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1.0. OBJECTIVE AND SCOPE

The objectives of the Verification Study were: (1) to verify that the commercial version of the SAFT and the MGRF reproduce the degree of aging obtained in the RTFOT for a wide range of neat binders, and (2) to compare the aging from the SAFT, MGRF and the RTFOT with that from mixture samples aged in a forced draft oven in accordance with the performance testing protocol contained in AASHTO R30. Initially the Verification Study only included the SAFT, but it was expanded at the request of the project panel to include the MGRF.

The Verification Study consisted of two main components: the RTFOT Verification Experiment and the Oven Aged Mixtures Experiment. The RTFOT Verification Experiment, which included DSR and BBR measurements, was designed to provide master curves for the binders in the tank condition and after SAFT, MGRF, and RTFOT conditioning. These binder master curves served two purposes: (1) to allow a comparison of the rheological properties of material conditioned in the SAFT, MGRF and RTFOT and (2) to allow a comparison of the master curves measured for the binders and the master curves back calculated from mixture properties. In the Oven Aged Mixtures Experiment, asphalt mixtures using the binders from the RTFOT Verification Experiment were prepared and aged in accordance with AASHTO R30. Dynamic modulus master curve tests were performed on the mixture samples. From the mixture modulus master curves, the binder stiffness was estimated using the Hirsch model (1) and compared to the measured stiffnesses obtained from the SAFT, MGRF and the RTFOT. The Verification Study was the last study in NCHRP 9-36 and provided the basis for making the final recommendation with respect to a replacement for the RTFOT.

2.0 RTFOT VERIFICATION EXPERIMENT

The twelve binders shown in Table 1 were used in the Verification Study. Six of the binders were unmodified and six were modified as described in Table 1.

2.1 Binder Testing Program and Data Evaluation

The testing program included DSR frequency sweeps at three temperatures in 12°C increments with 25 mm plates and three temperatures in 12°C increments with 8 mm plates. The strain levels were adjusted in each decade of frequency to keep the measurements in the linear

range. Measurements were taken in 22 equi-spaced (log scale) increments of frequency. All testing was done in duplicate using separate test specimens that, for the short-term aging procedures were aged in separate runs. DSR data obtained for the 12 binders used in the validation study are given in Section 5.

BBR testing was completed at three temperatures in 6°C increments with at least one of the test temperatures above and one below the specification temperature. Duplicate measurements were made at each temperature using separate test specimens that, for the short-term aging procedures, were aged in separate runs. BBR data obtained for the 12 binders used in the validation study are given in Section 6.

Table 1. Binders Used for the Verification Study.

Binder	Type	Grade	Supplier
AAC-1	Neat	PG 52-22	MRL
AAD-2	Neat	PG 52-28	MRL
AAF-1	Neat	PG 64-16	MRL
ABM-2	Neat	PG 58-16	MRL
ABL-1	Neat	PG 64-28	MRL
AAM-1	Neat	PG 64-16	MRL
Citgoflex	SBS Modified	PG 82-22	Citgo
ALF 64-40	SBS Modified	PG 70-34	FHWA
Air Blown	Air Blown	PG 76-16	Chevron
Elvaloy	RET Modified	PG 64-28	Mathy Construction
EVA	EVA Modified	PG 76-22	AAT
Novophalt	LDPE Modified	PG 76-16	AAT

Data from the DSR and BBR testing was plotted as the log of modulus and phase angle versus the log of time and as the log of stiffness and m-value versus the log of time. These plots were used to evaluate the quality of the data and to remove any obvious outliers. Typical examples are shown in Figure 1. DSR data up to 58 °C were used with the unmodified binders. The maximum temperature for the data for the modified binder master curves was 70 °C. Data up to BBR measurements were removed when they appeared as obvious outliers as shown by the deleted data in Figure 2.

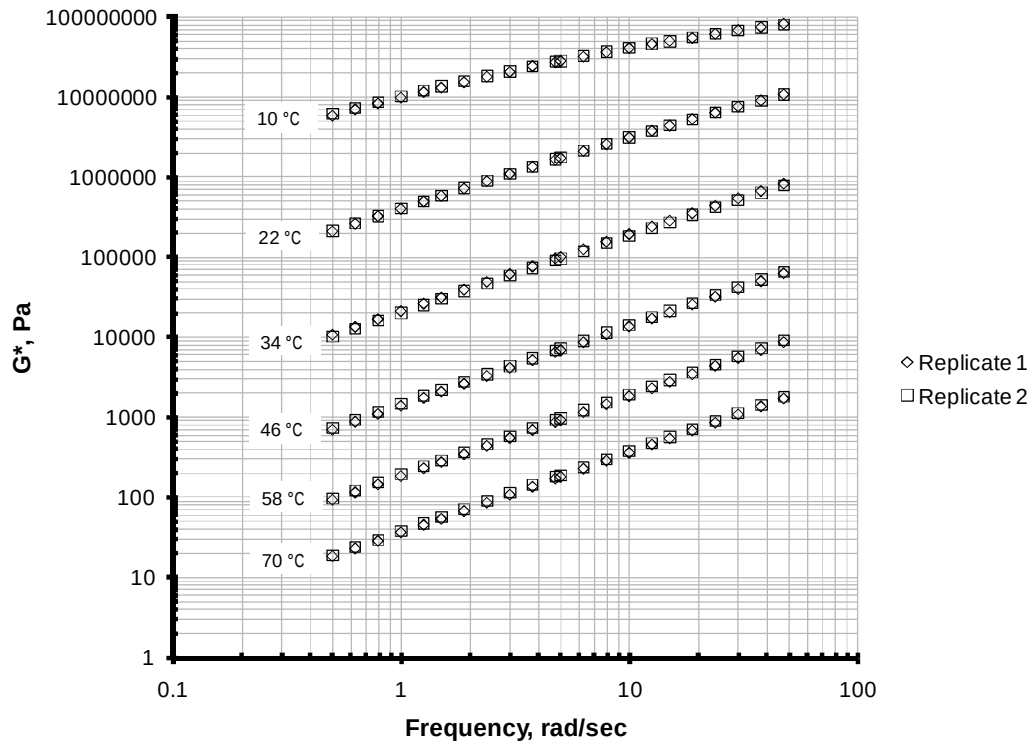


Figure 1. Complex Modulus Plotted versus Frequency, ABM-2, Tank Condition.

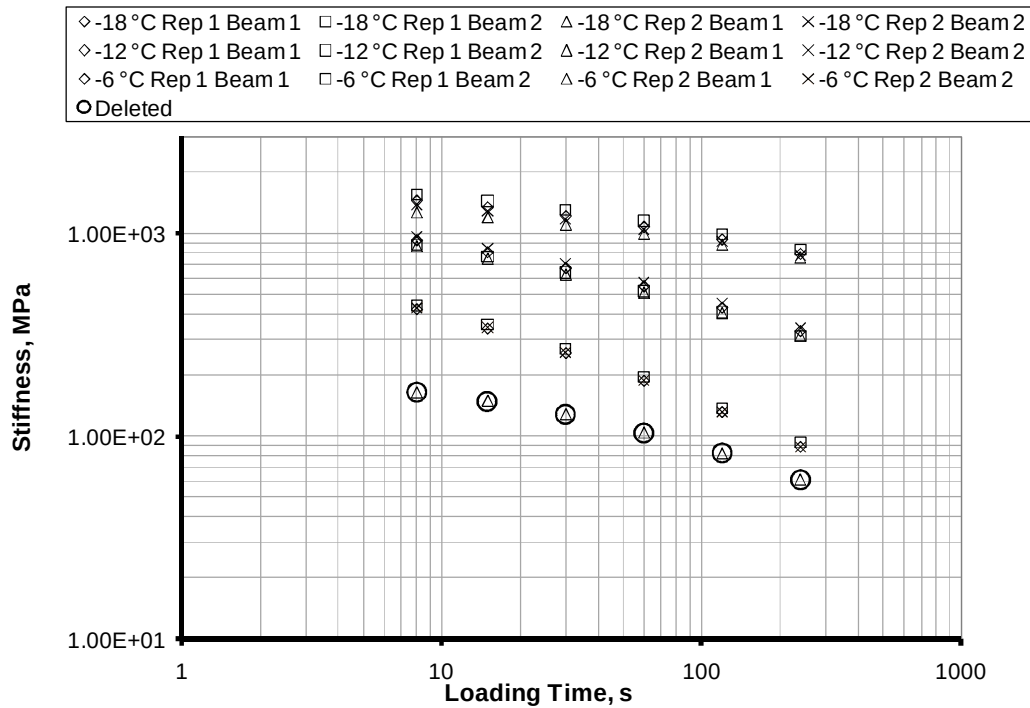


Figure 2. BBR Stiffness versus Loading Time, ABM-2, RTFOT Condition.

The dynamic shear data were also plotted in Black space. Measurements obtained at different temperatures should form a single line when plotted in Black Space. A typical plot is shown in Figure 3. DSR measurements were removed when the strain exceeded 125 percent of the value given by Equation 1, which was derived from linear range experiments completed during the Strategic Highway Research Program research (1).

$$\gamma = 390 (G^*)^{-0.33} \quad (1)$$

where:

γ = linear shear strain limit, %

G^* = binder shear modulus

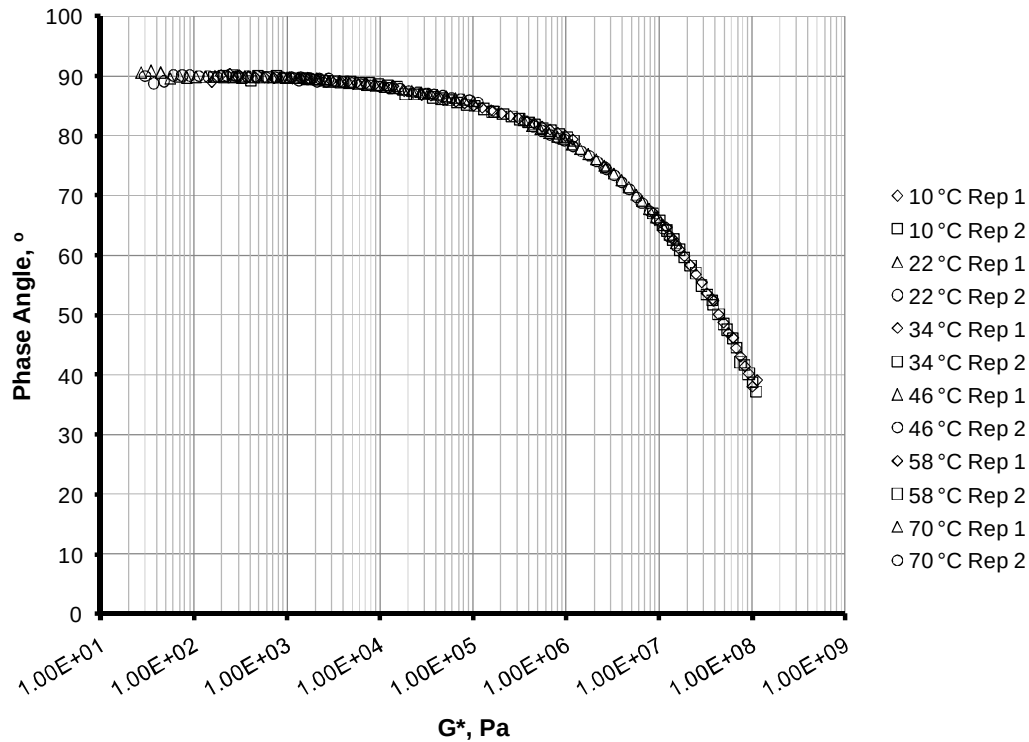


Figure 3. Black Space for ABM-2 DSR Measurements, SAFT Condition

This analysis of the data revealed major inconsistencies in the data for the EVA modified binder. This binder was particularly difficult to test, tending to phase separate during testing. The data for this binder were, therefore, not included in the analyses presented later in this chapter.

2.2 Initial Analysis of Binder Test Data

2.2.1 High Temperature Continuous Grade

The continuous grading temperatures for the RTFOT, SAFT, and MGRF conditioned binders were calculated by interpolating between the logarithm of two measurements, one obtained above the specification temperature and the other below the specification temperature. Figure 4 presents the continuous upper grading temperature for the 11 of the 12 binders included in the Verification Study after aging in the RTFOT, SAFT, and MGRF. The EVA binder was not included in this analysis due to the difficulties testing this binder as discussed above. Figure 4 shows the continuous grading temperature is lower for the SAFT when compared to the RTFOT, particularly for the stiffer binder grades. The continuous grading temperature for the MGRF more reasonably reproduces that for the RTFOT. The continuous grading temperature for the SAFT and MGRF conditioned binders are plotted versus the continuous grading temperature for the RTFOT conditioned binders in Figure 5. Figure 5 includes trend lines for the SAFT and MGRF data. This plot clearly shows the better agreement for the MGRF compared to the SAFT. The trend line for the MGRF data coincides with the line of equality, while that for the SAFT indicates less stiffening particularly for high stiffness binders. Figure 6 shows the difference between the continuous grading temperatures for the SAFT and the MGRF conditioned binder compared to the RTFOT conditioned binders. The difference for the SAFT appears to depend on the stiffness of the binder and for stiffer binders can reach as much as a full grade. The difference for the MGRF is within ± 1.8 °C, and does not appear to depend on the stiffness of the binder.

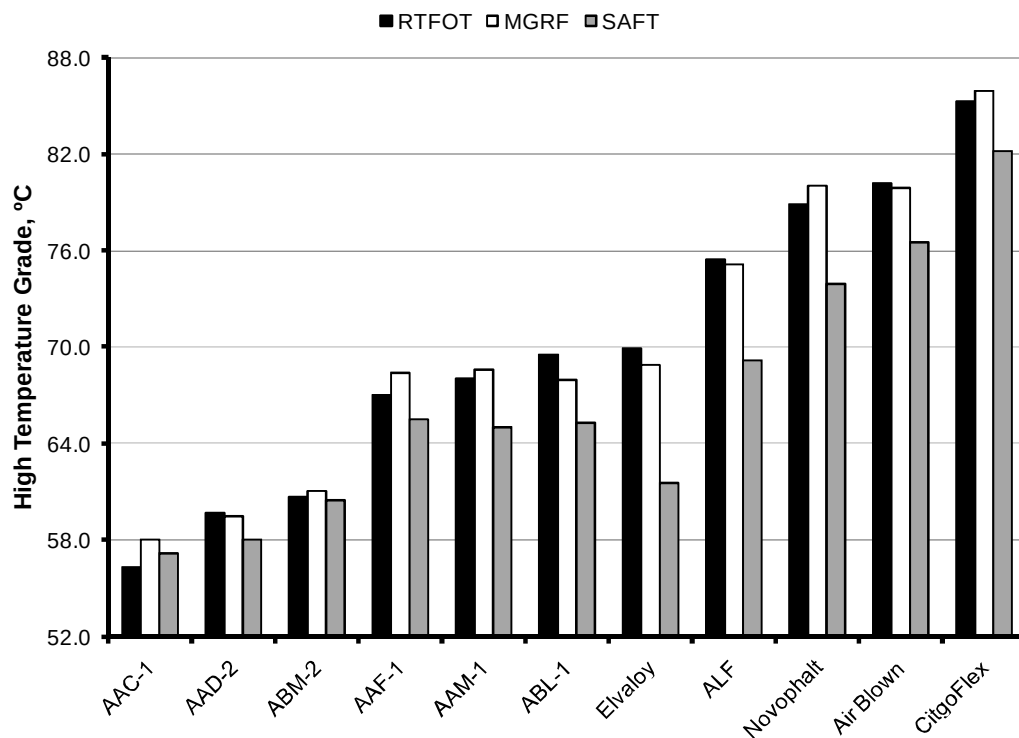


Figure 4. Continuous Grading Temperatures for RTFOT, SAFT, and MGRF Conditioned Binders.

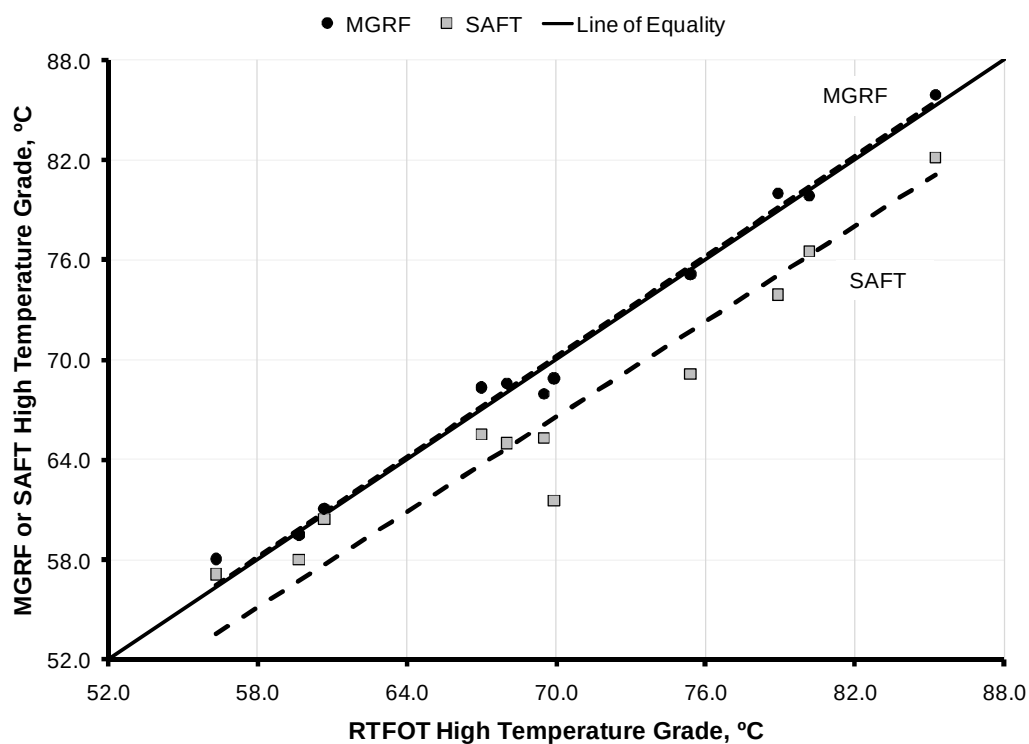


Figure 5. Comparison of SAFT and MGRF Continuous Grading Temperatures to RTFOT Continuous Grading Temperature.

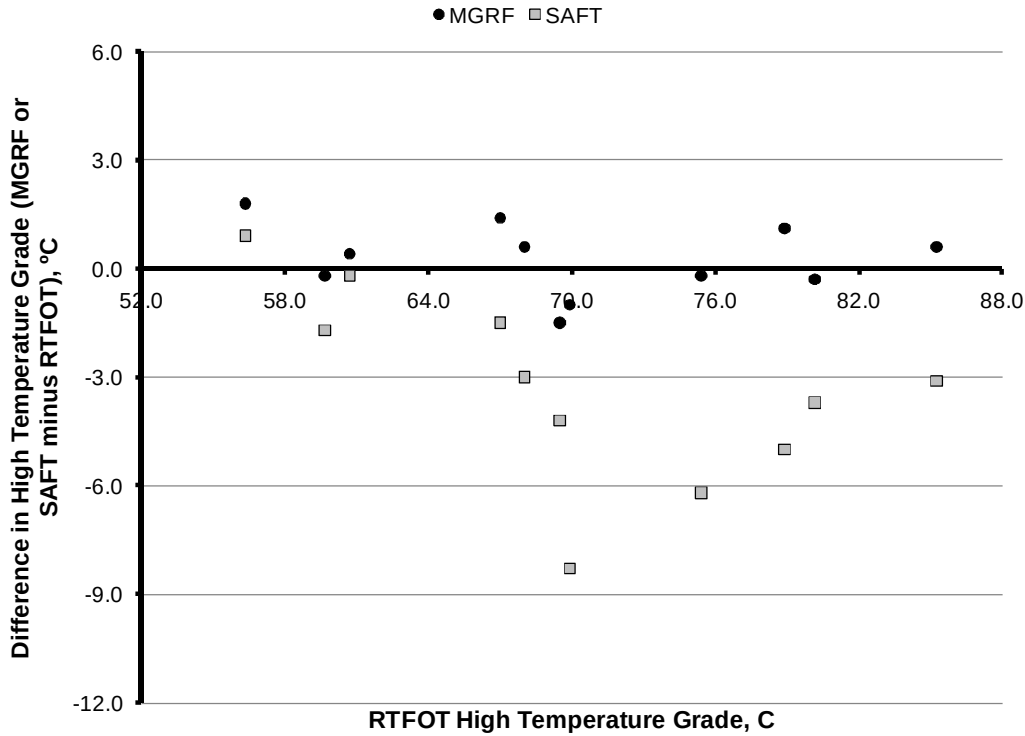


Figure 6. Difference in Continuous Grading Temperature for SAFT and MGRF Residue Compared to RTFOT Residue.

A paired difference t-test as summarized below was used to assess the significance of the differences shown in Figure 6. The analysis was conducted for three groups: (1) neat binders, (2) modified binders, and (3) all binders.

Null hypothesis: $\mu_{\text{candidate}} - \mu_{\text{RTFOT}} = 0$
 Alternative hypothesis: $\mu_{\text{candidate}} - \mu_{\text{RTFOT}} > 0$ or $\mu_{\text{candidate}} - \mu_{\text{RTFOT}} < 0$
 (as appropriate)

Test statistic:
$$t = \frac{\bar{d}}{\left(\frac{s_d}{\sqrt{n}} \right)}$$

Rejection region: Reject the null hypothesis and accept the alternative hypothesis if $t > t_{\alpha}$ for $n-1$ degrees of freedom.

where:

$\mu_{\text{candidate}}$ = population mean for either SAFT or MGRF residue
 μ_{RTFOT} = population mean for RTFOT residue
 $\bar{d}$ = average of the differences between candidate and RTFOT residues

s_d = standard deviation of the differences
 n = number of binders compared

The results are summarized in Tables 2, 3, and 4 for a level of significance of 5 percent. The results show that the continuous grade temperature for the SAFT residue is lower than that for the RTFOT for all three groups, while there is no significant difference in the continuous grade temperature for the MGRF residue and the RTFOT residue for all three groups.

Table 2. Summary of Paired t-test for Neat Binders.

Binder	Continuous Grading Temperature, °C			Differences (MGRF or SAFT minus RTFOT), °C	
	RTFOT	MGRF	SAFT	MGRF	SAFT
AAC-1	56.3	58.1	57.2	1.8	0.9
AAD-2	59.7	59.5	58.0	-0.2	-1.7
ABM-2	60.7	61.1	60.5	0.4	-0.2
AAF-1	67.0	68.4	65.5	1.4	-1.5
AAM-1	68.0	68.6	65.0	0.6	-3.0
ABL-1	69.5	68.0	65.3	-1.5	-4.2
Average Difference, °C				0.42	-1.62
Standard Deviation of Differences, °C				1.18	1.84
Calculated t				1.034	-2.151
t_{critical} (0.05, 5 degrees of freedom)				2.015	2.015
Conclusion				No Difference	SAFT lower

Table 3. Summary of Paired t-test for Modified Binders.

Binder	Continuous Grading Temperature, °C			Differences (MGRF or SAFT minus RTFOT), °C	
	RTFOT	MGRF	SAFT	MGRF	SAFT
Elvaloy	69.9	68.9	61.6	-1.0	-8.3
ALF	75.4	75.2	69.2	-0.2	-6.2
Novophalt	78.9	80.0	73.9	1.1	-5.0
Airblown	80.2	79.9	76.5	-0.3	-3.7
Citgoflex	85.3	85.9	82.2	0.6	-3.1
Average Difference, °C				0.04	-5.26
Standard Deviation of Differences, °C				0.82	2.08
Calculated t				0.128	-6.197
t_{critical} (0.05, 10 degrees of freedom)				2.132	2.132
Conclusion				No difference	SAFT lower

Table 4. Summary of Paired t-test for All Binders.

Binder	Continuous Grading Temperature, °C			Differences (MGRF or SAFT minus RTFOT), °C	
	RTFOT	MGRF	SAFT	MGRF	SAFT
AAC-1	56.3	58.1	57.2	1.8	0.9
AAD-2	59.7	59.5	58.0	-0.2	-1.7
ABM-2	60.7	61.1	60.5	0.4	-0.2
AAF-1	67.0	68.4	65.5	1.4	-1.5
AAM-1	68.0	68.6	65.0	0.6	-3.0
ABL-1	69.5	68.0	65.3	-1.5	-4.2
Elvaloy	69.9	68.9	61.6	-1.0	-8.3
ALF	75.4	75.2	69.2	-0.2	-6.2
Novophalt	78.9	80.0	73.9	1.1	-5.0
Airblown	80.2	79.9	76.5	-0.3	-3.7
Citgoflex	85.3	85.9	82.2	0.6	-3.1
Average Difference, °C				0.27	-3.24
Standard Deviation of Differences, °C				1.00	2.65
Calculated t				0.882	-4.054
t_{critical} (0.05, 10 degrees of freedom)				1.812	1.812
Conclusion				No difference	SAFT lower

Since the testing included testing replicate samples of each binder conditioned in the three short-term conditioning devices, an initial evaluation of the variability of the SAFT and MGRF relative to the RTFOT was made. This evaluation was done using an F-test on the pooled variance computed from the variances of the replicate tests for the 11 binders. The F-test is summarized below:

$$\begin{array}{ll} \text{Null hypothesis:} & \sigma_1^2 = \sigma_2^2 \\ \text{Alternative hypothesis:} & \sigma_1^2 > \sigma_2^2 \end{array}$$

$$\text{Test statistic:} \quad F = \frac{s_1^2}{s_2^2}$$

Rejection region: Reject the null hypothesis and accept the alternative hypothesis if $F > F_\alpha$ for n_1-1 and n_2-1 degrees of freedom.

where:

$$\begin{array}{l} \sigma_1^2 = \text{variance for method 1} \\ \sigma_2^2 = \text{variance for method 2} \\ s_1 = \text{standard deviation for method 1} \\ s_2 = \text{standard deviation for method 2} \\ n_1 = \text{number of samples for method 1} \\ n_2 = \text{number of samples for method 2} \end{array}$$

The results of this analysis are summarized in Table 5. This analysis shows that the variance of the high temperature continuous grade from the MGRF is greater than the RTFOT while that for the SAFT is the same as the RTFOT. Since the testing error associated with the DSR is the same for all conditioning procedures, the difference in the variance of the high temperature continuous grade must be associated with the conditioning procedure. Variability in the MGRF was particularly high for two of the binders: AAF-1 and Airblown. If these two binders are removed from the analysis, there would be no difference in the variability of the MGRF and that RTFOT.

Table 5. Analysis of Variability of MGRF and SAFT Relative to RTFOT.

Binder	Standard Deviation, °C			Variance, °C ²		
	RTFOT	MGRF	SAFT	RTFOT	MGRF	SAFT
AAC-1	0.21	0.35	0.07	0.043	0.125	0.005
AAD-2	0.49	0.14	0.00	0.243	0.020	0.000
ABM-2	0.35	0.21	0.35	0.120	0.045	0.125
AAF-1	0.44	2.90	0.28	0.190	8.405	0.080
AAM-1	0.35	1.27	0.28	0.123	1.620	0.080
ABL-1	0.35	0.21	0.57	0.120	0.045	0.320
Elvaloy	1.13	0.14	0.35	1.280	0.020	0.125
ALF	0.00	0.49	0.21	0.000	0.245	0.045
Novophalt	0.57	0.28	0.14	0.320	0.080	0.020
Air Blown	0.92	2.05	0.57	0.845	4.205	0.320
Citgoflex	0.21	0.14	0.21	0.045	0.020	0.045
Number of Replicates				2	2	2
Pooled Variance				0.3027	1.3482	0.1059
Computed F				NA	4.45	2.86
Critical F (0.05, 10, 10)				NA	2.98	2.98
Conclusion				NA	MGRF higher	No Difference

2.2.1 MGRF Mass Loss

The MGRF uses a mass loss procedure that is similar to that for the RTFOT: the flask is weighed before and after conditioning. Mass loss data from the MGRF and the RTFOT are summarized in Table 6 and compared in Figure 7. Figure 7 shows that there is a good relationship between the mass change measured in the MGRF and that measured in the RTFOT with the MGRF values being approximately 40 percent of the RTFOT value.

Table 6. Mass Change Data for RTFOT and MGRF.

Binder	Mass Change, %	
	RTFOT	MGRF
AAC-1	-0.058	-0.232
ABL-1	-0.654	-0.345
AAM-1	0.122	0.113
Citgoflex	-0.196	-0.103
Airblown	0.031	0.033
Novophalt	-0.132	-0.045
AAF-1	-0.008	-0.063
ABM-2	-0.349	-0.100
AAD-2	-1.058	-0.362
Elvaloy	-0.173	-0.060
ALF 64-40	-0.207	-0.073

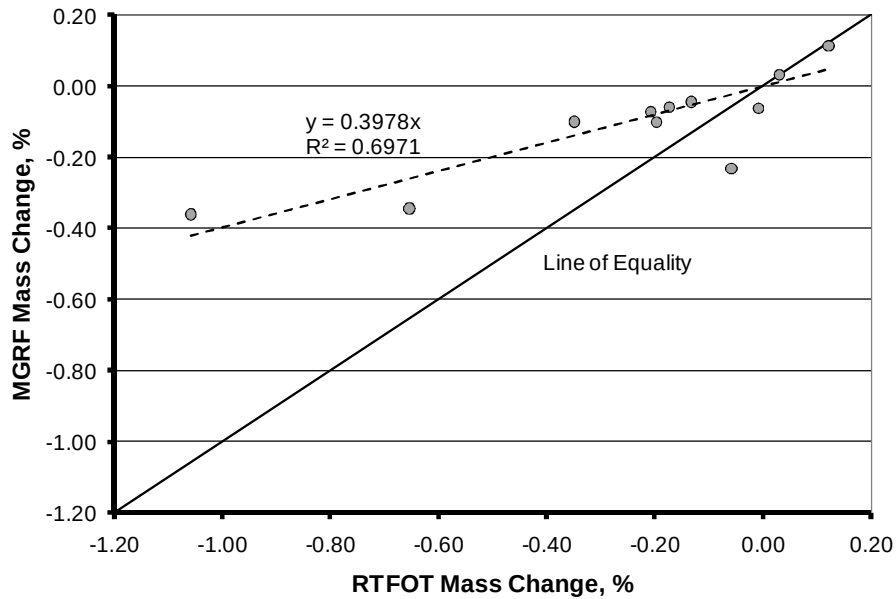


Figure 7. Comparison of Mass Change for MGRF and RTFOT.

2.3 Christensen-Anderson Model Characterization

Binder master curves were developed from the combined DSR-BBR data using the Christensen Anderson model (3). The Christensen-Anderson model was used because the parameters in the model are useful in interpreting changes in rheology that occur during

laboratory conditioning or in-service aging. Equation 2 presents the Christensen-Anderson model for the frequency dependency of the binder shear modulus.

$$G^*(\omega) = G_g \left[1 + \left(\frac{\omega_c}{\omega_r} \right)^{\frac{\log 2}{R}} \right]^{\frac{-R}{\log 2}} \quad (2)$$

where:

$G^*(\omega)$ = complex shear modulus

G_g = glass modulus, approximately equal to 1GPa

ω_r = reduced frequency at the reference temperature, rad/sec

ω_c = cross over frequency at the reference temperature, rad/sec

R = rheological index

The shift factors relative to the defining temperature are given by Equations 3 and 4 for temperatures above and below the defining temperature, respectively (3).

$$\log a(T) = \frac{-19(T - T_d)}{92 + T - T_d} \quad (3)$$

$$\log a(T) = 13016.07 \left(\frac{1}{T} - \frac{1}{T_d} \right) \quad (4)$$

where:

$a(T)$ = shift factor

T = temperature, °K

T_d = defining temperature, °K

Above T_d the WLF equation is valid, but below T_d it is no longer valid and the Arrhenius equation must be used. This is because the asphalt binder is not in an equilibrium condition as a result of physical hardening. The four unknown parameters, G_g , ω_c , R , and T_d , were obtained through non-linear least squares fitting of Equations 2, 3, and 4 using the data from the testing program. The parameter, ω_c , changes with temperature and therefore is always given at the reference temperature, selected as 22 °C for direct comparison with the data back-calculated from the mixture master curves. To construct the complete master curve, the bending beam

rheometer creep stiffness was converted to shear modulus using the following approximate inter-conversions.

$$G^*(w) \approx \frac{S(t)}{3} \quad (5)$$

$$w \approx \frac{1}{t} \quad (6)$$

where:

$G^*(\omega)$ = shear modulus

$S(t)$ = creep stiffness

ω = frequency in rad/sec

t = time in sec

Figure 8 presents an example fitted master curve and the nomenclature used with the Christensen-Anderson model. A major advantage of the Christensen-Anderson model is the model parameters have physical significance. The glassy modulus is the limiting maximum modulus and is approximately equal to 1 GPa, reflective of the stiffness of C-C bonds that predominate in asphalt binders. The viscous asymptote is the 45 degree line that the master curve approaches at low frequencies and is an indicator of the steady state viscosity of the binder. The cross-over frequency is the frequency where the phase angle is 45 degrees and is typically close to the point where the viscous asymptote intersects the glassy modulus. The cross-over frequency, ω_c , is an indicator of the hardness of the binder. Finally, the rheological index, R , is the difference between the log of the glassy modulus and the log of the dynamic modulus at the cross-over frequency. It is an indicator of the rheological type.

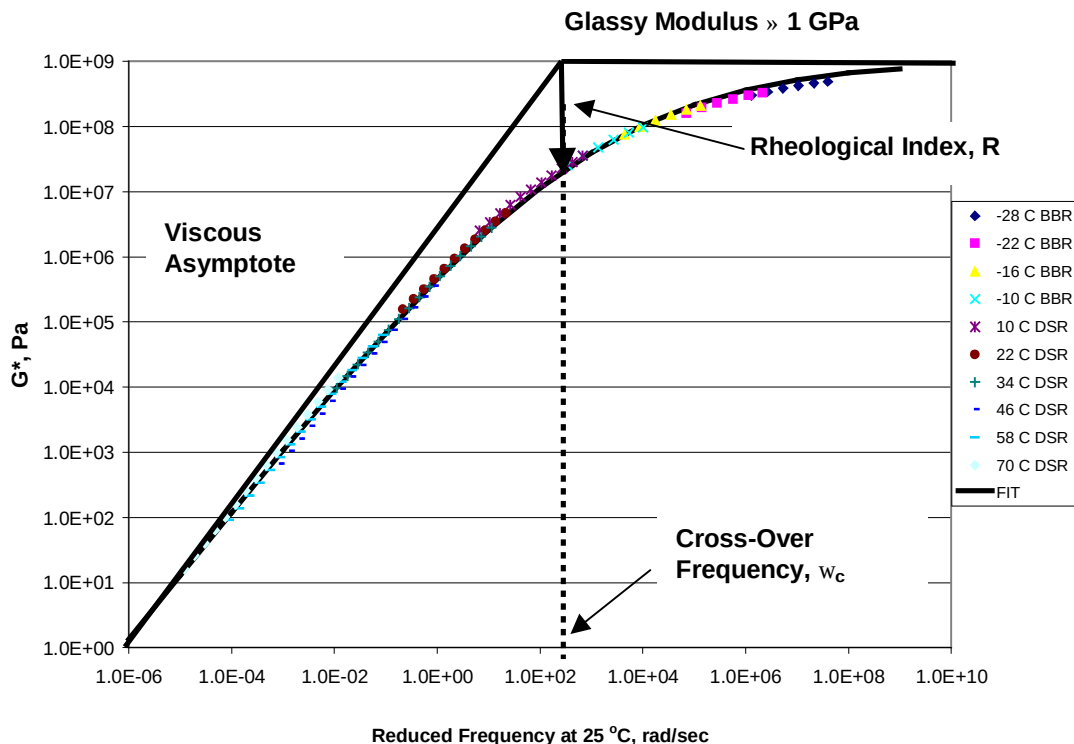


Figure 8. Christensen Anderson Model Master Curve.

2.3.1 Changes in Christensen-Andersen Model Parameters as a Result of RTFOT, MGRF and SAFT Conditioning

The Christensen-Anderson model parameters G_g , R , ω_c , and T_d for each of the binders were calculated by combining the DSR and BBR data and applying equations 1 through 6 as described above. For each binder, the glassy modulus was computed separately for each of the aging conditions, then the parameters for each aging condition were recomputed using the average glassy modulus. The complete set of master curve parameters is given in Table 7. Master curves were generated for the four conditions: original, RTFOT residue, MGRF residue, and SAFT residue. An example of these master curves (ABM-2, RTFOT residue) is shown in Figure 9 and the shift factors for the same material are shown in Figure 10. The complete set of master curves is included in Section 7.

Table 7. Christensen-Anderson Model Parameters.

Binder Source	Log ₁₀ Glassy Modulus, kPa	Rheological Parameter, R, log ₁₀ Pa				log ₁₀ Cross-over Frequency, ω , rad/s				Defining Temperature, T _d , °C			
		Tank	SAFT	RTFOT	MGRF	Tank	SAFT	RTFOT	MGRF	Tank	SAFT	RTFOT	MGRF
AAC-1	8.6	1.21	1.62	1.50	1.55	3.42	2.41	2.68	2.42	-9.8	-0.7	-3.6	-1.5
AAD-2	9.2	1.92	2.17	2.16	2.14	4.11	3.18	3.28	3.31	-18.1	-15.6	-15.1	-14.7
AAF-1	8.6	1.39	1.63	1.65	1.85	2.39	1.56	1.41	1.24	-1.3	3.7	3.8	4.0
AAM-1	8.6	1.49	1.67	1.86	1.91	2.39	1.92	1.41	1.40	-3.1	0.3	2.7	3.7
ABL-1	8.7	1.55	1.65	1.77	1.75	2.97	2.62	2.15	2.27	-14.9	-13.1	-10.7	-11.0
ABM-2	8.7	0.90	0.91	0.90	1.02	2.97	2.74	2.69	2.59	-4.1	-4.1	-3.1	-2.9
Airblown	8.8	2.31	2.42	2.41	2.29	0.88	0.35	0.12	0.38	3.7	5.0	4.2	3.8
ALF	10.9	4.69	5.13	5.36	5.47	2.71	1.48	0.81	0.70	-15.2	-12.6	-12.8	-10.4
Citgoflex	9.8	2.95	3.06	3.33	3.18	1.82	1.35	0.63	0.92	-7.5	-6.2	-2.6	-2.1
Elvaloy	9.2	2.06	2.18	2.44	2.41	3.29	2.77	1.99	2.32	-13.4	-11.1	-9.5	-10.8
Novophalt	8.8	1.60	1.63	1.83	1.87	2.20	1.80	1.14	1.26	-9.7	-9.4	-5.1	-4.2

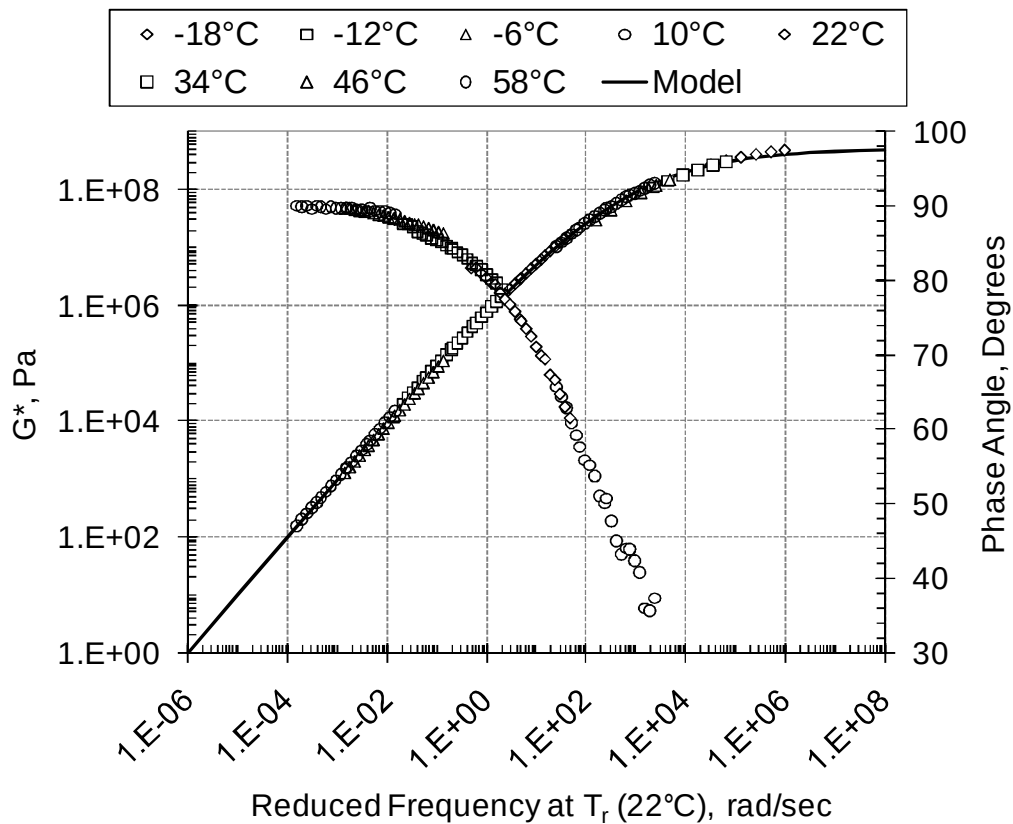


Figure 9. Master curve for ABM-2, RTFOT Residue.

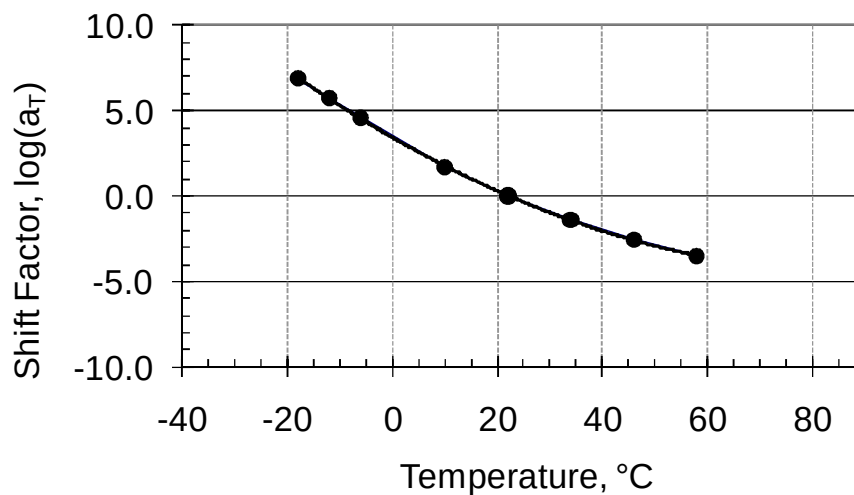


Figure 10. Shift Factor, a_T , ABM-2, RTFOT Residue

The model parameters for the rheological index, crossover frequency, and defining temperature are shown in bar chart format in Figure 11, Figure 12, and Figure 13, respectively. The following general observations can be made from these figures:

- R tends to increase with aging indicating a decrease in frequency dependency and a flattening of the master curve.
- ω_c tends to decrease with aging, indicating a stiffening of the binders as a consequence of aging.
- T_d tends to increase with aging indicating an increased temperature dependency; the same temperature change is equivalent to a larger frequency change.

These general trends are as expected based on previous research concerning the effect of aging on binder master curves (3).

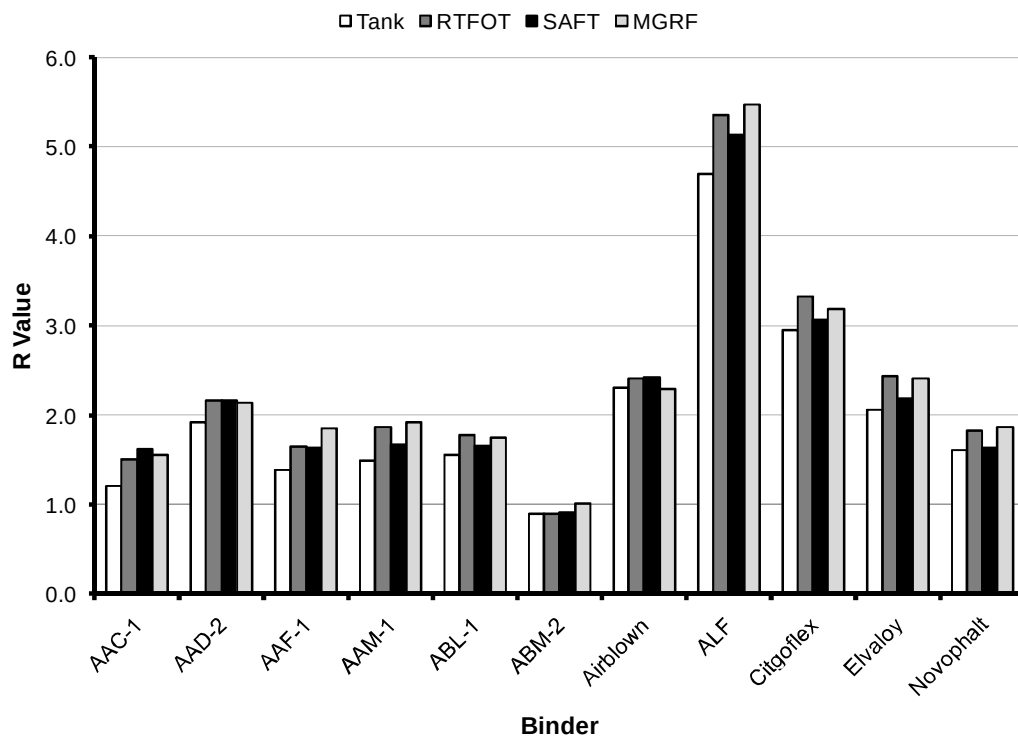


Figure 11. Rheological Index, R, for Study Binders.

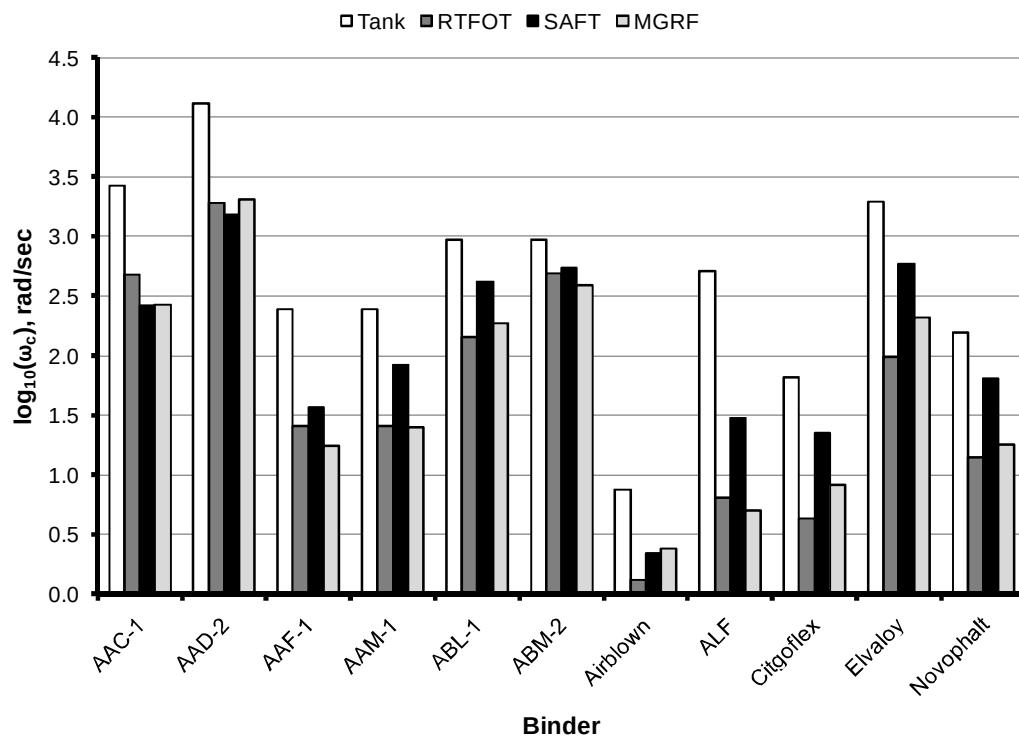


Figure 12. Crossover Frequency, ω_c , for Study Binders.

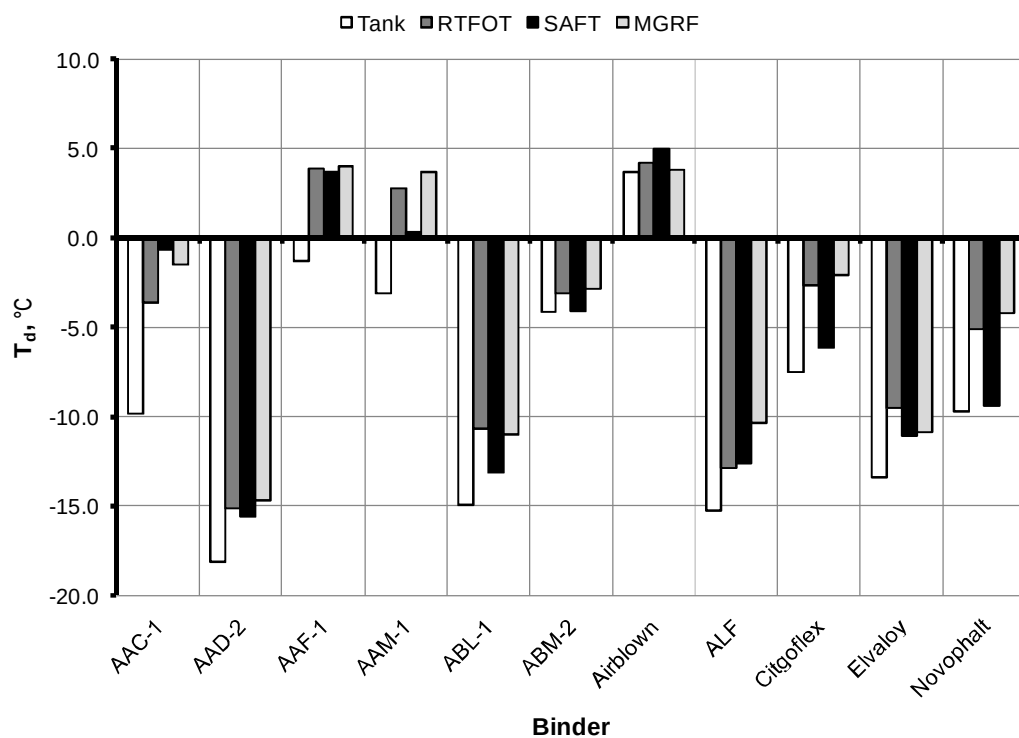


Figure 13. Defining Temperature, T_d , for Study Binders.

More obvious trends in the data can be observed by plotting the differences between the model parameters for the RTFOT, SAFT, or MGRF conditioned binders and the model parameters for the original binders. These are shown in Figure 14, Figure 15, and Figure 16 for R , ω_c , and T_d , respectively. If the changes in model parameters are the same for the SAFT and the MGRF compared to the RTFOT conditioned binders, the data should plot along the line of equality. As shown, there is significant scatter in the data because the master curve parameters are somewhat interrelated and depend on the quality of the data. Trend lines are shown for the SAFT and MGRF data in Figures 14 through 16 to make it easier to interpret these plots. The trend lines for the MGRF data are much closer the line of equality than those for the SAFT data. The results of regression analyses for the change in the Christensen-Anderson model parameters are summarized in Table 8. This analysis shows that there is a significant relationship between the change in the model parameters between the SAFT and the RTFOT and the MGRF and the RTFOT. The strength of the relationships, as indicated by the R^2 values are better for the MGRF compared to the SAFT. Additionally, the slopes for the MGRF data are close to 1, and the 95 percent confidence intervals for the slope capture 1 for all three parameters. The slopes for the SAFT data range from 0.6 to 0.7 and only the 95 percent confidence interval for the slope of the change in T_d relationship captures 1. The conclusion from this analysis is that MGRF aging produces changes in the Christensen-Anderson master curve parameters that are not significantly different than those for the RTFOT, while the SAFT aging produces different master curve parameters. The implication is that the SAFT and RTFOT conditioning is affecting these binders in different ways, leading the authors to conclude that the aging mechanism may be different for the two methods and questioning the SAFT as a replacement for the RTFOT.

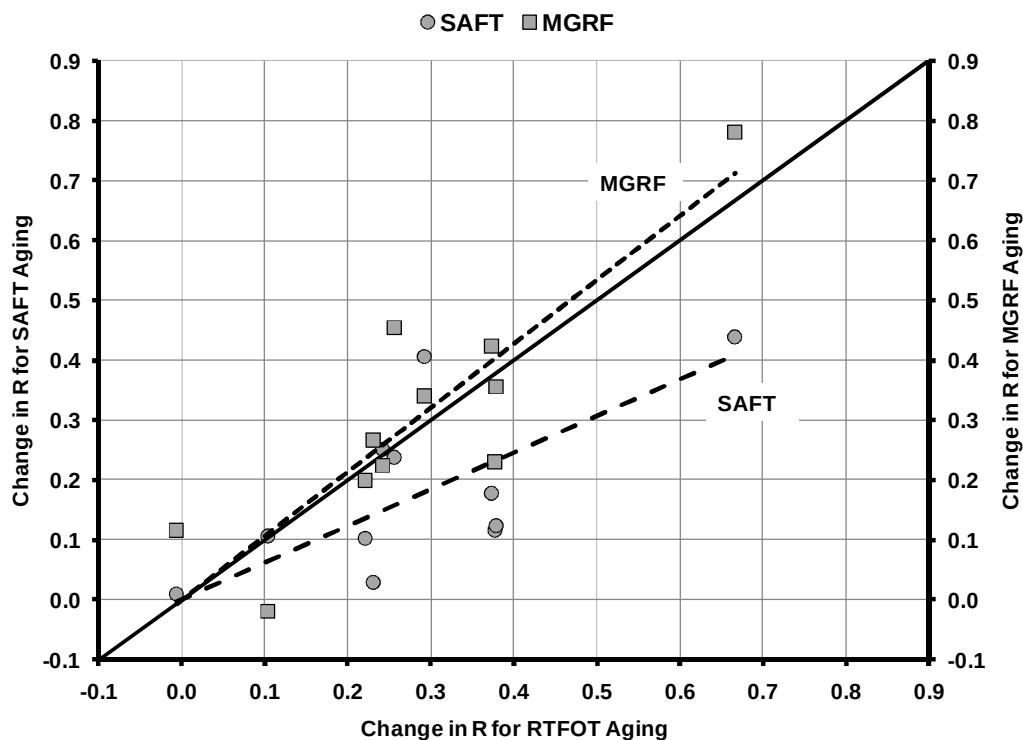


Figure 14. Comparison of Change in Rheological Index for RTFOT, SAFT, and MGRF Aging.

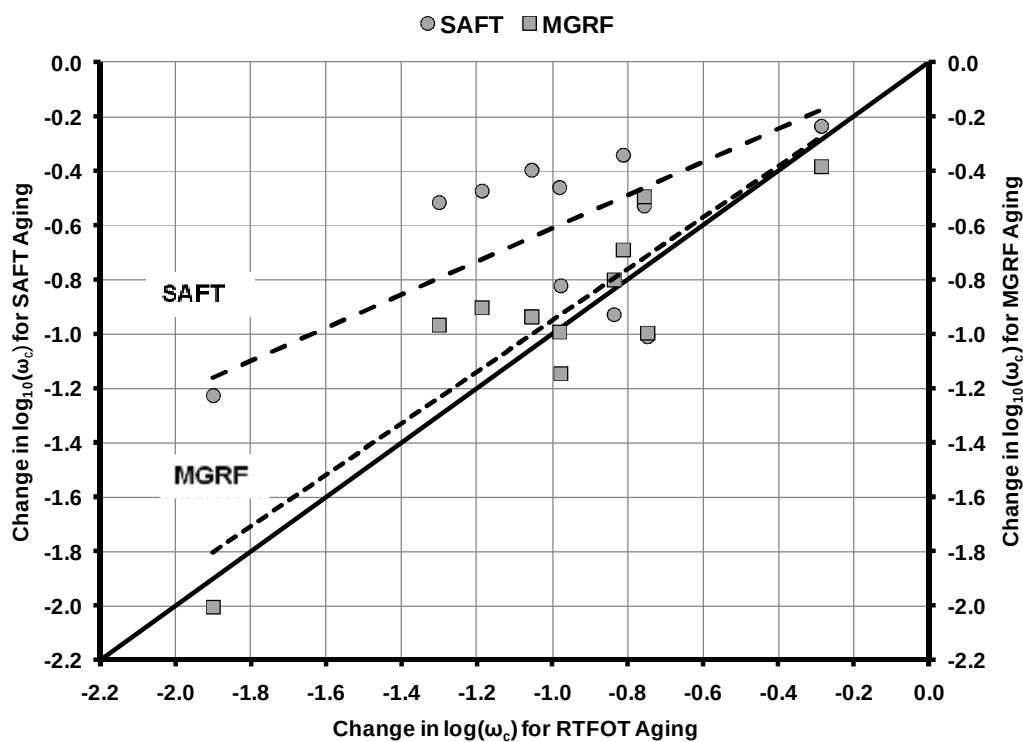


Figure 15. Comparison of Change Cross-over Frequency for RTFOT, SAFT, and MGRF Aging.

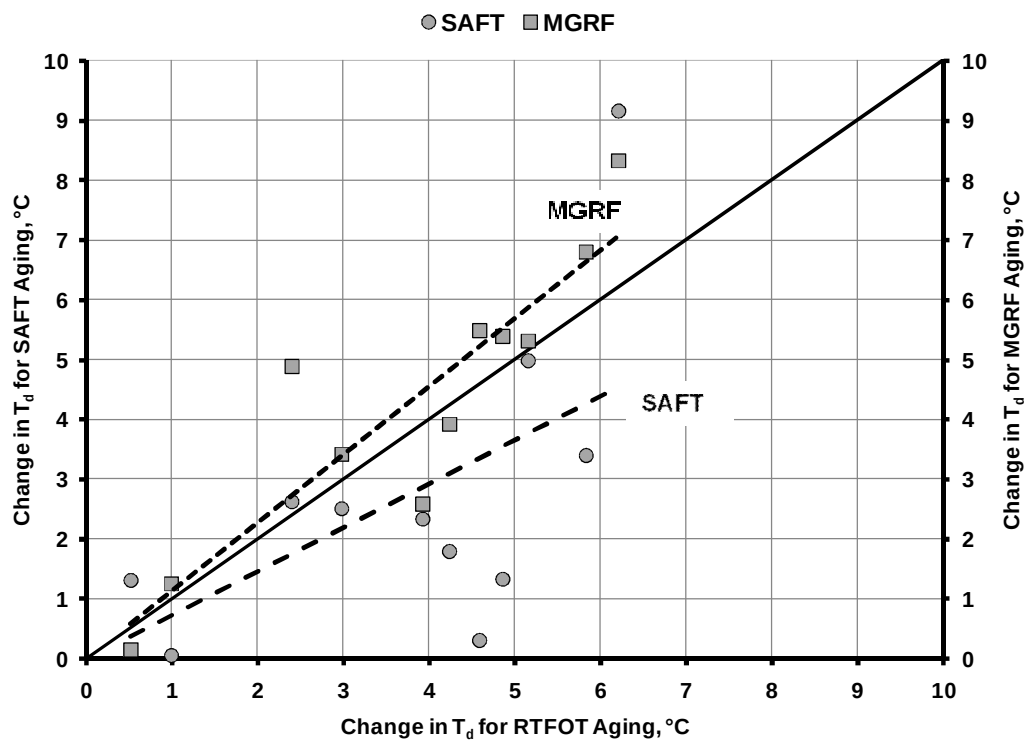


Figure 16. Comparison of Change Defining Temperature for RTFOT, SAFT, and MGRF Aging.

Table 8. Regression Analysis of Change in Christensen-Anderson Model Parameters.

Parameter	Measure	SAFT	MGRF
ΔR	Slope	0.61	1.07
	Lower 95 % CI	0.40	0.86
	Upper 95 % CI	0.83	1.28
	R^2	0.70	0.83
$\Delta\omega_c$	Slope	0.61	0.95
	Lower 95 % CI	0.43	0.83
	Upper 95 % CI	0.79	1.07
	R^2	0.75	0.87
ΔT_d	Slope	0.73	1.14
	Lower 95 % CI	0.40	0.71
	Upper 95 % CI	1.06	1.57
	R^2	0.61	0.86

2.4 Aging Indices Based on Complex Moduli Calculated from Master Curves

Another technique for judging the conditioning that occurs in the SAFT and MGRF relative to the RTFOT is to calculate and compare aging indices for the procedures. This was done by calculating aging indices at a common temperature for each aging condition (but different for each binder) and at a series of moduli. This approach parallels the aging that occurs in an actual pavement; the change that occurs in stiffness at temperatures corresponding to different unaged moduli. The temperature where G^* for the unaged binders at 10 rad/s is equal to 1, 10, 100, 1,000, 10,000, and 100,000 kPa was calculated using the fitted Christensen-Anderson model for each binder. These temperatures are shown in Table 9. The fitted Christensen-Anderson model was then used to calculate the complex moduli for the binders for the three aging conditions at these temperatures and 10 rad/s. The moduli for the aged binders were then divided by the moduli for the unaged binders. The resulting aging indices are shown in Table 9. Table 9.

The aging indices decrease with increasing stiffness as shown in Figure 17 for AAM-1. For RTFOT aging they range from about 1.5 to 3.0 for a stiffness of 1 kPa to about 1.0 for a stiffness of 100,000 kPa. The decrease in the aging index is expected because the stiffness of binders converges to approximately the same glassy modulus regardless of aging condition.

Figure 18 compares aging indices from the SAFT and MGRF with those from the RTFOT for the binders used in the study. If the aging indices for the SAFT and MGRF are the same as the RTFOT, the data should plot along the line of equality. As shown, there is significant scatter in the data. Trend lines are shown for the SAFT and MGRF data in Figures 18. The trend line for the MGRF data falls nearly on the line of equality while the trend line for the SAFT data is much lower. The results of regression analyses for the aging indices are summarized in Table 10. This analysis shows that there are significant relationships between the aging indices from the SAFT and the RTFOT and the MGRF and the RTFOT. The strength of the relationship, as indicated by the R^2 value is approximately the same for the MGRF compared to the SAFT. However, the slope for the MGRF data is close to 1, and the 95 percent confidence interval for the slope captures 1. The slope for the SAFT data is 0.74 and the 95 percent confidence interval for the slope does not capture 1. The conclusion from this analysis is the MGRF produces aging indices that are approximately the same as the RTFOT.

Table 9. Complex Moduli and Temperatures Used to Calculate Aging Indices.

Binder	G*, kPa	T, °C	Aging Index			Binder	G*, kPa	T, °C	Aging Index		
			SAFT	RTFOT	MGRF				SAFT	RTFOT	MGRF
AAC-1	1	56.9	2.35	2.11	2.70	Airblown	1	77.1	1.86	3.17	2.56
	10	43.0	2.56	2.21	2.92		10	59.5	1.76	2.81	2.40
	100	30.8	2.59	2.19	2.94		100	44.0	1.64	2.42	2.20
	1,000	19.7	2.35	2.00	2.66		1,000	29.8	1.49	2.00	1.95
	10,000	8.6	1.86	1.63	2.06		10,000	15.5	1.31	1.59	1.65
	100,000	-5.2	1.16	1.16	1.27		100,000	-2.5	1.09	1.20	1.30
AAD-2	1	57.1	2.51	3.08	2.87	ALF 64-40	1	70.1	1.52	2.51	2.58
	10	40.6	2.32	2.85	2.73		10	46.6	1.41	2.12	2.25
	100	26.2	2.08	2.55	2.51		100	27.2	1.32	1.78	1.96
	1,000	13.1	1.80	2.18	2.20		1,000	10.7	1.23	1.49	1.72
	10,000	0.5	1.49	1.77	1.82		10,000	-4.0	1.15	1.26	1.51
	100,000	-13.2	1.20	1.36	1.42		100,000	-17.6	1.03	1.03	1.18
AAF-1	1	64.5	2.29	2.99	3.18	Citgoflex	1	87.1	1.05	1.43	1.68
	10	50.4	2.32	2.97	2.90		10	64.4	1.04	1.39	1.73
	100	38.0	2.24	2.78	2.46		100	45.3	1.03	1.35	1.76
	1,000	26.5	2.01	2.39	1.93		1,000	28.6	1.02	1.30	1.76
	10,000	14.9	1.65	1.85	1.40		10,000	13.2	1.01	1.24	1.71
	100,000	0.3	1.14	1.19	0.92		100,000	-2.0	1.00	1.17	1.59
AAM-1	1	65.6	1.42	2.29	1.92	Elvaloy	1	66.0	1.21	3.10	3.05
	10	50.8	1.44	2.23	1.90		10	48.3	1.22	2.78	2.67
	100	37.7	1.42	2.05	1.79		100	32.9	1.22	2.40	2.25
	1,000	25.6	1.35	1.77	1.58		1,000	19.1	1.20	1.98	1.82
	10,000	13.5	1.22	1.41	1.30		10,000	5.7	1.16	1.57	1.43
	100,000	-1.9	1.03	0.98	0.92		100,000	-8.7	1.10	1.22	1.11
ABL-1	1	67.7	1.55	2.71	2.27	Novophalt	1	78.0	1.32	2.23	2.49
	10	50.3	1.53	2.63	2.23		10	59.6	1.30	2.20	2.46
	100	35.2	1.48	2.43	2.10		100	43.7	1.26	2.09	2.33
	1,000	21.4	1.39	2.12	1.88		1,000	29.3	1.22	1.88	2.07
	10,000	7.8	1.26	1.70	1.57		10,000	15.2	1.15	1.59	1.71
	100,000	-8.5	1.10	1.25	1.21		100,000	-1.1	1.06	1.24	1.29
ABM-2	1	61.5	1.70	1.69	1.96						
	10	48.3	1.68	1.73	1.96						
	100	36.8	1.65	1.76	1.89						
	1,000	26.6	1.58	1.74	1.74						
	10,000	16.8	1.44	1.64	1.48						
	100,000	5.4	1.21	1.36	1.14						

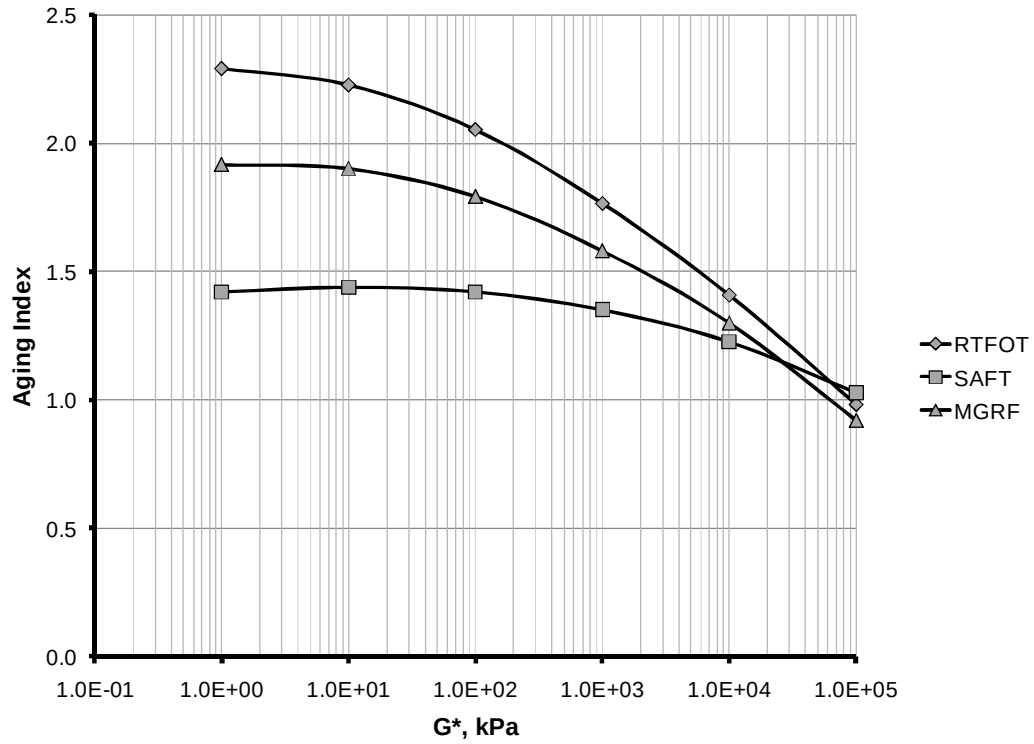


Figure 17. Typical Plot of Aging Index versus Binder Stiffness (AAM-1).

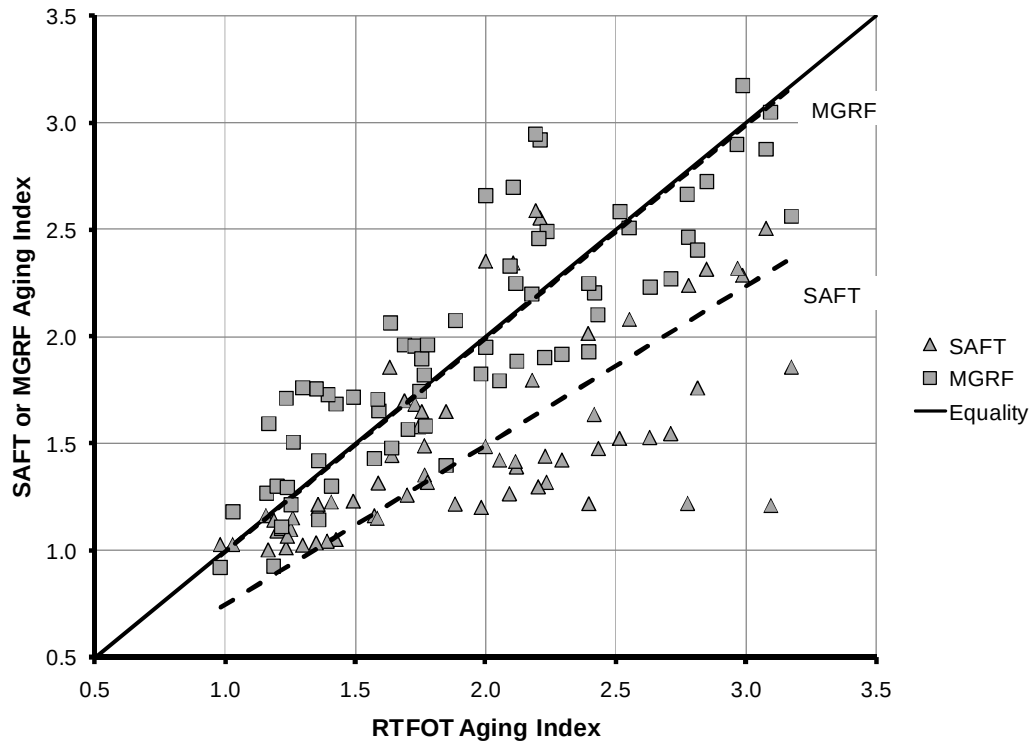


Figure 18. Comparison of Aging Indices for RTFOT, SAFT, and MGRF.

Table 10. Regression Analysis of Aging Indices.

Measure	SAFT	MGRF
Slope	0.64	1.00
Lower 95 % CI	0.70	0.96
Upper 95 % CI	0.79	1.03
R ²	0.93	0.96

One of the purported issues with the RTFOT is that aging for modified binders is less because the higher viscosity modified binders do not maintain in thin film during the test. Figure 19 compares average aging indices for 1 kPa stiffness between modified and unmodified binders for the RTFOT, the SAFT, and the MGRF. This stiffness was selected because it is approximately that used for high temperature grading in AASHTO M320. The average aging index for the RTFOT and the MGRF are about 10 percent higher than the current specification requirement of 2.2 (ratio of RTFOT aged minimum of 2.20 kPa to tank aged minimum of 1.00 kPa). The average aging index from the SAFT is about 25 percent below the specification requirement of 2.2. The error bars in Figure 19 are 95 percent confidence intervals for the average aging index. For the binders included in this study the average aging index for the neat and modified binders are the same when aged in the RTFOT and the MGRF. The SAFT results in somewhat less aging for the modified binders compared to the neat binders. This is confirmed by the statistical analysis of the equality of the mean aging indices between neat and modified binders presented in Table 11.

2.5 Summary of RTFOT Verification Experiment Findings

The RTFOT verification experiment included aging 12 binders, six neat and six modified in the RTFOT, the SAFT, and the MGRF and comparing the short-term aged continuous high temperature grade, changes in master curve parameters due to short-term aging, and aging indices. The primary finding from this experiment was that the MGRF reasonably reproduces the aging that occurs in the RTFOT for binders with a wide range of stiffnesses and chemistry, while the aging from the SAFT is similar to the RTFOT for low stiffness binders, but becomes significantly less as the binder stiffness increases. Three different analyses support this finding:

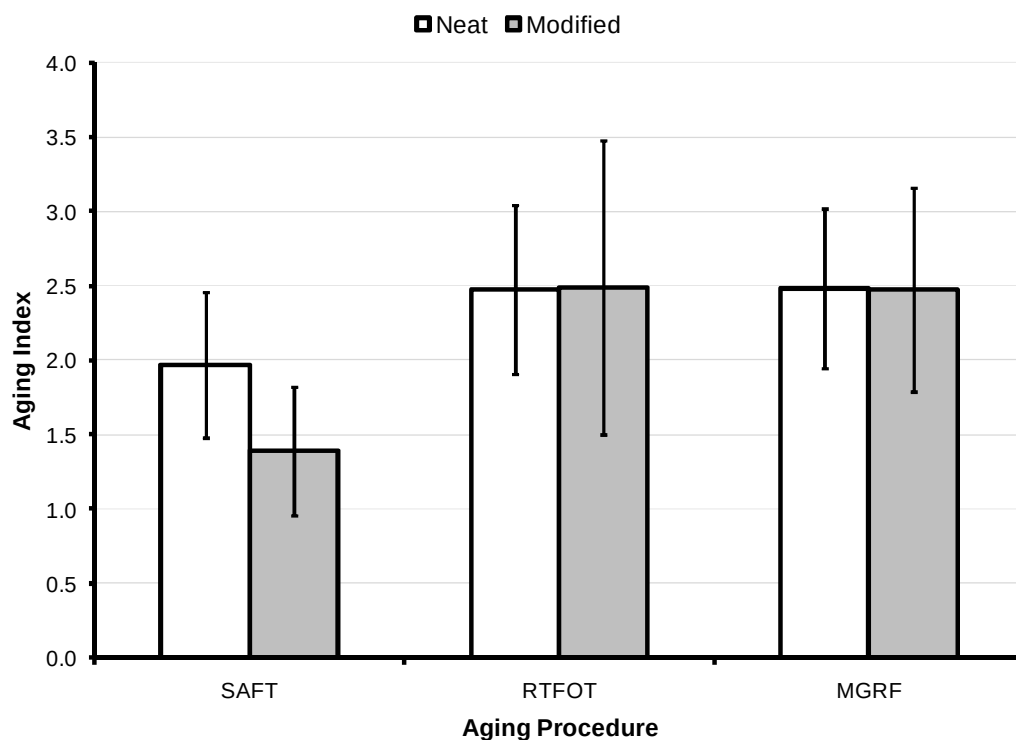


Figure 19. Comparison of Average Aging Indices for Neat and Modified Binders.

Table 11. Statistical Hypothesis Test for Equality of Average Aging Index for Neat and Modified Binders.

Property	SAFT		RTFOT		MGRF	
	Neat	Modified	Neat	Modified	Neat	Modified
Mean	1.97	1.39	2.48	2.49	2.48	2.47
Variance	0.22	0.10	0.29	0.51	0.26	0.24
Observations	6	5	6	5	6	5
Pooled Variance	0.16		0.39		0.26	
Computed t	2.35		-0.03		0.03	
t Critical two-tail	2.26		2.26		2.26	
Conclusion	Neat and Modified Average Aging Indices are Different		Neat and Modified Average Aging Indices are the Same		Neat and Modified Average Aging Indices are the Same	

- 1. Short-term aged high temperature grade.** Comparisons of the continuous high temperature grade after short-term aging showed the MGRF results in the same high temperature grade as the RTFOT over the range of binders tested. The maximum difference in the short-term aged high temperature continuous grade between MGRF and RTFOT aged binders was 1.8 °C and the difference was not a function of the high temperature grade of the binder over the range from 56 to 86 °C. The short-term aged high temperature continuous grade for SAFT conditioned binders, on the other hand, was similar to that for RTFOT aged binders between 58 and 60 °C, but was as much as 6 °C (one grade level) lower for higher stiffness binders. Variability of the short-term aged high temperature continuous grade for the MGRF was somewhat higher than for the RTFOT.
- 2. Change in Christensen-Anderson master curve parameters.** The continuous high temperature grade analysis, investigated the effect of the aging procedures on only the high temperature rheology. The master curve analysis compared the rheology of the binders over their entire stiffness range. This analysis showed the MGRF aging produced similar changes in the Christensen-Anderson master curve parameters as RTFOT aging while the changes for SAFT aging were different. This indicates that the MGRF aging produces similar changes in the structure of the binder as RTFOT aging, but the SAFT results in different structural changes.
- 3. Aging indices.** Aging indices, ratio of short-term aged G^* to unaged G^* for a particular test temperature and frequency of loading, are another way to evaluate the aging procedures over a range of binder stiffnesses. This analysis showed that aging indices to be similar for the MGRF and the RTFOT while those for the SAFT were lower.

A second important finding from the RTFOT verification experiment was the aging indices for the RTFOT and MGRF were similar for the neat and modified binders included in the study. The average aging indices for 1.0 kPa stiffness at 10 rad/sec for both methods were approximately 2.5 for both the neat and modified binders. This finding is in contrast to findings in other reports that there is less aging in the RTFOT for modified binders.

The third major finding from the RTFOT verification experiment was that the mass loss in the MGRF was lower than in the RTFOT. Mass loss in the MGRF was approximately 40 percent of that in the RTFOT.

3.0 OVEN AGED MIXTURE EXPERIMENT

3.1 Introduction

The second component of the Verification Study was an experiment designed to compare the degree of aging that occurs in mixtures conditioned in accordance with AASHTO R30 with that occurring in the RTFOT, the SAFT and the MGRF. In this experiment mixtures were prepared using the 12 binders included in the RTFOT Verification Experiment. A single 9.5 mm coarse graded limestone mixture was used. The aggregate was a limestone from Frazier Quarry, Incorporated's North Quarry in Harrisonburg, Virginia. This aggregate was used extensively in various mixture volumetric studies completed in NCHRP Projects 9-25 and 9-31 (4). Figure 20 shows the gradation of the mixture that was used. The optimum binder content for this mixture was selected using a PG 64-22 binder. Pertinent volumetric properties at the optimum binder content are summarized in Table 12. The same binder content of 5.5 percent was used in each of the 12 mixtures produced.

Dynamic modulus master curve tests were performed on samples prepared from unconditioned mixture and mixture conditioned for 4 hours at 135 °C as specified in AASHTO R30. Three replicate samples were prepared for both conditions. From the mixture dynamic modulus master curves, the binder shear modulus master curves were estimated using the Hirsh model (1). The back calculated binder modulus data was then analyzed to assess how well the binder aging procedures simulate the aging that occurs in mixtures during short-term oven conditioning.

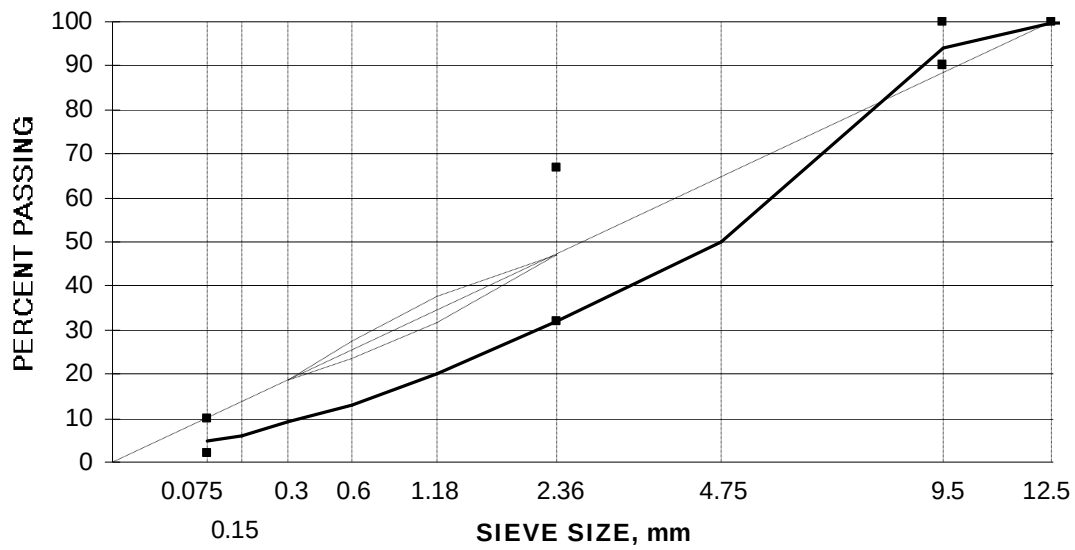


Figure 20. Gradation of the 9.5 mm Limestone Mixture.

Table 12. Volumetric Properties for the 9.5 mm Limestone Mixture.

Property		Value
Gradation	Sieve Size, mm	
	12.5	100
	9.5	94
	4.75	50
	2.36	32
	1.18	20
	0.600	13
	0.300	9
	0.150	6
	0.075	5.1
Asphalt Content, %		5.5
N _{design}		100
VMA, %		15.8
VFA, %		72.6
Dust/binder ratio (weight basis)		1.0
Fine Aggregate Angularity, %		46.0
Coarse Aggregate Angularity, %		100/100
Flat and Elongated Particles, %		0.8
Sand Equivalent		75
Surface Area, m ² /kg		4.40

3.2 Specimen Fabrication

Specimens for the Oven Aged Mixture Experiment were fabricated using techniques developed by AAT in NCHRP Project 9-29 for the Simple Performance Test System (5). The sections that follow discuss procedures used in the specimen fabrication process for handling binders and aggregates; laboratory mixing, aging, and compaction; and fabrication of specimens for the dynamic modulus test.

3.2.1 Binder Handling

Binders were received in either one gallon or five gallon containers. Each container was treated as a representative sample of the binder, with no mixing of the binder from individual containers. When binder was required for specific experiments, the one and five gallon samples were divided into quart containers by heating the larger sample containers in an oven set at 135°C, stirring with a mechanical stirrer, and pouring the binder into the individual quart containers. The quart containers were then used in the preparation of laboratory mixture batches. Quart containers were only heated once. Excess binder remaining in the quart containers was discarded.

3.2.2 Aggregate Handling

Representative samples of the aggregates used in the mixture were obtained by AAT technicians from Frazier Quarry, Incorporated's North Quarry in Harrisonburg, Virginia for NCHRP Projects 9-25 and 9-31. The procedures described in the Appendix of *Asphalt Institute Publication MS-2* (6) were used to prepare the aggregate samples for laboratory batching. Coarse aggregate samples were separated into individual sizes, while individual samples of fine aggregate were mixed together to produce a homogeneous supply for subsequent batching.

3.2.3 Mixing, Conditioning, and Compaction

Specimens for the dynamic modulus tests were prepared in a Superpave Gyratory compactor following the Draft Standard Practice for preparing performance test specimens in a gyratory compactor that was developed in NCHRP 9-29 (5). The dynamic modulus tests specimens were sawed and cored from 150 mm diameter by 165 mm high gyratory specimens. The gyratory specimens were prepared to a target air void content in accordance with AASHTO T312. An Interlaken compactor meeting the requirements of AASHTO T312 was used.

Mixing and compaction temperatures for the six MRL binders and the air blown binder were determined in the usual manner from viscosity measurements on the tank binder. For the MRL binders, the viscosity data reported during SHRP (7) was used; viscosity data for the air blown binder was measured during NCHRP Projects 9-25 and 9-31. Typical mixing and compaction temperatures for a neat PG 64-22 binder were used for the ALF and Elvaloy binders. The manufacturer's recommended temperatures were used for the Citgoflex and Novophalt binders. The Novophalt mixing and compaction temperatures were also used with the EVA. Table 13 summarizes the mixing and compaction temperatures used with each of the binders.

Table 13. Mixing and Compaction Temperatures.

Binder	Temperature, °C	
	Mixing	Compaction
AAC-1	135	125
AAD-2	140	130
AAF-1	150	140
AAM-1	160	150
ABL-1	155	145
ABM-2	135	125
Air Blown	170	155
ALF	160	145
Citgoflex	165	155
Elvaloy	160	145
EVA	170	155
Novophalt	170	155

Unconditioned specimens were compacted immediately after mixing. Conditioned specimens were compacted after short-term oven conditioning at 135 °C for four hours per AASHTO R30. Measurements of the maximum specific gravity of the mixture were made on unconditioned and conditioned samples to allow accurate computation of volumetric properties of the test specimens.

3.2.4 Sawing and Coring of Dynamic Modulus Specimens

The dynamic modulus test specimens were manufactured by coring and sawing 100 mm diameter by 150 mm high test specimens from the middle of 150 mm diameter by 165 mm high gyratory compacted specimens. The procedure is described in the Draft Standard Practice for

preparing performance test specimens in a gyratory compactor that was developed in NCHRP 9-29 (5). There are three reasons for using smaller test specimens obtained from larger gyratory specimens for dynamic modulus testing. The first is to obtain an appropriate aspect ratio for the test specimens. Research performed during Project 9-19 found that a minimum specimen diameter of 100 mm with a height to diameter ratio of 1.5 was needed (8). The second reason is to eliminate areas of the gyratory specimens with high air voids. Gyratory compacted specimens typically have high air voids near the ends and the circumference the specimen. The third reason is to obtain relatively smooth, parallel ends for testing.

Several laboratories have adapted equipment for preparing the dynamic modulus test specimens. The various approaches range from elaborate feed-control drills combined with sophisticated holders and double-bladed saws to standard drills and single-bladed saws with simple clamping arrangements. For this project, specimens were prepared using a portable core-drilling machine, and a double-bladed saw. As shown in Figure 22, the portable core-drilling machine was mounted to a heavy stand on the laboratory floor to facilitate vertical drilling of the specimen. The 150 mm diameter by 165 mm high gyratory compacted specimen was held in place under the drill by blocks of wood cut to provide a tight fit between the gyratory specimen and the stand.

Reasonably smooth, parallel ends for the test specimen were then provided by trimming the 100 mm diameter core using the double-bladed saw shown in Figure 23. This step is more critical than the coring step. It requires the 100 mm diameter core to fit tightly in the saw clamp, and the core to be long enough to provide approximately 10 mm of waste material on each end to keep the saw blades from bending.

All coring and sawing were done using water to cool the cutting tools. After all cutting was complete, the bulk specific gravity of the finished specimen was determined in accordance with AASHTO T166 by first measuring the immersed mass, then the saturated surface dry mass, and finally the dry mass. A completed test specimen is shown in Figure 24.



Figure 21. Portable Core Drilling Machine and Stand.



Figure 22. Double-Bladed Saw with 100-mm Core.



Figure 23. Final Dynamic Modulus Tests Specimen.

3.3 Mixture Dynamic Modulus Master Curves

3.3.1 Testing Equipment

The dynamic modulus tests were performed in an Interlaken Model 3310 servo-hydraulic load frame with a top loading actuator rated for 25 kN. Closed-loop control and data acquisition were provided by an Interlaken DDC 4000 controller with a microcomputer workstation running Interlaken's Universal Test Program. Strains were measured using linear variable differential transformers (LVDTs) mounted between gauge points that were glued to the specimen. Temperature control was provided by a BEMCO Inc Model FTUM-40/70C-10 environmental chamber. This chamber has a temperature range of from -10 to 70 °C. Figure 24 is a photograph of the dynamic modulus testing equipment. This equipment meets the requirements of AASHTO TP62.



Figure 24. Photograph of Dynamic Modulus Testing Equipment.

3.3.2 Dynamic Modulus Testing and Master Curve Fitting

Dynamic modulus master curve testing was performed in accordance with the Draft Standard Practice for developing dynamic modulus master curves with the Simple Performance Test System developed in NCHRP 9-29 (5). The testing was conducted at three temperatures and four frequencies as summarized in Table 14. The low and middle temperatures were set at 4 and 20 °C, respectively. The upper temperature was selected based on the binder grade; 34 °C for the softer binders: AAC-1, AAD-2, ABL-1, ABM-2, ALF, and Elvaloy; and 40 °C for AAF-1, AAM-1, Air blown, Citgoflex, Novophalt, and EVA. This testing protocol produces 10 dynamic modulus and phase angle measurements for each specimen. Three replicate specimens were tested in this project. The mixture dynamic modulus data are presented in Section 8.

Table 14. Temperatures and Frequencies Used in the Dynamic Modulus Master Curve Testing.

Temperature, °C	Frequency, Hz
4.0	10, 1, and 0.1
20.0	10, 1, and 0.1
34.0 or 40.0	10, 1, 0.1, and 0.01

Dynamic modulus master were fit to the measured data using the procedure in the Draft Standard Practice for developing dynamic modulus master curves with the Simple Performance Test System developed in NCHRP 9-29 (5). Equations 7 and 8 present the form of the master curve that was fitted to the data. Equation 7 is the form of the dynamic modulus master curve recommended in the Mechanistic-Empirical Pavement Design Guide (MEPDG) for use in pavement structural design (9). This sigmoidal function describes the frequency dependency of the modulus at the reference temperature, which for this testing was selected to be 22 °C to coincide with that used in the binder testing. The shift factors describe the temperature dependency of the modulus. Equation 8 provides the form of the Arrhenius equation used for the shift factors.

$$\log(E^*) = \log E^*_{\min} + \frac{(\log E^*_{\max} - \log E^*_{\min})}{1 + e^{b + \gamma \omega_r}} \quad (7)$$

where:

E^* = dynamic modulus

$E^*_{\max}$ = limiting maximum modulus

$E^*_{\min}$ = limiting minimum modulus

ω_r = frequency of loading at the reference temperature

β, γ = parameters describing the shape of the sigmoidal function

$$\log a(T) = \frac{\Delta E_a}{19.14714} \left(\frac{1}{T} - \frac{1}{T_r} \right) \quad (8)$$

where:

$a(T)$ = shift factor as a function of temperature

T = temperature, Kelvin

T_r = reference temperature, Kelvin

ΔE_a = activation energy

The final form of the dynamic modulus master curve equation is obtained by substituting Equation 8 into Equation 7.

$$\log|E^*| = \log E^*_{\min} + \frac{(\log E^*_{\max} - \log E^*_{\min})}{1 + e^{b+g \left\{ \log w + \frac{\Delta E_a}{19.14714} \left[\left(\frac{1}{T} \right) - \left(\frac{1}{T_r} \right) \right] \right\}}} \quad (9)$$

The limiting maximum modulus of the mixture $E^*_{\max}$ was estimated using the Hirsch model (1) and a limiting maximum binder shear modulus of 1 GPa (145,000 psi) (3). Equation 10 presents the Hirsch model. As shown, the limiting maximum modulus of the mixture is a function of VMA and VFA. It ranges from about 3,100 to 3,800 ksi for typical ranges of VMA and VFA.

$$|E^*|_{\text{mix}} = P_c \left[4,200,000 \left(1 - \frac{\text{VMA}}{100} \right) + 3 |G^*|_{\text{binder}} \left(\frac{\text{VFA} \times \text{VMA}}{10,000} \right) \right] + \frac{1 - P_c}{\left[\frac{\left(1 - \frac{\text{VMA}}{100} \right)}{4,200,000} + \frac{\text{VMA}}{3 \text{VFA} |G^*|_{\text{binder}}} \right]} \quad (10)$$

where:

$$P_c = \frac{\left(20 + \frac{\text{VFA} \times 3 |G^*|_{\text{binder}}}{\text{VMA}} \right)^{0.58}}{650 + \left(\frac{\text{VFA} \times 3 |G^*|_{\text{binder}}}{\text{VMA}} \right)^{0.58}}$$

$|E^*|_{\text{mix}}$ = mixture dynamic modulus, psi

VMA = Voids in mineral aggregates, %

VFA: Voids filled with asphalt, %

$|G^*|_{\text{binder}}$ = shear complex modulus of binder, psi

Table 15 summarizes the dynamic modulus master curve parameters obtained by numerical optimization of Equation 9 after substitution of the limiting maximum modulus obtained from Equation 10. Figure 25 shows a typical comparison of unconditioned and conditioned mixture master curves and temperature shift factors. Similar plots for all of the 12 binders are included in Section 9.

Table 15. Mixture Modulus Master Curve Parameters.

Parameter	Binder	Unconditioned	Conditioned	Binder	Unconditioned	Conditioned
Air Voids, %	AAC-1	4.6	4.4	Air Blown	4.3	4.0
VMA		16.4	16.0		16.4	15.9
VFA		72.3	72.7		73.6	74.6
E^*_{max} , ksi		3342.2	3366.2		3349.1	3381.6
E^*_{min} , ksi		7.5	4.1		3.6	2.2
β		-0.1910	-0.5708		-1.1127	-1.3366
γ		0.6503	0.4924		0.4485	0.3721
E_a , kJ/mole		213344	211294		217602	208852
Air Voids, %	AAD-2	4.2	4.2	ALF	4.3	4.3
VMA		16.0	15.5		16.4	15.7
VFA		73.7	73.1		73.6	72.7
E^*_{max} , ksi		3371.5	3396.0		3363.9	3382.8
E^*_{min} , ksi		5.1	5.3		21.7	21.1
β		-0.0012	-0.3389		0.5936	0.2370
γ		0.5674	0.4767		0.5903	0.5194
E_a , kJ/mole		180577	182085		169894	173512
Air Voids, %	AAF-1	3.9	4.0	Citgoflex	3.7	3.9
VMA		15.6	15.6		15.5	15.5
VFA		75.2	74.2		76.1	76.1
E^*_{max} , ksi		3401.2	3396.1		3411.3	3417.9
E^*_{min} , ksi		5.3	2.6		18.0	40.0822
β		-0.8889	-1.3679		-0.6852	-0.8515
γ		0.5905	0.5199		0.5239	0.6811
E_a , kJ/mole		212784	211229		187462	194955
Air Voids, %	AAM-1	4.4	4.2	Elvaloy	4.2	4.0
VMA		16.4	16.1		15.9	15.5
VFA		73.1	74.1		73.6	74.0
E^*_{max} , ksi		3346.5	3368.1		3376.5	3400.7
E^*_{min} , ksi		3.6	2.4		12.5	7.6
β		-0.6677	-0.9797		-0.1281	-0.6076
γ		0.5018	0.4312		0.5684	0.4448
E_a , kJ/mole		225645	234911		188958	193486
Air Voids, %	ABL-1	4.2	4.0	EVA	4.0	4.0
VMA		15.8	15.4		15.9	15.6
VFA		73.3	74.2		75.0	74.1
E^*_{max} , ksi		3380.4	3407.3		3383.7	3395.6
E^*_{min} , ksi		6.2	8.1		29.0	7.1
β		-0.4518	-0.6041		-0.7557	-1.1755
γ		0.5407	0.5080		0.5999	0.4138
E_a , kJ/mole		187271	188768		190346	191384
Air Voids, %	ABM-2	4.1	4.2	Novophalt	3.8	3.8
VMA		15.9	15.8		15.3	15.5
VFA		73.9	73.0		75.2	75.4
E^*_{max} , ksi		3378.0	3378.8		3385.7	3409.8
E^*_{min} , ksi		7.4	8.7		9.0	13.8
β		-0.7397	-0.9640		-0.9371	-1.1633
γ		0.8694	0.8167		0.5481	0.5569
E_a , kJ/mole		195125	200619		183832	190785

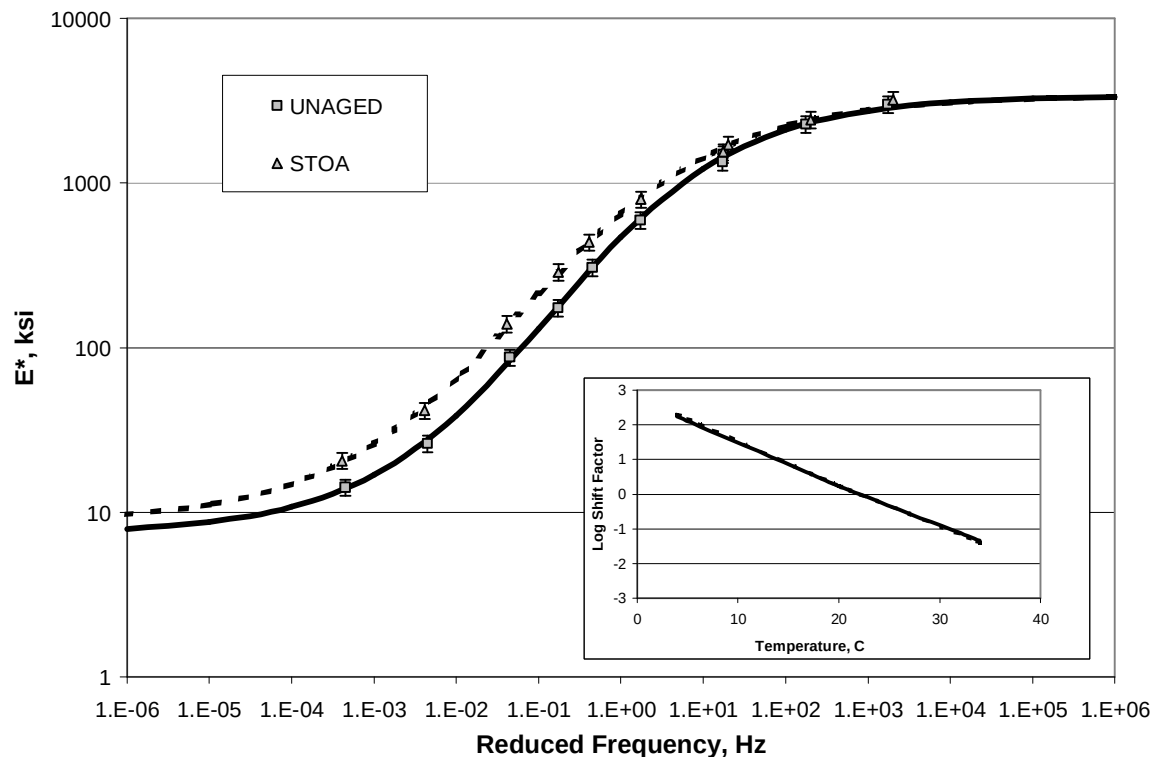


Figure 25. Mixture Dynamic Modulus Master Curves for ABL-1.

Figure 25 shows the fitted master curves as well as the measured data for ABL-1. The error bars shown are 95 percent confidence intervals based on the pooled standard deviation of the dynamic modulus data for all binders. As shown in this figure, short-term oven conditioning in accordance with AASHTO R30 results in significant stiffening.

3.4 Back Calculated Binder Modulus Master Curves

The mixture dynamic modulus is highly sensitive to the stiffness of the binder in the mixture. The shear modulus of the binder can be estimated from the mixture dynamic modulus using the Hirsch model (1) previously presented as Equation 10. Knowing the dynamic modulus of the mixture and the VMA and VFA of the test specimens, Equation 10 can be solved for the binder shear modulus. This is best done by trial and error. In the analysis, it is important to use consistent units for frequency. In mixture testing, dynamic modulus is normally reported as a function of reduced frequency in Hz, while for binder testing, it is reported as reduced frequency in rad/sec. Figure 26 presents an example of the back calculated binder shear moduli for the

testing conditions used in the dynamic modulus testing. Back calculated binder shear modulus data for all of the binders is included in Section 10. Figure 26 presents data for both the unconditioned mixture and the mixture conditioned for 4 hours at 135 °C in accordance with AASHTO R30. The effect of the short-term oven conditioning is clearly evident. It results in significant stiffening, particularly at the higher temperatures.

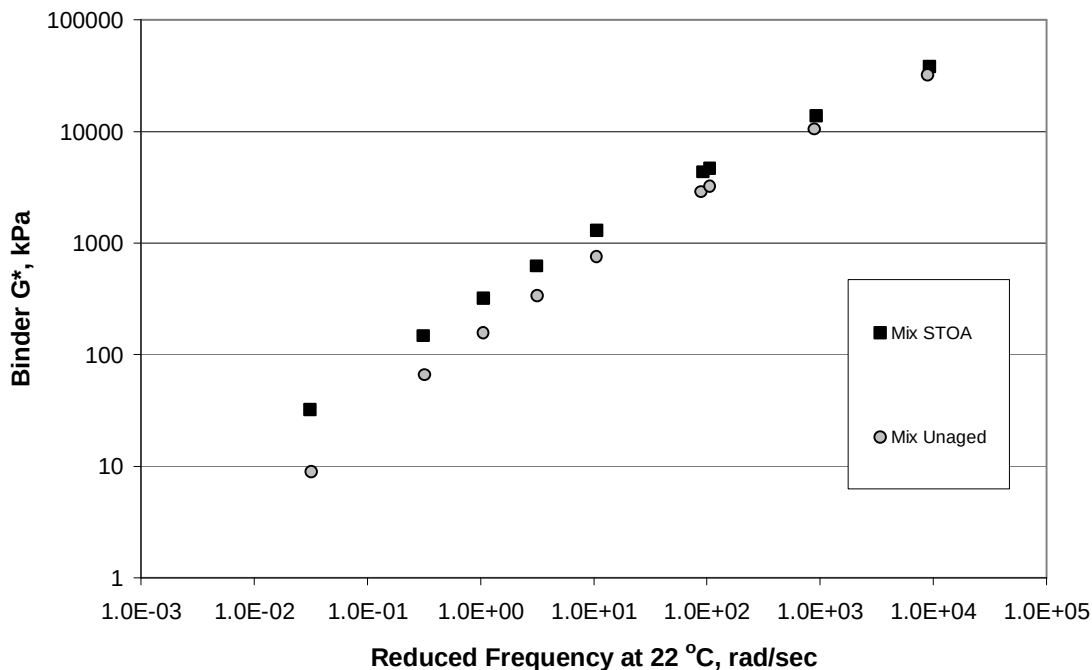


Figure 26. Back-Calculated Binder Modulus Master Curves for ABL-1.

Master curves were developed for the back-calculated binder modulus data by fitting the Christensen-Anderson model to the data as described previously for the binder test data. The glassy modulus from the binder testing was used in fitting the back-calculated master curves. The resulting Christensen-Anderson master curve parameters are summarized in Table 15 for the eleven binders included in the binder evaluation.

Table 16. Christensen-Anderson Model Parameters for Back-Calculated Binder Moduli.

Binder Source	Log ₁₀ Glassy Modulus, kPa	Rheological Parameter, R, log ₁₀ Pa		log ₁₀ Cross-over Frequency, ω , rad/s		Defining Temperature, T _d , °C	
		Unaged	R30	Unaged	R30	Unaged	R30
AAC-1	8.6	1.16	1.85	3.69	2.57	-6.4	-5.5
AAD-2	9.2	1.90	2.47	4.33	2.98	-14.4	-15.6
AAF-1	8.6	1.32	1.46	2.64	1.85	-3.5	-4.2
AAM-1	8.6	1.83	2.07	2.51	1.66	0.4	2.3
ABL-1	8.7	1.72	2.01	2.92	2.07	-13.3	-12.4
ABM-2	8.7	0.59	0.68	3.43	3.09	-9.5	-7.3
Airblown	8.8	2.27	2.94	1.14	-0.57	-2.2	-3.1
ALF	10.9	4.49	5.18	3.18	1.32	-18.4	-15.8
Citgoflex	9.8	3.82	3.33	0.15	0.29	-4.2	2.0
Elvaloy	9.2	2.32	3.03	3.02	1.23	-12.1	-10.4
Novophalt	8.8	1.73	2.10	2.03	0.73	-13.5	-4.5

3.5 Comparison of Short-Term Aging From Binder and Mixture Procedures

The purpose of the oven aged mixture experiment was to compare the degree of aging from the short-term binder aging procedures with that from mixtures conditioned at 135 °C for 4 hours in accordance with AASHTO R30. The following sections describe the two approaches that were used to compare the data.

3.5.1 Binder Master Curve Parameters

The first approach for comparing the short-term binder and mixture aging procedures was to compare the Christensen-Anderson master curve parameters obtained from the binder aging procedures with those obtained from the back-calculated binder moduli from the mixture dynamic modulus testing. The parameters include the rheological index, R, the cross over frequency, ω_c , and the defining temperature, T_d. Recall, the physical significance of the Christensen-Anderson master curve parameters are as follows:

- The rheological index, R , is the difference between the log of the glassy modulus and the log of the dynamic modulus at the cross-over frequency. It is an indicator of the rheological type.
- The cross-over frequency, ω_c , is the frequency where the phase angle is close to 45 degrees and is an indicator of the hardness of the binder.
- The defining temperature, T_d , is the temperature below which the WLF equation is no valid, and the binder is not in equilibrium. It is an indicator of the glass transition of the binder.

Figure 27, Figure 28, and Figure 29 compare the Christensen-Anderson master curve parameters back calculated from the unaged mixture dynamic modulus tests with those measured for the tank binder. These figures show that there is reasonable agreement in the master curve parameters for unaged conditions. Table 17 summarizes the results of regression analyses for each of the parameters. The 95 percent confidence intervals for the slope of the best fit regression line for each of the three parameters captures one, the line of equality, indicating that the back-calculated master curves vary in a similar manner as the tank master curves for the range of binders tested.

Figures 30, 31, and 32 compare changes in the master curve parameters for AASHTO R30 mixture aging with RTFOT and SAFT aging for the binders. Comparisons were not made for MGRF aging because analysis of the binder aging data showed the RTFOT and MGRF aging were essentially the same. Figures 30 and 32 show that there is no relationship for the change in the rheological index and the change in the defining temperature between short-term mixture and binder aging. The trend lines in Figure 31 show that there is a weak relationship for the cross-over frequency between the short-term mixture and binder aging, with the mixture aging producing somewhat harder binders.

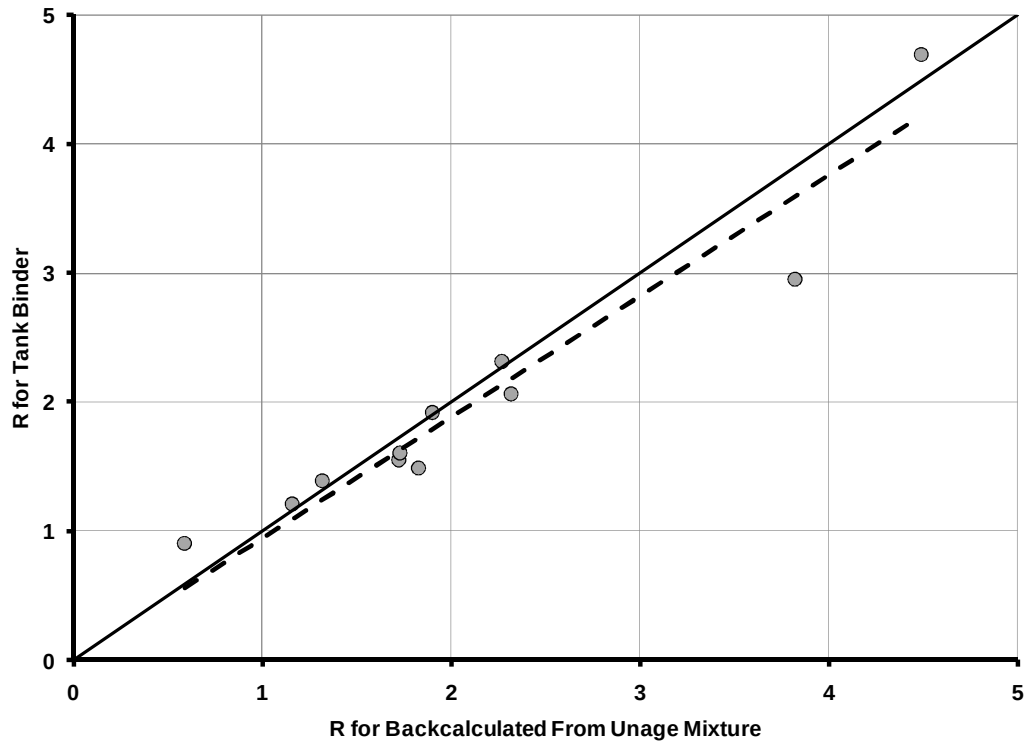


Figure 27. Comparison of Rheological Index From Unaged Mixture and Tank Binder Tests.

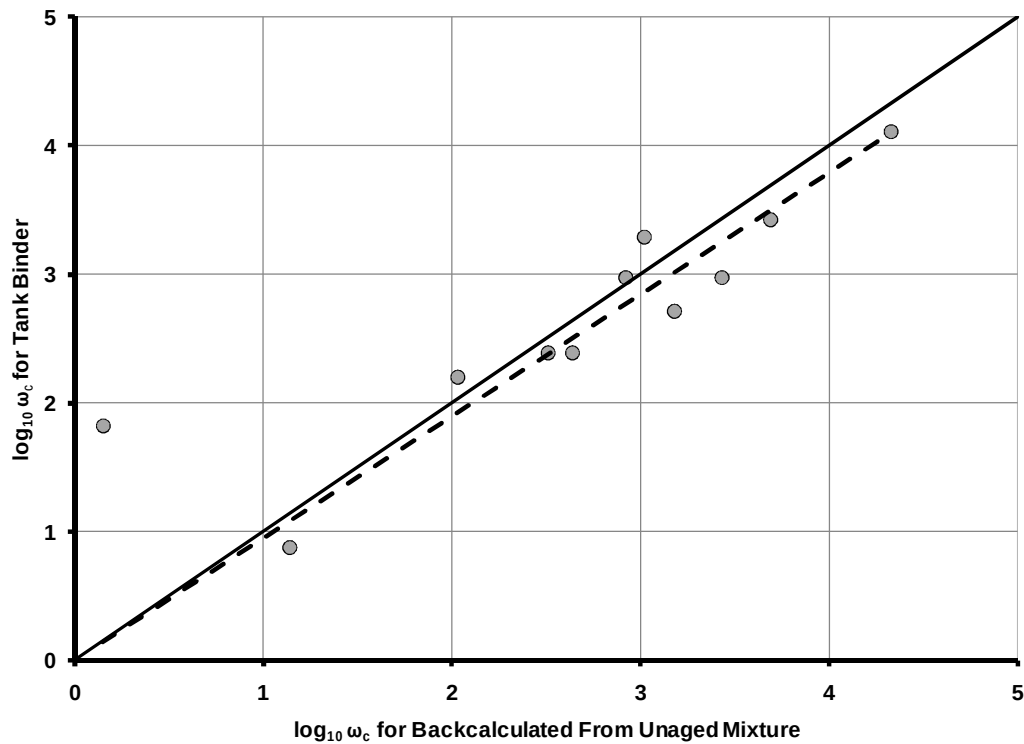


Figure 28. Comparison of Cross Over Frequency From Unaged Mixture and Tank Binder Tests.

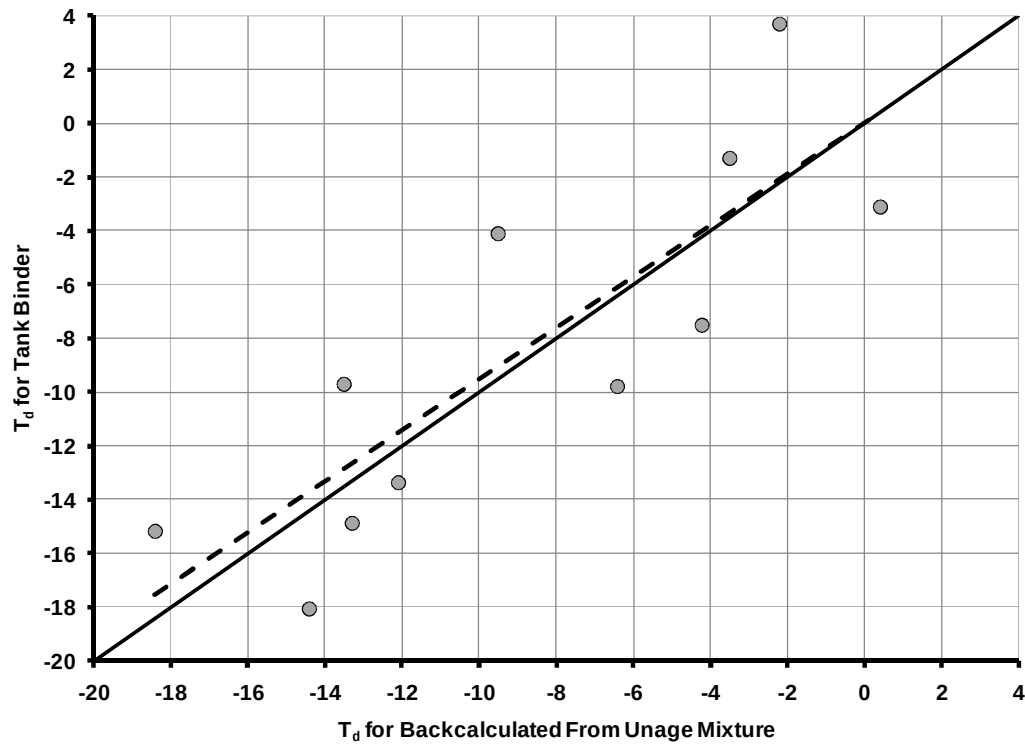


Figure 29. Comparison of Defining Temperature From Unaged Mixture and Tank Binder Tests.

Table 17. Regression Analysis of Unaged Mixture and Tank Christensen-Anderson Model Parameters.

Parameter	Measure	Value
R	Slope	0.94
	Lower 95 % CI	0.85
	Upper 95 % CI	1.02
	R ²	0.88
ω_c	Slope	0.95
	Lower 95 % CI	0.81
	Upper 95 % CI	1.08
	R ²	0.86
T _d	Slope	0.95
	Lower 95 % CI	0.71
	Upper 95 % CI	1.19
	R ²	0.78

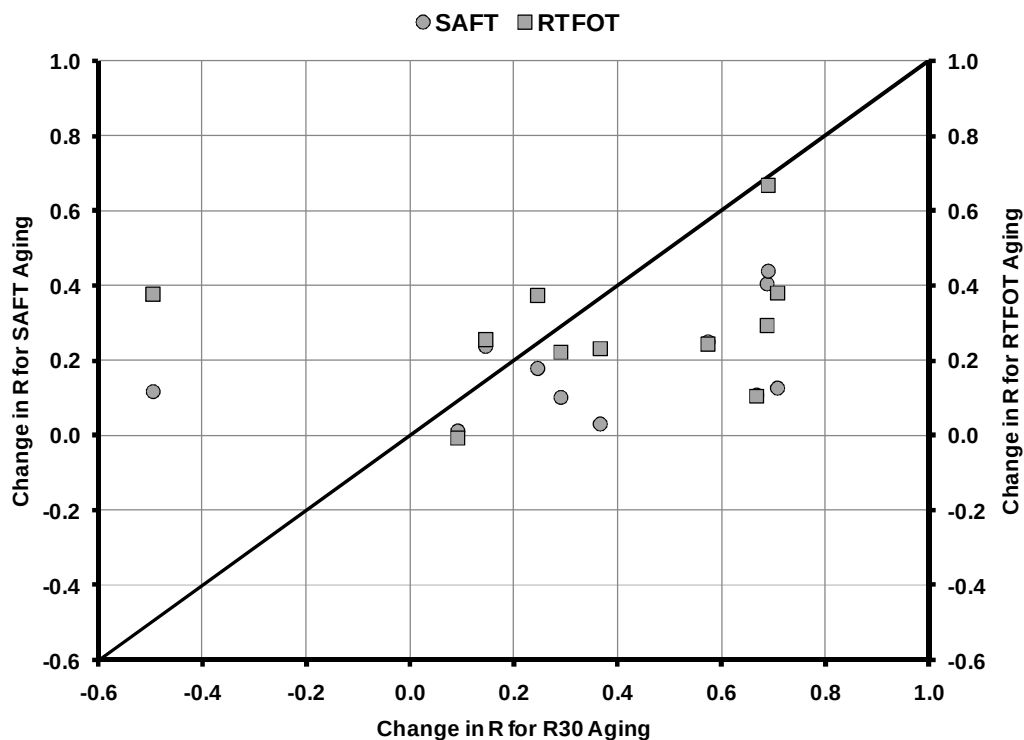


Figure 30. Comparison of Change in Rheological Index for Short-Term Mixture and Binder Aging.

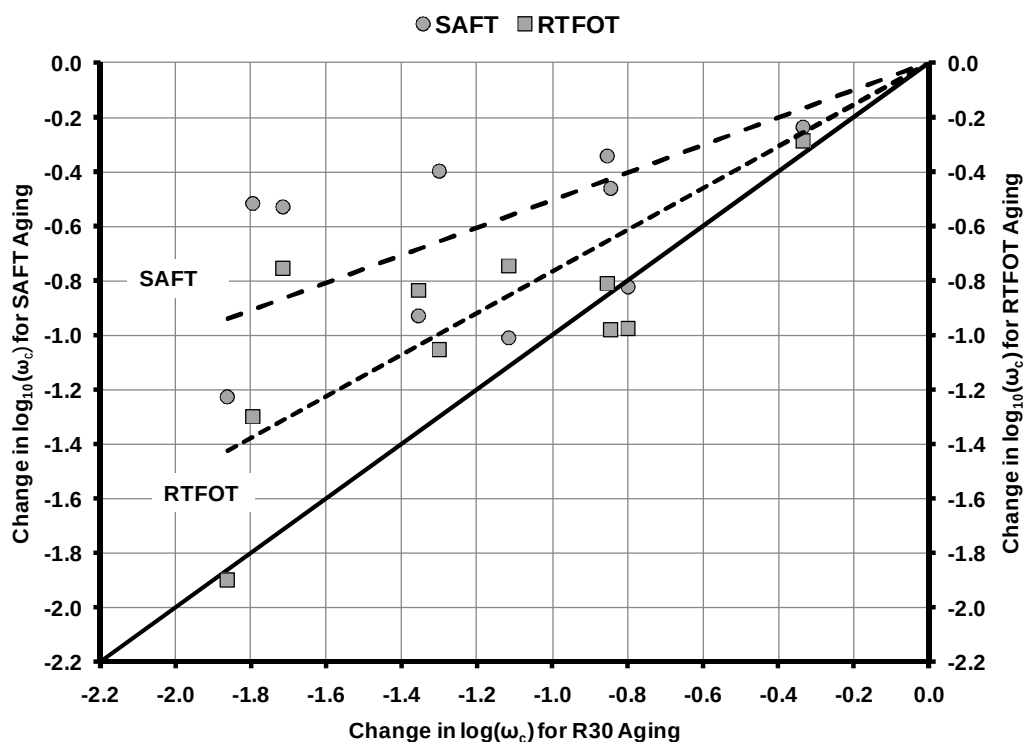


Figure 31. Comparison of Change in Cross-Over Frequency for Short-Term Mixture and Binder Aging

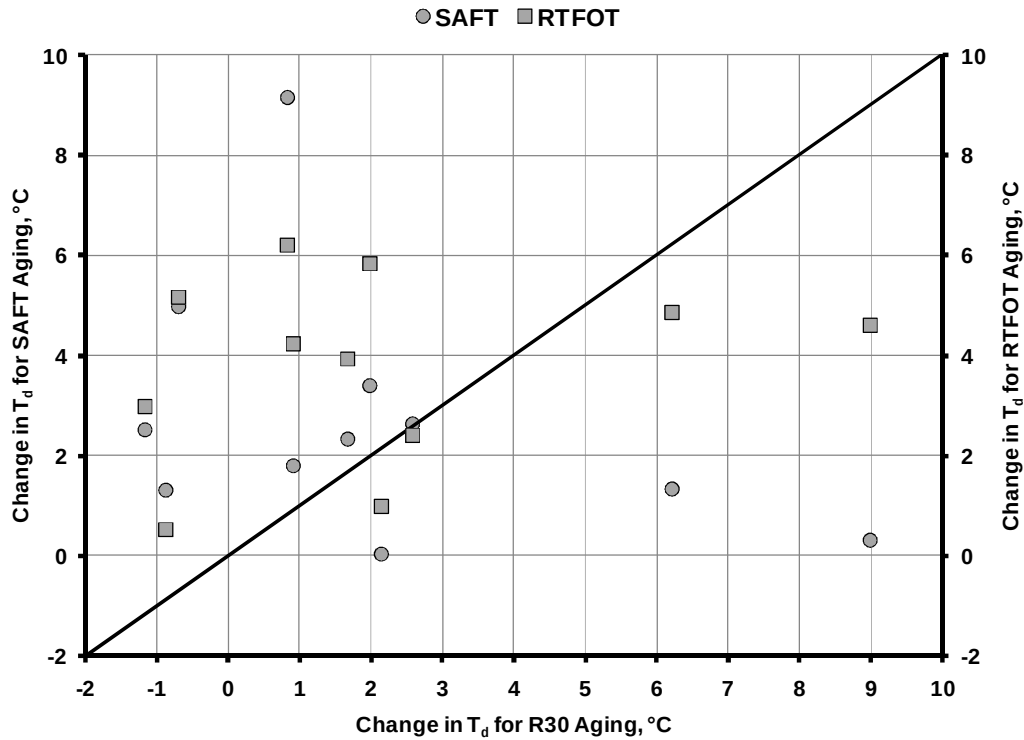


Figure 32. Comparison of Change in Defining Temperature for Short-Term Mixture and Binder Aging.

3.5.2 Aging Indices

The second approach for comparing the short-term mixture and binder aging procedures was to compare aging indices computed from the fitted binder master curves. Aging indices were computed from the back-calculated binder modulus data using the method previously described for the binder testing. Table 18 presents aging indices computed in this manner for each of the binders for various unaged binder modulus values ranging from 1 to 100,000 kPa. The 1 kPa values are based on unaged binder modulus values that were below the range measured in the dynamic modulus test and the 100,000 kPa values were above the range measured in the dynamic modulus test. The remaining values were within the range of the measured data.

Table 18. Aging Indices for AASHTO R-30 Conditioning Based on Back Calculated Binder Modulus Values.

Binder	Aging Indices From AASHTO R-30 for Various Unaged Binder Modulus Values					
	1 kPa	10 kPa	100 kPa	1,000 kPa	10,000 kPa	100,000 kPa
AAC-1	4.78	3.50	2.34	1.43	0.84	0.55
AAD-2	6.46	4.53	3.01	1.91	1.19	0.77
AAF-1	5.26	4.49	3.61	2.68	1.83	1.17
AAM-1	2.95	2.62	2.23	1.80	1.40	1.00
ABL-1	3.43	2.89	2.32	1.77	1.30	0.97
ABM-2	1.70	1.79	1.87	1.89	1.73	1.32
Air Blown	6.66	4.34	2.71	1.65	1.02	0.72
ALF	3.33	2.74	2.24	1.82	1.48	1.19
Citgoflex	0.85	1.20	1.72	2.40	3.09	2.79
Elvaloy	6.13	4.34	2.94	1.93	1.26	0.86
Novophalt	2.61	2.66	2.58	2.34	1.94	1.43

Figure 33 compares aging indices for from the mixture testing with those from the RTFOT, the SAFT, and the MGRF for an unaged binder modulus of 10 kPa, the lowest stiffness included in the mixture testing conditions. Figure 33 shows a reasonable correlation between the AASHTO R30 mixture aging and the RTFOT and the MGRF. The correlation for the SAFT is much poorer. The regression analysis is summarized in Table 19. The slope and intercept from the RTFOT and the MGRF regression models are both significant at the 99 percent level while those for the SAFT are not significant at the 95 percent level. The slopes of the relationships indicate that the aging index from the short-term binder aging tests is less than that obtained from short-term aging of mixtures in accordance with AASHTO R30.

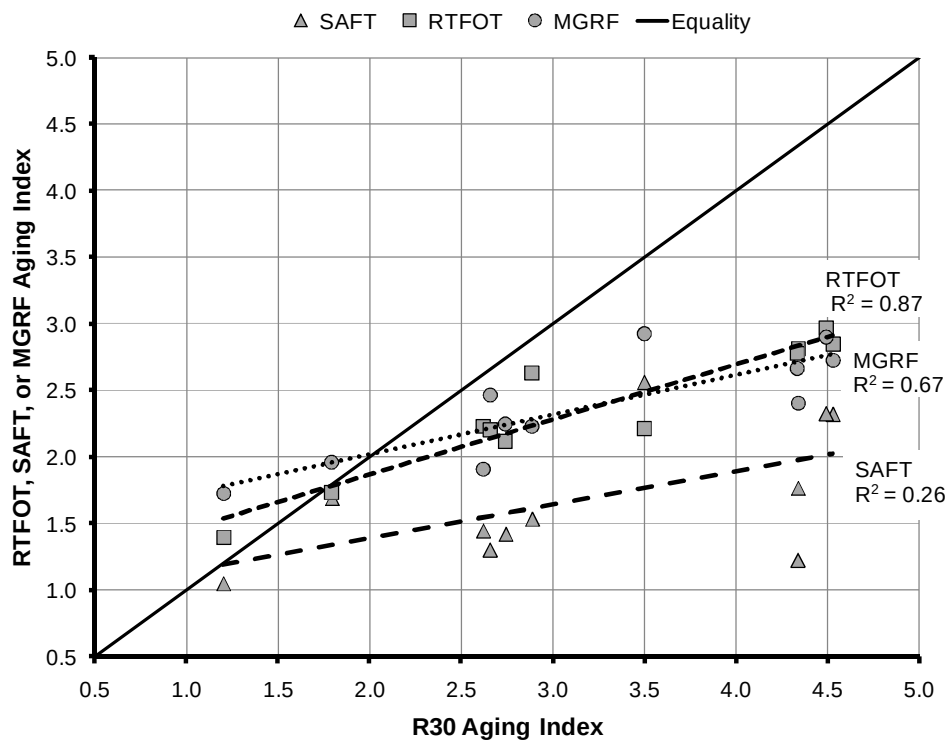


Figure 33. Comparison of 10 kPa Aging Indices for Mixture and Binder Testing.

Table 19. Regression Analysis of Aging Indices from AASHTO R30, RTFOT, SAFT, and MGRF.

Model	Measure	Value
RTFOT vs R30	R ²	0.87
	Slope	0.41
	p-value for slope	0.0002
	Intercept	1.04
	p-value for intercept	>0.0001
SAFT vs R30	R ²	0.26
	Slope	0.25
	p-value for slope	0.0639
	Intercept	0.88
	p-value for intercept	0.0563
MGRF vs R30	R ²	0.67
	Slope	0.30
	p-value for slope	0.0012
	Intercept	1.42
	p-value for intercept	0.0010

Rankings for the aging indices can be used to compare the short-term binder aging procedures to AASHTO R30. Table 20 summarizes the rankings for each test, with the rank of 1 given to the binder with the highest aging index. Table 20 also presents the Spearman's rank correlation coefficient and its significance level (p-value) for the three short-term binder aging procedures. Higher values of the Spearman's rank correlation coefficient indicate greater similarity in the rankings. The p-values for the Spearman's rank correlation coefficient indicate the level of statistical significance for the rankings. The ranking analysis in Table 20 shows that the RTFOT provides the closest rankings compared to AASHTO R30 with a Spearman's rank correlation coefficient of 0.91 and a significance level exceeding 99.9 percent. The MGRF also provides similar rankings as AASHTO R30 with a Spearman's rank correlation coefficient of 0.80 and a significance level of 99.7 percent. The SAFT provides rankings having the greatest difference compared to AASHTO R30. The Spearman's rank correlation coefficient for the SAFT rankings is only 0.60 and the correlation is not significant at the 95 percent level.

Table 20. Comparison of Ranking of Binder Aging Indices.

Binder	Rank			
	R-30	RTFOT	SAFT	MGRF
AAC-1	5	7	1	1
AAD-2	1	2	3	3
AAF-1	2	1	2	2
AAM-1	9	6	7	10
ABL-1	6	5	6	8
ABM-2	10	10	5	9
Air Blown	3	3	4	6
ALF	7	9	8	7
Citgoflex	11	11	11	11
Elvaloy	4	4	10	4
Novophalt	8	8	9	5
Spearman Rank Correlation Coefficient	ρ	0.91	0.60	0.80
	p-value	0.0001	0.0510	0.0031

Table 21 summarizes average mixture aging indices for the neat and modified binders for 10 kPa unaged binder stiffness. In computing the averages and standard deviations given in Table 21 the data for the EVA binder was eliminated due to the testing difficulties caused by phase

separation that were discussed previously. Figure 34 compares the average aging indices for neat and modified binders for short-term mixture aging in accordance with AASHTO R30 and short-term binder aging using the RTFOT, MGRF, and SAFT. The error bars shown in Figure 34 are 95 percent confidence intervals for the average.

Table 21. Average 10 kPa Aging Indices for Neat and Modified Binders.

Method	Neat		Modified		Hypothesis Test of Equality of Average Aging Index for Neat and Modified Binders			
	Average	Standard Deviation	Average	Standard Deviation	Pooled s	t	t _{critical}	Conclusion
R30	3.30	1.08	3.05	1.32	1.19	0.43	2.26	No difference
RTFOT	2.44	0.46	2.26	0.58	0.52	0.55	2.26	No difference
MGRF	2.44	0.47	2.30	0.35	0.42	0.54	2.26	No difference
SAFT	1.97	0.48	1.34	0.27	0.40	2.60	2.26	Neat > Modified

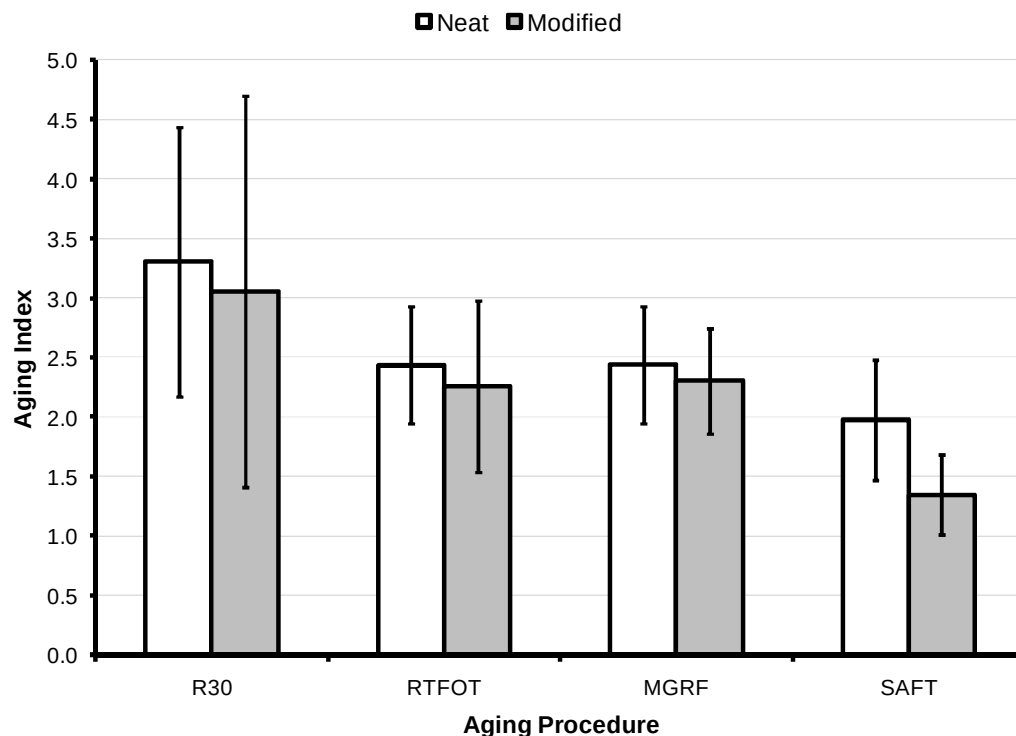


Figure 34. Comparison of Average 10 kPa Aging Indices for Neat and Modified Binders.

Table 21 also summarizes the results of hypothesis testing for the average of the mean 10 kPa aging index between neat and modified binders for the four short-term aging procedures. This

testing shows that the average aging index is the same for neat and modified binders for short-term mixture aging in accordance with AASHTO R30 and short-term binder aging in the RTFOT and MGRF. For the SAFT, the hypothesis testing shows that the average aging index for the neat binder is greater than that for the modified binder.

3.6. Summary of Oven Aged Mixture Experiment Findings

The oven aged mixture experiment included dynamic modulus testing of 12 mixtures produced using a combination of one limestone aggregate with 12 different binders, six neat and six modified. Testing was performed for samples from unaged mixtures and mixtures that were short-term aged in a forced draft oven for 4 hours at 135 °C per AASHTO R30. Binder moduli were back-calculated from the measured mixture moduli and used to compare the AASHTO R30 short-term mixture aging with the three short-term binder aging procedures: RTFOT, SAFT, and MGRF. The comparisons were based on changes in Christensen-Anderson master curve model parameters and aging indices. This experiment produced the following findings:

1. The binder aging that occurs when a mixture is short-term conditioned in a forced draft oven for 4 hours at 135 °C per AASHTO R30 generally exceeds the aging that occurs in the short-term binder aging procedures. Hardening measured by the change in the Christensen-Anderson cross-over frequency was greater for AASHTO R30 compared to the RTFOT, the SAFT and the MGRF. Binder aging indices were also greater for AASHTO R30 compared to the three short-term binder aging procedures.
2. Based on an analysis of aging index rankings, short-term binder aging in the RTFOT and the MGRF provided similar rankings as short-term mixture aging in accordance with AASHTO R30. The ranking of binders aged in the SAFT did not correlate well with the AASHTO R30 rankings.
3. For the binders tested in this study the average aging of the neat binders was approximately the same as that for the modified binders for AASHTO R30, RTFOT, and MGRF conditioning. For the SAFT, the average aging of the neat binders was greater than that of the modified binders.

4.0 REFERENCES

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5.0 DSR DATA

Table 22. AAC-1 Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	TANK	1	10	0.20	0.50	1203000	65.1	46	37.05	223.4	223	89.0
AAC-1	TANK	1	10	0.20	0.63	1421000	64.0	46	37.05	278.2	278	89.1
AAC-1	TANK	1	10	0.20	0.79	1669000	63.3	46	37.05	352.1	352	88.9
AAC-1	TANK	1	10	0.20	1.00	1962000	62.1	46	37.05	440.8	441	88.7
AAC-1	TANK	1	10	0.20	1.26	2303000	61.1	46	37.04	553.6	554	88.4
AAC-1	TANK	1	10	0.20	1.50	2625000	60.2	46	21.82	654.3	654	88.5
AAC-1	TANK	1	10	0.20	1.89	3065000	59.2	46	21.82	820.9	821	88.3
AAC-1	TANK	1	10	0.20	2.38	3552000	58.2	46	21.83	1028.0	1028	88.0
AAC-1	TANK	1	10	0.20	2.99	4104000	57.0	46	21.83	1287.0	1287	87.8
AAC-1	TANK	1	10	0.20	3.77	4736000	56.1	46	21.82	1611.0	1611	87.6
AAC-1	TANK	1	10	0.20	4.74	5451000	55.0	46	21.83	2012.0	2012	87.4
AAC-1	TANK	1	10	0.10	5.00	5662000	55.1	46	12.21	2117.0	2117	87.3
AAC-1	TANK	1	10	0.10	6.30	6512000	54.0	46	12.21	2641.0	2641	87.1
AAC-1	TANK	1	10	0.10	7.92	7472000	52.8	46	12.21	3300.0	3300	86.9
AAC-1	TANK	1	10	0.10	9.98	8532000	51.9	46	12.21	4117.0	4117	86.7
AAC-1	TANK	1	10	0.10	12.56	9710000	50.8	46	12.21	5137.0	5137	86.5
AAC-1	TANK	1	10	0.10	15.00	10670000	49.8	46	4.01	6142.0	6142	86.3
AAC-1	TANK	1	10	0.10	18.88	12090000	49.1	46	4.01	7656.0	7656	86.1
AAC-1	TANK	1	10	0.10	23.77	13730000	48.2	46	4.01	9543.0	9543	85.9
AAC-1	TANK	1	10	0.10	29.93	15400000	47.2	46	4.01	11870.0	11870	85.7
AAC-1	TANK	1	10	0.09	37.68	17320000	46.1	46	4.01	14760.0	14760	85.5
AAC-1	TANK	1	10	0.09	47.43	19430000	45.2	46	4.01	18350.0	18350	85.2
AAC-1	TANK	2	10	0.20	0.50	1294000	63.8	46	30.05	271.6	272	88.7
AAC-1	TANK	2	10	0.20	0.63	1516000	62.8	46	30.05	340.0	340	88.4
AAC-1	TANK	2	10	0.20	0.79	1783000	61.9	46	30.05	426.9	427	88.3
AAC-1	TANK	2	10	0.20	1.00	2093000	60.8	46	30.05	535.6	536	88.0
AAC-1	TANK	2	10	0.20	1.26	2445000	60.1	46	30.04	670.1	670	87.9
AAC-1	TANK	2	10	0.20	1.50	2742000	59.1	46	20.42	794.1	794	87.6
AAC-1	TANK	2	10	0.20	1.89	3186000	58.2	46	20.41	994.0	994	87.4
AAC-1	TANK	2	10	0.20	2.38	3693000	57.3	46	20.42	1243.0	1243	87.3
AAC-1	TANK	2	10	0.20	2.99	4289000	56.1	46	20.42	1551.0	1551	87.0
AAC-1	TANK	2	10	0.20	3.77	4924000	55.1	46	20.42	1936.0	1936	86.8
AAC-1	TANK	2	10	0.20	4.74	5651000	54.0	46	20.42	2415.0	2415	86.6
AAC-1	TANK	2	10	0.10	5.00	5859000	54.2	46	13.42	2547.0	2547	86.5
AAC-1	TANK	2	10	0.10	6.30	6686000	52.9	46	13.42	3177.0	3177	86.3
AAC-1	TANK	2	10	0.10	7.92	7627000	51.9	46	13.42	3961.0	3961	86.1
AAC-1	TANK	2	10	0.10	9.98	8684000	51.1	46	13.42	4929.0	4929	85.9
AAC-1	TANK	2	10	0.10	12.56	9870000	49.9	46	13.42	6136.0	6136	85.7
AAC-1	TANK	2	10	0.10	15.00	10940000	49.2	46	6.01	7285.0	7285	85.6
AAC-1	TANK	2	10	0.10	18.88	12350000	48.4	46	6.01	9056.0	9056	85.3
AAC-1	TANK	2	10	0.10	23.77	13870000	47.3	46	6.01	11260.0	11260	85.1
AAC-1	TANK	2	10	0.10	29.93	15640000	46.2	46	6.01	13990.0	13990	84.9
AAC-1	TANK	2	10	0.09	37.68	17480000	45.5	46	6.01	17340.0	17340	84.7
AAC-1	TANK	2	10	0.09	47.43	19650000	44.4	46	6.00	21510.0	21510	84.4
AAC-1	TANK	1	22	5.01	0.50	52490	79.4	58	21.03	39.1	39	89.3

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	TANK	1	22	5.01	0.63	64220	78.6	58	21.03	50.2	50	89.4
AAC-1	TANK	1	22	5.01	0.79	78570	78.2	58	21.03	61.6	62	89.0
AAC-1	TANK	1	22	5.01	1.00	95960	77.7	58	21.03	78.0	78	88.9
AAC-1	TANK	1	22	5.01	1.26	116800	77.2	58	21.03	98.2	98	88.9
AAC-1	TANK	1	22	4.41	1.50	136600	76.9	58	12.01	117.4	117	89.0
AAC-1	TANK	1	22	4.41	1.89	166200	76.2	58	12.01	148.6	149	89.5
AAC-1	TANK	1	22	4.41	2.38	201600	75.6	58	12.01	184.9	185	88.8
AAC-1	TANK	1	22	4.41	2.99	244300	75.0	58	12.01	233.1	233	88.8
AAC-1	TANK	1	22	4.41	3.77	294900	74.4	58	12.02	292.7	293	88.7
AAC-1	TANK	1	22	4.41	4.74	355100	73.9	58	12.02	366.0	366	88.7
AAC-1	TANK	1	22	3.70	5.00	374200	73.5	58	6.50	386.1	386	88.7
AAC-1	TANK	1	22	3.70	6.30	448700	72.9	58	6.50	483.2	483	88.6
AAC-1	TANK	1	22	3.70	7.92	538200	72.2	58	6.51	604.3	604	88.3
AAC-1	TANK	1	22	3.70	9.98	642600	71.5	58	6.51	757.2	757	88.2
AAC-1	TANK	1	22	3.70	12.56	766900	70.8	58	6.51	949.5	950	88.1
AAC-1	TANK	1	22	2.80	15.00	897000	69.8	58	2.01	1132.0	1132	88.1
AAC-1	TANK	1	22	2.80	18.88	1059000	69.1	58	2.01	1420.0	1420	88.1
AAC-1	TANK	1	22	2.80	23.77	1249000	68.4	58	2.01	1774.0	1774	88.0
AAC-1	TANK	1	22	2.80	29.93	1475000	67.6	58	2.01	2222.0	2222	87.8
AAC-1	TANK	1	22	2.79	37.68	1737000	66.8	58	2.01	2774.0	2774	87.7
AAC-1	TANK	1	22	2.79	47.43	2041000	66.0	58	2.02	3466.0	3466	87.6
AAC-1	TANK	2	22	4.61	0.50	55940	78.8	58	17.03	45.2	45	90.0
AAC-1	TANK	2	22	4.61	0.63	68020	77.9	58	17.03	55.9	56	88.0
AAC-1	TANK	2	22	4.61	0.79	82650	77.5	58	17.03	71.2	71	88.6
AAC-1	TANK	2	22	4.61	1.00	100600	77.1	58	17.03	89.5	90	89.5
AAC-1	TANK	2	22	4.61	1.26	122300	76.6	58	17.03	112.7	113	89.2
AAC-1	TANK	2	22	4.11	1.50	142100	76.5	58	15.02	133.1	133	88.9
AAC-1	TANK	2	22	4.10	1.89	172300	75.6	58	15.02	168.0	168	89.1
AAC-1	TANK	2	22	4.11	2.38	208600	75.1	58	15.03	211.2	211	88.6
AAC-1	TANK	2	22	4.11	2.99	252600	74.5	58	15.03	264.4	264	88.6
AAC-1	TANK	2	22	4.11	3.77	305500	73.8	58	15.03	332.1	332	88.3
AAC-1	TANK	2	22	4.10	4.74	368000	73.2	58	15.03	416.2	416	88.1
AAC-1	TANK	2	22	3.60	5.00	383600	72.9	58	13.01	439.4	439	88.2
AAC-1	TANK	2	22	3.60	6.30	459300	72.3	58	13.01	550.7	551	88.0
AAC-1	TANK	2	22	3.60	7.92	550300	71.7	58	13.01	688.5	689	87.9
AAC-1	TANK	2	22	3.60	9.98	656600	70.9	58	13.01	862.8	863	87.8
AAC-1	TANK	2	22	3.60	12.56	782700	70.2	58	13.01	1079.0	1079	87.7
AAC-1	TANK	2	22	2.80	15.00	918700	69.2	58	10.02	1284.0	1284	87.6
AAC-1	TANK	2	22	2.80	18.88	1085000	68.6	58	10.02	1605.0	1605	87.5
AAC-1	TANK	2	22	2.80	23.77	1282000	67.8	58	10.02	2007.0	2007	87.4
AAC-1	TANK	2	22	2.80	29.93	1513000	67.0	58	10.02	2507.0	2507	87.3
AAC-1	TANK	2	22	2.79	37.68	1779000	66.2	58	10.02	3131.0	3131	87.1
AAC-1	TANK	2	22	2.79	47.43	2087000	65.4	58	10.01	3909.0	3909	87.0
AAC-1	TANK	1	34	8.52	0.50	3095	84.7	70	89.92	9.9	10	90.4
AAC-1	TANK	1	34	8.51	0.63	3830	84.6	70	89.91	12.6	13	90.4
AAC-1	TANK	1	34	8.51	0.79	4744	84.6	70	89.91	15.2	15	89.0
AAC-1	TANK	1	34	8.51	1.00	5902	84.2	70	89.91	18.9	19	89.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	TANK	1	34	8.51	1.26	7305	84.0	70	89.90	24.0	24	88.7
AAC-1	TANK	1	34	7.51	1.50	8635	84.1	70	62.97	28.4	28	89.2
AAC-1	TANK	1	34	7.51	1.89	10700	83.5	70	62.96	35.6	36	89.7
AAC-1	TANK	1	34	7.51	2.38	13190	83.7	70	62.98	44.8	45	89.0
AAC-1	TANK	1	34	7.51	2.99	16370	83.0	70	62.99	56.1	56	89.1
AAC-1	TANK	1	34	7.51	3.77	20210	82.8	70	62.98	70.3	70	89.2
AAC-1	TANK	1	34	7.51	4.74	24990	82.3	70	62.99	88.4	88	89.2
AAC-1	TANK	1	34	6.51	5.00	26240	82.4	70	42.47	93.1	93	89.2
AAC-1	TANK	1	34	6.51	6.30	32370	82.0	70	42.47	116.7	117	89.2
AAC-1	TANK	1	34	6.51	7.92	39870	81.7	70	42.47	146.7	147	89.3
AAC-1	TANK	1	34	6.51	9.98	49070	81.4	70	42.47	184.3	184	89.2
AAC-1	TANK	1	34	6.51	12.56	60290	81.0	70	42.47	231.5	232	89.2
AAC-1	TANK	1	34	5.01	15.00	71150	80.7	70	20.03	279.4	279	89.1
AAC-1	TANK	1	34	5.01	18.88	87320	80.3	70	20.03	348.1	348	89.1
AAC-1	TANK	1	34	5.01	23.77	107300	79.8	70	20.03	437.7	438	89.1
AAC-1	TANK	1	34	5.00	29.93	131000	79.5	70	20.03	548.0	548	89.1
AAC-1	TANK	1	34	5.00	37.68	159700	79.0	70	20.03	688.2	688	89.0
AAC-1	TANK	1	34	5.00	47.43	194400	78.5	70	20.02	863.7	864	88.9
AAC-1	TANK	2	34	8.02	0.50	3341	84.2	70	80.00	10.2	10	88.0
AAC-1	TANK	2	34	8.02	0.63	4091	83.7	70	80.00	12.8	13	89.2
AAC-1	TANK	2	34	8.02	0.79	5076	83.8	70	79.99	15.9	16	88.7
AAC-1	TANK	2	34	8.01	1.00	6310	83.6	70	79.99	19.8	20	88.6
AAC-1	TANK	2	34	8.01	1.26	7733	83.4	70	79.98	24.9	25	89.9
AAC-1	TANK	2	34	7.21	1.50	9100	83.5	70	57.59	29.8	30	89.4
AAC-1	TANK	2	34	7.21	1.89	11240	82.9	70	57.58	37.9	38	89.5
AAC-1	TANK	2	34	7.21	2.38	14350	83.5	70	57.60	47.2	47	89.2
AAC-1	TANK	2	34	7.21	2.99	17140	82.6	70	57.60	59.6	60	89.5
AAC-1	TANK	2	34	7.21	3.77	21190	82.4	70	57.60	74.7	75	89.4
AAC-1	TANK	2	34	7.21	4.74	25970	81.8	70	57.60	93.9	94	89.4
AAC-1	TANK	2	34	6.31	5.00	27480	81.5	70	40.07	98.9	99	89.5
AAC-1	TANK	2	34	6.31	6.30	33910	81.7	70	40.07	124.2	124	89.3
AAC-1	TANK	2	34	6.31	7.92	41770	81.3	70	40.07	156.2	156	89.4
AAC-1	TANK	2	34	6.31	9.98	51450	81.0	70	40.07	196.0	196	89.4
AAC-1	TANK	2	34	6.31	12.56	63010	80.6	70	40.07	246.6	247	89.4
AAC-1	TANK	2	34	5.01	15.00	73800	80.3	70	20.03	295.4	295	89.3
AAC-1	TANK	2	34	5.01	18.88	90430	79.9	70	20.03	370.8	371	89.2
AAC-1	TANK	2	34	5.01	23.77	110300	79.4	70	20.03	465.7	466	89.2
AAC-1	TANK	2	34	5.00	29.93	134800	79.0	70	20.03	584.5	585	89.1
AAC-1	TANK	2	34	5.00	37.68	164500	78.6	70	20.03	733.9	734	89.0
AAC-1	TANK	2	34	5.00	47.43	200200	78.1	70	20.02	920.5	921	88.9

Table 23. AAC-1 RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	RTFOT	1	10	0.20	0.50	2321000	56.2	46	13.01	0.50	619.6	87.1
AAC-1	RTFOT	1	10	0.20	0.63	2690000	55.4	46	13.01	0.63	776.0	86.7
AAC-1	RTFOT	1	10	0.20	0.79	3102000	54.6	46	13.01	0.79	965.7	86.4
AAC-1	RTFOT	1	10	0.20	1.00	3562000	53.6	46	13.01	1.00	1209.0	86.2
AAC-1	RTFOT	1	10	0.20	1.26	4067000	52.5	46	13.00	1.26	1507.0	85.6
AAC-1	RTFOT	1	10	0.20	1.50	4524000	51.8	46	12.21	1.50	1780.0	85.6
AAC-1	RTFOT	1	10	0.20	1.89	5143000	50.8	46	12.21	1.89	2214.0	85.2
AAC-1	RTFOT	1	10	0.19	2.38	5843000	50.1	46	12.21	2.38	2747.0	84.9
AAC-1	RTFOT	1	10	0.19	2.99	6622000	49.1	46	12.21	2.99	3410.0	84.7
AAC-1	RTFOT	1	10	0.19	3.77	7499000	48.2	46	12.21	3.77	4234.0	84.3
AAC-1	RTFOT	1	10	0.19	4.74	8457000	47.4	46	12.21	4.74	5248.0	84.0
AAC-1	RTFOT	1	10	0.10	5.00	8678000	47.3	46	11.41	5.00	5519.0	84.0
AAC-1	RTFOT	1	10	0.10	6.30	9740000	46.6	46	11.41	6.30	6828.0	83.7
AAC-1	RTFOT	1	10	0.10	7.92	10960000	45.7	46	11.41	7.92	8446.0	83.3
AAC-1	RTFOT	1	10	0.10	9.98	12170000	45.1	46	11.41	9.98	10420.0	82.9
AAC-1	RTFOT	1	10	0.10	12.56	13670000	44.2	46	11.40	12.56	12880.0	82.6
AAC-1	RTFOT	1	10	0.09	15.00	15110000	43.5	46	10.00	15.00	15210.0	82.3
AAC-1	RTFOT	1	10	0.09	18.88	16690000	42.7	46	9.99	18.88	18730.0	82.0
AAC-1	RTFOT	1	10	0.09	23.77	18610000	41.9	46	9.98	23.77	23060.0	81.6
AAC-1	RTFOT	1	10	0.09	29.93	20620000	41.3	46	9.97	29.93	28360.0	81.3
AAC-1	RTFOT	1	10	0.09	37.68	22840000	40.4	46	9.95	37.68	34810.0	80.9
AAC-1	RTFOT	1	10	0.09	47.43	25350000	39.7	46	9.92	47.43	42690.0	80.6
AAC-1	RTFOT	2	10	0.20	0.50	2454000	56.5	46	13.01	0.50	646.1	86.7
AAC-1	RTFOT	2	10	0.20	0.63	2823000	55.5	46	13.01	0.63	812.0	86.4
AAC-1	RTFOT	2	10	0.20	0.79	3253000	54.3	46	13.01	0.79	1014.0	86.2
AAC-1	RTFOT	2	10	0.20	1.00	3738000	53.4	46	13.01	1.00	1266.0	86.0
AAC-1	RTFOT	2	10	0.20	1.26	4276000	52.4	46	13.00	1.26	1570.0	85.7
AAC-1	RTFOT	2	10	0.20	1.50	4763000	51.4	46	12.21	1.50	1866.0	85.6
AAC-1	RTFOT	2	10	0.19	1.89	5421000	50.6	46	12.21	1.89	2319.0	85.2
AAC-1	RTFOT	2	10	0.19	2.38	6150000	49.7	46	12.21	2.38	2885.0	84.9
AAC-1	RTFOT	2	10	0.19	2.99	6968000	48.7	46	12.21	2.99	3579.0	84.6
AAC-1	RTFOT	2	10	0.19	3.77	7872000	47.9	46	12.21	3.77	4446.0	84.2
AAC-1	RTFOT	2	10	0.19	4.74	8892000	47.0	46	12.21	4.74	5509.0	83.9
AAC-1	RTFOT	2	10	0.10	5.00	9190000	46.8	46	11.41	5.00	5793.0	83.8
AAC-1	RTFOT	2	10	0.10	6.30	10370000	46.0	46	11.41	6.30	7167.0	83.5
AAC-1	RTFOT	2	10	0.10	7.92	11610000	45.4	46	11.41	7.92	8864.0	83.1
AAC-1	RTFOT	2	10	0.10	9.98	12990000	44.4	46	11.41	9.98	10930.0	82.7
AAC-1	RTFOT	2	10	0.09	12.56	14540000	43.8	46	11.40	12.56	13490.0	82.4
AAC-1	RTFOT	2	10	0.09	15.00	15710000	43.0	46	10.00	15.00	15860.0	82.1
AAC-1	RTFOT	2	10	0.09	18.88	17600000	42.3	46	9.99	18.88	19500.0	81.8
AAC-1	RTFOT	2	10	0.09	23.77	19580000	41.3	46	9.98	23.77	24000.0	81.4
AAC-1	RTFOT	2	10	0.09	29.93	21730000	40.7	46	9.97	29.93	29470.0	81.0
AAC-1	RTFOT	2	10	0.09	37.68	24050000	39.9	46	9.95	37.68	36150.0	80.7
AAC-1	RTFOT	2	10	0.09	47.43	26550000	39.5	46	9.92	47.43	44280.0	80.3
AAC-1	RTFOT	1	22	1.90	0.50	139100	72.4	58	9.01	0.50	89.4	88.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	RTFOT	1	22	1.90	0.63	167700	71.7	58	9.01	0.63	114.4	89.4
AAC-1	RTFOT	1	22	1.90	0.79	200600	71.1	58	9.01	0.79	138.5	88.0
AAC-1	RTFOT	1	22	1.90	1.00	240500	70.3	58	9.01	1.00	176.6	87.8
AAC-1	RTFOT	1	22	1.90	1.26	287700	69.8	58	9.01	1.26	220.6	88.0
AAC-1	RTFOT	1	22	1.90	1.50	333700	69.6	58	4.01	1.50	265.9	87.9
AAC-1	RTFOT	1	22	1.90	1.89	395900	68.5	58	4.01	1.89	328.8	88.0
AAC-1	RTFOT	1	22	1.90	2.38	469000	67.8	58	4.01	2.38	415.0	87.8
AAC-1	RTFOT	1	22	1.90	2.99	554300	67.1	58	4.01	2.99	519.5	87.6
AAC-1	RTFOT	1	22	1.90	3.77	655700	66.3	58	4.01	3.77	644.4	87.2
AAC-1	RTFOT	1	22	1.90	4.74	774000	65.6	58	4.01	4.74	808.1	87.0
AAC-1	RTFOT	1	22	1.90	5.00	809100	65.2	58	1.59	5.00	851.1	86.9
AAC-1	RTFOT	1	22	1.90	6.30	951900	64.5	58	1.59	6.30	1057.0	86.9
AAC-1	RTFOT	1	22	1.90	7.92	1118000	63.7	58	1.59	7.92	1325.0	86.8
AAC-1	RTFOT	1	22	1.90	9.98	1309000	63.0	58	1.59	9.98	1651.0	86.5
AAC-1	RTFOT	1	22	1.90	12.56	1531000	62.2	58	1.59	12.56	2062.0	86.4
AAC-1	RTFOT	1	22	1.90	15.00	1746000	61.3	58	0.29	15.00	2491.0	87.7
AAC-1	RTFOT	1	22	1.90	18.88	2020000	60.6	58	0.30	18.88	3039.0	87.3
AAC-1	RTFOT	1	22	1.89	23.77	2338000	59.9	58	0.29	23.77	4042.0	86.5
AAC-1	RTFOT	1	22	1.89	29.93	2703000	59.1	58	0.29	29.93	4761.0	86.2
AAC-1	RTFOT	1	22	1.89	37.68	3117000	58.3	58	0.30	37.68	5871.0	86.7
AAC-1	RTFOT	1	22	1.89	47.43	3586000	57.5	58	0.30	47.43	7361.0	85.6
AAC-1	RTFOT	2	22	1.50	0.50	175300	71.5	58	9.01	0.50	93.2	88.2
AAC-1	RTFOT	2	22	1.50	0.63	209200	70.0	58	9.01	0.63	117.1	88.6
AAC-1	RTFOT	2	22	1.50	0.79	250600	69.6	58	9.01	0.79	148.7	88.4
AAC-1	RTFOT	2	22	1.50	1.00	299900	68.7	58	9.01	1.00	184.0	88.8
AAC-1	RTFOT	2	22	1.50	1.26	357400	68.0	58	9.01	1.26	229.1	88.3
AAC-1	RTFOT	2	22	1.50	1.50	407000	67.9	58	6.92	1.50	274.1	88.1
AAC-1	RTFOT	2	22	1.50	1.89	485800	66.7	58	6.91	1.89	339.5	87.9
AAC-1	RTFOT	2	22	1.50	2.38	573300	65.9	58	6.92	2.38	428.0	87.9
AAC-1	RTFOT	2	22	1.50	2.99	678300	65.1	58	6.92	2.99	535.6	87.4
AAC-1	RTFOT	2	22	1.50	3.77	800000	64.3	58	6.92	3.77	669.6	87.5
AAC-1	RTFOT	2	22	1.50	4.74	939700	63.5	58	6.92	4.74	837.0	87.1
AAC-1	RTFOT	2	22	1.50	5.00	981900	63.1	58	5.20	5.00	880.1	87.1
AAC-1	RTFOT	2	22	1.50	6.30	1147000	62.4	58	5.20	6.30	1103.0	86.7
AAC-1	RTFOT	2	22	1.50	7.92	1340000	61.6	58	5.21	7.92	1376.0	86.6
AAC-1	RTFOT	2	22	1.50	9.98	1562000	60.8	58	5.20	9.98	1714.0	86.4
AAC-1	RTFOT	2	22	1.50	12.56	1815000	60.0	58	5.21	12.56	2140.0	86.2
AAC-1	RTFOT	2	22	1.50	15.00	2051000	59.1	58	3.00	15.00	2552.0	86.1
AAC-1	RTFOT	2	22	1.50	18.88	2361000	58.4	58	3.00	18.88	3173.0	85.8
AAC-1	RTFOT	2	22	1.50	23.77	2722000	57.7	58	3.01	23.77	3947.0	85.6
AAC-1	RTFOT	2	22	1.49	29.93	3133000	56.9	58	3.01	29.93	4912.0	85.3
AAC-1	RTFOT	2	22	1.49	37.68	3598000	56.1	58	3.01	37.68	6109.0	85.1
AAC-1	RTFOT	2	22	1.49	47.43	4125000	55.4	58	3.01	47.43	7574.0	84.9
AAC-1	RTFOT	1	34	3.00	0.50	8839	81.8	70	44.07	0.50	18.5	88.4
AAC-1	RTFOT	1	34	3.00	0.63	10770	81.4	70	44.07	0.63	23.4	89.2
AAC-1	RTFOT	1	34	3.00	0.79	13270	81.2	70	44.07	0.79	29.3	87.5
AAC-1	RTFOT	1	34	3.00	1.00	16400	80.6	70	44.07	1.00	36.8	89.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	RTFOT	1	34	3.00	1.26	20110	80.0	70	44.06	1.26	46.1	88.4
AAC-1	RTFOT	1	34	3.00	1.50	23610	79.8	70	36.55	1.50	54.7	89.4
AAC-1	RTFOT	1	34	3.00	1.89	28940	79.2	70	36.55	1.89	68.3	88.9
AAC-1	RTFOT	1	34	3.00	2.38	35420	78.7	70	36.56	2.38	85.8	89.0
AAC-1	RTFOT	1	34	3.01	2.99	43270	78.2	70	36.56	2.99	107.4	88.6
AAC-1	RTFOT	1	34	3.01	3.77	52770	77.7	70	36.56	3.77	135.1	88.7
AAC-1	RTFOT	1	34	3.01	4.74	64150	77.2	70	36.56	4.74	169.3	88.8
AAC-1	RTFOT	1	34	3.00	5.00	67200	77.1	70	29.75	5.00	178.2	88.7
AAC-1	RTFOT	1	34	3.00	6.30	81570	76.5	70	29.75	6.30	223.7	88.7
AAC-1	RTFOT	1	34	3.01	7.92	98910	76.1	70	29.75	7.92	280.3	88.6
AAC-1	RTFOT	1	34	3.01	9.98	119900	75.6	70	29.75	9.98	350.4	88.5
AAC-1	RTFOT	1	34	3.01	12.56	145200	75.0	70	29.75	12.56	439.7	88.4
AAC-1	RTFOT	1	34	3.01	15.00	168600	74.6	70	20.03	15.00	525.0	88.2
AAC-1	RTFOT	1	34	3.01	18.88	202800	74.0	70	20.03	18.88	657.4	88.1
AAC-1	RTFOT	1	34	3.01	23.77	244200	73.4	70	20.03	23.77	823.3	88.0
AAC-1	RTFOT	1	34	3.00	29.93	293500	72.9	70	20.03	29.93	1030.0	87.8
AAC-1	RTFOT	1	34	3.00	37.68	352000	72.3	70	20.03	37.68	1287.0	87.6
AAC-1	RTFOT	1	34	3.00	47.43	421300	71.7	70	20.02	47.43	1607.0	87.5
AAC-1	RTFOT	2	34	2.50	0.50	10570	80.3	70	44.07	0.50	18.7	88.1
AAC-1	RTFOT	2	34	2.50	0.63	13010	80.0	70	44.07	0.63	23.5	91.2
AAC-1	RTFOT	2	34	2.50	0.79	15950	79.5	70	44.07	0.79	29.2	89.2
AAC-1	RTFOT	2	34	2.50	1.00	19550	79.2	70	44.07	1.00	36.6	89.1
AAC-1	RTFOT	2	34	2.50	1.26	23970	78.6	70	44.07	1.26	46.1	89.0
AAC-1	RTFOT	2	34	2.50	1.50	28100	78.5	70	41.75	1.50	54.0	89.4
AAC-1	RTFOT	2	34	2.50	1.89	34160	77.7	70	41.75	1.89	68.6	89.0
AAC-1	RTFOT	2	34	2.50	2.38	41530	77.1	70	41.76	2.38	85.8	88.7
AAC-1	RTFOT	2	34	2.50	2.99	50190	76.9	70	41.76	2.99	108.2	88.9
AAC-1	RTFOT	2	34	2.50	3.77	61130	76.3	70	41.76	3.77	136.2	89.1
AAC-1	RTFOT	2	34	2.50	4.74	74220	75.8	70	41.76	4.74	171.2	88.9
AAC-1	RTFOT	2	34	2.50	5.00	78080	75.6	70	39.27	5.00	180.6	88.9
AAC-1	RTFOT	2	34	2.50	6.30	94420	75.1	70	39.27	6.30	226.3	88.9
AAC-1	RTFOT	2	34	2.50	7.92	114200	74.5	70	39.27	7.92	284.1	88.8
AAC-1	RTFOT	2	34	2.50	9.98	137700	73.9	70	39.27	9.98	356.8	88.7
AAC-1	RTFOT	2	34	2.50	12.56	166100	73.4	70	39.28	12.56	447.1	88.5
AAC-1	RTFOT	2	34	2.50	15.00	193000	72.9	70	35.05	15.00	533.4	88.3
AAC-1	RTFOT	2	34	2.50	18.88	231200	72.3	70	35.05	18.88	668.0	88.3
AAC-1	RTFOT	2	34	2.50	23.77	277400	71.8	70	35.05	23.77	835.8	88.1
AAC-1	RTFOT	2	34	2.50	29.93	332000	71.2	70	35.04	29.93	1046.0	87.9
AAC-1	RTFOT	2	34	2.50	37.68	396700	70.6	70	35.03	37.68	1306.0	87.8
AAC-1	RTFOT	2	34	2.50	47.43	472900	70.0	70	35.01	47.43	1630.0	87.6

Table 24. AAC-1 SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	SAFT	1	10	0.10	0.50	2782000	54.7	46	12.00	0.50	709.7	86.2
AAC-1	SAFT	1	10	0.10	0.63	3189000	53.9	46	12.00	0.63	888.8	85.9
AAC-1	SAFT	1	10	0.10	0.79	3645000	52.9	46	12.00	0.79	1104.0	85.6
AAC-1	SAFT	1	10	0.10	1.00	4167000	52.1	46	12.00	1.00	1371.0	85.3
AAC-1	SAFT	1	10	0.10	1.26	4756000	51.1	46	12.00	1.26	1703.0	84.9
AAC-1	SAFT	1	10	0.06	1.50	5324000	50.7	46	12.00	1.50	2026.0	84.7
AAC-1	SAFT	1	10	0.06	1.89	6015000	49.8	46	12.00	1.89	2511.0	84.3
AAC-1	SAFT	1	10	0.06	2.38	6767000	49.2	46	12.00	2.38	3114.0	84.0
AAC-1	SAFT	1	10	0.06	2.99	7690000	48.2	46	12.00	2.99	3858.0	83.6
AAC-1	SAFT	1	10	0.06	3.77	8613000	46.9	46	12.00	3.77	4773.0	83.3
AAC-1	SAFT	1	10	0.06	4.74	9760000	46.5	46	12.00	4.74	5899.0	82.8
AAC-1	SAFT	1	10	0.03	5.00	10060000	47.3	46	12.00	5.00	6193.0	82.8
AAC-1	SAFT	1	10	0.03	6.30	11290000	46.5	46	12.00	6.30	7634.0	82.4
AAC-1	SAFT	1	10	0.03	7.92	12720000	45.4	46	12.00	7.92	9402.0	82.0
AAC-1	SAFT	1	10	0.03	9.98	14080000	44.5	46	11.99	9.98	11570.0	81.6
AAC-1	SAFT	1	10	0.03	12.56	15810000	43.7	46	11.99	12.56	14230.0	81.2
AAC-1	SAFT	1	10	0.01	15.00	17940000	43.9	46	11.99	15.00	16700.0	80.9
AAC-1	SAFT	1	10	0.01	18.88	19610000	44.4	46	11.98	18.88	20460.0	80.5
AAC-1	SAFT	1	10	0.01	23.77	21390000	41.8	46	11.96	23.77	25050.0	80.1
AAC-1	SAFT	1	10	0.01	29.93	24220000	39.7	46	11.94	29.93	30650.0	79.7
AAC-1	SAFT	1	10	0.01	37.68	26220000	39.1	46	11.92	37.68	37430.0	79.4
AAC-1	SAFT	1	10	0.01	47.43	29090000	40.5	46	11.89	47.43	45640.0	79.0
AAC-1	SAFT	2	10	0.10	0.50	2733000	54.8	46	10.60	0.50	761.0	86.2
AAC-1	SAFT	2	10	0.10	0.63	3132000	53.6	46	10.60	0.63	951.0	85.7
AAC-1	SAFT	2	10	0.10	0.79	3599000	52.9	46	10.60	0.79	1184.0	85.4
AAC-1	SAFT	2	10	0.10	1.00	4101000	52.0	46	10.60	1.00	1476.0	85.2
AAC-1	SAFT	2	10	0.10	1.26	4703000	50.9	46	10.60	1.26	1833.0	84.8
AAC-1	SAFT	2	10	0.10	1.50	5233000	49.9	46	10.60	1.50	2170.0	84.6
AAC-1	SAFT	2	10	0.10	1.89	5924000	49.4	46	10.59	1.89	2687.0	84.1
AAC-1	SAFT	2	10	0.10	2.38	6721000	48.6	46	10.60	2.38	3336.0	83.8
AAC-1	SAFT	2	10	0.10	2.99	7580000	47.7	46	10.59	2.99	4131.0	83.4
AAC-1	SAFT	2	10	0.10	3.77	8507000	46.8	46	10.60	3.77	5113.0	83.0
AAC-1	SAFT	2	10	0.10	4.74	9567000	46.0	46	10.59	4.74	6314.0	82.7
AAC-1	SAFT	2	10	0.10	5.00	9865000	46.1	46	10.59	5.00	6635.0	82.5
AAC-1	SAFT	2	10	0.10	6.30	11060000	45.0	46	10.59	6.30	8180.0	82.1
AAC-1	SAFT	2	10	0.10	7.92	12370000	44.2	46	10.59	7.92	10070.0	81.7
AAC-1	SAFT	2	10	0.10	9.98	13830000	43.3	46	10.59	9.98	12390.0	81.3
AAC-1	SAFT	2	10	0.09	12.56	15410000	42.6	46	10.58	12.56	15230.0	80.9
AAC-1	SAFT	2	10	0.09	15.00	16710000	42.0	46	10.58	15.00	17890.0	80.5
AAC-1	SAFT	2	10	0.09	18.88	18540000	41.4	46	10.56	18.88	21910.0	80.1
AAC-1	SAFT	2	10	0.09	23.77	20630000	40.5	46	10.55	23.77	26800.0	79.7
AAC-1	SAFT	2	10	0.09	29.93	22760000	39.9	46	10.53	29.93	32760.0	79.3
AAC-1	SAFT	2	10	0.09	37.68	25230000	39.0	46	10.50	37.68	39980.0	78.9
AAC-1	SAFT	2	10	0.09	47.43	27790000	38.2	46	10.47	47.43	48720.0	78.5
AAC-1	SAFT	1	22	1.30	0.50	202000	69.9	58	8.01	0.50	104.9	89.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	SAFT	1	22	1.30	0.63	242000	68.5	58	8.01	0.63	132.0	88.5
AAC-1	SAFT	1	22	1.30	0.79	287300	68.0	58	8.01	0.79	166.4	88.8
AAC-1	SAFT	1	22	1.30	1.00	342000	67.0	58	8.01	1.00	207.7	88.0
AAC-1	SAFT	1	22	1.30	1.26	406700	66.3	58	8.01	1.26	259.2	87.9
AAC-1	SAFT	1	22	1.30	1.50	461300	66.5	58	8.01	1.50	310.4	87.4
AAC-1	SAFT	1	22	1.30	1.89	548000	65.1	58	8.01	1.89	387.8	87.2
AAC-1	SAFT	1	22	1.30	2.38	644900	64.4	58	8.01	2.38	484.9	87.0
AAC-1	SAFT	1	22	1.30	2.99	758100	63.5	58	8.01	2.99	606.0	86.8
AAC-1	SAFT	1	22	1.30	3.77	891000	62.8	58	8.02	3.77	755.7	86.6
AAC-1	SAFT	1	22	1.30	4.74	1044000	62.0	58	8.01	4.74	943.5	86.5
AAC-1	SAFT	1	22	1.30	5.00	1089000	61.8	58	8.01	5.00	989.8	86.4
AAC-1	SAFT	1	22	1.30	6.30	1267000	60.9	58	8.02	6.30	1235.0	86.1
AAC-1	SAFT	1	22	1.30	7.92	1476000	60.2	58	8.02	7.92	1538.0	85.9
AAC-1	SAFT	1	22	1.30	9.98	1713000	59.4	58	8.02	9.98	1913.0	85.6
AAC-1	SAFT	1	22	1.30	12.56	1988000	58.6	58	8.02	12.56	2381.0	85.3
AAC-1	SAFT	1	22	1.30	15.00	2239000	57.8	58	8.02	15.00	2813.0	85.1
AAC-1	SAFT	1	22	1.30	18.88	2571000	57.1	58	8.02	18.88	3493.0	84.9
AAC-1	SAFT	1	22	1.29	23.77	2958000	56.4	58	8.03	23.77	4336.0	84.5
AAC-1	SAFT	1	22	1.29	29.93	3396000	55.6	58	8.03	29.93	5378.0	84.3
AAC-1	SAFT	1	22	1.29	37.68	3891000	54.9	58	8.02	37.68	6663.0	84.0
AAC-1	SAFT	1	22	1.29	47.43	4450000	54.1	58	8.02	47.43	8247.0	83.7
AAC-1	SAFT	2	22	1.20	0.50	215300	68.9	58	7.81	0.50	105.7	88.8
AAC-1	SAFT	2	22	1.20	0.63	255200	68.1	58	7.81	0.63	130.9	87.8
AAC-1	SAFT	2	22	1.20	0.79	303700	67.7	58	7.81	0.79	165.3	88.5
AAC-1	SAFT	2	22	1.20	1.00	359600	66.9	58	7.81	1.00	207.9	88.2
AAC-1	SAFT	2	22	1.20	1.26	427400	66.0	58	7.81	1.26	259.0	88.0
AAC-1	SAFT	2	22	1.20	1.50	486100	66.0	58	6.85	1.50	309.7	87.6
AAC-1	SAFT	2	22	1.20	1.89	577300	64.7	58	6.85	1.89	389.5	87.3
AAC-1	SAFT	2	22	1.20	2.38	680600	63.9	58	6.85	2.38	484.6	87.2
AAC-1	SAFT	2	22	1.20	2.99	798900	63.1	58	6.85	2.99	606.5	87.1
AAC-1	SAFT	2	22	1.20	3.77	937300	62.3	58	6.85	3.77	757.6	86.7
AAC-1	SAFT	2	22	1.20	4.74	1096000	61.5	58	6.85	4.74	944.7	86.6
AAC-1	SAFT	2	22	1.20	5.00	1141000	61.2	58	5.92	5.00	994.0	86.4
AAC-1	SAFT	2	22	1.20	6.30	1327000	60.4	58	5.92	6.30	1239.0	86.2
AAC-1	SAFT	2	22	1.20	7.92	1543000	59.6	58	5.92	7.92	1546.0	85.9
AAC-1	SAFT	2	22	1.20	9.98	1790000	58.8	58	5.92	9.98	1925.0	85.6
AAC-1	SAFT	2	22	1.20	12.56	2073000	58.0	58	5.92	12.56	2395.0	85.5
AAC-1	SAFT	2	22	1.20	15.00	2327000	57.2	58	4.50	15.00	2839.0	85.2
AAC-1	SAFT	2	22	1.19	18.88	2675000	56.5	58	4.51	18.88	3524.0	84.9
AAC-1	SAFT	2	22	1.19	23.77	3070000	55.8	58	4.51	23.77	4375.0	84.5
AAC-1	SAFT	2	22	1.19	29.93	3518000	55.0	58	4.51	29.93	5429.0	84.3
AAC-1	SAFT	2	22	1.19	37.68	4028000	54.3	58	4.51	37.68	6724.0	83.9
AAC-1	SAFT	2	22	1.19	47.43	4602000	53.5	58	4.51	47.43	8323.0	83.6
AAC-1	SAFT	1	34	2.10	0.50	12340	80.1	70	40.03	0.50	20.3	89.5
AAC-1	SAFT	1	34	2.10	0.63	15180	79.5	70	40.03	0.63	25.1	88.8
AAC-1	SAFT	1	34	2.10	0.79	18520	78.5	70	40.03	0.79	31.2	88.2
AAC-1	SAFT	1	34	2.10	1.00	22620	78.4	70	40.02	1.00	39.2	88.3

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	SAFT	1	34	2.10	1.26	27710	77.7	70	40.02	1.26	50.1	88.7
AAC-1	SAFT	1	34	2.10	1.50	32710	77.6	70	40.02	1.50	59.4	88.6
AAC-1	SAFT	1	34	2.10	1.89	39610	76.8	70	40.01	1.89	74.3	88.5
AAC-1	SAFT	1	34	2.10	2.38	48200	76.2	70	40.03	2.38	94.0	88.6
AAC-1	SAFT	1	34	2.10	2.99	58400	75.7	70	40.03	2.99	117.4	88.5
AAC-1	SAFT	1	34	2.10	3.77	70700	75.2	70	40.03	3.77	147.0	88.4
AAC-1	SAFT	1	34	2.10	4.74	85590	74.6	70	40.03	4.74	184.3	88.3
AAC-1	SAFT	1	34	2.10	5.00	88970	74.5	70	40.03	5.00	194.3	88.3
AAC-1	SAFT	1	34	2.10	6.30	107200	73.9	70	40.04	6.30	243.3	88.2
AAC-1	SAFT	1	34	2.10	7.92	129400	73.3	70	40.03	7.92	304.9	88.1
AAC-1	SAFT	1	34	2.10	9.98	155800	72.8	70	40.04	9.98	381.6	88.0
AAC-1	SAFT	1	34	2.10	12.56	187300	72.3	70	40.04	12.56	477.5	87.8
AAC-1	SAFT	1	34	2.10	15.00	217800	71.7	70	40.04	15.00	568.7	87.7
AAC-1	SAFT	1	34	2.10	18.88	259400	71.2	70	40.04	18.88	710.1	87.6
AAC-1	SAFT	1	34	2.10	23.77	309400	70.6	70	40.03	23.77	886.9	87.4
AAC-1	SAFT	1	34	2.10	29.93	368200	70.0	70	40.02	29.93	1107.0	87.2
AAC-1	SAFT	1	34	2.10	37.68	439300	69.4	70	40.00	37.68	1380.0	87.1
AAC-1	SAFT	1	34	2.10	47.43	523600	68.8	70	39.96	47.43	1720.0	86.9
AAC-1	SAFT	2	34	1.90	0.50	13420	79.6	70	39.02	0.50	19.8	89.3
AAC-1	SAFT	2	34	1.90	0.63	16470	79.2	70	39.02	0.63	24.5	90.5
AAC-1	SAFT	2	34	1.90	0.79	20040	78.4	70	39.02	0.79	30.9	90.7
AAC-1	SAFT	2	34	1.90	1.00	24630	77.9	70	39.02	1.00	38.3	89.3
AAC-1	SAFT	2	34	1.90	1.26	29830	77.6	70	39.02	1.26	48.4	89.4
AAC-1	SAFT	2	34	1.90	1.50	35000	77.2	70	39.02	1.50	58.2	89.4
AAC-1	SAFT	2	34	1.90	1.89	42620	76.5	70	39.01	1.89	72.8	89.2
AAC-1	SAFT	2	34	1.90	2.38	51820	75.8	70	39.02	2.38	92.0	89.1
AAC-1	SAFT	2	34	1.90	2.99	62750	76.4	70	39.02	2.99	115.4	89.0
AAC-1	SAFT	2	34	1.90	3.77	75940	74.8	70	39.03	3.77	145.0	89.0
AAC-1	SAFT	2	34	1.90	4.74	91920	74.3	70	39.03	4.74	182.1	89.0
AAC-1	SAFT	2	34	1.90	5.00	96210	74.0	70	39.03	5.00	192.6	88.9
AAC-1	SAFT	2	34	1.90	6.30	115700	73.6	70	39.03	6.30	241.1	88.8
AAC-1	SAFT	2	34	1.90	7.92	139600	72.9	70	39.03	7.92	302.4	88.6
AAC-1	SAFT	2	34	1.90	9.98	167700	72.3	70	39.03	9.98	378.9	88.4
AAC-1	SAFT	2	34	1.90	12.56	201900	71.8	70	39.03	12.56	474.9	88.2
AAC-1	SAFT	2	34	1.90	15.00	232400	71.3	70	39.04	15.00	566.1	88.1
AAC-1	SAFT	2	34	1.90	18.88	278100	70.7	70	39.04	18.88	707.1	87.9
AAC-1	SAFT	2	34	1.90	23.77	332100	70.0	70	39.04	23.77	883.6	87.7
AAC-1	SAFT	2	34	1.90	29.93	395700	69.5	70	39.04	29.93	1103.0	87.5
AAC-1	SAFT	2	34	1.90	37.68	470700	68.8	70	39.03	37.68	1375.0	87.3
AAC-1	SAFT	2	34	1.90	47.43	559600	68.2	70	39.00	47.43	1714.0	87.1

Table 25. AAC-1 MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	MGRF	1	15	5.00	0.10	122904	72.6	46	9.95	0.10	218.0	87.9
AAC-1	MGRF	1	15	5.00	0.13	147436	72.0	46	10.00	0.13	272.0	87.7
AAC-1	MGRF	1	15	5.00	0.16	176500	71.4	46	10.20	0.16	340.0	87.5
AAC-1	MGRF	1	15	5.00	0.20	210725	70.7	46	10.10	0.20	424.5	87.2
AAC-1	MGRF	1	15	5.00	0.25	249385	70.0	46	10.10	0.25	531.0	87.0
AAC-1	MGRF	1	15	5.00	0.32	295450	69.4	46	10.05	0.32	663.0	86.8
AAC-1	MGRF	1	15	5.00	0.40	350000	68.8	46	10.00	0.40	826.5	86.5
AAC-1	MGRF	1	15	5.00	0.50	412322	68.1	46	10.00	0.50	1030.0	86.2
AAC-1	MGRF	1	15	5.00	0.63	484263	67.5	46	10.10	0.63	1290.0	85.9
AAC-1	MGRF	1	15	5.00	0.79	566942	66.9	46	10.10	0.79	1600.0	85.6
AAC-1	MGRF	1	15	5.00	1.00	663000	66.3	46	10.00	1.00	1990.0	85.3
AAC-1	MGRF	1	15	5.00	1.26	772483	65.7	46	10.00	1.26	2475.0	85.0
AAC-1	MGRF	1	15	5.00	1.58	895940	65.1	46	10.00	1.58	3075.0	84.6
AAC-1	MGRF	1	15	5.00	2.00	1042226	64.6	46	10.00	2.00	3810.0	84.3
AAC-1	MGRF	1	15	5.00	2.51	1200000	64.0	46	10.00	2.51	4725.0	83.9
AAC-1	MGRF	1	15	5.00	3.16	1379810	63.4	46	10.00	3.16	5850.0	83.5
AAC-1	MGRF	1	15	5.00	3.98	1586198	62.9	46	10.00	3.98	7235.0	83.1
AAC-1	MGRF	1	15	5.00	5.01	1819257	62.4	46	10.00	5.01	8935.0	82.7
AAC-1	MGRF	1	15	5.00	6.31	2080000	61.9	46	10.00	6.31	11000.0	82.3
AAC-1	MGRF	1	15	5.00	7.94	2365209	61.4	46	10.00	7.94	13550.0	81.9
AAC-1	MGRF	1	15	5.00	10.00	2685068	60.9	46	10.00	10.00	16700.0	81.5
AAC-1	MGRF	1	15	5.00	12.60	3043297	60.5	46	10.00	12.60	20500.0	81.1
AAC-1	MGRF	1	15	5.00	15.80	3435000	60.0	46	9.97	15.80	25150.0	80.6
AAC-1	MGRF	1	15	5.00	20.00	3874281	59.5	46	10.00	20.00	30850.0	80.2
AAC-1	MGRF	1	15	5.01	25.10	4335248	59.0	46	9.99	25.10	37650.0	79.8
AAC-1	MGRF	1	15	5.01	31.60	4845397	58.5	46	10.00	31.60	45950.0	79.4
AAC-1	MGRF	1	15	5.00	39.80	5405000	58.0	46	10.00	39.80	55900.0	79.0
AAC-1	MGRF	1	15	4.99	50.10	6001581	57.3	46	10.00	50.10	67800.0	78.6
AAC-1	MGRF	1	15	5.00	63.10	6605199	57.0	46	10.00	63.10	82100.0	78.2
AAC-1	MGRF	1	15	5.03	79.40	7116931	57.1	46	10.00	79.40	99350.0	77.8
AAC-1	MGRF	1	15	5.02	100.00	7420000	57.6	46	10.00	100.00	119500.0	77.5
AAC-1	MGRF	2	15	5.00	0.10	80600	75.0	46	9.95	0.10	189.5	88.3
AAC-1	MGRF	2	15	5.00	0.13	107500	74.1	46	10.00	0.13	237.5	88.1
AAC-1	MGRF	2	15	5.00	0.16	136500	73.2	46	10.20	0.16	297.5	87.9
AAC-1	MGRF	2	15	5.00	0.20	170500	72.4	46	10.10	0.20	373.0	87.7
AAC-1	MGRF	2	15	5.00	0.25	209500	71.5	46	10.10	0.25	467.0	87.5
AAC-1	MGRF	2	15	5.00	0.32	256000	70.7	46	10.05	0.32	584.5	87.2
AAC-1	MGRF	2	15	5.00	0.40	310000	69.9	46	10.00	0.40	729.5	87.0
AAC-1	MGRF	2	15	5.00	0.50	374000	69.1	46	10.00	0.50	911.5	86.7
AAC-1	MGRF	2	15	5.00	0.63	449000	68.3	46	10.10	0.63	1140.0	86.4
AAC-1	MGRF	2	15	5.00	0.79	537000	67.5	46	10.10	0.79	1420.0	86.1
AAC-1	MGRF	2	15	5.00	1.00	640000	66.7	46	10.00	1.00	1765.0	85.8
AAC-1	MGRF	2	15	5.00	1.26	760000	65.8	46	10.00	1.26	2200.0	85.5
AAC-1	MGRF	2	15	5.00	1.58	899500	64.9	46	10.00	1.58	2730.0	85.1
AAC-1	MGRF	2	15	5.00	2.00	1060000	64.1	46	10.00	2.00	3400.0	84.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	MGRF	2	15	5.00	2.51	1245000	63.1	46	10.00	2.51	4220.0	84.4
AAC-1	MGRF	2	15	5.00	3.16	1470000	62.2	46	10.00	3.16	5225.0	84.0
AAC-1	MGRF	2	15	5.00	3.98	1715000	61.3	46	10.00	3.98	6470.0	83.7
AAC-1	MGRF	2	15	5.00	5.01	2005000	60.4	46	10.00	5.01	8010.0	83.3
AAC-1	MGRF	2	15	5.00	6.31	2335000	59.4	46	10.00	6.31	9880.0	82.9
AAC-1	MGRF	2	15	5.00	7.94	2715000	58.5	46	10.00	7.94	12200.0	82.4
AAC-1	MGRF	2	15	5.00	10.00	3135000	57.6	46	10.00	10.00	15000.0	82.0
AAC-1	MGRF	2	15	5.00	12.60	3620000	56.7	46	10.00	12.60	18550.0	81.6
AAC-1	MGRF	2	15	5.00	15.80	4165000	55.8	46	9.97	15.80	22750.0	81.2
AAC-1	MGRF	2	15	5.00	20.00	4775000	54.8	46	10.00	20.00	27900.0	80.7
AAC-1	MGRF	2	15	5.01	25.10	5460000	53.9	46	9.99	25.10	34150.0	80.3
AAC-1	MGRF	2	15	5.01	31.60	6220000	52.9	46	10.00	31.60	41700.0	79.9
AAC-1	MGRF	2	15	5.00	39.80	7080000	52.0	46	10.00	39.80	50850.0	79.5
AAC-1	MGRF	2	15	4.99	50.10	8115000	51.1	46	10.00	50.10	61850.0	79.1
AAC-1	MGRF	2	15	5.00	63.10	9185000	50.2	46	10.00	63.10	75000.0	78.7
AAC-1	MGRF	2	15	5.03	79.40	10350000	49.0	46	10.00	79.40	90850.0	78.3
AAC-1	MGRF	2	15	5.02	100.00	11700000	47.9	46	10.00	100.00	109500.0	77.9
AAC-1	MGRF	1	25	5.00	0.10	20886	78.5	58	9.96	0.10	25.9	89.0
AAC-1	MGRF	1	25	5.00	0.13	25454	78.0	58	10.00	0.13	32.4	89.0
AAC-1	MGRF	1	25	5.00	0.16	31050	77.5	58	10.00	0.16	40.4	88.9
AAC-1	MGRF	1	25	5.00	0.20	37907	76.8	58	10.00	0.20	50.6	88.8
AAC-1	MGRF	1	25	5.00	0.25	45867	76.2	58	10.05	0.25	63.4	88.8
AAC-1	MGRF	1	25	5.00	0.32	55557	75.6	58	10.00	0.32	79.4	88.7
AAC-1	MGRF	1	25	5.00	0.40	67200	75.0	58	10.00	0.40	99.5	88.6
AAC-1	MGRF	1	25	5.00	0.50	81099	74.4	58	10.00	0.50	124.5	88.5
AAC-1	MGRF	1	25	5.00	0.63	97680	73.8	58	10.00	0.63	156.5	88.4
AAC-1	MGRF	1	25	5.00	0.79	117370	73.3	58	10.00	0.79	195.5	88.3
AAC-1	MGRF	1	25	5.00	1.00	141000	72.7	58	10.00	1.00	245.5	88.2
AAC-1	MGRF	1	25	5.00	1.26	168699	72.1	58	10.00	1.26	306.5	88.0
AAC-1	MGRF	1	25	5.00	1.58	200753	71.5	58	10.00	1.58	384.0	87.8
AAC-1	MGRF	1	25	5.00	2.00	240195	70.9	58	10.00	2.00	480.5	87.7
AAC-1	MGRF	1	25	5.00	2.51	285000	70.3	58	10.00	2.51	601.0	87.5
AAC-1	MGRF	1	25	5.00	3.16	339343	69.7	58	10.00	3.16	752.0	87.2
AAC-1	MGRF	1	25	5.00	3.98	401930	69.1	58	10.00	3.98	939.5	87.0
AAC-1	MGRF	1	25	5.00	5.01	474026	68.5	58	10.00	5.01	1170.0	86.8
AAC-1	MGRF	1	25	5.00	6.31	558000	67.9	58	10.00	6.31	1465.0	86.6
AAC-1	MGRF	1	25	5.00	7.94	653304	67.3	58	10.00	7.94	1825.0	86.3
AAC-1	MGRF	1	25	5.00	10.00	762725	66.7	58	10.00	10.00	2275.0	86.1
AAC-1	MGRF	1	25	5.00	12.60	889752	66.1	58	10.00	12.60	2830.0	85.8
AAC-1	MGRF	1	25	5.00	15.80	1036000	65.6	58	9.82	15.80	3525.0	85.6
AAC-1	MGRF	1	25	5.01	20.00	1203406	64.9	58	10.00	20.00	4375.0	85.3
AAC-1	MGRF	1	25	5.01	25.10	1383947	64.3	58	10.00	25.10	5430.0	85.0
AAC-1	MGRF	1	25	5.02	31.60	1590153	63.7	58	10.00	31.60	6730.0	84.8
AAC-1	MGRF	1	25	5.02	39.80	1825000	63.3	58	10.00	39.80	8330.0	84.6
AAC-1	MGRF	1	25	5.02	50.10	2070804	62.9	58	10.00	50.10	10300.0	84.4
AAC-1	MGRF	1	25	5.02	63.10	2335358	62.5	58	10.00	63.10	12700.0	84.2
AAC-1	MGRF	1	25	5.02	79.40	2619684	62.1	58	10.00	79.40	15650.0	84.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	MGRF	1	25	5.02	100.00	2930000	61.6	58	10.00	100.00	19250.0	84.0
AAC-1	MGRF	2	25	5.00	0.10	19200	78.5	58	9.96	0.10	23.9	89.5
AAC-1	MGRF	2	25	5.00	0.13	24650	78.0	58	10.00	0.13	29.9	89.4
AAC-1	MGRF	2	25	5.00	0.16	31050	77.5	58	10.00	0.16	37.4	89.3
AAC-1	MGRF	2	25	5.00	0.20	38600	77.0	58	10.00	0.20	46.9	89.3
AAC-1	MGRF	2	25	5.00	0.25	47600	76.4	58	10.05	0.25	58.8	89.2
AAC-1	MGRF	2	25	5.00	0.32	58400	75.8	58	10.00	0.32	73.7	89.1
AAC-1	MGRF	2	25	5.00	0.40	71400	75.2	58	10.00	0.40	92.5	89.0
AAC-1	MGRF	2	25	5.00	0.50	87000	74.7	58	10.00	0.50	116.0	88.9
AAC-1	MGRF	2	25	5.00	0.63	105500	74.1	58	10.00	0.63	145.5	88.8
AAC-1	MGRF	2	25	5.00	0.79	128000	73.5	58	10.00	0.79	182.5	88.6
AAC-1	MGRF	2	25	5.00	1.00	154500	72.9	58	10.00	1.00	229.0	88.5
AAC-1	MGRF	2	25	5.00	1.26	187000	72.2	58	10.00	1.26	286.5	88.3
AAC-1	MGRF	2	25	5.00	1.58	225000	71.6	58	10.00	1.58	359.0	88.2
AAC-1	MGRF	2	25	5.00	2.00	270000	70.9	58	10.00	2.00	450.0	88.0
AAC-1	MGRF	2	25	5.00	2.51	323500	70.2	58	10.00	2.51	563.5	87.8
AAC-1	MGRF	2	25	5.00	3.16	387500	69.5	58	10.00	3.16	705.5	87.5
AAC-1	MGRF	2	25	5.00	3.98	462000	68.7	58	10.00	3.98	882.0	87.3
AAC-1	MGRF	2	25	5.00	5.01	551500	68.0	58	10.00	5.01	1105.0	87.1
AAC-1	MGRF	2	25	5.00	6.31	657000	67.2	58	10.00	6.31	1380.0	86.8
AAC-1	MGRF	2	25	5.00	7.94	779000	66.4	58	10.00	7.94	1715.0	86.6
AAC-1	MGRF	2	25	5.00	10.00	921500	65.6	58	10.00	10.00	2145.0	86.3
AAC-1	MGRF	2	25	5.00	12.60	1085000	64.7	58	10.00	12.60	2670.0	86.1
AAC-1	MGRF	2	25	5.00	15.80	1280000	63.9	58	9.82	15.80	3320.0	85.8
AAC-1	MGRF	2	25	5.01	20.00	1500000	63.0	58	10.00	20.00	4130.0	85.6
AAC-1	MGRF	2	25	5.01	25.10	1755000	62.0	58	10.00	25.10	5135.0	85.3
AAC-1	MGRF	2	25	5.02	31.60	2055000	60.9	58	10.00	31.60	6375.0	85.2
AAC-1	MGRF	2	25	5.02	39.80	2390000	59.8	58	10.00	39.80	7890.0	84.9
AAC-1	MGRF	2	25	5.02	50.10	2785000	58.5	58	10.00	50.10	9770.0	84.7
AAC-1	MGRF	2	25	5.02	63.10	3265000	58.2	58	10.00	63.10	12050.0	84.5
AAC-1	MGRF	2	25	5.02	79.40	3785000	57.4	58	10.00	79.40	14900.0	84.4
AAC-1	MGRF	2	25	5.02	100.00	4370000	56.5	58	10.00	100.00	18350.0	84.3
AAC-1	MGRF	1	35	5.00	0.10	51450	81.0	70	9.99	0.10	4.4	89.1
AAC-1	MGRF	1	35	5.00	0.13	63010	80.6	70	10.00	0.13	5.5	89.1
AAC-1	MGRF	1	35	5.00	0.16	73800	80.3	70	10.10	0.16	6.9	89.1
AAC-1	MGRF	1	35	5.00	0.20	90430	79.9	70	10.00	0.20	8.7	89.0
AAC-1	MGRF	1	35	5.00	0.25	110300	79.4	70	10.00	0.25	10.9	89.1
AAC-1	MGRF	1	35	5.00	0.32	134800	79.0	70	10.00	0.32	13.7	89.1
AAC-1	MGRF	1	35	5.00	0.40	164500	78.6	70	10.00	0.40	17.2	89.2
AAC-1	MGRF	1	35	5.00	0.50	200200	78.1	70	10.00	0.50	21.6	89.2
AAC-1	MGRF	1	35	5.00	0.63	3467	83.7	70	10.00	0.63	27.1	89.2
AAC-1	MGRF	1	35	5.00	0.79	4291	83.3	70	10.00	0.79	34.1	89.3
AAC-1	MGRF	1	35	5.00	1.00	5315	83.0	70	10.00	1.00	42.8	89.3
AAC-1	MGRF	1	35	5.00	1.26	6580	82.4	70	10.00	1.26	53.9	89.3
AAC-1	MGRF	1	35	5.00	1.58	8072	81.9	70	10.00	1.58	67.6	89.3
AAC-1	MGRF	1	35	5.00	2.00	9934	81.4	70	10.00	2.00	84.8	89.4
AAC-1	MGRF	1	35	5.00	2.51	12250	81.0	70	10.00	2.51	106.5	89.3

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAC-1	MGRF	1	35	5.00	3.16	15001	80.4	70	10.00	3.16	134.0	89.3
AAC-1	MGRF	1	35	5.00	3.98	18359	79.9	70	10.00	3.98	168.0	89.2
AAC-1	MGRF	1	35	5.00	5.01	22449	79.4	70	10.00	5.01	211.5	89.2
AAC-1	MGRF	1	35	5.00	6.31	27500	78.9	70	10.00	6.31	265.5	89.2
AAC-1	MGRF	1	35	5.00	7.94	33530	78.3	70	10.00	7.94	333.0	89.1
AAC-1	MGRF	1	35	5.00	10.00	40687	77.8	70	10.00	10.00	418.5	89.1
AAC-1	MGRF	1	35	5.00	12.60	49722	77.2	70	10.00	12.60	524.5	89.1
AAC-1	MGRF	1	35	5.00	15.80	60250	76.7	70	9.99	15.80	657.0	89.1
AAC-1	MGRF	1	35	5.00	20.00	73082	76.1	70	10.00	20.00	823.0	89.2
AAC-1	MGRF	1	35	5.00	25.10	88457	75.5	70	10.00	25.10	1030.0	89.2
AAC-1	MGRF	1	35	5.01	31.60	106944	75.0	70	10.00	31.60	1290.0	89.4
AAC-1	MGRF	1	35	5.01	39.80	129500	74.4	70	10.00	39.80	1610.0	89.8
AAC-1	MGRF	1	35	5.01	50.10	155218	73.8	70	10.00	50.10	2010.0	90.0
AAC-1	MGRF	1	35	5.01	63.10	186085	73.2	70	10.00	63.10	2505.0	90.0
AAC-1	MGRF	1	35	5.00	79.40	223318	72.6	70	10.00	79.40	3125.0	90.0
AAC-1	MGRF	1	35	4.99	100.00	267500	72.1	70	10.00	100.00	3900.0	90.0
AAC-1	MGRF	2	35	5.00	0.10	3350	83.6	70	9.99	0.10	3.9	90.0
AAC-1	MGRF	2	35	5.00	0.13	4260	82.9	70	10.00	0.13	5.0	90.0
AAC-1	MGRF	2	35	5.00	0.16	5320	82.2	70	10.10	0.16	6.2	90.0
AAC-1	MGRF	2	35	5.00	0.20	6620	82.0	70	10.00	0.20	7.8	90.0
AAC-1	MGRF	2	35	5.00	0.25	8200	81.5	70	10.00	0.25	9.8	90.0
AAC-1	MGRF	2	35	5.00	0.32	10145	81.1	70	10.00	0.32	12.3	90.0
AAC-1	MGRF	2	35	5.00	0.40	12500	80.7	70	10.00	0.40	15.4	89.9
AAC-1	MGRF	2	35	5.00	0.50	15400	80.3	70	10.00	0.50	19.4	89.8
AAC-1	MGRF	2	35	5.00	0.63	18950	79.9	70	10.00	0.63	24.4	89.7
AAC-1	MGRF	2	35	5.00	0.79	23300	79.4	70	10.00	0.79	30.6	89.6
AAC-1	MGRF	2	35	5.00	1.00	28550	79.0	70	10.00	1.00	38.4	89.5
AAC-1	MGRF	2	35	5.00	1.26	34950	78.4	70	10.00	1.26	48.2	89.4
AAC-1	MGRF	2	35	5.00	1.58	42700	77.9	70	10.00	1.58	60.6	89.4
AAC-1	MGRF	2	35	5.00	2.00	52050	77.4	70	10.00	2.00	76.1	89.3
AAC-1	MGRF	2	35	5.00	2.51	63400	76.8	70	10.00	2.51	95.6	89.2
AAC-1	MGRF	2	35	5.00	3.16	77250	76.3	70	10.00	3.16	120.0	89.1
AAC-1	MGRF	2	35	5.00	3.98	93700	75.7	70	10.00	3.98	151.0	88.9
AAC-1	MGRF	2	35	5.00	5.01	113500	75.1	70	10.00	5.01	189.5	88.8
AAC-1	MGRF	2	35	5.00	6.31	138500	74.5	70	10.00	6.31	238.5	88.7
AAC-1	MGRF	2	35	5.00	7.94	167000	73.9	70	10.00	7.94	299.0	88.5
AAC-1	MGRF	2	35	5.00	10.00	201500	73.3	70	10.00	10.00	376.5	88.3
AAC-1	MGRF	2	35	5.00	12.60	243500	72.6	70	10.00	12.60	472.0	88.1
AAC-1	MGRF	2	35	5.00	15.80	293000	71.9	70	9.99	15.80	592.0	87.8
AAC-1	MGRF	2	35	5.00	20.00	353000	71.2	70	10.00	20.00	741.5	87.5
AAC-1	MGRF	2	35	5.00	25.10	423000	70.5	70	10.00	25.10	928.5	87.2
AAC-1	MGRF	2	35	5.01	31.60	507000	69.7	70	10.00	31.60	1165.0	86.8
AAC-1	MGRF	2	35	5.01	39.80	606000	68.9	70	10.00	39.80	1450.0	86.1
AAC-1	MGRF	2	35	5.01	50.10	723500	68.0	70	10.00	50.10	1820.0	85.7
AAC-1	MGRF	2	35	5.01	63.10	862000	67.0	70	10.00	63.10	2265.0	85.2
AAC-1	MGRF	2	35	5.00	79.40	1028000	65.7	70	10.00	79.40	2830.0	84.5
AAC-1	MGRF	2	35	4.99	100.00	1220000	64.9	70	10.00	100.00	3530.0	83.7

Table 26. AAD-2 Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	TANK	1	10	1.10	0.50	199800	66.8	46	35.05	0.50	230.3	87.8
AAD-2	TANK	1	10	1.10	0.63	237300	66.5	46	35.05	0.63	287.7	87.4
AAD-2	TANK	1	10	1.10	0.79	281600	65.9	46	35.05	0.79	360.9	86.9
AAD-2	TANK	1	10	1.10	1.00	334200	65.6	46	35.04	1.00	449.6	86.7
AAD-2	TANK	1	10	1.10	1.26	393800	65.0	46	35.04	1.26	562.3	86.1
AAD-2	TANK	1	10	1.10	1.50	450400	64.6	46	20.92	1.50	667.2	85.7
AAD-2	TANK	1	10	1.10	1.89	531100	64.3	46	20.92	1.89	831.4	85.3
AAD-2	TANK	1	10	1.10	2.38	625600	63.8	46	20.93	2.38	1030.0	84.8
AAD-2	TANK	1	10	1.10	2.99	736000	63.3	46	20.92	2.99	1281.0	84.3
AAD-2	TANK	1	10	1.10	3.77	865500	62.8	46	20.92	3.77	1589.0	83.7
AAD-2	TANK	1	10	1.10	4.74	1016000	62.3	46	20.92	4.74	1966.0	83.2
AAD-2	TANK	1	10	1.10	5.00	1055000	62.1	46	11.81	5.00	2071.0	83.1
AAD-2	TANK	1	10	1.10	6.30	1235000	61.6	46	11.81	6.30	2557.0	82.5
AAD-2	TANK	1	10	1.10	7.92	1446000	61.0	46	11.81	7.92	3154.0	82.0
AAD-2	TANK	1	10	1.10	9.98	1692000	60.4	46	11.81	9.98	3886.0	81.5
AAD-2	TANK	1	10	1.10	12.56	1969000	59.8	46	11.81	12.56	4781.0	81.0
AAD-2	TANK	1	10	1.10	15.00	2220000	59.2	46	4.01	15.00	5607.0	80.7
AAD-2	TANK	1	10	1.10	18.88	2578000	58.6	46	4.01	18.88	6889.0	80.2
AAD-2	TANK	1	10	1.10	23.77	2990000	57.9	46	4.01	23.77	8436.0	79.7
AAD-2	TANK	1	10	1.10	29.93	3453000	57.2	46	4.01	29.93	10320.0	79.2
AAD-2	TANK	1	10	1.10	37.68	3986000	56.5	46	4.01	37.68	12620.0	78.8
AAD-2	TANK	1	10	1.10	47.43	4595000	55.7	46	4.00	47.43	15400.0	78.3
AAD-2	TANK	2	10	0.90	0.50	241200	66.2	46	34.05	0.50	238.1	87.8
AAD-2	TANK	2	10	0.90	0.63	285000	65.7	46	34.05	0.63	298.7	87.7
AAD-2	TANK	2	10	0.90	0.79	338200	65.0	46	34.05	0.79	373.8	86.7
AAD-2	TANK	2	10	0.90	1.00	401000	64.9	46	34.05	1.00	466.7	86.4
AAD-2	TANK	2	10	0.90	1.26	472300	64.4	46	34.05	1.26	581.9	85.8
AAD-2	TANK	2	10	0.90	1.50	542600	64.1	46	20.42	1.50	690.3	85.4
AAD-2	TANK	2	10	0.90	1.89	638600	63.7	46	20.41	1.89	860.2	84.9
AAD-2	TANK	2	10	0.90	2.38	748500	63.4	46	20.42	2.38	1065.0	84.5
AAD-2	TANK	2	10	0.90	2.99	882000	62.8	46	20.42	2.99	1324.0	83.9
AAD-2	TANK	2	10	0.90	3.77	1035000	62.3	46	20.42	3.77	1640.0	83.4
AAD-2	TANK	2	10	0.90	4.74	1215000	61.7	46	20.42	4.74	2027.0	82.9
AAD-2	TANK	2	10	0.90	5.00	1266000	61.5	46	11.71	5.00	2132.0	82.8
AAD-2	TANK	2	10	0.90	6.30	1481000	61.0	46	11.71	6.30	2629.0	82.2
AAD-2	TANK	2	10	0.90	7.92	1731000	60.4	46	11.71	7.92	3239.0	81.6
AAD-2	TANK	2	10	0.90	9.98	2016000	59.8	46	11.70	9.98	3987.0	81.1
AAD-2	TANK	2	10	0.90	12.56	2350000	59.2	46	11.71	12.56	4900.0	80.6
AAD-2	TANK	2	10	0.90	15.00	2643000	58.7	46	4.01	15.00	5748.0	80.3
AAD-2	TANK	2	10	0.90	18.88	3064000	58.0	46	4.01	18.88	7049.0	79.9
AAD-2	TANK	2	10	0.90	23.77	3551000	57.4	46	4.01	23.77	8627.0	79.3
AAD-2	TANK	2	10	0.90	29.93	4100000	56.7	46	4.01	29.93	10540.0	78.8
AAD-2	TANK	2	10	0.90	37.68	4730000	55.9	46	4.00	37.68	12870.0	78.4
AAD-2	TANK	2	10	0.90	47.43	5445000	55.2	46	4.00	47.43	15680.0	78.0
AAD-2	TANK	1	22	11.01	0.50	18970	74.0	58	18.02	0.50	43.9	88.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	TANK	1	22	11.01	0.63	22910	73.5	58	18.02	0.63	56.3	90.4
AAD-2	TANK	1	22	11.01	0.79	27460	73.0	58	18.02	0.79	71.6	89.6
AAD-2	TANK	1	22	11.01	1.00	33150	72.8	58	18.02	1.00	88.0	89.0
AAD-2	TANK	1	22	11.01	1.26	39940	72.2	58	18.02	1.26	112.7	88.9
AAD-2	TANK	1	22	11.01	1.50	46500	72.0	58	13.91	1.50	133.6	88.8
AAD-2	TANK	1	22	11.01	1.89	55600	71.3	58	13.91	1.89	168.2	88.5
AAD-2	TANK	1	22	11.01	2.38	66670	70.8	58	13.91	2.38	211.5	88.4
AAD-2	TANK	1	22	11.01	2.99	79350	70.5	58	13.91	2.99	266.3	88.1
AAD-2	TANK	1	22	11.01	3.77	94710	70.1	58	13.91	3.77	332.8	87.7
AAD-2	TANK	1	22	11.01	4.74	112700	69.7	58	13.91	4.74	417.3	87.3
AAD-2	TANK	1	22	11.01	5.00	118300	69.6	58	10.41	5.00	441.1	87.3
AAD-2	TANK	1	22	11.01	6.30	139800	69.3	58	10.41	6.30	550.8	86.8
AAD-2	TANK	1	22	11.01	7.92	165900	69.0	58	10.41	7.92	688.2	86.4
AAD-2	TANK	1	22	11.01	9.98	196000	68.7	58	10.42	9.98	857.7	85.9
AAD-2	TANK	1	22	11.01	12.56	231600	68.4	58	10.41	12.56	1068.0	85.5
AAD-2	TANK	1	22	11.01	15.00	266600	68.0	58	6.02	15.00	1263.0	85.1
AAD-2	TANK	1	22	11.01	18.88	310000	67.9	58	6.02	18.88	1568.0	84.6
AAD-2	TANK	1	22	11.00	23.77	362200	67.6	58	6.02	23.77	1944.0	84.2
AAD-2	TANK	1	22	11.00	29.93	423300	67.4	58	6.02	29.93	2411.0	83.7
AAD-2	TANK	1	22	10.99	37.68	493000	67.2	58	6.02	37.68	2980.0	83.2
AAD-2	TANK	1	22	10.98	47.43	572300	66.9	58	6.02	47.43	3680.0	82.7
AAD-2	TANK	2	22	9.02	0.50	24320	73.4	58	17.52	0.50	48.7	89.6
AAD-2	TANK	2	22	9.02	0.63	29120	72.5	58	17.52	0.63	60.0	89.3
AAD-2	TANK	2	22	9.02	0.79	34900	72.3	58	17.52	0.79	75.6	89.5
AAD-2	TANK	2	22	9.02	1.00	42020	71.7	58	17.52	1.00	95.7	88.9
AAD-2	TANK	2	22	9.01	1.26	50500	71.1	58	17.52	1.26	119.4	89.0
AAD-2	TANK	2	22	9.01	1.50	58040	71.4	58	11.51	1.50	142.9	88.7
AAD-2	TANK	2	22	9.01	1.89	69290	70.4	58	11.51	1.89	178.2	88.2
AAD-2	TANK	2	22	9.02	2.38	82750	70.1	58	11.51	2.38	223.6	88.2
AAD-2	TANK	2	22	9.01	2.99	98670	69.7	58	11.51	2.99	276.7	88.5
AAD-2	TANK	2	22	9.01	3.77	117500	69.3	58	11.51	3.77	352.9	87.4
AAD-2	TANK	2	22	9.01	4.74	139900	69.0	58	11.51	4.74	442.1	87.1
AAD-2	TANK	2	22	9.01	5.00	146500	68.9	58	7.21	5.00	464.1	86.9
AAD-2	TANK	2	22	9.01	6.30	173100	68.5	58	7.21	6.30	578.4	86.5
AAD-2	TANK	2	22	9.01	7.92	205300	68.2	58	7.21	7.92	722.4	86.1
AAD-2	TANK	2	22	9.01	9.98	242600	67.9	58	7.21	9.98	897.7	85.7
AAD-2	TANK	2	22	9.01	12.56	286500	67.7	58	7.21	12.56	1118.0	85.1
AAD-2	TANK	2	22	9.01	15.00	329500	67.3	58	3.01	15.00	1323.0	84.8
AAD-2	TANK	2	22	9.01	18.88	383900	67.1	58	3.01	18.88	1643.0	84.8
AAD-2	TANK	2	22	9.01	23.77	449700	66.9	58	3.01	23.77	2034.0	83.8
AAD-2	TANK	2	22	9.00	29.93	526200	66.6	58	3.01	29.93	2520.0	83.4
AAD-2	TANK	2	22	9.00	37.68	614300	66.3	58	3.01	37.68	3111.0	83.0
AAD-2	TANK	2	22	8.99	47.43	715300	66.1	58	3.01	47.43	3830.0	82.2
AAD-2	TANK	1	34	10.51	0.50	2013	81.3	70	69.11	0.50	11.6	90.0
AAD-2	TANK	1	34	10.51	0.63	2498	80.7	70	69.11	0.63	14.8	87.9
AAD-2	TANK	1	34	10.51	0.79	3109	80.0	70	69.10	0.79	18.3	89.5
AAD-2	TANK	1	34	10.51	1.00	3776	79.8	70	69.10	1.00	23.2	89.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	TANK	1	34	10.51	1.26	4628	79.2	70	69.10	1.26	29.1	89.7
AAD-2	TANK	1	34	10.50	1.50	5412	79.0	70	38.55	1.50	35.3	89.4
AAD-2	TANK	1	34	10.50	1.89	6618	78.1	70	38.55	1.89	43.9	90.1
AAD-2	TANK	1	34	10.51	2.38	8069	77.5	70	38.56	2.38	56.0	89.5
AAD-2	TANK	1	34	10.51	2.99	9819	77.0	70	38.57	2.99	69.9	88.9
AAD-2	TANK	1	34	10.51	3.77	11930	76.4	70	38.56	3.77	87.9	89.2
AAD-2	TANK	1	34	10.51	4.74	14460	76.0	70	38.57	4.74	110.7	89.2
AAD-2	TANK	1	34	10.51	5.00	15150	75.8	70	20.33	5.00	116.8	89.1
AAD-2	TANK	1	34	10.51	6.30	18390	75.2	70	20.33	6.30	146.3	88.9
AAD-2	TANK	1	34	10.51	7.92	22190	74.9	70	20.33	7.92	184.8	88.8
AAD-2	TANK	1	34	10.51	9.98	26740	74.4	70	20.33	9.98	231.6	88.5
AAD-2	TANK	1	34	10.51	12.56	32210	73.9	70	20.33	12.56	290.9	88.3
AAD-2	TANK	1	34	10.50	15.00	37310	73.6	70	6.02	15.00	345.9	88.1
AAD-2	TANK	1	34	10.50	18.88	44780	73.2	70	6.02	18.88	438.2	86.7
AAD-2	TANK	1	34	10.50	23.77	53490	72.8	70	6.02	23.77	541.9	87.4
AAD-2	TANK	1	34	10.50	29.93	64400	72.5	70	6.02	29.93	678.6	87.0
AAD-2	TANK	1	34	10.49	37.68	77000	72.1	70	6.02	37.68	847.3	86.6
AAD-2	TANK	1	34	10.49	47.43	91980	71.9	70	6.02	47.43	1056.0	86.3
AAD-2	TANK	2	34	8.01	0.50	2666	80.9	70	64.97	0.50	11.9	90.4
AAD-2	TANK	2	34	8.01	0.63	3244	79.8	70	64.97	0.63	15.8	90.1
AAD-2	TANK	2	34	8.01	0.79	3956	79.1	70	64.97	0.79	19.7	90.7
AAD-2	TANK	2	34	8.01	1.00	4871	78.8	70	64.97	1.00	24.9	90.3
AAD-2	TANK	2	34	8.01	1.26	5962	77.9	70	64.96	1.26	31.1	89.5
AAD-2	TANK	2	34	8.01	1.50	6944	78.1	70	31.24	1.50	36.4	89.7
AAD-2	TANK	2	34	8.01	1.89	8441	77.2	70	31.23	1.89	46.5	90.3
AAD-2	TANK	2	34	8.01	2.38	10270	76.7	70	31.25	2.38	58.3	89.3
AAD-2	TANK	2	34	8.01	2.99	12460	76.1	70	31.25	2.99	73.3	89.4
AAD-2	TANK	2	34	8.01	3.77	15090	75.5	70	31.25	3.77	92.0	89.5
AAD-2	TANK	2	34	8.01	4.74	18300	75.0	70	31.25	4.74	115.4	89.4
AAD-2	TANK	2	34	8.01	5.00	19110	74.8	70	14.02	5.00	121.9	90.8
AAD-2	TANK	2	34	8.01	6.30	23070	74.4	70	14.02	6.30	154.5	89.0
AAD-2	TANK	2	34	8.01	7.92	27830	73.9	70	14.02	7.92	193.2	88.7
AAD-2	TANK	2	34	8.01	9.98	33540	73.5	70	14.02	9.98	244.1	88.0
AAD-2	TANK	2	34	8.01	12.56	40340	73.0	70	14.02	12.56	304.4	88.2
AAD-2	TANK	2	34	8.01	15.00	46690	72.7	70	3.01	15.00	364.2	88.4
AAD-2	TANK	2	34	8.01	18.88	55940	72.4	70	3.00	18.88	445.5	86.4
AAD-2	TANK	2	34	8.01	23.77	67050	72.1	70	3.00	23.77	571.1	87.6
AAD-2	TANK	2	34	8.01	29.93	80280	71.5	70	3.01	29.93	712.8	86.8
AAD-2	TANK	2	34	8.00	37.68	95970	71.3	70	3.01	37.68	886.9	86.4
AAD-2	TANK	2	34	8.00	47.43	114600	70.9	70	3.01	47.43	1105.0	86.1

Table 27. AAD-2 RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	RTFOT	1	10	0.35	0.50	636500	58.5	46	9.01	0.50	924.8	81.8
AAD-2	RTFOT	1	10	0.35	0.63	730700	58.4	46	9.01	0.63	1144.0	80.5
AAD-2	RTFOT	1	10	0.35	0.79	854500	57.8	46	9.01	0.79	1404.0	79.9
AAD-2	RTFOT	1	10	0.35	1.00	994200	57.5	46	9.01	1.00	1724.0	79.2
AAD-2	RTFOT	1	10	0.35	1.26	1148000	56.5	46	9.01	1.26	2103.0	78.6
AAD-2	RTFOT	1	10	0.35	1.50	1289000	56.1	46	6.91	1.50	2461.0	78.4
AAD-2	RTFOT	1	10	0.35	1.89	1495000	55.8	46	6.91	1.89	3001.0	77.3
AAD-2	RTFOT	1	10	0.35	2.38	1727000	55.4	46	6.91	2.38	3657.0	76.7
AAD-2	RTFOT	1	10	0.35	2.99	1996000	54.8	46	6.91	2.99	4435.0	76.2
AAD-2	RTFOT	1	10	0.35	3.77	2299000	54.4	46	6.91	3.77	5388.0	75.6
AAD-2	RTFOT	1	10	0.35	4.74	2644000	53.8	46	6.91	4.74	6514.0	75.0
AAD-2	RTFOT	1	10	0.35	5.00	2744000	53.4	46	5.20	5.00	6820.0	74.9
AAD-2	RTFOT	1	10	0.35	6.30	3159000	53.1	46	5.19	6.30	8238.0	74.3
AAD-2	RTFOT	1	10	0.35	7.92	3624000	52.5	46	5.19	7.92	9944.0	73.8
AAD-2	RTFOT	1	10	0.35	9.98	4149000	51.9	46	5.19	9.98	11980.0	73.2
AAD-2	RTFOT	1	10	0.35	12.56	4750000	51.4	46	5.18	12.56	14420.0	72.7
AAD-2	RTFOT	1	10	0.35	15.00	5243000	50.7	46	2.99	15.00	16650.0	72.4
AAD-2	RTFOT	1	10	0.35	18.88	5981000	50.2	46	2.99	18.88	19980.0	72.0
AAD-2	RTFOT	1	10	0.35	23.77	6810000	49.6	46	2.98	23.77	23970.0	71.6
AAD-2	RTFOT	1	10	0.35	29.93	7747000	49.0	46	2.98	29.93	28730.0	71.2
AAD-2	RTFOT	1	10	0.35	37.68	8779000	48.3	46	2.97	37.68	34350.0	70.8
AAD-2	RTFOT	1	10	0.35	47.43	9912000	47.7	46	2.97	47.43	41050.0	70.6
AAD-2	RTFOT	3	10	0.35	0.50	586600	59.4	46	9.01	0.50	930.4	81.2
AAD-2	RTFOT	3	10	0.35	0.63	683400	58.8	46	9.01	0.63	1146.0	80.8
AAD-2	RTFOT	3	10	0.35	0.79	795900	58.5	46	9.01	0.79	1410.0	79.6
AAD-2	RTFOT	3	10	0.35	1.00	923400	58.1	46	9.01	1.00	1731.0	79.1
AAD-2	RTFOT	3	10	0.35	1.26	1075000	57.6	46	9.01	1.26	2111.0	78.3
AAD-2	RTFOT	3	10	0.35	1.50	1206000	57.1	46	7.40	1.50	2469.0	78.2
AAD-2	RTFOT	3	10	0.35	1.89	1394000	56.6	46	7.40	1.89	3009.0	77.2
AAD-2	RTFOT	3	10	0.35	2.38	1615000	56.1	46	7.40	2.38	3662.0	76.6
AAD-2	RTFOT	3	10	0.35	2.99	1859000	55.7	46	7.40	2.99	4446.0	75.9
AAD-2	RTFOT	3	10	0.35	3.77	2150000	55.2	46	7.40	3.77	5387.0	75.3
AAD-2	RTFOT	3	10	0.35	4.74	2471000	54.6	46	7.40	4.74	6523.0	74.7
AAD-2	RTFOT	3	10	0.35	5.00	2564000	54.4	46	6.00	5.00	6815.0	74.6
AAD-2	RTFOT	3	10	0.35	6.30	2944000	53.8	46	6.00	6.30	8226.0	74.1
AAD-2	RTFOT	3	10	0.35	7.92	3381000	53.3	46	6.00	7.92	9922.0	73.6
AAD-2	RTFOT	3	10	0.35	9.98	3876000	52.7	46	5.99	9.98	11940.0	73.0
AAD-2	RTFOT	3	10	0.35	12.56	4433000	52.2	46	5.99	12.56	14380.0	72.6
AAD-2	RTFOT	3	10	0.35	15.00	4920000	51.6	46	3.99	15.00	16580.0	72.2
AAD-2	RTFOT	3	10	0.35	18.88	5610000	51.0	46	3.99	18.88	19880.0	71.8
AAD-2	RTFOT	3	10	0.35	23.77	6382000	50.3	46	3.98	23.77	23840.0	71.4
AAD-2	RTFOT	3	10	0.35	29.93	7238000	49.6	46	3.97	29.93	28520.0	71.0
AAD-2	RTFOT	3	10	0.35	37.68	8225000	49.0	46	3.97	37.68	34130.0	70.7
AAD-2	RTFOT	3	10	0.35	47.43	9300000	48.4	46	3.95	47.43	40810.0	70.4
AAD-2	RTFOT	1	22	3.00	0.50	73750	64.3	58	48.58	0.50	167.8	87.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	RTFOT	1	22	3.00	0.63	85940	64.7	58	48.58	0.63	209.9	86.1
AAD-2	RTFOT	1	22	3.00	0.79	101500	64.1	58	48.57	0.79	261.7	85.7
AAD-2	RTFOT	1	22	3.00	1.00	118800	63.9	58	48.57	1.00	325.2	85.2
AAD-2	RTFOT	1	22	3.00	1.26	139600	63.1	58	48.57	1.26	404.5	84.6
AAD-2	RTFOT	1	22	3.00	1.50	159600	63.1	58	26.73	1.50	478.2	84.1
AAD-2	RTFOT	1	22	3.00	1.89	187200	62.8	58	26.72	1.89	594.9	83.4
AAD-2	RTFOT	1	22	3.00	2.38	219000	62.6	58	26.73	2.38	737.8	83.0
AAD-2	RTFOT	1	22	3.00	2.99	256700	62.2	58	26.73	2.99	909.8	82.2
AAD-2	RTFOT	1	22	3.00	3.77	300800	62.1	58	26.73	3.77	1119.0	81.7
AAD-2	RTFOT	1	22	3.00	4.74	352200	61.7	58	26.73	4.74	1378.0	81.0
AAD-2	RTFOT	1	22	3.00	5.00	365900	61.6	58	13.91	5.00	1449.0	80.8
AAD-2	RTFOT	1	22	3.00	6.30	427100	61.4	58	13.91	6.30	1777.0	80.2
AAD-2	RTFOT	1	22	3.00	7.92	498500	61.1	58	13.91	7.92	2181.0	79.5
AAD-2	RTFOT	1	22	3.00	9.98	581200	60.8	58	13.91	9.98	2666.0	78.9
AAD-2	RTFOT	1	22	3.00	12.56	677500	60.5	58	13.91	12.56	3259.0	78.3
AAD-2	RTFOT	1	22	3.00	15.00	764700	60.2	58	4.01	15.00	3803.0	77.9
AAD-2	RTFOT	1	22	3.00	18.88	887000	60.0	58	4.01	18.88	4639.0	77.4
AAD-2	RTFOT	1	22	3.00	23.77	1029000	59.7	58	4.01	23.77	5641.0	76.8
AAD-2	RTFOT	1	22	3.00	29.93	1193000	59.4	58	4.01	29.93	6849.0	76.3
AAD-2	RTFOT	1	22	3.00	37.68	1381000	59.0	58	4.01	37.68	8305.0	75.8
AAD-2	RTFOT	1	22	3.00	47.43	1597000	58.7	58	4.00	47.43	10060.0	75.4
AAD-2	RTFOT	3	22	3.21	0.50	65650	65.2	58	48.07	0.50	171.7	86.8
AAD-2	RTFOT	3	22	3.20	0.63	76650	64.9	58	48.07	0.63	215.2	86.2
AAD-2	RTFOT	3	22	3.20	0.79	90670	64.5	58	48.07	0.79	267.6	85.6
AAD-2	RTFOT	3	22	3.20	1.00	106400	64.3	58	48.07	1.00	332.7	85.1
AAD-2	RTFOT	3	22	3.20	1.26	125600	64.0	58	48.07	1.26	413.9	84.5
AAD-2	RTFOT	3	22	3.20	1.50	144400	63.5	58	24.83	1.50	487.4	84.0
AAD-2	RTFOT	3	22	3.20	1.89	168900	63.4	58	24.83	1.89	603.2	83.4
AAD-2	RTFOT	3	22	3.20	2.38	198400	63.1	58	24.84	2.38	745.3	82.8
AAD-2	RTFOT	3	22	3.20	2.99	233000	62.8	58	24.84	2.99	922.1	82.2
AAD-2	RTFOT	3	22	3.20	3.77	272200	62.5	58	24.84	3.77	1135.0	81.5
AAD-2	RTFOT	3	22	3.20	4.74	319400	62.2	58	24.83	4.74	1397.0	80.8
AAD-2	RTFOT	3	22	3.20	5.00	332000	62.1	58	12.01	5.00	1466.0	80.6
AAD-2	RTFOT	3	22	3.20	6.30	387900	61.9	58	12.01	6.30	1807.0	79.9
AAD-2	RTFOT	3	22	3.20	7.92	453500	61.6	58	12.01	7.92	2212.0	79.4
AAD-2	RTFOT	3	22	3.20	9.98	529400	61.3	58	12.01	9.98	2705.0	78.7
AAD-2	RTFOT	3	22	3.20	12.56	617500	61.0	58	12.01	12.56	3304.0	78.2
AAD-2	RTFOT	3	22	3.20	15.00	698300	60.7	58	3.01	15.00	3837.0	77.8
AAD-2	RTFOT	3	22	3.20	18.88	811200	60.4	58	3.00	18.88	4700.0	77.3
AAD-2	RTFOT	3	22	3.20	23.77	941600	60.0	58	3.00	23.77	5716.0	76.7
AAD-2	RTFOT	3	22	3.20	29.93	1089000	59.9	58	3.00	29.93	6934.0	76.2
AAD-2	RTFOT	3	22	3.20	37.68	1260000	59.5	58	3.00	37.68	8409.0	75.7
AAD-2	RTFOT	3	22	3.19	47.43	1457000	59.2	58	3.00	47.43	10180.0	75.2
AAD-2	RTFOT	1	34	2.40	0.50	8907	72.2	70	21.03	0.50	37.4	86.3
AAD-2	RTFOT	1	34	2.40	0.63	10630	71.7	70	21.03	0.63	46.9	88.5
AAD-2	RTFOT	1	34	2.40	0.79	12790	70.9	70	21.03	0.79	59.1	89.6
AAD-2	RTFOT	1	34	2.40	1.00	15300	70.5	70	21.03	1.00	75.6	89.2

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	RTFOT	1	34	2.40	1.26	18220	69.8	70	21.03	1.26	93.3	88.2
AAD-2	RTFOT	1	34	2.40	1.50	21010	69.5	70	13.22	1.50	112.4	88.0
AAD-2	RTFOT	1	34	2.40	1.89	25010	68.9	70	13.22	1.89	138.7	87.2
AAD-2	RTFOT	1	34	2.40	2.38	29920	68.2	70	13.22	2.38	175.9	87.2
AAD-2	RTFOT	1	34	2.40	2.99	35480	68.0	70	13.23	2.99	219.1	86.7
AAD-2	RTFOT	1	34	2.40	3.77	42200	67.4	70	13.22	3.77	274.5	86.1
AAD-2	RTFOT	1	34	2.40	4.74	50020	67.1	70	13.22	4.74	342.4	85.9
AAD-2	RTFOT	1	34	2.40	5.00	51930	67.0	70	7.91	5.00	359.8	85.6
AAD-2	RTFOT	1	34	2.40	6.30	61330	66.8	70	7.91	6.30	446.8	85.0
AAD-2	RTFOT	1	34	2.40	7.92	72770	66.4	70	7.91	7.92	555.7	84.5
AAD-2	RTFOT	1	34	2.40	9.98	86220	66.0	70	7.91	9.98	689.5	83.8
AAD-2	RTFOT	1	34	2.40	12.56	101900	65.7	70	7.91	12.56	853.8	83.3
AAD-2	RTFOT	1	34	2.41	15.00	116100	65.5	70	3.00	15.00	1004.0	82.8
AAD-2	RTFOT	1	34	2.41	18.88	137300	65.2	70	3.01	18.88	1235.0	82.5
AAD-2	RTFOT	1	34	2.41	23.77	162000	65.1	70	3.01	23.77	1524.0	81.8
AAD-2	RTFOT	1	34	2.40	29.93	191100	64.7	70	3.01	29.93	1884.0	81.3
AAD-2	RTFOT	1	34	2.41	37.68	225100	64.5	70	3.01	37.68	2313.0	80.5
AAD-2	RTFOT	1	34	2.41	47.43	265100	64.3	70	3.01	47.43	2838.0	80.0
AAD-2	RTFOT	3	34	2.60	0.50	7987	72.8	70	21.03	0.50	38.2	89.3
AAD-2	RTFOT	3	34	2.60	0.63	9519	72.0	70	21.03	0.63	46.7	88.2
AAD-2	RTFOT	3	34	2.60	0.79	11540	71.4	70	21.03	0.79	59.5	89.7
AAD-2	RTFOT	3	34	2.60	1.00	13630	71.0	70	21.03	1.00	76.5	88.0
AAD-2	RTFOT	3	34	2.60	1.26	16320	70.5	70	21.03	1.26	94.1	88.1
AAD-2	RTFOT	3	34	2.60	1.50	19130	69.7	70	13.22	1.50	112.8	88.3
AAD-2	RTFOT	3	34	2.60	1.89	22860	69.5	70	13.22	1.89	140.4	87.5
AAD-2	RTFOT	3	34	2.60	2.38	27290	69.0	70	13.22	2.38	175.4	87.1
AAD-2	RTFOT	3	34	2.60	2.99	32360	68.5	70	13.22	2.99	220.1	86.8
AAD-2	RTFOT	3	34	2.60	3.77	38570	67.9	70	13.22	3.77	274.3	86.4
AAD-2	RTFOT	3	34	2.60	4.74	45760	67.7	70	13.22	4.74	342.6	85.8
AAD-2	RTFOT	3	34	2.60	5.00	46980	67.8	70	7.91	5.00	360.7	85.4
AAD-2	RTFOT	3	34	2.60	6.30	55790	67.3	70	7.91	6.30	448.0	85.0
AAD-2	RTFOT	3	34	2.60	7.92	66110	66.9	70	7.91	7.92	557.9	84.5
AAD-2	RTFOT	3	34	2.60	9.98	78230	66.6	70	7.91	9.98	692.0	83.9
AAD-2	RTFOT	3	34	2.60	12.56	92590	66.3	70	7.92	12.56	855.9	83.3
AAD-2	RTFOT	3	34	2.60	15.00	105100	66.1	70	3.00	15.00	1006.0	83.0
AAD-2	RTFOT	3	34	2.60	18.88	124000	65.8	70	3.00	18.88	1249.0	82.4
AAD-2	RTFOT	3	34	2.60	23.77	146900	65.4	70	3.00	23.77	1537.0	81.8
AAD-2	RTFOT	3	34	2.60	29.93	173300	65.3	70	3.01	29.93	1891.0	81.2
AAD-2	RTFOT	3	34	2.60	37.68	204400	65.0	70	3.01	37.68	2318.0	80.5
AAD-2	RTFOT	3	34	2.60	47.43	241000	64.8	70	3.01	47.43	2846.0	80.0

Table 28. AAD-2 SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	SAFT	1	10	0.50	0.50	508400	60.5	46	10.99	0.50	734.8	81.5
AAD-2	SAFT	1	10	0.50	0.63	596800	59.6	46	10.99	0.63	910.5	80.6
AAD-2	SAFT	1	10	0.50	0.79	692100	59.2	46	10.99	0.79	1111.0	79.7
AAD-2	SAFT	1	10	0.50	1.00	807000	58.6	46	10.99	1.00	1366.0	79.2
AAD-2	SAFT	1	10	0.50	1.26	938900	58.2	46	10.99	1.26	1672.0	78.5
AAD-2	SAFT	1	10	0.50	1.50	1046000	58.6	46	10.99	1.50	1953.0	78.3
AAD-2	SAFT	1	10	0.50	1.89	1219000	57.6	46	10.99	1.89	2381.0	77.3
AAD-2	SAFT	1	10	0.50	2.38	1413000	57.2	46	10.99	2.38	2898.0	76.8
AAD-2	SAFT	1	10	0.50	2.99	1639000	56.7	46	10.99	2.99	3521.0	76.1
AAD-2	SAFT	1	10	0.50	3.77	1896000	56.3	46	10.99	3.77	4270.0	75.5
AAD-2	SAFT	1	10	0.50	4.74	2190000	55.8	46	10.98	4.74	5168.0	74.9
AAD-2	SAFT	1	10	0.50	5.00	2268000	55.8	46	10.98	5.00	5408.0	74.7
AAD-2	SAFT	1	10	0.50	6.30	2610000	55.2	46	10.98	6.30	6529.0	74.2
AAD-2	SAFT	1	10	0.50	7.92	3006000	54.7	46	10.98	7.92	7878.0	73.7
AAD-2	SAFT	1	10	0.50	9.98	3454000	54.2	46	10.97	9.98	9481.0	73.1
AAD-2	SAFT	1	10	0.50	12.56	3965000	53.6	46	10.96	12.56	11410.0	72.6
AAD-2	SAFT	1	10	0.50	15.00	4410000	53.2	46	10.96	15.00	13150.0	72.2
AAD-2	SAFT	1	10	0.50	18.88	5042000	52.6	46	10.94	18.88	15780.0	71.8
AAD-2	SAFT	1	10	0.50	23.77	5767000	52.0	46	10.93	23.77	18920.0	71.4
AAD-2	SAFT	1	10	0.50	29.93	6574000	51.5	46	10.91	29.93	22650.0	71.0
AAD-2	SAFT	1	10	0.50	37.68	7485000	50.8	46	10.89	37.68	27080.0	70.7
AAD-2	SAFT	1	10	0.50	47.43	8511000	50.2	46	10.85	47.43	32370.0	70.4
AAD-2	SAFT	2	10	0.55	0.50	468900	59.6	46	10.99	0.50	734.4	81.7
AAD-2	SAFT	2	10	0.55	0.63	546200	59.2	46	10.99	0.63	908.4	80.7
AAD-2	SAFT	2	10	0.55	0.79	636300	59.1	46	10.99	0.79	1110.0	80.0
AAD-2	SAFT	2	10	0.55	1.00	741800	58.8	46	10.99	1.00	1365.0	79.2
AAD-2	SAFT	2	10	0.55	1.26	859400	58.3	46	10.99	1.26	1672.0	78.6
AAD-2	SAFT	2	10	0.55	1.50	962700	58.6	46	10.99	1.50	1958.0	78.4
AAD-2	SAFT	2	10	0.55	1.89	1119000	57.5	46	10.99	1.89	2387.0	77.5
AAD-2	SAFT	2	10	0.55	2.38	1298000	57.1	46	10.99	2.38	2901.0	76.8
AAD-2	SAFT	2	10	0.55	2.99	1503000	56.7	46	10.99	2.99	3525.0	76.3
AAD-2	SAFT	2	10	0.55	3.77	1739000	56.4	46	10.99	3.77	4278.0	75.6
AAD-2	SAFT	2	10	0.55	4.74	2007000	55.8	46	10.98	4.74	5181.0	75.1
AAD-2	SAFT	2	10	0.55	5.00	2075000	55.7	46	10.98	5.00	5421.0	74.9
AAD-2	SAFT	2	10	0.55	6.30	2386000	55.2	46	10.98	6.30	6553.0	74.3
AAD-2	SAFT	2	10	0.55	7.92	2749000	54.7	46	10.98	7.92	7905.0	73.9
AAD-2	SAFT	2	10	0.55	9.98	3158000	54.2	46	10.97	9.98	9520.0	73.3
AAD-2	SAFT	2	10	0.55	12.56	3629000	53.6	46	10.96	12.56	11460.0	72.8
AAD-2	SAFT	2	10	0.55	15.00	4039000	53.2	46	10.96	15.00	13220.0	72.4
AAD-2	SAFT	2	10	0.55	18.88	4625000	52.6	46	10.95	18.88	15870.0	72.0
AAD-2	SAFT	2	10	0.55	23.77	5282000	52.0	46	10.93	23.77	19030.0	71.5
AAD-2	SAFT	2	10	0.54	29.93	6019000	51.4	46	10.91	29.93	22800.0	71.2
AAD-2	SAFT	2	10	0.54	37.68	6852000	50.7	46	10.89	37.68	27270.0	70.8
AAD-2	SAFT	2	10	0.54	47.43	7791000	50.1	46	10.86	47.43	32580.0	70.5
AAD-2	SAFT	1	22	4.50	0.50	57830	66.3	58	59.04	0.50	136.4	86.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	SAFT	1	22	4.50	0.63	68280	65.3	58	59.04	0.63	171.4	86.3
AAD-2	SAFT	1	22	4.50	0.79	80030	64.9	58	59.04	0.79	213.9	85.5
AAD-2	SAFT	1	22	4.50	1.00	94590	64.4	58	59.04	1.00	266.4	85.0
AAD-2	SAFT	1	22	4.50	1.26	111700	64.1	58	59.03	1.26	331.3	84.7
AAD-2	SAFT	1	22	4.50	1.50	126100	64.3	58	55.62	1.50	391.7	84.2
AAD-2	SAFT	1	22	4.50	1.89	148500	63.6	58	55.61	1.89	485.3	83.5
AAD-2	SAFT	1	22	4.50	2.38	174600	63.2	58	55.63	2.38	600.3	82.9
AAD-2	SAFT	1	22	4.50	2.99	204600	63.0	58	55.63	2.99	740.1	82.3
AAD-2	SAFT	1	22	4.50	3.77	240000	62.8	58	55.63	3.77	913.0	81.6
AAD-2	SAFT	1	22	4.50	4.74	281200	62.6	58	55.63	4.74	1122.0	81.1
AAD-2	SAFT	1	22	4.50	5.00	292700	62.4	58	52.13	5.00	1178.0	80.9
AAD-2	SAFT	1	22	4.50	6.30	341600	62.2	58	52.13	6.30	1443.0	80.3
AAD-2	SAFT	1	22	4.50	7.92	399500	62.0	58	52.13	7.92	1766.0	79.7
AAD-2	SAFT	1	22	4.50	9.98	465900	61.8	58	52.12	9.98	2155.0	79.1
AAD-2	SAFT	1	22	4.50	12.56	543500	61.6	58	52.11	12.56	2629.0	78.6
AAD-2	SAFT	1	22	4.50	15.00	620100	61.2	58	46.00	15.00	3072.0	78.1
AAD-2	SAFT	1	22	4.50	18.88	715500	61.1	58	46.00	18.88	3730.0	77.5
AAD-2	SAFT	1	22	4.50	23.77	827600	60.9	58	45.98	23.77	4527.0	77.0
AAD-2	SAFT	1	22	4.49	29.93	957500	60.7	58	45.95	29.93	5477.0	76.5
AAD-2	SAFT	1	22	4.49	37.68	1107000	60.5	58	45.92	37.68	6613.0	76.1
AAD-2	SAFT	1	22	4.49	47.43	1280000	60.2	58	45.86	47.43	7967.0	75.6
AAD-2	SAFT	2	22	4.80	0.50	53070	65.6	58	58.05	0.50	136.2	87.0
AAD-2	SAFT	2	22	4.80	0.63	62820	65.1	58	58.05	0.63	170.3	86.5
AAD-2	SAFT	2	22	4.80	0.79	74430	64.8	58	58.05	0.79	212.2	85.7
AAD-2	SAFT	2	22	4.80	1.00	87160	64.5	58	58.04	1.00	264.9	85.4
AAD-2	SAFT	2	22	4.80	1.26	102800	64.2	58	58.04	1.26	330.6	84.8
AAD-2	SAFT	2	22	4.80	1.50	116400	64.3	58	55.24	1.50	390.6	84.4
AAD-2	SAFT	2	22	4.80	1.89	137100	63.5	58	55.23	1.89	484.3	83.7
AAD-2	SAFT	2	22	4.80	2.38	161000	63.3	58	55.25	2.38	598.5	83.1
AAD-2	SAFT	2	22	4.80	2.99	188800	63.1	58	55.25	2.99	738.8	82.5
AAD-2	SAFT	2	22	4.80	3.77	221200	62.8	58	55.25	3.77	910.7	81.9
AAD-2	SAFT	2	22	4.80	4.74	259100	62.6	58	55.25	4.74	1120.0	81.3
AAD-2	SAFT	2	22	4.80	5.00	269900	62.5	58	52.34	5.00	1177.0	81.1
AAD-2	SAFT	2	22	4.80	6.30	314600	62.3	58	52.34	6.30	1443.0	80.5
AAD-2	SAFT	2	22	4.80	7.92	368200	62.0	58	52.34	7.92	1768.0	79.9
AAD-2	SAFT	2	22	4.80	9.98	429000	61.8	58	52.33	9.98	2158.0	79.3
AAD-2	SAFT	2	22	4.80	12.56	500700	61.6	58	52.33	12.56	2633.0	78.8
AAD-2	SAFT	2	22	4.80	15.00	568700	61.3	58	47.21	15.00	3081.0	78.3
AAD-2	SAFT	2	22	4.80	18.88	658700	61.1	58	47.20	18.88	3743.0	77.8
AAD-2	SAFT	2	22	4.80	23.77	763500	60.9	58	47.18	23.77	4543.0	77.3
AAD-2	SAFT	2	22	4.79	29.93	885100	60.7	58	47.15	29.93	5501.0	76.8
AAD-2	SAFT	2	22	4.79	37.68	1025000	60.5	58	47.12	37.68	6645.0	76.3
AAD-2	SAFT	2	22	4.78	47.43	1185000	60.2	58	47.06	47.43	8007.0	75.9
AAD-2	SAFT	1	34	3.70	0.50	6921	73.1	70	26.01	0.50	31.8	88.0
AAD-2	SAFT	1	34	3.70	0.63	8384	72.4	70	26.01	0.63	39.8	88.6
AAD-2	SAFT	1	34	3.70	0.79	10080	72.0	70	26.00	0.79	49.5	89.5
AAD-2	SAFT	1	34	3.70	1.00	12120	71.5	70	26.00	1.00	62.8	88.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	SAFT	1	34	3.70	1.26	14480	70.6	70	26.00	1.26	77.8	87.9
AAD-2	SAFT	1	34	3.70	1.50	16570	70.7	70	26.00	1.50	93.4	88.3
AAD-2	SAFT	1	34	3.70	1.89	19860	69.6	70	26.00	1.89	116.9	87.7
AAD-2	SAFT	1	34	3.70	2.38	23650	69.2	70	26.01	2.38	146.2	87.0
AAD-2	SAFT	1	34	3.70	2.99	28080	68.5	70	26.01	2.99	182.9	86.7
AAD-2	SAFT	1	34	3.70	3.77	33520	68.2	70	26.01	3.77	228.8	86.1
AAD-2	SAFT	1	34	3.70	4.74	39770	67.6	70	26.01	4.74	280.0	85.6
AAD-2	SAFT	1	34	3.70	5.00	41150	67.7	70	26.01	5.00	299.3	85.7
AAD-2	SAFT	1	34	3.70	6.30	48890	67.5	70	26.01	6.30	373.0	85.0
AAD-2	SAFT	1	34	3.70	7.92	58200	67.2	70	26.01	7.92	463.4	84.4
AAD-2	SAFT	1	34	3.70	9.98	69200	66.8	70	26.01	9.98	573.8	83.8
AAD-2	SAFT	1	34	3.70	12.56	82040	66.1	70	26.01	12.56	711.1	83.2
AAD-2	SAFT	1	34	3.70	15.00	93870	66.3	70	26.00	15.00	837.4	82.8
AAD-2	SAFT	1	34	3.70	18.88	111200	66.1	70	26.01	18.88	1033.0	82.3
AAD-2	SAFT	1	34	3.70	23.77	130200	65.8	70	26.01	23.77	1273.0	81.6
AAD-2	SAFT	1	34	3.70	29.93	154400	65.6	70	26.00	29.93	1565.0	81.0
AAD-2	SAFT	1	34	3.70	37.68	182300	65.4	70	25.99	37.68	1922.0	80.4
AAD-2	SAFT	1	34	3.70	47.43	215000	65.2	70	25.97	47.43	2354.0	79.9
AAD-2	SAFT	2	34	4.00	0.50	6435	73.5	70	26.01	0.50	31.9	88.0
AAD-2	SAFT	2	34	4.00	0.63	7675	72.4	70	26.01	0.63	38.3	89.7
AAD-2	SAFT	2	34	4.00	0.79	9229	72.0	70	26.01	0.79	50.0	89.1
AAD-2	SAFT	2	34	4.00	1.00	11110	71.4	70	26.00	1.00	62.6	88.3
AAD-2	SAFT	2	34	4.00	1.26	13310	70.8	70	26.00	1.26	78.7	88.5
AAD-2	SAFT	2	34	4.00	1.50	15270	70.8	70	26.00	1.50	92.9	88.2
AAD-2	SAFT	2	34	4.00	1.89	18270	70.0	70	26.00	1.89	117.4	87.5
AAD-2	SAFT	2	34	4.00	2.38	21840	69.5	70	26.01	2.38	147.0	87.3
AAD-2	SAFT	2	34	4.00	2.99	25980	68.8	70	26.01	2.99	184.0	86.7
AAD-2	SAFT	2	34	4.00	3.77	30880	68.5	70	26.01	3.77	229.9	86.2
AAD-2	SAFT	2	34	4.00	4.74	36840	68.2	70	26.01	4.74	286.6	85.7
AAD-2	SAFT	2	34	4.00	5.00	38300	68.1	70	26.01	5.00	301.0	85.5
AAD-2	SAFT	2	34	4.00	6.30	45530	67.6	70	26.01	6.30	375.4	85.0
AAD-2	SAFT	2	34	4.00	7.92	53940	67.3	70	26.01	7.92	466.5	84.5
AAD-2	SAFT	2	34	4.00	9.98	63920	66.9	70	26.01	9.98	578.3	83.9
AAD-2	SAFT	2	34	4.00	12.56	75770	66.7	70	26.01	12.56	715.9	83.3
AAD-2	SAFT	2	34	4.00	15.00	86630	66.4	70	26.01	15.00	839.6	82.7
AAD-2	SAFT	2	34	4.00	18.88	102400	66.2	70	26.01	18.88	1042.0	82.2
AAD-2	SAFT	2	34	4.00	23.77	120700	65.9	70	26.00	23.77	1284.0	81.6
AAD-2	SAFT	2	34	4.00	29.93	142400	65.7	70	26.00	29.93	1577.0	81.1
AAD-2	SAFT	2	34	4.00	37.68	167900	65.6	70	25.99	37.68	1936.0	80.5
AAD-2	SAFT	2	34	4.00	47.43	198100	65.4	70	25.97	47.43	2372.0	80.0

Table 29. AAD-2 MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	MGRF	1	10	1.00	0.10	159000	62.9	46	9.94	0.10	194.5	86.3
AAD-2	MGRF	1	10	1.00	0.13	224500	62.2	46	10.00	0.13	243.0	85.8
AAD-2	MGRF	1	10	1.00	0.16	282500	61.5	46	10.00	0.16	303.0	85.2
AAD-2	MGRF	1	10	1.00	0.20	342500	61.1	46	10.00	0.20	377.5	84.6
AAD-2	MGRF	1	10	1.00	0.25	408500	60.6	46	10.00	0.25	468.5	83.9
AAD-2	MGRF	1	10	1.00	0.32	483000	60.1	46	10.00	0.32	581.5	83.3
AAD-2	MGRF	1	10	1.00	0.40	568000	59.7	46	10.00	0.40	719.5	82.6
AAD-2	MGRF	1	10	1.00	0.50	665500	59.3	46	10.10	0.50	888.5	81.9
AAD-2	MGRF	1	10	1.00	0.63	777500	58.9	46	10.10	0.63	1095.0	81.2
AAD-2	MGRF	1	10	1.00	0.79	907000	58.5	46	10.10	0.79	1345.0	80.5
AAD-2	MGRF	1	10	1.00	1.00	1055000	58.1	46	10.00	1.00	1655.0	79.9
AAD-2	MGRF	1	10	1.00	1.26	1225000	57.6	46	10.00	1.26	2025.0	79.2
AAD-2	MGRF	1	10	1.00	1.58	1425000	57.2	46	10.00	1.58	2480.0	78.5
AAD-2	MGRF	1	10	1.00	2.00	1650000	56.7	46	10.00	2.00	3025.0	77.8
AAD-2	MGRF	1	10	1.00	2.51	1905000	56.2	46	10.00	2.51	3685.0	77.2
AAD-2	MGRF	1	10	1.00	3.16	2200000	55.7	46	10.00	3.16	4480.0	76.6
AAD-2	MGRF	1	10	1.00	3.98	2535000	55.2	46	10.00	3.98	5440.0	75.9
AAD-2	MGRF	1	10	1.00	5.01	2920000	54.7	46	10.00	5.01	6595.0	75.3
AAD-2	MGRF	1	10	1.00	6.31	3360000	54.1	46	10.00	6.31	7985.0	74.8
AAD-2	MGRF	1	10	1.00	7.94	3855000	53.5	46	10.00	7.94	9645.0	74.2
AAD-2	MGRF	1	10	1.00	10.00	4415000	53.0	46	10.00	10.00	11650.0	73.6
AAD-2	MGRF	1	10	1.00	12.60	5045000	52.4	46	10.00	12.60	14050.0	73.1
AAD-2	MGRF	1	10	1.00	15.80	5750000	51.8	46	9.97	15.80	16850.0	72.6
AAD-2	MGRF	1	10	1.00	20.00	6545000	51.1	46	10.00	20.00	20250.0	72.2
AAD-2	MGRF	1	10	1.00	25.10	7425000	50.5	46	9.98	25.10	24250.0	71.7
AAD-2	MGRF	1	10	0.99	31.60	8420000	49.8	46	10.00	31.60	29100.0	71.3
AAD-2	MGRF	1	10	0.99	39.80	9625000	49.2	46	10.00	39.80	34800.0	71.0
AAD-2	MGRF	1	10	0.99	50.10	10850000	48.6	46	10.00	50.10	41550.0	70.6
AAD-2	MGRF	1	10	0.99	63.10	12300000	47.9	46	10.00	63.10	49600.0	70.3
AAD-2	MGRF	1	10	0.99	79.40	13800000	47.2	46	10.00	79.40	59100.0	70.1
AAD-2	MGRF	1	10	0.99	100.00	15500000	46.2	46	10.00	100.00	70350.0	69.9
AAD-2	MGRF	2	10	5.00	0.10	144500	63.3	46	10.00	0.10	229.0	85.7
AAD-2	MGRF	2	10	5.00	0.13	211000	62.5	46	10.00	0.13	284.5	85.2
AAD-2	MGRF	2	10	5.00	0.16	268000	61.8	46	10.00	0.16	353.0	84.5
AAD-2	MGRF	2	10	5.00	0.20	325000	61.4	46	10.00	0.20	437.5	84.0
AAD-2	MGRF	2	10	5.00	0.25	386500	60.9	46	10.00	0.25	541.5	83.2
AAD-2	MGRF	2	10	5.00	0.32	456000	60.5	46	10.00	0.32	669.5	82.5
AAD-2	MGRF	2	10	5.00	0.40	533500	60.1	46	10.00	0.40	826.0	81.8
AAD-2	MGRF	2	10	5.00	0.50	623000	59.8	46	10.00	0.50	1018.5	81.1
AAD-2	MGRF	2	10	5.00	0.63	724500	59.4	46	10.00	0.63	1250.0	80.5
AAD-2	MGRF	2	10	5.00	0.79	841000	59.1	46	10.00	0.79	1530.0	79.8
AAD-2	MGRF	2	10	5.00	1.00	972500	58.8	46	10.00	1.00	1875.0	79.1
AAD-2	MGRF	2	10	5.00	1.26	1125000	58.4	46	10.00	1.26	2295.0	78.4
AAD-2	MGRF	2	10	5.00	1.58	1295000	58.1	46	10.00	1.58	2795.0	77.8
AAD-2	MGRF	2	10	5.00	2.00	1490000	57.7	46	10.00	2.00	3405.0	77.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	MGRF	2	10	5.00	2.51	1710000	57.4	46	10.00	2.51	4135.0	76.4
AAD-2	MGRF	2	10	5.00	3.16	1965000	57.0	46	10.00	3.16	5025.0	75.8
AAD-2	MGRF	2	10	5.00	3.98	2240000	56.7	46	10.00	3.98	6075.0	75.2
AAD-2	MGRF	2	10	5.00	5.01	2560000	56.4	46	10.00	5.01	7360.0	74.6
AAD-2	MGRF	2	10	4.99	6.31	2920000	56.0	46	10.00	6.31	8910.0	74.0
AAD-2	MGRF	2	10	5.00	7.94	3315000	55.7	46	10.00	7.94	10700.0	73.4
AAD-2	MGRF	2	10	5.00	10.00	3755000	55.4	46	10.00	10.00	12900.0	72.9
AAD-2	MGRF	2	10	5.00	12.60	4240000	55.0	46	10.00	12.60	15550.0	72.4
AAD-2	MGRF	2	10	5.00	15.80	4775000	54.7	46	10.00	15.80	18650.0	71.9
AAD-2	MGRF	2	10	5.00	20.00	5360000	54.4	46	10.00	20.00	22350.0	71.4
AAD-2	MGRF	2	10	4.99	25.10	6000000	54.0	46	10.00	25.10	26550.0	71.0
AAD-2	MGRF	2	10	4.99	31.60	6685000	53.6	46	9.95	31.60	31650.0	70.5
AAD-2	MGRF	2	10	4.98	39.80	7425000	53.3	46	9.96	39.80	38250.0	70.2
AAD-2	MGRF	2	10	4.97	50.10	8200000	52.8	46	9.96	50.10	45700.0	69.8
AAD-2	MGRF	2	10	4.98	63.10	9010000	52.3	46	9.95	63.10	54400.0	69.5
AAD-2	MGRF	2	10	5.01	79.40	9835000	51.9	46	9.95	79.40	64800.0	69.2
AAD-2	MGRF	2	10	5.01	100.00	9945000	52.8	46	9.94	100.00	77050.0	68.9
AAD-2	MGRF	1	25	1.00	0.10	10200	68.3	58	9.97	0.10	31.1	89.2
AAD-2	MGRF	1	25	1.00	0.13	13050	67.6	58	10.00	0.13	39.1	89.1
AAD-2	MGRF	1	25	1.00	0.16	15900	67.2	58	10.05	0.16	49.3	88.9
AAD-2	MGRF	1	25	1.00	0.20	19200	67.0	58	10.00	0.20	61.9	88.6
AAD-2	MGRF	1	25	1.00	0.25	22950	66.7	58	10.00	0.25	77.9	88.4
AAD-2	MGRF	1	25	1.00	0.32	27300	66.5	58	10.00	0.32	97.8	88.0
AAD-2	MGRF	1	25	1.00	0.40	32400	66.2	58	10.00	0.40	123.0	87.7
AAD-2	MGRF	1	25	1.00	0.50	38500	65.9	58	10.00	0.50	153.5	87.2
AAD-2	MGRF	1	25	1.00	0.63	45600	65.7	58	10.00	0.63	192.5	86.8
AAD-2	MGRF	1	25	1.00	0.79	53900	65.5	58	10.00	0.79	240.5	86.3
AAD-2	MGRF	1	25	1.00	1.00	63750	65.2	58	10.00	1.00	299.5	85.8
AAD-2	MGRF	1	25	1.00	1.26	75250	64.9	58	10.00	1.26	373.5	85.2
AAD-2	MGRF	1	25	1.00	1.58	88800	64.7	58	10.00	1.58	465.0	84.6
AAD-2	MGRF	1	25	1.00	2.00	104500	64.4	58	10.00	2.00	577.0	84.0
AAD-2	MGRF	1	25	1.00	2.51	123000	64.2	58	10.00	2.51	715.0	83.4
AAD-2	MGRF	1	25	1.00	3.16	145500	63.9	58	10.00	3.16	884.5	82.7
AAD-2	MGRF	1	25	1.00	3.98	170500	63.7	58	10.00	3.98	1095.0	82.1
AAD-2	MGRF	1	25	1.00	5.01	201000	63.5	58	10.00	5.01	1345.0	81.5
AAD-2	MGRF	1	25	1.00	6.31	237000	63.2	58	10.00	6.31	1655.0	80.9
AAD-2	MGRF	1	25	1.00	7.94	278000	63.0	58	10.00	7.94	2035.0	80.3
AAD-2	MGRF	1	25	1.00	10.00	326500	62.7	58	10.00	10.00	2495.0	79.7
AAD-2	MGRF	1	25	1.00	12.60	383000	62.4	58	10.00	12.60	3050.0	79.1
AAD-2	MGRF	1	25	1.00	15.80	449000	62.0	58	9.86	15.80	3730.0	78.5
AAD-2	MGRF	1	25	1.00	20.00	527500	61.8	58	10.00	20.00	4550.0	78.0
AAD-2	MGRF	1	25	1.00	25.10	619000	61.4	58	10.00	25.10	5535.0	77.5
AAD-2	MGRF	1	25	1.00	31.60	725000	61.1	58	10.00	31.60	6730.0	77.0
AAD-2	MGRF	1	25	1.00	39.80	849500	60.7	58	10.00	39.80	8165.0	76.6
AAD-2	MGRF	1	25	1.00	50.10	993000	60.2	58	10.00	50.10	9885.0	76.2
AAD-2	MGRF	1	25	1.00	63.10	1160000	59.7	58	10.00	63.10	11950.0	75.9
AAD-2	MGRF	1	25	1.00	79.40	1365000	59.1	58	10.00	79.40	14450.0	75.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	MGRF	1	25	1.00	100.00	1590000	58.3	58	10.00	100.00	17400.0	75.6
AAD-2	MGRF	2	25	5.00	0.10	10065	71.3	58	10.00	0.10	33.8	89.3
AAD-2	MGRF	2	25	5.00	0.13	12750	70.6	58	10.00	0.13	42.5	89.1
AAD-2	MGRF	2	25	5.00	0.16	15550	69.8	58	10.00	0.16	53.4	88.8
AAD-2	MGRF	2	25	5.00	0.20	18800	69.3	58	10.00	0.20	67.1	88.6
AAD-2	MGRF	2	25	5.00	0.25	22500	68.7	58	10.00	0.25	84.2	88.2
AAD-2	MGRF	2	25	5.00	0.32	26850	68.1	58	10.00	0.32	105.5	87.7
AAD-2	MGRF	2	25	5.00	0.40	32000	67.6	58	10.00	0.40	132.5	87.3
AAD-2	MGRF	2	25	5.00	0.50	38000	67.1	58	10.00	0.50	165.5	86.9
AAD-2	MGRF	2	25	5.00	0.63	45050	66.7	58	10.00	0.63	206.5	86.4
AAD-2	MGRF	2	25	5.00	0.79	53300	66.3	58	10.00	0.79	258.0	85.9
AAD-2	MGRF	2	25	5.00	1.00	63050	65.9	58	10.00	1.00	321.0	85.4
AAD-2	MGRF	2	25	5.00	1.26	74450	65.5	58	10.00	1.26	399.5	84.7
AAD-2	MGRF	2	25	5.00	1.58	87800	65.2	58	10.00	1.58	495.5	84.1
AAD-2	MGRF	2	25	5.00	2.00	103500	64.9	58	10.00	2.00	614.0	83.5
AAD-2	MGRF	2	25	5.00	2.51	122000	64.5	58	10.00	2.51	759.0	82.8
AAD-2	MGRF	2	25	5.00	3.16	143500	64.2	58	10.00	3.16	938.5	82.2
AAD-2	MGRF	2	25	5.00	3.98	168000	63.9	58	10.00	3.98	1155.0	81.5
AAD-2	MGRF	2	25	5.00	5.01	198000	63.7	58	10.00	5.01	1425.0	80.9
AAD-2	MGRF	2	25	5.00	6.31	233000	63.4	58	10.00	6.31	1755.0	80.2
AAD-2	MGRF	2	25	5.00	7.94	273000	63.2	58	10.00	7.94	2145.0	79.6
AAD-2	MGRF	2	25	5.00	10.00	320000	62.9	58	10.00	10.00	2625.0	79.0
AAD-2	MGRF	2	25	5.01	12.60	374000	62.6	58	10.00	12.60	3215.0	78.3
AAD-2	MGRF	2	25	5.01	15.80	436500	62.2	58	10.00	15.80	3925.0	77.7
AAD-2	MGRF	2	25	5.01	20.00	511000	62.0	58	10.00	20.00	4775.0	77.1
AAD-2	MGRF	2	25	5.01	25.10	596000	61.8	58	10.00	25.10	5805.0	76.5
AAD-2	MGRF	2	25	5.01	31.60	693500	61.5	58	10.00	31.60	7025.0	75.7
AAD-2	MGRF	2	25	5.01	39.80	805000	61.2	58	10.10	39.80	8440.0	74.4
AAD-2	MGRF	2	25	5.01	50.10	932500	60.9	58	10.05	50.10	10200.0	73.3
AAD-2	MGRF	2	25	5.01	63.10	1075000	60.5	58	10.05	63.10	12350.0	71.9
AAD-2	MGRF	2	25	5.01	79.40	1240000	60.0	58	10.00	79.40	15050.0	70.8
AAD-2	MGRF	2	25	5.00	100.00	1435000	59.1	58	9.97	100.00	18250.0	69.6
AAD-2	MGRF	1	35	1.00	0.10	1400	79.2	70	9.99	0.10	6.7	89.4
AAD-2	MGRF	1	35	1.00	0.13	1825	76.9	70	10.00	0.13	8.4	89.5
AAD-2	MGRF	1	35	1.00	0.16	2315	74.5	70	10.00	0.16	10.6	89.4
AAD-2	MGRF	1	35	1.00	0.20	2875	72.9	70	10.00	0.20	13.3	89.6
AAD-2	MGRF	1	35	1.00	0.25	3520	71.6	70	10.00	0.25	16.7	89.4
AAD-2	MGRF	1	35	1.00	0.32	4270	70.7	70	10.00	0.32	21.0	89.4
AAD-2	MGRF	1	35	1.00	0.40	5150	70.2	70	10.00	0.40	26.5	89.3
AAD-2	MGRF	1	35	1.00	0.50	6190	69.9	70	10.00	0.50	33.3	89.2
AAD-2	MGRF	1	35	1.00	0.63	7420	69.7	70	10.00	0.63	41.8	89.1
AAD-2	MGRF	1	35	1.00	0.79	8880	69.5	70	10.00	0.79	52.6	88.9
AAD-2	MGRF	1	35	1.00	1.00	10600	69.4	70	10.00	1.00	66.1	88.7
AAD-2	MGRF	1	35	1.00	1.26	12650	69.1	70	10.00	1.26	83.0	88.5
AAD-2	MGRF	1	35	1.00	1.58	15100	68.9	70	10.00	1.58	104.0	88.2
AAD-2	MGRF	1	35	1.00	2.00	18050	68.7	70	10.00	2.00	131.0	87.9
AAD-2	MGRF	1	35	1.00	2.51	21500	68.4	70	10.00	2.51	163.5	87.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAD-2	MGRF	1	35	1.00	3.16	25600	68.2	70	10.00	3.16	204.5	87.1
AAD-2	MGRF	1	35	1.00	3.98	30400	67.8	70	10.00	3.98	256.5	86.7
AAD-2	MGRF	1	35	1.00	5.01	36200	67.6	70	10.00	5.01	319.5	86.3
AAD-2	MGRF	1	35	1.00	6.31	43100	67.3	70	10.00	6.31	399.0	85.8
AAD-2	MGRF	1	35	1.00	7.94	51100	67.0	70	10.00	7.94	496.5	85.3
AAD-2	MGRF	1	35	1.00	10.00	60650	66.6	70	10.00	10.00	617.0	84.9
AAD-2	MGRF	1	35	1.00	12.60	72050	66.3	70	10.00	12.60	765.5	84.4
AAD-2	MGRF	1	35	1.00	15.80	85500	66.0	70	9.99	15.80	947.5	83.9
AAD-2	MGRF	1	35	1.00	20.00	101450	65.6	70	10.00	20.00	1170.0	83.5
AAD-2	MGRF	1	35	1.00	25.10	120000	65.2	70	10.00	25.10	1445.0	83.2
AAD-2	MGRF	1	35	1.00	31.60	142500	64.7	70	10.00	31.60	1775.0	82.9
AAD-2	MGRF	1	35	1.00	39.80	169000	64.1	70	10.00	39.80	2185.0	82.7
AAD-2	MGRF	1	35	1.00	50.10	201000	63.4	70	10.00	50.10	2675.0	82.7
AAD-2	MGRF	1	35	1.00	63.10	238500	62.6	70	10.00	63.10	3280.0	82.9
AAD-2	MGRF	1	35	1.00	79.40	284000	61.5	70	10.00	79.40	4005.0	83.2
AAD-2	MGRF	1	35	1.00	100.00	339000	60.2	70	10.00	100.00	4890.0	84.0
AAD-2	MGRF	2	35	5.00	0.10	1505	79.4	70	10.00	0.10	6.7	89.4
AAD-2	MGRF	2	35	5.00	0.13	1895	78.2	70	10.00	0.13	8.4	89.8
AAD-2	MGRF	2	35	5.00	0.16	2345	77.1	70	10.00	0.16	10.5	89.9
AAD-2	MGRF	2	35	5.00	0.20	2885	76.3	70	10.00	0.20	13.2	90.0
AAD-2	MGRF	2	35	5.00	0.25	3515	75.5	70	10.00	0.25	16.5	89.8
AAD-2	MGRF	2	35	5.00	0.32	4270	74.8	70	10.00	0.32	20.7	89.6
AAD-2	MGRF	2	35	5.00	0.40	5170	74.2	70	10.00	0.40	26.0	89.5
AAD-2	MGRF	2	35	5.00	0.50	6240	73.6	70	10.00	0.50	32.7	89.4
AAD-2	MGRF	2	35	5.00	0.63	7510	73.1	70	10.00	0.63	41.1	89.2
AAD-2	MGRF	2	35	5.00	0.79	9025	72.5	70	10.00	0.79	51.6	89.1
AAD-2	MGRF	2	35	5.00	1.00	10850	72.0	70	10.00	1.00	64.8	88.8
AAD-2	MGRF	2	35	5.00	1.26	13000	71.4	70	10.00	1.26	81.3	88.5
AAD-2	MGRF	2	35	5.00	1.58	15500	70.9	70	10.00	1.58	102.0	88.2
AAD-2	MGRF	2	35	5.00	2.00	18550	70.4	70	10.00	2.00	127.5	87.8
AAD-2	MGRF	2	35	5.00	2.51	22150	69.8	70	10.00	2.51	160.0	87.3
AAD-2	MGRF	2	35	5.00	3.16	26400	69.3	70	10.00	3.16	200.0	86.9
AAD-2	MGRF	2	35	5.00	3.98	31400	68.8	70	10.00	3.98	249.5	86.4
AAD-2	MGRF	2	35	5.00	5.01	37350	68.4	70	10.00	5.01	312.0	85.8
AAD-2	MGRF	2	35	5.00	6.31	44500	68.0	70	10.00	6.31	389.5	85.3
AAD-2	MGRF	2	35	5.00	7.94	52850	67.5	70	10.00	7.94	484.0	84.7
AAD-2	MGRF	2	35	5.01	10.00	62650	66.9	70	10.00	10.00	602.0	84.1
AAD-2	MGRF	2	35	5.00	12.60	74350	66.6	70	10.00	12.60	747.0	83.4
AAD-2	MGRF	2	35	5.00	15.80	88150	66.2	70	10.00	15.80	924.5	82.8
AAD-2	MGRF	2	35	5.00	20.00	104500	65.8	70	10.00	20.00	1145.0	82.1
AAD-2	MGRF	2	35	5.00	25.10	124000	65.3	70	10.00	25.10	1410.0	81.4
AAD-2	MGRF	2	35	5.01	31.60	146000	64.7	70	10.00	31.60	1740.0	80.7
AAD-2	MGRF	2	35	5.01	39.80	173500	64.1	70	10.00	39.80	2135.0	80.0
AAD-2	MGRF	2	35	5.00	50.10	205000	63.4	70	10.00	50.10	2625.0	79.0
AAD-2	MGRF	2	35	4.99	63.10	243500	62.5	70	9.97	63.10	3220.0	78.3
AAD-2	MGRF	2	35	4.99	79.40	288500	61.3	70	9.98	79.40	3945.0	77.5
AAD-2	MGRF	2	35	4.99	100.00	343000	59.9	70	9.98	100.00	4825.0	76.7

Table 30. AAF-1 Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	TANK	1	10	0.06	0.50	4314000	58.8	46	10.01	0.50	882.7	88.7
AAF-1	TANK	1	10	0.06	0.63	5010000	57.1	46	10.01	0.63	1103.0	88.5
AAF-1	TANK	1	10	0.06	0.79	5742000	55.9	46	10.01	0.79	1378.0	88.1
AAF-1	TANK	1	10	0.06	1.00	6630000	54.3	46	10.01	1.00	1733.0	88.0
AAF-1	TANK	1	10	0.06	1.26	7612000	53.1	46	10.01	1.26	2169.0	87.9
AAF-1	TANK	1	10	0.06	1.50	8440000	52.8	46	10.01	1.50	2567.0	87.7
AAF-1	TANK	1	10	0.06	1.89	9588000	50.9	46	10.01	1.89	3206.0	87.4
AAF-1	TANK	1	10	0.06	2.38	10930000	49.6	46	10.01	2.38	4013.0	87.2
AAF-1	TANK	1	10	0.06	2.99	12330000	48.6	46	10.01	2.99	5016.0	86.9
AAF-1	TANK	1	10	0.06	3.77	13940000	47.6	46	10.01	3.77	6261.0	86.7
AAF-1	TANK	1	10	0.06	4.74	15550000	46.2	46	10.01	4.74	7818.0	86.4
AAF-1	TANK	1	10	0.06	5.00	16020000	45.9	46	10.01	5.00	8235.0	86.4
AAF-1	TANK	1	10	0.06	6.30	18070000	44.5	46	10.01	6.30	10260.0	86.1
AAF-1	TANK	1	10	0.06	7.92	20150000	43.6	46	10.00	7.92	12780.0	85.8
AAF-1	TANK	1	10	0.06	9.98	22420000	42.4	46	10.00	9.98	15900.0	85.4
AAF-1	TANK	1	10	0.06	12.56	24940000	41.7	46	10.00	12.56	19790.0	85.1
AAF-1	TANK	1	10	0.06	15.00	27060000	41.2	46	9.99	15.00	23460.0	84.8
AAF-1	TANK	1	10	0.06	18.88	29720000	39.6	46	9.99	18.88	29080.0	84.5
AAF-1	TANK	1	10	0.06	23.77	32990000	39.0	46	9.97	23.77	36060.0	84.1
AAF-1	TANK	1	10	0.06	29.93	36150000	37.7	46	9.95	29.93	44660.0	83.7
AAF-1	TANK	1	10	0.06	37.68	39740000	36.9	46	9.92	37.68	55200.0	83.3
AAF-1	TANK	1	10	0.05	47.43	43680000	35.9	46	9.88	47.43	68180.0	82.9
AAF-1	TANK	2	10	0.05	0.50	4289000	55.8	46	9.01	0.50	942.0	88.9
AAF-1	TANK	2	10	0.05	0.63	5000000	54.4	46	9.01	0.63	1187.0	88.6
AAF-1	TANK	2	10	0.05	0.79	5732000	53.3	46	9.01	0.79	1481.0	88.4
AAF-1	TANK	2	10	0.05	1.00	6576000	51.7	46	9.01	1.00	1864.0	88.2
AAF-1	TANK	2	10	0.05	1.26	7499000	50.7	46	9.01	1.26	2332.0	87.9
AAF-1	TANK	2	10	0.05	1.50	8361000	49.3	46	5.20	1.50	2795.0	88.0
AAF-1	TANK	2	10	0.05	1.89	9483000	48.2	46	5.20	1.89	3484.0	87.7
AAF-1	TANK	2	10	0.05	2.38	10780000	46.9	46	5.20	2.38	4363.0	87.4
AAF-1	TANK	2	10	0.05	2.99	12180000	45.9	46	5.20	2.99	5460.0	87.3
AAF-1	TANK	2	10	0.05	3.77	13610000	44.2	46	5.20	3.77	6828.0	86.9
AAF-1	TANK	2	10	0.05	4.74	15290000	43.2	46	5.20	4.74	8523.0	86.7
AAF-1	TANK	2	10	0.05	5.00	15760000	42.6	46	2.80	5.00	8991.0	86.6
AAF-1	TANK	2	10	0.05	6.30	17940000	41.8	46	2.80	6.30	11210.0	86.4
AAF-1	TANK	2	10	0.05	7.92	19640000	40.6	46	2.80	7.92	13980.0	86.1
AAF-1	TANK	2	10	0.05	9.98	21910000	38.9	46	2.80	9.98	17410.0	85.8
AAF-1	TANK	2	10	0.05	12.56	24190000	38.8	46	2.80	12.56	21680.0	85.4
AAF-1	TANK	2	10	0.05	15.00	26160000	37.1	46	0.89	15.00	25740.0	85.3
AAF-1	TANK	2	10	0.05	18.88	28860000	36.2	46	0.89	18.88	32000.0	85.0
AAF-1	TANK	2	10	0.05	23.77	31620000	35.0	46	0.89	23.77	39950.0	84.6
AAF-1	TANK	2	10	0.05	29.93	34770000	33.8	46	0.89	29.93	49340.0	84.2
AAF-1	TANK	2	10	0.05	37.68	38060000	33.0	46	0.89	37.68	61030.0	84.0
AAF-1	TANK	2	10	0.05	47.43	41570000	32.1	46	0.89	47.43	75580.0	83.6
AAF-1	TANK	1	22	0.70	0.50	324700	74.1	58	64.97	0.50	127.0	89.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	TANK	1	22	0.70	0.63	392800	73.4	58	64.97	0.63	160.8	89.9
AAF-1	TANK	1	22	0.70	0.79	471500	72.5	58	64.97	0.79	201.9	89.6
AAF-1	TANK	1	22	0.70	1.00	568200	71.4	58	64.96	1.00	254.3	89.7
AAF-1	TANK	1	22	0.70	1.26	684800	70.7	58	64.96	1.26	319.0	89.5
AAF-1	TANK	1	22	0.70	1.50	781700	70.5	58	22.13	1.50	376.6	89.6
AAF-1	TANK	1	22	0.70	1.89	936700	69.0	58	22.12	1.89	473.1	89.6
AAF-1	TANK	1	22	0.70	2.38	1119000	68.0	58	22.13	2.38	592.2	89.3
AAF-1	TANK	1	22	0.70	2.99	1331000	67.0	58	22.13	2.99	747.6	89.1
AAF-1	TANK	1	22	0.70	3.77	1578000	65.9	58	22.13	3.77	935.8	88.9
AAF-1	TANK	1	22	0.70	4.74	1865000	64.9	58	22.13	4.74	1179.0	88.9
AAF-1	TANK	1	22	0.70	5.00	1940000	64.5	58	6.72	5.00	1244.0	88.7
AAF-1	TANK	1	22	0.70	6.30	2281000	63.5	58	6.72	6.30	1565.0	88.8
AAF-1	TANK	1	22	0.70	7.92	2683000	62.4	58	6.72	7.92	1955.0	88.7
AAF-1	TANK	1	22	0.70	9.98	3138000	61.2	58	6.72	9.98	2457.0	88.3
AAF-1	TANK	1	22	0.70	12.56	3663000	60.0	58	6.72	12.56	3078.0	88.2
AAF-1	TANK	1	22	0.69	15.00	4123000	59.1	58	52.07	15.00	3667.0	88.1
AAF-1	TANK	1	22	0.69	18.88	4775000	58.0	58	52.06	18.88	4580.0	87.9
AAF-1	TANK	1	22	0.69	23.77	5521000	56.8	58	52.05	23.77	5718.0	87.7
AAF-1	TANK	1	22	0.69	29.93	6371000	55.6	58	52.03	29.93	7130.0	87.5
AAF-1	TANK	1	22	0.69	37.68	7311000	54.5	58	52.00	37.68	8874.0	87.3
AAF-1	TANK	1	22	0.68	47.43	8372000	53.4	58	51.94	47.43	11020.0	87.1
AAF-1	TANK	2	22	0.65	0.50	341100	73.5	58	57.09	0.50	142.0	89.5
AAF-1	TANK	2	22	0.65	0.63	411300	72.8	58	57.09	0.63	178.4	89.8
AAF-1	TANK	2	22	0.65	0.79	498200	71.9	58	57.09	0.79	223.7	89.6
AAF-1	TANK	2	22	0.65	1.00	597300	71.2	58	57.09	1.00	282.0	89.4
AAF-1	TANK	2	22	0.65	1.26	715000	70.2	58	57.08	1.26	354.8	89.4
AAF-1	TANK	2	22	0.65	1.50	819100	69.8	58	30.24	1.50	421.7	89.3
AAF-1	TANK	2	22	0.65	1.89	983000	68.4	58	30.24	1.89	530.1	89.3
AAF-1	TANK	2	22	0.65	2.38	1171000	67.3	58	30.25	2.38	664.8	89.1
AAF-1	TANK	2	22	0.65	2.99	1390000	66.3	58	30.25	2.99	836.2	89.0
AAF-1	TANK	2	22	0.65	3.77	1650000	65.2	58	30.25	3.77	1049.0	88.9
AAF-1	TANK	2	22	0.65	4.74	1946000	64.1	58	30.25	4.74	1315.0	88.8
AAF-1	TANK	2	22	0.65	5.00	2021000	63.8	58	15.12	5.00	1388.0	88.7
AAF-1	TANK	2	22	0.65	6.30	2377000	62.6	58	15.12	6.30	1742.0	88.6
AAF-1	TANK	2	22	0.65	7.92	2789000	61.6	58	15.12	7.92	2184.0	88.4
AAF-1	TANK	2	22	0.65	9.98	3259000	60.4	58	15.12	9.98	2738.0	88.3
AAF-1	TANK	2	22	0.65	12.56	3799000	59.2	58	15.12	12.56	3433.0	88.1
AAF-1	TANK	2	22	0.64	15.00	4276000	58.3	58	4.01	15.00	4100.0	88.1
AAF-1	TANK	2	22	0.64	18.88	4950000	57.1	58	4.01	18.88	5123.0	87.8
AAF-1	TANK	2	22	0.64	23.77	5716000	55.9	58	4.01	23.77	6419.0	87.6
AAF-1	TANK	2	22	0.64	29.93	6577000	54.8	58	4.01	29.93	8027.0	87.4
AAF-1	TANK	2	22	0.64	37.68	7548000	53.7	58	4.01	37.68	10030.0	87.2
AAF-1	TANK	2	22	0.64	47.43	8632000	52.5	58	4.01	47.43	12520.0	87.0
AAF-1	TANK	1	34	1.20	0.50	18330	82.3	70	300.10	0.50	27.0	89.8
AAF-1	TANK	1	34	1.20	0.63	22430	82.1	70	300.10	0.63	33.9	89.8
AAF-1	TANK	1	34	1.20	0.79	27710	81.4	70	300.10	0.79	42.8	89.8
AAF-1	TANK	1	34	1.20	1.00	34200	81.2	70	300.10	1.00	53.6	89.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	TANK	1	34	1.20	1.26	42240	81.1	70	300.10	1.26	67.4	89.9
AAF-1	TANK	1	34	1.20	1.50	49660	80.9	70	212.00	1.50	80.2	89.9
AAF-1	TANK	1	34	1.20	1.89	60890	80.2	70	211.90	1.89	100.8	89.8
AAF-1	TANK	1	34	1.20	2.38	74880	79.7	70	212.00	2.38	127.3	89.8
AAF-1	TANK	1	34	1.20	2.99	91740	79.2	70	212.00	2.99	159.9	89.8
AAF-1	TANK	1	34	1.20	3.77	112700	78.8	70	212.00	3.77	201.0	89.8
AAF-1	TANK	1	34	1.20	4.74	137600	78.2	70	212.00	4.74	252.8	89.7
AAF-1	TANK	1	34	1.20	5.00	144000	78.0	70	144.90	5.00	266.7	89.7
AAF-1	TANK	1	34	1.20	6.30	175900	77.5	70	144.90	6.30	335.3	89.6
AAF-1	TANK	1	34	1.20	7.92	214500	76.9	70	144.80	7.92	421.5	89.6
AAF-1	TANK	1	34	1.20	9.98	260800	76.2	70	144.80	9.98	529.3	89.6
AAF-1	TANK	1	34	1.20	12.56	317100	75.5	70	144.80	12.56	665.3	89.5
AAF-1	TANK	1	34	1.20	15.00	370100	75.0	70	70.01	15.00	795.4	89.4
AAF-1	TANK	1	34	1.20	18.88	445400	74.2	70	70.01	18.88	998.7	89.3
AAF-1	TANK	1	34	1.20	23.77	537500	73.4	70	69.99	23.77	1254.0	89.2
AAF-1	TANK	1	34	1.20	29.93	649000	72.6	70	69.98	29.93	1572.0	89.1
AAF-1	TANK	1	34	1.20	37.68	780000	71.7	70	69.95	37.68	1970.0	89.0
AAF-1	TANK	1	34	1.20	47.43	935600	70.8	70	69.89	47.43	2470.0	88.9
AAF-1	TANK	2	34	1.10	0.50	19620	81.9	70	28.54	0.50	28.9	91.7
AAF-1	TANK	2	34	1.10	0.63	24290	81.5	70	28.54	0.63	35.3	91.2
AAF-1	TANK	2	34	1.10	0.79	30010	81.5	70	28.54	0.79	45.9	89.8
AAF-1	TANK	2	34	1.10	1.00	37000	80.8	70	28.54	1.00	56.1	90.3
AAF-1	TANK	2	34	1.10	1.26	45580	80.7	70	28.53	1.26	70.3	89.6
AAF-1	TANK	2	34	1.10	1.50	53550	80.6	70	17.82	1.50	84.5	89.8
AAF-1	TANK	2	34	1.10	1.89	65720	79.9	70	17.82	1.89	106.9	89.9
AAF-1	TANK	2	34	1.10	2.38	80740	79.5	70	17.82	2.38	133.8	89.7
AAF-1	TANK	2	34	1.10	2.99	99200	79.1	70	17.82	2.99	170.2	89.8
AAF-1	TANK	2	34	1.10	3.77	121600	78.5	70	17.82	3.77	213.7	89.8
AAF-1	TANK	2	34	1.10	4.74	148400	77.9	70	17.82	4.74	269.0	89.7
AAF-1	TANK	2	34	1.10	5.00	155600	77.7	70	10.72	5.00	284.1	89.9
AAF-1	TANK	2	34	1.10	6.30	189800	77.1	70	10.72	6.30	356.4	89.7
AAF-1	TANK	2	34	1.10	7.92	231400	76.4	70	10.72	7.92	448.2	89.6
AAF-1	TANK	2	34	1.10	9.98	280600	75.8	70	10.73	9.98	563.1	89.5
AAF-1	TANK	2	34	1.10	12.56	340700	75.0	70	10.72	12.56	709.6	89.4
AAF-1	TANK	2	34	1.10	15.00	395700	74.4	70	4.01	15.00	847.8	89.5
AAF-1	TANK	2	34	1.10	18.88	478100	73.7	70	4.02	18.88	1063.0	89.4
AAF-1	TANK	2	34	1.10	23.77	576800	72.8	70	4.01	23.77	1337.0	89.2
AAF-1	TANK	2	34	1.10	29.93	695100	72.0	70	4.01	29.93	1677.0	89.1
AAF-1	TANK	2	34	1.10	37.68	834700	71.1	70	4.02	37.68	2102.0	89.0
AAF-1	TANK	2	34	1.10	47.43	1002000	70.2	70	4.02	47.43	2637.0	88.8

Table 31. AAF-1 RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	RTFOT	1	10	0.02	0.50	9184000	48.1	46	2.49	0.50	3415.0	86.4
AAF-1	RTFOT	1	10	0.02	0.63	10390000	47.0	46	2.49	0.63	4263.0	86.2
AAF-1	RTFOT	1	10	0.02	0.79	11610000	45.9	46	2.49	0.79	5314.0	85.7
AAF-1	RTFOT	1	10	0.02	1.00	13020000	44.6	46	2.49	1.00	6601.0	85.3
AAF-1	RTFOT	1	10	0.02	1.26	14570000	43.5	46	2.49	1.26	8246.0	85.0
AAF-1	RTFOT	1	10	0.02	1.50	16030000	42.8	46	1.50	1.50	9783.0	84.8
AAF-1	RTFOT	1	10	0.02	1.89	17800000	41.8	46	1.50	1.89	12170.0	84.3
AAF-1	RTFOT	1	10	0.02	2.38	19590000	41.6	46	1.50	2.38	15060.0	83.8
AAF-1	RTFOT	1	10	0.02	2.99	21590000	39.8	46	1.50	2.99	18660.0	83.4
AAF-1	RTFOT	1	10	0.02	3.77	24090000	38.8	46	1.50	3.77	23100.0	82.9
AAF-1	RTFOT	1	10	0.02	4.74	26390000	38.1	46	1.50	4.74	28470.0	82.4
AAF-1	RTFOT	1	10	0.02	5.00	26660000	37.0	46	0.89	5.00	29910.0	82.4
AAF-1	RTFOT	1	10	0.02	6.30	29710000	37.0	46	0.88	6.30	36920.0	82.0
AAF-1	RTFOT	1	10	0.02	7.92	32420000	35.9	46	0.88	7.92	45460.0	81.3
AAF-1	RTFOT	1	10	0.02	9.98	35670000	35.7	46	0.88	9.98	55850.0	80.9
AAF-1	RTFOT	1	10	0.02	12.56	38770000	34.0	46	0.88	12.56	68320.0	80.3
AAF-1	RTFOT	1	10	0.02	15.00	41270000	33.2	46	0.29	15.00	80820.0	80.2
AAF-1	RTFOT	1	10	0.02	18.88	45220000	33.1	46	0.29	18.88	99290.0	80.0
AAF-1	RTFOT	1	10	0.02	23.77	49030000	32.3	46	0.29	23.77	119900.0	79.2
AAF-1	RTFOT	1	10	0.02	29.93	52950000	31.4	46	0.28	29.93	149100.0	78.7
AAF-1	RTFOT	1	10	0.02	37.68	57190000	30.8	46	0.28	37.68	180300.0	78.4
AAF-1	RTFOT	1	10	0.02	47.43	62650000	28.3	46	0.28	47.43	220300.0	77.3
AAF-1	RTFOT	2	10	0.02	0.50	9414000	48.5	46	2.10	0.50	3937.0	86.3
AAF-1	RTFOT	2	10	0.02	0.63	10670000	47.0	46	2.10	0.63	4927.0	85.9
AAF-1	RTFOT	2	10	0.02	0.79	12040000	46.0	46	2.10	0.79	6129.0	85.3
AAF-1	RTFOT	2	10	0.02	1.00	13510000	45.0	46	2.10	1.00	7604.0	84.8
AAF-1	RTFOT	2	10	0.02	1.26	15120000	44.0	46	2.09	1.26	9439.0	84.5
AAF-1	RTFOT	2	10	0.02	1.50	16580000	43.2	46	1.19	1.50	11150.0	84.3
AAF-1	RTFOT	2	10	0.02	1.89	18430000	42.3	46	1.19	1.89	13770.0	83.9
AAF-1	RTFOT	2	10	0.02	2.38	20440000	41.9	46	1.19	2.38	17070.0	83.5
AAF-1	RTFOT	2	10	0.02	2.99	22530000	40.4	46	1.19	2.99	21080.0	82.9
AAF-1	RTFOT	2	10	0.02	3.77	24940000	39.1	46	1.19	3.77	26070.0	82.4
AAF-1	RTFOT	2	10	0.02	4.74	27400000	39.1	46	1.19	4.74	32100.0	81.9
AAF-1	RTFOT	2	10	0.02	5.00	28270000	38.3	46	0.60	5.00	33880.0	82.2
AAF-1	RTFOT	2	10	0.02	6.30	30780000	36.6	46	0.60	6.30	41730.0	81.6
AAF-1	RTFOT	2	10	0.02	7.92	33930000	37.2	46	0.59	7.92	51340.0	80.9
AAF-1	RTFOT	2	10	0.02	9.98	37350000	36.7	46	0.59	9.98	63130.0	80.5
AAF-1	RTFOT	2	10	0.02	12.56	41000000	34.7	46	0.59	12.56	77360.0	79.9
AAF-1	RTFOT	2	10	0.02	15.00	43130000	34.3	46	0.20	15.00	91270.0	80.4
AAF-1	RTFOT	2	10	0.02	18.88	46980000	33.5	46	0.20	18.88	112600.0	79.1
AAF-1	RTFOT	2	10	0.02	23.77	50380000	32.6	46	0.20	23.77	136300.0	78.4
AAF-1	RTFOT	2	10	0.02	29.93	55140000	32.1	46	0.19	29.93	167500.0	78.4
AAF-1	RTFOT	2	10	0.02	37.68	59580000	31.8	46	0.19	37.68	204400.0	77.5
AAF-1	RTFOT	2	10	0.02	47.43	65180000	29.8	46	0.19	47.43	250800.0	77.0
AAF-1	RTFOT	1	22	0.22	0.50	966000	64.6	58	19.03	0.50	424.1	89.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	RTFOT	1	22	0.22	0.63	1132000	64.1	58	19.03	0.63	534.4	88.7
AAF-1	RTFOT	1	22	0.22	0.79	1332000	62.7	58	19.03	0.79	665.4	88.7
AAF-1	RTFOT	1	22	0.22	1.00	1565000	62.1	58	19.03	1.00	836.2	88.4
AAF-1	RTFOT	1	22	0.22	1.26	1826000	61.0	58	19.03	1.26	1049.0	88.4
AAF-1	RTFOT	1	22	0.22	1.50	2062000	60.0	58	13.11	1.50	1245.0	88.1
AAF-1	RTFOT	1	22	0.22	1.89	2396000	58.8	58	13.11	1.89	1563.0	87.8
AAF-1	RTFOT	1	22	0.22	2.38	2770000	58.0	58	13.12	2.38	1954.0	87.6
AAF-1	RTFOT	1	22	0.22	2.99	3214000	57.0	58	13.11	2.99	2444.0	87.2
AAF-1	RTFOT	1	22	0.22	3.77	3703000	55.8	58	13.12	3.77	3059.0	87.1
AAF-1	RTFOT	1	22	0.22	4.74	4271000	54.6	58	13.11	4.74	3819.0	86.8
AAF-1	RTFOT	1	22	0.22	5.00	4420000	54.4	58	8.72	5.00	4026.0	86.7
AAF-1	RTFOT	1	22	0.22	6.30	5060000	53.3	58	8.72	6.30	5024.0	86.4
AAF-1	RTFOT	1	22	0.22	7.92	5778000	52.4	58	8.72	7.92	6265.0	86.0
AAF-1	RTFOT	1	22	0.22	9.98	6601000	51.2	58	8.72	9.98	7805.0	85.7
AAF-1	RTFOT	1	22	0.22	12.56	7496000	50.2	58	8.72	12.56	9727.0	85.4
AAF-1	RTFOT	1	22	0.22	15.00	8266000	49.5	58	4.01	15.00	11540.0	85.1
AAF-1	RTFOT	1	22	0.22	18.88	9346000	48.3	58	4.01	18.88	14330.0	84.8
AAF-1	RTFOT	1	22	0.21	23.77	10580000	47.4	58	4.01	23.77	17790.0	84.3
AAF-1	RTFOT	1	22	0.21	29.93	11890000	46.3	58	4.01	29.93	22050.0	83.9
AAF-1	RTFOT	1	22	0.21	37.68	13320000	45.3	58	4.00	37.68	27290.0	83.5
AAF-1	RTFOT	1	22	0.21	47.43	14940000	44.5	58	4.00	47.43	33770.0	83.1
AAF-1	RTFOT	2	22	0.21	0.50	1017000	64.9	58	17.32	0.50	463.2	89.0
AAF-1	RTFOT	2	22	0.21	0.63	1205000	63.8	58	17.32	0.63	580.6	89.0
AAF-1	RTFOT	2	22	0.21	0.79	1407000	62.7	58	17.32	0.79	731.1	88.6
AAF-1	RTFOT	2	22	0.21	1.00	1651000	61.8	58	17.32	1.00	919.7	88.3
AAF-1	RTFOT	2	22	0.21	1.26	1934000	60.8	58	17.32	1.26	1153.0	88.2
AAF-1	RTFOT	2	22	0.21	1.50	2178000	59.8	58	12.91	1.50	1372.0	87.9
AAF-1	RTFOT	2	22	0.21	1.89	2532000	58.8	58	12.91	1.89	1714.0	87.6
AAF-1	RTFOT	2	22	0.21	2.38	2932000	57.7	58	12.92	2.38	2146.0	87.4
AAF-1	RTFOT	2	22	0.21	2.99	3391000	56.6	58	12.91	2.99	2682.0	87.0
AAF-1	RTFOT	2	22	0.21	3.77	3900000	55.6	58	12.92	3.77	3354.0	86.8
AAF-1	RTFOT	2	22	0.21	4.74	4483000	54.6	58	12.91	4.74	4186.0	86.5
AAF-1	RTFOT	2	22	0.21	5.00	4651000	54.3	58	9.32	5.00	4395.0	86.4
AAF-1	RTFOT	2	22	0.21	6.30	5313000	53.4	58	9.32	6.30	5482.0	86.1
AAF-1	RTFOT	2	22	0.21	7.92	6078000	52.2	58	9.32	7.92	6830.0	85.7
AAF-1	RTFOT	2	22	0.21	9.98	6918000	50.9	58	9.32	9.98	8491.0	85.4
AAF-1	RTFOT	2	22	0.21	12.56	7876000	50.1	58	9.31	12.56	10570.0	85.0
AAF-1	RTFOT	2	22	0.21	15.00	8668000	49.4	58	5.00	15.00	12510.0	84.7
AAF-1	RTFOT	2	22	0.20	18.88	9825000	48.5	58	5.00	18.88	15520.0	84.4
AAF-1	RTFOT	2	22	0.20	23.77	11080000	47.4	58	5.00	23.77	19240.0	84.0
AAF-1	RTFOT	2	22	0.20	29.93	12450000	46.5	58	5.00	29.93	23810.0	83.5
AAF-1	RTFOT	2	22	0.20	37.68	14010000	45.5	58	4.99	37.68	29450.0	83.1
AAF-1	RTFOT	2	22	0.20	47.43	15700000	44.6	58	4.98	47.43	36380.0	82.7
AAF-1	RTFOT	1	34	0.32	0.50	65580	77.0	70	11.51	0.50	72.2	90.5
AAF-1	RTFOT	1	34	0.32	0.63	79770	76.2	70	11.51	0.63	84.8	89.7
AAF-1	RTFOT	1	34	0.32	0.79	96690	75.5	70	11.51	0.79	113.6	90.0
AAF-1	RTFOT	1	34	0.32	1.00	117100	74.9	70	11.51	1.00	144.1	88.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	RTFOT	1	34	0.32	1.26	142100	74.5	70	11.51	1.26	177.4	89.8
AAF-1	RTFOT	1	34	0.32	1.50	163600	74.3	70	8.92	1.50	215.0	89.5
AAF-1	RTFOT	1	34	0.32	1.89	199000	73.2	70	8.92	1.89	268.8	89.6
AAF-1	RTFOT	1	34	0.32	2.38	238200	72.7	70	8.92	2.38	333.6	89.3
AAF-1	RTFOT	1	34	0.32	2.99	288600	71.9	70	8.92	2.99	424.6	89.6
AAF-1	RTFOT	1	34	0.32	3.77	346800	71.0	70	8.92	3.77	534.7	89.2
AAF-1	RTFOT	1	34	0.32	4.74	415100	70.4	70	8.92	4.74	673.1	89.1
AAF-1	RTFOT	1	34	0.32	5.00	434600	70.0	70	6.81	5.00	708.1	88.9
AAF-1	RTFOT	1	34	0.32	6.30	517100	69.4	70	6.81	6.30	887.5	88.8
AAF-1	RTFOT	1	34	0.32	7.92	617300	68.6	70	6.81	7.92	1113.0	88.6
AAF-1	RTFOT	1	34	0.32	9.98	735100	67.7	70	6.81	9.98	1398.0	88.4
AAF-1	RTFOT	1	34	0.32	12.56	873200	66.8	70	6.81	12.56	1749.0	88.2
AAF-1	RTFOT	1	34	0.32	15.00	994700	66.1	70	4.01	15.00	2089.0	88.1
AAF-1	RTFOT	1	34	0.32	18.88	1176000	65.2	70	4.01	18.88	2610.0	87.8
AAF-1	RTFOT	1	34	0.32	23.77	1389000	64.3	70	4.02	23.77	3272.0	87.7
AAF-1	RTFOT	1	34	0.32	29.93	1632000	63.3	70	4.02	29.93	4088.0	87.4
AAF-1	RTFOT	1	34	0.32	37.68	1917000	62.3	70	4.02	37.68	5111.0	87.1
AAF-1	RTFOT	1	34	0.32	47.43	2246000	61.4	70	4.02	47.43	6384.0	86.9
AAF-1	RTFOT	2	34	0.30	0.50	69240	76.6	70	10.10	0.50	79.7	90.1
AAF-1	RTFOT	2	34	0.30	0.63	84020	75.9	70	10.10	0.63	100.6	89.1
AAF-1	RTFOT	2	34	0.30	0.79	102000	75.7	70	10.10	0.79	129.0	87.0
AAF-1	RTFOT	2	34	0.30	1.00	123100	74.6	70	10.10	1.00	156.6	89.0
AAF-1	RTFOT	2	34	0.30	1.26	149800	74.2	70	10.10	1.26	199.6	89.8
AAF-1	RTFOT	2	34	0.30	1.50	173200	73.9	70	8.52	1.50	237.3	89.9
AAF-1	RTFOT	2	34	0.30	1.89	209300	73.2	70	8.52	1.89	303.5	89.9
AAF-1	RTFOT	2	34	0.30	2.38	251200	72.4	70	8.53	2.38	375.2	89.2
AAF-1	RTFOT	2	34	0.30	2.99	302300	71.6	70	8.52	2.99	473.3	89.1
AAF-1	RTFOT	2	34	0.30	3.77	362500	71.0	70	8.52	3.77	592.8	89.0
AAF-1	RTFOT	2	34	0.30	4.74	435400	70.0	70	8.52	4.74	747.2	88.9
AAF-1	RTFOT	2	34	0.30	5.00	453300	69.8	70	7.12	5.00	785.8	88.9
AAF-1	RTFOT	2	34	0.30	6.30	541600	69.1	70	7.12	6.30	987.9	88.6
AAF-1	RTFOT	2	34	0.30	7.92	645900	68.4	70	7.12	7.92	1237.0	88.5
AAF-1	RTFOT	2	34	0.30	9.98	768800	67.5	70	7.12	9.98	1549.0	88.2
AAF-1	RTFOT	2	34	0.30	12.56	909800	66.7	70	7.12	12.56	1942.0	88.0
AAF-1	RTFOT	2	34	0.30	15.00	1038000	65.8	70	5.01	15.00	2311.0	87.9
AAF-1	RTFOT	2	34	0.30	18.88	1231000	65.0	70	5.01	18.88	2888.0	87.6
AAF-1	RTFOT	2	34	0.30	23.77	1447000	64.2	70	5.01	23.77	3616.0	87.4
AAF-1	RTFOT	2	34	0.30	29.93	1703000	63.1	70	5.01	29.93	4519.0	87.1
AAF-1	RTFOT	2	34	0.30	37.68	1996000	62.2	70	5.01	37.68	5642.0	86.9
AAF-1	RTFOT	2	34	0.30	47.43	2336000	61.2	70	5.01	47.43	7039.0	86.6

Table 32. AAF-1 SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	SAFT	1	10	0.03	0.50	8107000	50.6	46	2.90	0.50	2839.0	86.6
AAF-1	SAFT	1	10	0.03	0.63	9243000	49.5	46	2.90	0.63	3539.0	86.2
AAF-1	SAFT	1	10	0.03	0.79	10450000	48.0	46	2.90	0.79	4413.0	85.6
AAF-1	SAFT	1	10	0.03	1.00	11750000	47.1	46	2.90	1.00	5487.0	85.3
AAF-1	SAFT	1	10	0.03	1.26	13230000	46.4	46	2.90	1.26	6840.0	84.8
AAF-1	SAFT	1	10	0.03	1.50	14570000	45.2	46	2.90	1.50	8128.0	84.8
AAF-1	SAFT	1	10	0.03	1.89	16180000	44.6	46	2.90	1.89	10090.0	84.2
AAF-1	SAFT	1	10	0.03	2.38	17970000	43.7	46	2.90	2.38	12510.0	83.7
AAF-1	SAFT	1	10	0.03	2.99	20050000	42.1	46	2.90	2.99	15500.0	83.2
AAF-1	SAFT	1	10	0.03	3.77	22340000	41.7	46	2.90	3.77	19160.0	82.8
AAF-1	SAFT	1	10	0.03	5.00	25120000	40.7	46	2.90	4.74	23680.0	82.4
AAF-1	SAFT	1	10	0.03	6.30	27960000	39.9	46	2.90	5.00	24850.0	82.2
AAF-1	SAFT	1	10	0.03	7.92	30900000	38.4	46	2.89	6.30	30640.0	81.7
AAF-1	SAFT	1	10	0.03	9.98	33910000	37.8	46	2.89	7.92	37710.0	81.2
AAF-1	SAFT	1	10	0.03	12.56	36960000	37.5	46	2.88	9.98	46310.0	80.6
AAF-1	SAFT	1	10	0.03	15.00	39390000	36.7	46	2.88	12.56	56870.0	80.1
AAF-1	SAFT	1	10	0.03	18.88	43300000	36.1	46	2.87	15.00	66680.0	79.6
AAF-1	SAFT	1	10	0.03	23.77	47390000	35.2	46	2.85	18.88	81630.0	79.2
AAF-1	SAFT	1	10	0.03	29.93	51440000	34.0	46	2.84	23.77	99880.0	78.6
AAF-1	SAFT	1	10	0.03	37.68	55990000	33.1	46	2.82	29.93	122000.0	78.0
AAF-1	SAFT	1	10	0.03	47.43	60870000	31.9	46	2.79	37.68	148700.0	77.4
AAF-1	SAFT	2	10	0.03	0.50	8629000	50.6	46	2.75	47.43	181200.0	76.8
AAF-1	SAFT	2	10	0.03	0.63	9798000	49.7	46	3.20	0.50	2583.0	87.0
AAF-1	SAFT	2	10	0.03	0.79	11070000	48.8	46	3.20	0.63	3229.0	86.3
AAF-1	SAFT	2	10	0.03	1.00	12500000	47.3	46	3.19	0.79	4012.0	86.0
AAF-1	SAFT	2	10	0.03	1.26	14100000	46.6	46	3.19	1.00	4999.0	85.7
AAF-1	SAFT	2	10	0.03	1.50	15420000	45.5	46	3.19	1.26	6223.0	85.3
AAF-1	SAFT	2	10	0.03	1.89	17120000	44.5	46	3.19	1.50	7401.0	85.0
AAF-1	SAFT	2	10	0.03	2.38	19110000	43.3	46	3.19	1.89	9200.0	84.5
AAF-1	SAFT	2	10	0.03	2.99	21080000	42.2	46	3.19	2.38	11420.0	84.1
AAF-1	SAFT	2	10	0.03	3.77	23450000	41.7	46	3.19	2.99	14160.0	83.7
AAF-1	SAFT	2	10	0.03	5.00	26390000	41.1	46	3.19	3.77	17530.0	83.2
AAF-1	SAFT	2	10	0.03	6.30	29310000	39.6	46	3.19	4.74	21640.0	82.6
AAF-1	SAFT	2	10	0.03	7.92	32580000	39.2	46	3.19	5.00	22770.0	82.5
AAF-1	SAFT	2	10	0.03	9.98	35480000	38.0	46	3.18	6.30	28080.0	82.1
AAF-1	SAFT	2	10	0.03	12.56	39190000	37.0	46	3.18	7.92	34590.0	81.5
AAF-1	SAFT	2	10	0.03	15.00	41410000	36.2	46	3.17	9.98	42550.0	81.0
AAF-1	SAFT	2	10	0.03	18.88	45510000	35.7	46	3.17	12.56	52340.0	80.4
AAF-1	SAFT	2	10	0.02	23.77	49700000	35.1	46	3.16	15.00	61390.0	80.1
AAF-1	SAFT	2	10	0.02	29.93	53900000	34.1	46	3.14	18.88	75300.0	79.5
AAF-1	SAFT	2	10	0.02	37.68	58840000	33.6	46	3.13	23.77	92050.0	79.0
AAF-1	SAFT	2	10	0.02	47.43	64160000	32.7	46	3.11	29.93	112600.0	78.4
AAF-1	SAFT	1	22	0.33	0.50	787000	67.9	46	3.08	37.68	137500.0	77.8
AAF-1	SAFT	1	22	0.33	0.63	937800	66.0	46	3.03	47.43	167700.0	77.3
AAF-1	SAFT	1	22	0.33	0.79	1104000	65.2	58	23.32	0.50	341.3	89.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	SAFT	1	22	0.33	1.00	1311000	64.1	58	23.32	0.63	429.1	88.9
AAF-1	SAFT	1	22	0.33	1.26	1534000	62.9	58	23.32	0.79	537.5	88.8
AAF-1	SAFT	1	22	0.33	1.50	1728000	62.9	58	23.32	1.00	677.1	88.6
AAF-1	SAFT	1	22	0.33	1.89	2036000	61.1	58	23.31	1.26	848.9	88.3
AAF-1	SAFT	1	22	0.33	2.38	2381000	60.1	58	23.31	1.50	1015.0	88.2
AAF-1	SAFT	1	22	0.33	2.99	2766000	59.1	58	23.31	1.89	1273.0	88.0
AAF-1	SAFT	1	22	0.33	3.77	3215000	58.0	58	23.32	2.38	1593.0	87.7
AAF-1	SAFT	1	22	0.33	4.74	3720000	56.8	58	23.32	2.99	1994.0	87.4
AAF-1	SAFT	1	22	0.33	5.00	3858000	56.6	58	23.32	3.77	2495.0	87.1
AAF-1	SAFT	1	22	0.33	6.30	4445000	55.5	58	23.32	4.74	3114.0	86.8
AAF-1	SAFT	1	22	0.32	7.92	5115000	54.5	58	23.32	5.00	3280.0	86.8
AAF-1	SAFT	1	22	0.32	9.98	5859000	53.4	58	23.32	6.30	4090.0	86.5
AAF-1	SAFT	1	22	0.32	12.56	6701000	52.4	58	23.31	7.92	5097.0	86.2
AAF-1	SAFT	1	22	0.32	15.00	7426000	51.5	58	23.31	9.98	6346.0	85.8
AAF-1	SAFT	1	22	0.32	18.88	8438000	50.5	58	23.31	12.56	7898.0	85.4
AAF-1	SAFT	1	22	0.32	23.77	9588000	49.6	58	23.30	15.00	9353.0	85.2
AAF-1	SAFT	1	22	0.32	29.93	10840000	48.6	58	23.30	18.88	11600.0	84.8
AAF-1	SAFT	1	22	0.32	37.68	12240000	47.6	58	23.28	23.77	14370.0	84.4
AAF-1	SAFT	1	22	0.32	47.43	13770000	46.6	58	23.26	29.93	17780.0	84.0
AAF-1	SAFT	2	22	0.31	0.50	828400	67.4	58	23.23	37.68	21950.0	83.6
AAF-1	SAFT	2	22	0.31	0.63	988700	66.0	58	23.19	47.43	27050.0	83.2
AAF-1	SAFT	2	22	0.31	0.79	1167000	65.0	58	23.91	0.50	326.9	89.0
AAF-1	SAFT	2	22	0.31	1.00	1378000	64.0	58	23.91	0.63	412.1	89.1
AAF-1	SAFT	2	22	0.31	1.26	1621000	62.9	58	23.91	0.79	514.6	88.8
AAF-1	SAFT	2	22	0.31	1.50	1826000	62.6	58	23.91	1.00	646.7	88.7
AAF-1	SAFT	2	22	0.31	1.89	2151000	60.9	58	23.91	1.26	813.6	88.5
AAF-1	SAFT	2	22	0.31	2.38	2510000	59.8	58	23.51	1.50	971.7	88.1
AAF-1	SAFT	2	22	0.31	2.99	2920000	58.8	58	23.51	1.89	1218.0	87.9
AAF-1	SAFT	2	22	0.31	3.77	3374000	57.8	58	23.52	2.38	1525.0	87.8
AAF-1	SAFT	2	22	0.31	4.74	3907000	56.7	58	23.52	2.99	1911.0	87.6
AAF-1	SAFT	2	22	0.31	5.00	4050000	56.4	58	23.52	3.77	2388.0	87.3
AAF-1	SAFT	2	22	0.31	6.30	4655000	55.2	58	23.52	4.74	2983.0	87.0
AAF-1	SAFT	2	22	0.31	7.92	5344000	54.2	58	23.10	5.00	3135.0	86.9
AAF-1	SAFT	2	22	0.30	9.98	6130000	53.2	58	23.10	6.30	3913.0	86.6
AAF-1	SAFT	2	22	0.30	12.56	7011000	52.2	58	23.10	7.92	4876.0	86.3
AAF-1	SAFT	2	22	0.30	15.00	7732000	51.4	58	23.10	9.98	6074.0	86.0
AAF-1	SAFT	2	22	0.30	18.88	8794000	50.4	58	23.09	12.56	7565.0	85.6
AAF-1	SAFT	2	22	0.30	23.77	9994000	49.4	58	22.30	15.00	8981.0	85.3
AAF-1	SAFT	2	22	0.30	29.93	11310000	48.5	58	22.29	18.88	11150.0	85.0
AAF-1	SAFT	2	22	0.30	37.68	12780000	47.4	58	22.28	23.77	13840.0	84.6
AAF-1	SAFT	2	22	0.30	47.43	14390000	46.5	58	22.26	29.93	17150.0	84.2
AAF-1	SAFT	1	34	5.10	0.50	50300	79.5	58	22.23	37.68	21200.0	83.8
AAF-1	SAFT	1	34	5.10	0.63	61620	78.6	58	22.19	47.43	26150.0	83.4
AAF-1	SAFT	1	34	5.10	0.79	75450	78.0	70	13.21	0.50	60.5	90.6
AAF-1	SAFT	1	34	5.10	1.00	91960	77.2	70	13.21	0.63	76.2	90.3
AAF-1	SAFT	1	34	5.10	1.26	111800	76.7	70	13.21	0.79	99.0	89.9
AAF-1	SAFT	1	34	4.56	1.50	130200	76.4	70	13.21	1.00	122.9	89.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	SAFT	1	34	4.56	1.89	158300	75.4	70	13.21	1.26	152.9	89.8
AAF-1	SAFT	1	34	4.56	2.38	191300	74.8	70	13.21	1.50	183.5	90.1
AAF-1	SAFT	1	34	4.56	2.99	231300	74.0	70	13.21	1.89	232.9	89.9
AAF-1	SAFT	1	34	4.56	3.77	278400	73.3	70	13.21	2.38	290.4	89.4
AAF-1	SAFT	1	34	4.56	4.74	334900	72.6	70	13.21	2.99	365.9	89.3
AAF-1	SAFT	1	34	4.04	5.00	351000	72.3	70	13.21	3.77	459.5	89.2
AAF-1	SAFT	1	34	4.04	6.30	419900	71.6	70	13.21	4.74	578.1	89.0
AAF-1	SAFT	1	34	4.04	7.92	501700	70.8	70	13.21	5.00	608.8	89.0
AAF-1	SAFT	1	34	4.04	9.98	597700	70.1	70	13.21	6.30	763.9	88.9
AAF-1	SAFT	1	34	4.04	12.56	710500	69.3	70	13.21	7.92	959.9	88.6
AAF-1	SAFT	1	34	3.20	15.00	823600	68.4	70	13.21	9.98	1203.0	88.4
AAF-1	SAFT	1	34	3.20	18.88	971000	67.7	70	13.21	12.56	1507.0	88.3
AAF-1	SAFT	1	34	3.20	23.77	1143000	66.9	70	13.22	15.00	1795.0	88.0
AAF-1	SAFT	1	34	3.19	29.93	1347000	66.1	70	13.22	18.88	2248.0	87.8
AAF-1	SAFT	1	34	3.19	37.68	1579000	65.3	70	13.22	23.77	2814.0	87.6
AAF-1	SAFT	1	34	3.19	47.43	1848000	64.5	70	13.21	29.93	3518.0	87.3
AAF-1	SAFT	2	34	5.10	0.50	50180	79.9	70	13.21	37.68	4396.0	87.1
AAF-1	SAFT	2	34	5.10	0.63	61980	78.8	70	13.20	47.43	5488.0	86.8
AAF-1	SAFT	2	34	5.10	0.79	75770	78.3	70	13.80	0.50	58.8	90.3
AAF-1	SAFT	2	34	5.10	1.00	92320	77.7	70	13.80	0.63	72.7	88.8
AAF-1	SAFT	2	34	5.10	1.26	112500	77.1	70	13.80	0.79	92.4	88.1
AAF-1	SAFT	2	34	4.69	1.50	131000	76.8	70	13.80	1.00	115.6	89.7
AAF-1	SAFT	2	34	4.69	1.89	159500	75.7	70	13.80	1.26	148.0	89.8
AAF-1	SAFT	2	34	4.69	2.38	193000	75.0	70	13.80	1.50	174.3	90.5
AAF-1	SAFT	2	34	4.69	2.99	233600	74.4	70	13.80	1.89	220.4	89.7
AAF-1	SAFT	2	34	4.69	3.77	281800	73.6	70	13.80	2.38	277.4	89.5
AAF-1	SAFT	2	34	4.69	4.74	337400	72.9	70	13.81	2.99	348.0	89.2
AAF-1	SAFT	2	34	4.28	5.00	354100	72.7	70	13.80	3.77	438.6	89.1
AAF-1	SAFT	2	34	4.28	6.30	423500	71.9	70	13.81	4.74	551.0	89.1
AAF-1	SAFT	2	34	4.28	7.92	506400	71.1	70	13.81	5.00	580.2	89.0
AAF-1	SAFT	2	34	4.28	9.98	603500	70.4	70	13.80	6.30	728.8	88.9
AAF-1	SAFT	2	34	4.28	12.56	717300	69.6	70	13.81	7.92	914.2	88.7
AAF-1	SAFT	2	34	3.60	15.00	832900	68.7	70	13.81	9.98	1146.0	88.5
AAF-1	SAFT	2	34	3.60	18.88	979200	68.1	70	13.81	12.56	1439.0	88.3
AAF-1	SAFT	2	34	3.60	23.77	1154000	67.3	70	13.81	15.00	1713.0	88.1
AAF-1	SAFT	2	34	3.59	29.93	1357000	66.5	70	13.81	18.88	2145.0	87.9
AAF-1	SAFT	2	34	3.59	37.68	1591000	65.7	70	13.81	23.77	2685.0	87.7
AAF-1	SAFT	2	34	3.59	47.43	1861000	64.9	70	13.81	29.93	3360.0	87.4
AAF-1	SAFT	2						70	13.80	37.68	4198.0	87.2
AAF-1	SAFT	2						70	13.80	47.43	5240.0	86.9

Table 33. AAF-1 MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	MGRF	1	10	1.00	0.10	379500	72.6	46	10.00	0.10	942.5	88.2
AAF-1	MGRF	1	10	1.00	0.13	504500	71.4	46	10.00	0.13	1185.0	88.0
AAF-1	MGRF	1	10	1.00	0.16	642500	70.1	46	10.00	0.16	1495.0	87.6
AAF-1	MGRF	1	10	1.00	0.20	797500	69.0	46	10.00	0.20	1875.0	87.4
AAF-1	MGRF	1	10	1.00	0.25	974000	67.8	46	10.00	0.25	2350.0	87.0
AAF-1	MGRF	1	10	1.00	0.32	1175000	66.6	46	10.00	0.32	2935.0	86.6
AAF-1	MGRF	1	10	1.00	0.40	1410000	65.5	46	10.00	0.40	3670.0	86.3
AAF-1	MGRF	1	10	1.00	0.50	1685000	64.4	46	10.00	0.50	4585.0	86.0
AAF-1	MGRF	1	10	1.00	0.63	1995000	63.3	46	10.00	0.63	5720.0	85.6
AAF-1	MGRF	1	10	1.00	0.79	2355000	62.2	46	10.00	0.79	7125.0	85.2
AAF-1	MGRF	1	10	1.00	1.00	2765000	61.1	46	10.00	1.00	8855.0	84.8
AAF-1	MGRF	1	10	1.00	1.26	3230000	60.0	46	10.00	1.26	11000.0	84.3
AAF-1	MGRF	1	10	1.00	1.58	3760000	58.8	46	10.00	1.58	13600.0	83.9
AAF-1	MGRF	1	10	1.00	2.00	4365000	57.7	46	10.00	2.00	16900.0	83.4
AAF-1	MGRF	1	10	1.00	2.51	5045000	56.6	46	10.00	2.51	20850.0	82.9
AAF-1	MGRF	1	10	1.00	3.16	5815000	55.5	46	10.00	3.16	25850.0	82.3
AAF-1	MGRF	1	10	1.00	3.98	6665000	54.4	46	10.00	3.98	31800.0	81.8
AAF-1	MGRF	1	10	1.00	5.01	7630000	53.3	46	10.00	5.01	39200.0	81.3
AAF-1	MGRF	1	10	1.00	6.31	8710000	52.2	46	9.99	6.31	48350.0	80.7
AAF-1	MGRF	1	10	1.00	7.94	9880000	51.2	46	9.99	7.94	59300.0	80.2
AAF-1	MGRF	1	10	1.00	10.00	11200000	50.1	46	9.99	10.00	72600.0	79.6
AAF-1	MGRF	1	10	0.99	12.60	12650000	49.1	46	9.98	12.60	88700.0	79.0
AAF-1	MGRF	1	10	0.99	15.80	14250000	48.1	46	9.98	15.80	107500.0	78.5
AAF-1	MGRF	1	10	0.99	20.00	16000000	47.1	46	9.96	20.00	132000.0	77.9
AAF-1	MGRF	1	10	0.99	25.10	17900000	46.2	46	9.95	25.10	159500.0	77.3
AAF-1	MGRF	1	10	0.99	31.60	20000000	45.2	46	9.94	31.60	193000.0	76.7
AAF-1	MGRF	1	10	0.99	39.80	22250000	44.3	46	9.92	39.80	232500.0	76.1
AAF-1	MGRF	1	10	0.99	50.10	24700000	43.4	46	9.90	50.10	279000.0	75.5
AAF-1	MGRF	1	10	0.99	63.10	27300000	42.5	46	9.88	63.10	332500.0	74.9
AAF-1	MGRF	1	10	0.98	79.40	30150000	41.6	46	9.88	79.40	371500.0	75.0
AAF-1	MGRF	1	10	0.98	100.00	33150000	40.7	46	9.84	100.00	424000.0	75.0
AAF-1	MGRF	2	10	5.00	0.10	2960000	61.3	46	10.00	0.10	668.5	88.3
AAF-1	MGRF	2	10	4.99	0.13	4495000	58.5	46	10.00	0.13	845.5	88.1
AAF-1	MGRF	2	10	4.99	0.16	5630000	56.8	46	10.00	0.16	1065.0	87.8
AAF-1	MGRF	2	10	4.99	0.20	6645000	55.7	46	10.00	0.20	1340.0	87.7
AAF-1	MGRF	2	10	4.99	0.25	7630000	54.7	46	10.00	0.25	1680.0	87.3
AAF-1	MGRF	2	10	4.98	0.32	8655000	53.8	46	10.00	0.32	2100.0	87.0
AAF-1	MGRF	2	10	4.98	0.40	9715000	53.1	46	10.00	0.40	2630.0	86.7
AAF-1	MGRF	2	10	4.98	0.50	10850000	52.4	46	10.00	0.50	3295.0	86.5
AAF-1	MGRF	2	10	4.97	0.63	12050000	51.8	46	10.00	0.63	4110.0	86.1
AAF-1	MGRF	2	10	4.97	0.79	13350000	51.1	46	10.00	0.79	5125.0	85.8
AAF-1	MGRF	2	10	4.97	1.00	14700000	50.6	46	10.00	1.00	6385.0	85.4
AAF-1	MGRF	2	10	4.96	1.26	16200000	50.0	46	10.00	1.26	7950.0	85.0
AAF-1	MGRF	2	10	4.96	1.58	17750000	49.5	46	10.00	1.58	9875.0	84.5
AAF-1	MGRF	2	10	4.96	2.00	19450000	49.0	46	10.00	2.00	12250.0	84.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	MGRF	2	10	4.95	2.51	21150000	48.5	46	10.00	2.51	15150.0	83.6
AAF-1	MGRF	2	10	4.95	3.16	23050000	48.0	46	10.00	3.16	18850.0	83.1
AAF-1	MGRF	2	10	4.95	3.98	25000000	47.5	46	10.00	3.98	23200.0	82.6
AAF-1	MGRF	2	10	4.93	5.01	25150000	48.5	46	10.00	5.01	28700.0	82.1
AAF-1	MGRF	2	10	4.95	6.31	26350000	48.9	46	10.00	6.31	35450.0	81.6
AAF-1	MGRF	2	10	4.94	7.94	28700000	49.0	46	9.99	7.94	43600.0	81.0
AAF-1	MGRF	2	10	4.94	10.00	31150000	48.9	46	9.99	10.00	53550.0	80.5
AAF-1	MGRF	2	10	4.92	12.60	33650000	48.8	46	9.99	12.60	65650.0	79.9
AAF-1	MGRF	2	10	4.92	15.80	36100000	48.4	46	9.99	15.80	80300.0	79.4
AAF-1	MGRF	2	10	4.92	20.00	38150000	48.1	46	9.96	20.00	98000.0	78.8
AAF-1	MGRF	2	10	4.90	25.10	40050000	47.9	46	9.96	25.10	119500.0	78.2
AAF-1	MGRF	2	10	4.88	31.60	41350000	47.7	46	9.95	31.60	145000.0	77.7
AAF-1	MGRF	2	10	4.87	39.80	42000000	45.3	46	9.94	39.80	175500.0	77.1
AAF-1	MGRF	2	10	4.89	50.10	42200000	45.5	46	9.92	50.10	212000.0	76.5
AAF-1	MGRF	2	10	4.93	63.10	42100000	45.8	46	9.90	63.10	255000.0	75.9
AAF-1	MGRF	2	10	4.96	79.40	38700000	46.9	46	9.89	79.40	305000.0	75.4
AAF-1	MGRF	2	10	4.97	100.00	39700000	46.6	46	9.87	100.00	363000.0	74.8
AAF-1	MGRF	1	25	1.00	0.10	65400	78.2	58	10.00	0.10	126.5	89.7
AAF-1	MGRF	1	25	1.00	0.13	84050	77.5	58	10.00	0.13	159.0	89.7
AAF-1	MGRF	1	25	1.00	0.16	105500	76.6	58	10.00	0.16	200.0	89.5
AAF-1	MGRF	1	25	1.00	0.20	131000	75.9	58	10.00	0.20	251.5	89.5
AAF-1	MGRF	1	25	1.00	0.25	162000	75.1	58	10.00	0.25	316.0	89.3
AAF-1	MGRF	1	25	1.00	0.32	198500	74.3	58	10.00	0.32	397.5	89.1
AAF-1	MGRF	1	25	1.00	0.40	242000	73.5	58	10.00	0.40	499.0	88.9
AAF-1	MGRF	1	25	1.00	0.50	293500	72.7	58	10.00	0.50	627.0	88.8
AAF-1	MGRF	1	25	1.00	0.63	355000	71.9	58	10.00	0.63	787.0	88.6
AAF-1	MGRF	1	25	1.00	0.79	428500	71.0	58	10.00	0.79	985.0	88.4
AAF-1	MGRF	1	25	1.00	1.00	515500	70.2	58	10.00	1.00	1240.0	88.2
AAF-1	MGRF	1	25	1.00	1.26	618000	69.2	58	10.00	1.26	1550.0	87.9
AAF-1	MGRF	1	25	1.00	1.58	738500	68.3	58	10.00	1.58	1945.0	87.6
AAF-1	MGRF	1	25	1.00	2.00	879500	67.4	58	10.00	2.00	2430.0	87.4
AAF-1	MGRF	1	25	1.00	2.51	1045000	66.4	58	10.00	2.51	3030.0	87.1
AAF-1	MGRF	1	25	1.00	3.16	1240000	65.4	58	10.00	3.16	3795.0	86.7
AAF-1	MGRF	1	25	1.00	3.98	1460000	64.4	58	10.00	3.98	4720.0	86.4
AAF-1	MGRF	1	25	1.00	5.01	1725000	63.4	58	10.00	5.01	5905.0	86.1
AAF-1	MGRF	1	25	1.00	6.31	2035000	62.4	58	10.00	6.31	7375.0	85.7
AAF-1	MGRF	1	25	1.00	7.94	2375000	61.4	58	10.00	7.94	9180.0	85.3
AAF-1	MGRF	1	25	1.00	10.00	2770000	60.3	58	10.00	10.00	11400.0	84.9
AAF-1	MGRF	1	25	1.00	12.60	3225000	59.3	58	10.00	12.60	14200.0	84.5
AAF-1	MGRF	1	25	1.00	15.80	3740000	58.3	58	10.00	15.80	17600.0	84.1
AAF-1	MGRF	1	25	1.00	20.00	4325000	57.2	58	10.00	20.00	21850.0	83.6
AAF-1	MGRF	1	25	1.00	25.10	4975000	56.1	58	9.99	25.10	26700.0	83.1
AAF-1	MGRF	1	25	1.00	31.60	5715000	55.0	58	9.98	31.60	33400.0	82.7
AAF-1	MGRF	1	25	0.99	39.80	6575000	54.0	58	9.98	39.80	41200.0	82.2
AAF-1	MGRF	1	25	0.99	50.10	7545000	52.9	58	9.97	50.10	50750.0	81.7
AAF-1	MGRF	1	25	0.99	63.10	8600000	51.9	58	9.97	63.10	62400.0	81.1
AAF-1	MGRF	1	25	0.99	79.40	9735000	50.4	58	9.97	79.40	76550.0	80.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	MGRF	1	25	0.99	100.00	11100000	49.2	58	9.96	100.00	93700.0	80.1
AAF-1	MGRF	2	25	5.00	0.10	103500	76.9	58	10.00	0.10	79.1	89.7
AAF-1	MGRF	2	25	5.00	0.13	131500	76.1	58	10.00	0.13	99.4	89.7
AAF-1	MGRF	2	25	5.00	0.16	163500	75.1	58	10.00	0.16	125.0	89.6
AAF-1	MGRF	2	25	5.00	0.20	200000	74.4	58	10.00	0.20	157.0	89.6
AAF-1	MGRF	2	25	5.00	0.25	243500	73.5	58	10.00	0.25	198.0	89.4
AAF-1	MGRF	2	25	5.00	0.32	294500	72.7	58	10.00	0.32	248.0	89.3
AAF-1	MGRF	2	25	5.00	0.40	354500	71.9	58	10.00	0.40	312.0	89.2
AAF-1	MGRF	2	25	5.00	0.50	424500	71.1	58	10.00	0.50	393.0	89.1
AAF-1	MGRF	2	25	5.00	0.63	506500	70.3	58	10.00	0.63	493.0	89.0
AAF-1	MGRF	2	25	5.00	0.79	602500	69.6	58	10.00	0.79	619.0	88.8
AAF-1	MGRF	2	25	5.00	1.00	712500	68.8	58	10.00	1.00	777.0	88.6
AAF-1	MGRF	2	25	5.00	1.26	840000	67.9	58	10.00	1.26	975.0	88.4
AAF-1	MGRF	2	25	5.00	1.58	987000	67.2	58	10.00	1.58	1220.0	88.2
AAF-1	MGRF	2	25	5.00	2.00	1155000	66.4	58	10.00	2.00	1530.0	87.9
AAF-1	MGRF	2	25	5.00	2.51	1345000	65.6	58	10.00	2.51	1910.0	87.6
AAF-1	MGRF	2	25	5.00	3.16	1570000	64.8	58	10.00	3.16	2400.0	87.4
AAF-1	MGRF	2	25	5.00	3.98	1815000	64.0	58	10.00	3.98	2990.0	87.1
AAF-1	MGRF	2	25	5.00	5.01	2095000	63.3	58	10.00	5.01	3740.0	86.8
AAF-1	MGRF	2	25	5.00	6.31	2410000	62.5	58	10.00	6.31	4680.0	86.5
AAF-1	MGRF	2	25	5.00	7.94	2760000	61.8	58	10.00	7.94	5840.0	86.1
AAF-1	MGRF	2	25	5.00	10.00	3150000	61.1	58	10.00	10.00	7280.0	85.8
AAF-1	MGRF	2	25	5.00	12.60	3575000	60.4	58	10.00	12.60	9070.0	85.4
AAF-1	MGRF	2	25	5.00	15.80	4045000	59.7	58	10.00	15.80	11300.0	85.0
AAF-1	MGRF	2	25	5.00	20.00	4560000	59.1	58	10.00	20.00	14000.0	84.6
AAF-1	MGRF	2	25	5.00	25.10	5120000	58.4	58	10.00	25.10	17200.0	84.0
AAF-1	MGRF	2	25	4.99	31.60	5725000	57.7	58	9.98	31.60	21600.0	83.7
AAF-1	MGRF	2	25	4.98	39.80	6375000	57.1	58	9.98	39.80	26700.0	83.3
AAF-1	MGRF	2	25	4.98	50.10	7055000	56.4	58	9.98	50.10	33000.0	82.8
AAF-1	MGRF	2	25	5.00	63.10	7780000	55.6	58	9.97	63.10	40700.0	82.3
AAF-1	MGRF	2	25	5.03	79.40	8370000	55.4	58	9.97	79.40	50100.0	81.8
AAF-1	MGRF	2	25	5.03	100.00	8285000	55.8	58	9.97	100.00	61600.0	81.2
AAF-1	MGRF	1	35	5.00	0.10	13100	83.3	70	10.00	0.10	24.5	89.9
AAF-1	MGRF	1	35	5.00	0.13	16650	82.8	70	10.00	0.13	30.6	90.0
AAF-1	MGRF	1	35	5.00	0.16	20800	82.1	70	10.00	0.16	38.4	90.0
AAF-1	MGRF	1	35	5.00	0.20	25900	81.6	70	10.00	0.20	48.2	90.0
AAF-1	MGRF	1	35	5.00	0.25	32100	81.0	70	10.00	0.25	60.5	89.9
AAF-1	MGRF	1	35	5.00	0.32	39700	80.3	70	10.00	0.32	76.1	89.8
AAF-1	MGRF	1	35	5.00	0.40	48900	79.7	70	10.00	0.40	95.6	89.8
AAF-1	MGRF	1	35	5.00	0.50	60100	79.2	70	10.00	0.50	120.0	89.7
AAF-1	MGRF	1	35	5.00	0.63	73750	78.5	70	10.00	0.63	151.0	89.7
AAF-1	MGRF	1	35	5.00	0.79	90150	77.9	70	10.00	0.79	190.0	89.6
AAF-1	MGRF	1	35	5.00	1.00	110000	77.3	70	10.00	1.00	238.5	89.5
AAF-1	MGRF	1	35	5.00	1.26	134000	76.5	70	10.00	1.26	300.5	89.4
AAF-1	MGRF	1	35	5.00	1.58	163000	75.9	70	10.00	1.58	377.0	89.3
AAF-1	MGRF	1	35	5.00	2.00	196500	75.2	70	10.00	2.00	473.0	89.1
AAF-1	MGRF	1	35	5.00	2.51	238000	74.4	70	10.00	2.51	594.0	89.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAF-1	MGRF	1	35	5.00	3.16	287500	73.7	70	10.00	3.16	746.5	88.8
AAF-1	MGRF	1	35	5.00	3.98	345000	73.0	70	10.00	3.98	934.5	88.6
AAF-1	MGRF	1	35	5.00	5.01	414000	72.2	70	10.00	5.01	1175.0	88.4
AAF-1	MGRF	1	35	5.00	6.31	496500	71.5	70	10.00	6.31	1475.0	88.1
AAF-1	MGRF	1	35	5.00	7.94	591500	70.7	70	10.00	7.94	1850.0	87.9
AAF-1	MGRF	1	35	5.00	10.00	702500	69.9	70	10.00	10.00	2315.0	87.7
AAF-1	MGRF	1	35	5.01	12.60	831500	69.1	70	10.00	12.60	2895.0	87.4
AAF-1	MGRF	1	35	5.01	15.80	982000	68.4	70	10.00	15.80	3620.0	87.1
AAF-1	MGRF	1	35	5.01	20.00	1155000	67.5	70	10.00	20.00	4530.0	86.8
AAF-1	MGRF	1	35	5.02	25.10	1350000	66.6	70	10.00	25.10	5645.0	86.4
AAF-1	MGRF	1	35	5.03	31.60	1575000	65.7	70	9.96	31.60	6950.0	85.5
AAF-1	MGRF	1	35	5.02	39.80	1835000	65.2	70	9.98	39.80	8800.0	85.7
AAF-1	MGRF	1	35	5.02	50.10	2115000	64.5	70	9.98	50.10	10950.0	85.3
AAF-1	MGRF	1	35	5.02	63.10	2420000	63.9	70	9.97	63.10	13650.0	84.9
AAF-1	MGRF	1	35	5.01	79.40	2750000	63.2	70	9.98	79.40	17000.0	84.5
AAF-1	MGRF	1	35	5.01	100.00	3105000	62.5	70	9.98	100.00	21100.0	84.0
AAF-1	MGRF	2	35	5.00	0.10	17200	82.6	70	10.00	0.10	13.7	89.5
AAF-1	MGRF	2	35	5.00	0.13	21450	82.1	70	10.00	0.13	17.1	89.8
AAF-1	MGRF	2	35	5.00	0.16	26650	81.4	70	10.00	0.16	21.4	89.9
AAF-1	MGRF	2	35	5.00	0.20	33050	81.0	70	10.00	0.20	26.8	90.0
AAF-1	MGRF	2	35	5.00	0.25	40800	80.3	70	10.00	0.25	33.7	89.9
AAF-1	MGRF	2	35	5.00	0.32	50200	79.7	70	10.00	0.32	42.2	89.8
AAF-1	MGRF	2	35	5.00	0.40	61650	79.1	70	10.00	0.40	53.0	89.8
AAF-1	MGRF	2	35	5.00	0.50	75550	78.5	70	10.00	0.50	66.6	89.8
AAF-1	MGRF	2	35	5.00	0.63	92300	77.8	70	10.00	0.63	83.7	89.7
AAF-1	MGRF	2	35	5.00	0.79	112500	77.2	70	10.00	0.79	105.5	89.7
AAF-1	MGRF	2	35	5.00	1.00	136500	76.5	70	10.00	1.00	132.0	89.7
AAF-1	MGRF	2	35	5.00	1.26	166500	75.8	70	10.00	1.26	166.0	89.6
AAF-1	MGRF	2	35	5.00	1.58	201000	75.1	70	10.00	1.58	209.0	89.5
AAF-1	MGRF	2	35	5.00	2.00	243000	74.4	70	10.00	2.00	262.5	89.4
AAF-1	MGRF	2	35	5.00	2.51	292000	73.7	70	10.00	2.51	329.5	89.3
AAF-1	MGRF	2	35	5.00	3.16	351500	73.0	70	10.00	3.16	414.0	89.2
AAF-1	MGRF	2	35	5.00	3.98	420000	72.2	70	10.00	3.98	519.5	89.0
AAF-1	MGRF	2	35	5.00	5.01	502500	71.5	70	10.00	5.01	654.0	88.9
AAF-1	MGRF	2	35	5.00	6.31	599500	70.8	70	10.00	6.31	822.5	88.7
AAF-1	MGRF	2	35	5.00	7.94	711500	70.0	70	10.00	7.94	1035.0	88.5
AAF-1	MGRF	2	35	5.00	10.00	841000	69.3	70	10.00	10.00	1295.0	88.2
AAF-1	MGRF	2	35	5.01	12.60	991000	68.5	70	10.00	12.60	1625.0	88.0
AAF-1	MGRF	2	35	5.01	15.80	1165000	67.7	70	10.00	15.80	2030.0	87.7
AAF-1	MGRF	2	35	5.02	20.00	1360000	66.9	70	10.00	20.00	2545.0	87.5
AAF-1	MGRF	2	35	5.02	25.10	1585000	66.0	70	10.00	25.10	3185.0	87.1
AAF-1	MGRF	2	35	5.02	31.60	1835000	65.1	70	10.00	31.60	3975.0	86.7
AAF-1	MGRF	2	35	5.03	39.80	2125000	64.1	70	10.00	39.80	4890.0	84.8
AAF-1	MGRF	2	35	5.02	50.10	2450000	63.9	70	9.97	50.10	6205.0	86.0
AAF-1	MGRF	2	35	5.02	63.10	2780000	63.3	70	9.97	63.10	7755.0	85.7
AAF-1	MGRF	2	35	5.02	79.40	3130000	62.6	70	9.98	79.40	9670.0	85.3
AAF-1	MGRF	2	35	5.02	100.00	3500000	62.0	70	9.98	100.00	12050.0	84.8

Table 34. AAM-1 Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	TANK	1	10	0.07	0.50	3500000	46.9	46	7.51	0.50	908.1	86.7
AAM-1	TANK	1	10	0.07	0.63	3920000	46.3	46	7.51	0.63	1134.0	86.3
AAM-1	TANK	1	10	0.07	0.79	4433000	45.6	46	7.51	0.79	1412.0	86.0
AAM-1	TANK	1	10	0.07	1.00	4959000	44.8	46	7.51	1.00	1763.0	85.8
AAM-1	TANK	1	10	0.07	1.26	5527000	44.1	46	7.51	1.26	2183.0	85.2
AAM-1	TANK	1	10	0.07	1.50	6088000	43.3	46	7.51	1.50	2585.0	84.9
AAM-1	TANK	1	10	0.07	1.89	6792000	42.6	46	7.51	1.89	3217.0	84.5
AAM-1	TANK	1	10	0.07	2.38	7518000	42.1	46	7.51	2.38	3988.0	84.0
AAM-1	TANK	1	10	0.07	2.99	8358000	41.6	46	7.51	2.99	4948.0	83.6
AAM-1	TANK	1	10	0.07	3.77	9263000	41.0	46	7.51	3.77	6127.0	83.2
AAM-1	TANK	1	10	0.07	4.74	10260000	40.4	46	7.51	4.74	7572.0	82.8
AAM-1	TANK	1	10	0.07	5.00	10560000	40.2	46	7.51	5.00	7960.0	82.7
AAM-1	TANK	1	10	0.07	6.30	11650000	39.6	46	7.50	6.30	9820.0	82.3
AAM-1	TANK	1	10	0.07	7.92	12830000	39.0	46	7.50	7.92	12110.0	81.8
AAM-1	TANK	1	10	0.07	9.98	14120000	38.2	46	7.50	9.98	14880.0	81.4
AAM-1	TANK	1	10	0.07	12.56	15520000	37.7	46	7.49	12.56	18310.0	81.0
AAM-1	TANK	1	10	0.07	15.00	16930000	37.2	46	7.49	15.00	21470.0	80.6
AAM-1	TANK	1	10	0.07	18.88	18540000	36.9	46	7.48	18.88	26320.0	80.2
AAM-1	TANK	1	10	0.07	23.77	20300000	36.2	46	7.47	23.77	32250.0	79.7
AAM-1	TANK	1	10	0.07	29.93	22310000	35.8	46	7.46	29.93	39450.0	79.3
AAM-1	TANK	1	10	0.06	37.68	24410000	35.3	46	7.44	37.68	48200.0	78.9
AAM-1	TANK	1	10	0.06	47.43	26520000	34.6	46	7.41	47.43	58810.0	78.4
AAM-1	TANK	2	10	0.06	0.50	4049000	46.1	46	6.50	0.50	1075.0	86.2
AAM-1	TANK	2	10	0.06	0.63	4514000	45.6	46	6.50	0.63	1333.0	85.5
AAM-1	TANK	2	10	0.06	0.79	5056000	44.6	46	6.50	0.79	1668.0	85.4
AAM-1	TANK	2	10	0.06	1.00	5633000	44.0	46	6.50	1.00	2070.0	84.8
AAM-1	TANK	2	10	0.06	1.26	6303000	43.5	46	6.50	1.26	2568.0	84.3
AAM-1	TANK	2	10	0.06	1.50	6912000	42.8	46	6.50	1.50	3039.0	84.2
AAM-1	TANK	2	10	0.06	1.89	7654000	42.2	46	6.50	1.89	3767.0	83.7
AAM-1	TANK	2	10	0.06	2.38	8396000	41.4	46	6.50	2.38	4669.0	83.3
AAM-1	TANK	2	10	0.06	2.99	9454000	41.6	46	6.50	2.99	5763.0	82.8
AAM-1	TANK	2	10	0.06	3.77	10410000	40.5	46	6.50	3.77	7127.0	82.4
AAM-1	TANK	2	10	0.06	4.74	11520000	40.0	46	6.50	4.74	8789.0	82.0
AAM-1	TANK	2	10	0.06	5.00	11850000	39.5	46	6.50	5.00	9213.0	81.9
AAM-1	TANK	2	10	0.06	6.30	13050000	38.9	46	6.50	6.30	11340.0	81.4
AAM-1	TANK	2	10	0.06	7.92	14370000	38.2	46	6.49	7.92	13960.0	81.0
AAM-1	TANK	2	10	0.06	9.98	15740000	38.1	46	6.49	9.98	17120.0	80.5
AAM-1	TANK	2	10	0.05	12.56	17350000	37.6	46	6.48	12.56	21030.0	80.0
AAM-1	TANK	2	10	0.05	15.00	18650000	37.0	46	6.48	15.00	24620.0	79.6
AAM-1	TANK	2	10	0.05	18.88	20420000	36.5	46	6.47	18.88	30100.0	79.2
AAM-1	TANK	2	10	0.05	23.77	22480000	36.2	46	6.46	23.77	36810.0	78.7
AAM-1	TANK	2	10	0.05	29.93	24430000	35.3	46	6.44	29.93	44930.0	78.3
AAM-1	TANK	2	10	0.05	37.68	26770000	35.0	46	6.42	37.68	54740.0	77.8
AAM-1	TANK	2	10	0.05	47.43	29000000	34.3	46	6.39	47.43	66660.0	77.4
AAM-1	TANK	1	22	0.60	0.50	391500	59.6	58	4.01	0.50	160.2	89.7

AAM-1	TANK	1	22	0.60	0.63	453300	59.0	58	4.01	0.63	201.4	88.0
AAM-1	TANK	1	22	0.60	0.79	528000	58.0	58	4.01	0.79	250.9	88.6
AAM-1	TANK	1	22	0.60	1.00	610400	57.3	58	4.01	1.00	316.4	88.4
AAM-1	TANK	1	22	0.60	1.26	708200	56.6	58	4.01	1.26	397.0	87.7
AAM-1	TANK	1	22	0.60	1.50	793400	55.9	58	4.01	1.50	473.4	87.8
AAM-1	TANK	1	22	0.60	1.89	913800	55.2	58	4.01	1.89	590.7	87.7
AAM-1	TANK	1	22	0.60	2.38	1052000	54.4	58	4.01	2.38	742.0	87.3
AAM-1	TANK	1	22	0.60	2.99	1200000	53.8	58	4.01	2.99	923.7	87.2
AAM-1	TANK	1	22	0.60	3.77	1381000	53.2	58	4.01	3.77	1159.0	86.9
AAM-1	TANK	1	22	0.60	4.74	1579000	52.5	58	4.01	4.74	1448.0	86.6
AAM-1	TANK	1	22	0.60	5.00	1630000	52.3	58	4.01	5.00	1530.0	86.5
AAM-1	TANK	1	22	0.60	6.30	1860000	51.6	58	4.01	6.30	1906.0	86.3
AAM-1	TANK	1	22	0.60	7.92	2118000	51.0	58	4.01	7.92	2377.0	86.0
AAM-1	TANK	1	22	0.60	9.98	2408000	50.3	58	4.01	9.98	2958.0	85.6
AAM-1	TANK	1	22	0.59	12.56	2735000	49.7	58	4.01	12.56	3684.0	85.3
AAM-1	TANK	1	22	0.59	15.00	3014000	49.2	58	4.01	15.00	4361.0	85.1
AAM-1	TANK	1	22	0.59	18.88	3412000	48.6	58	4.01	18.88	5413.0	84.7
AAM-1	TANK	1	22	0.59	23.77	3853000	47.9	58	4.02	23.77	6710.0	84.3
AAM-1	TANK	1	22	0.59	29.93	4347000	47.4	58	4.02	29.93	8329.0	84.0
AAM-1	TANK	1	22	0.59	37.68	4896000	46.9	58	4.02	37.68	10310.0	83.7
AAM-1	TANK	1	22	0.59	47.43	5504000	46.3	58	4.02	47.43	12760.0	83.3
AAM-1	TANK	2	22	0.55	0.50	423500	58.9	58	4.01	0.50	186.0	88.9
AAM-1	TANK	2	22	0.55	0.63	490800	58.2	58	4.01	0.63	235.5	88.8
AAM-1	TANK	2	22	0.55	0.79	570600	57.5	58	4.01	0.79	296.6	88.6
AAM-1	TANK	2	22	0.55	1.00	660700	57.2	58	4.01	1.00	374.3	87.5
AAM-1	TANK	2	22	0.55	1.26	762900	56.0	58	4.01	1.26	463.8	88.2
AAM-1	TANK	2	22	0.55	1.50	853500	55.5	58	4.01	1.50	553.9	87.6
AAM-1	TANK	2	22	0.55	1.89	979900	54.8	58	4.01	1.89	694.5	87.4
AAM-1	TANK	2	22	0.55	2.38	1124000	54.1	58	4.01	2.38	869.4	87.1
AAM-1	TANK	2	22	0.55	2.99	1290000	53.4	58	4.01	2.99	1087.0	86.9
AAM-1	TANK	2	22	0.55	3.77	1476000	52.6	58	4.01	3.77	1356.0	86.5
AAM-1	TANK	2	22	0.55	4.74	1688000	52.0	58	4.01	4.74	1691.0	86.2
AAM-1	TANK	2	22	0.55	5.00	1744000	51.9	58	4.01	5.00	1781.0	86.1
AAM-1	TANK	2	22	0.55	6.30	1985000	51.3	58	4.01	6.30	2213.0	85.8
AAM-1	TANK	2	22	0.55	7.92	2261000	50.6	58	4.01	7.92	2754.0	85.5
AAM-1	TANK	2	22	0.55	9.98	2565000	50.0	58	4.01	9.98	3426.0	85.1
AAM-1	TANK	2	22	0.55	12.56	2910000	49.4	58	4.01	12.56	4256.0	84.7
AAM-1	TANK	2	22	0.55	15.00	3207000	48.9	58	4.01	15.00	5033.0	84.5
AAM-1	TANK	2	22	0.55	18.88	3634000	48.3	58	4.01	18.88	6239.0	84.1
AAM-1	TANK	2	22	0.55	23.77	4097000	47.7	58	4.01	23.77	7725.0	83.6
AAM-1	TANK	2	22	0.55	29.93	4619000	47.2	58	4.01	29.93	9565.0	83.4
AAM-1	TANK	2	22	0.54	37.68	5198000	46.7	58	4.01	37.68	11830.0	83.0
AAM-1	TANK	2	22	0.55	47.43	5833000	46.1	58	4.02	47.43	14600.0	82.7
AAM-1	TANK	1	34	0.90	0.50	24020	74.4	70	18.53	0.50	37.7	89.9
AAM-1	TANK	1	34	0.90	0.63	29490	73.3	70	18.52	0.63	46.5	89.3
AAM-1	TANK	1	34	0.90	0.79	35290	72.9	70	18.52	0.79	58.3	89.7
AAM-1	TANK	1	34	0.90	1.00	42400	71.7	70	18.52	1.00	73.7	89.4
AAM-1	TANK	1	34	0.90	1.26	51090	71.3	70	18.52	1.26	91.9	89.8

AAM-1	TANK	1	34	0.90	1.50	58370	71.3	70	18.52	1.50	110.3	89.5
AAM-1	TANK	1	34	0.90	1.89	69820	70.3	70	18.52	1.89	138.7	89.5
AAM-1	TANK	1	34	0.90	2.38	83400	69.6	70	18.53	2.38	173.8	89.0
AAM-1	TANK	1	34	0.90	2.99	99970	69.0	70	18.53	2.99	218.7	89.0
AAM-1	TANK	1	34	0.90	3.77	119300	68.4	70	18.53	3.77	274.9	88.8
AAM-1	TANK	1	34	0.90	4.74	142000	67.7	70	18.53	4.74	345.4	88.6
AAM-1	TANK	1	34	0.90	5.00	147500	67.6	70	18.53	5.00	363.8	88.6
AAM-1	TANK	1	34	0.90	6.30	174700	66.9	70	18.53	6.30	456.1	88.4
AAM-1	TANK	1	34	0.90	7.92	207400	66.3	70	18.53	7.92	571.5	88.2
AAM-1	TANK	1	34	0.90	9.98	245400	65.6	70	18.53	9.98	715.5	88.0
AAM-1	TANK	1	34	0.90	12.56	289800	65.0	70	18.53	12.56	896.3	87.7
AAM-1	TANK	1	34	0.90	15.00	329500	64.5	70	18.53	15.00	1066.0	87.5
AAM-1	TANK	1	34	0.90	18.88	387100	63.8	70	18.53	18.88	1332.0	87.3
AAM-1	TANK	1	34	0.90	23.77	456200	63.2	70	18.53	23.77	1665.0	87.1
AAM-1	TANK	1	34	0.90	29.93	533800	62.5	70	18.53	29.93	2078.0	86.8
AAM-1	TANK	1	34	0.90	37.68	624500	61.8	70	18.53	37.68	2591.0	86.6
AAM-1	TANK	1	34	0.90	47.43	730100	61.2	70	18.52	47.43	3229.0	86.3
AAM-1	TANK	2	34	0.85	0.50	25150	73.2	70	16.52	0.50	39.1	89.0
AAM-1	TANK	2	34	0.85	0.63	30130	73.1	70	16.52	0.63	51.4	90.1
AAM-1	TANK	2	34	0.85	0.79	36370	72.5	70	16.52	0.79	63.8	86.0
AAM-1	TANK	2	34	0.85	1.00	43920	71.6	70	16.52	1.00	82.9	90.6
AAM-1	TANK	2	34	0.85	1.26	52820	71.3	70	16.52	1.26	103.4	89.4
AAM-1	TANK	2	34	0.85	1.50	60970	71.2	70	16.52	1.50	122.5	89.1
AAM-1	TANK	2	34	0.85	1.89	72720	70.3	70	16.52	1.89	154.8	88.9
AAM-1	TANK	2	34	0.85	2.38	86870	69.6	70	16.52	2.38	193.0	89.0
AAM-1	TANK	2	34	0.85	2.99	104000	69.0	70	16.52	2.99	243.3	88.7
AAM-1	TANK	2	34	0.85	3.77	123600	68.3	70	16.52	3.77	305.9	88.6
AAM-1	TANK	2	34	0.85	4.74	147400	67.7	70	16.52	4.74	384.0	88.5
AAM-1	TANK	2	34	0.85	5.00	153600	67.6	70	16.52	5.00	404.9	88.4
AAM-1	TANK	2	34	0.85	6.30	182200	66.9	70	16.52	6.30	507.4	88.2
AAM-1	TANK	2	34	0.85	7.92	215900	66.3	70	16.53	7.92	635.7	87.9
AAM-1	TANK	2	34	0.85	9.98	255400	65.6	70	16.52	9.98	795.6	87.7
AAM-1	TANK	2	34	0.85	12.56	301600	65.0	70	16.53	12.56	995.7	87.4
AAM-1	TANK	2	34	0.85	15.00	342400	64.4	70	16.53	15.00	1184.0	87.3
AAM-1	TANK	2	34	0.85	18.88	403100	63.8	70	16.53	18.88	1480.0	87.0
AAM-1	TANK	2	34	0.85	23.77	474700	63.1	70	16.53	23.77	1846.0	86.7
AAM-1	TANK	2	34	0.85	29.93	555300	62.5	70	16.53	29.93	2304.0	86.5
AAM-1	TANK	2	34	0.85	37.68	650400	61.9	70	16.52	37.68	2872.0	86.2
AAM-1	TANK	2	34	0.85	47.43	759500	61.2	70	16.52	47.43	3577.0	85.9

Table 35. AAM-1 RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	RTFOT	1	10	0.03	0.50	6230000	42.1	46	2.49	0.50	3189.0	81.2
AAM-1	RTFOT	1	10	0.03	0.63	6907000	41.8	46	2.49	0.63	3923.0	80.9
AAM-1	RTFOT	1	10	0.03	0.79	7680000	40.9	46	2.49	0.79	4822.0	79.9
AAM-1	RTFOT	1	10	0.03	1.00	8528000	40.6	46	2.49	1.00	5903.0	79.3
AAM-1	RTFOT	1	10	0.03	1.26	9401000	39.5	46	2.49	1.26	7210.0	78.7
AAM-1	RTFOT	1	10	0.03	1.50	10220000	39.1	46	2.49	1.50	8434.0	78.3
AAM-1	RTFOT	1	10	0.03	1.89	11280000	38.7	46	2.49	1.89	10260.0	77.6
AAM-1	RTFOT	1	10	0.03	2.38	12400000	38.3	46	2.49	2.38	12530.0	77.0
AAM-1	RTFOT	1	10	0.03	2.99	13570000	37.7	46	2.49	2.99	15220.0	76.4
AAM-1	RTFOT	1	10	0.03	3.77	14890000	36.9	46	2.49	3.77	18460.0	75.8
AAM-1	RTFOT	1	10	0.03	4.74	16350000	36.2	46	2.48	4.74	22370.0	75.3
AAM-1	RTFOT	1	10	0.03	5.00	16780000	36.8	46	2.48	5.00	23390.0	75.1
AAM-1	RTFOT	1	10	0.03	6.30	18470000	36.2	46	2.48	6.30	28280.0	74.5
AAM-1	RTFOT	1	10	0.03	7.92	20170000	35.9	46	2.47	7.92	34180.0	73.9
AAM-1	RTFOT	1	10	0.03	9.98	21730000	35.0	46	2.47	9.98	41150.0	73.4
AAM-1	RTFOT	1	10	0.03	12.56	23930000	34.8	46	2.46	12.56	49560.0	72.8
AAM-1	RTFOT	1	10	0.03	15.00	25330000	34.3	46	2.45	15.00	57260.0	72.3
AAM-1	RTFOT	1	10	0.03	18.88	27730000	34.0	46	2.44	18.88	68640.0	71.9
AAM-1	RTFOT	1	10	0.03	23.77	30110000	33.4	46	2.43	23.77	82360.0	71.3
AAM-1	RTFOT	1	10	0.03	29.93	32600000	32.7	46	2.41	29.93	98720.0	70.8
AAM-1	RTFOT	1	10	0.03	37.68	35520000	32.2	46	2.39	37.68	118200.0	70.3
AAM-1	RTFOT	1	10	0.03	47.43	37510000	31.2	46	2.36	47.43	140900.0	69.8
AAM-1	RTFOT	2	10	0.04	0.50	5655000	41.8	46	2.49	0.50	3003.0	81.9
AAM-1	RTFOT	2	10	0.04	0.63	6281000	40.7	46	2.49	0.63	3703.0	80.8
AAM-1	RTFOT	2	10	0.04	0.79	6961000	40.3	46	2.49	0.79	4556.0	80.3
AAM-1	RTFOT	2	10	0.04	1.00	7707000	39.9	46	2.49	1.00	5608.0	79.8
AAM-1	RTFOT	2	10	0.04	1.26	8502000	39.8	46	2.49	1.26	6859.0	79.1
AAM-1	RTFOT	2	10	0.04	1.50	9201000	38.7	46	2.49	1.50	8096.0	78.7
AAM-1	RTFOT	2	10	0.04	1.89	10150000	38.5	46	2.49	1.89	9909.0	78.0
AAM-1	RTFOT	2	10	0.04	2.38	11160000	38.0	46	2.49	2.38	12100.0	77.5
AAM-1	RTFOT	2	10	0.04	2.99	12220000	38.3	46	2.49	2.99	14710.0	76.8
AAM-1	RTFOT	2	10	0.04	3.77	13390000	37.1	46	2.49	3.77	17900.0	76.3
AAM-1	RTFOT	2	10	0.04	4.74	14750000	36.7	46	2.49	4.74	21610.0	75.7
AAM-1	RTFOT	2	10	0.04	5.00	15080000	36.4	46	2.48	5.00	22740.0	75.5
AAM-1	RTFOT	2	10	0.04	6.30	16500000	36.2	46	2.48	6.30	27520.0	74.9
AAM-1	RTFOT	2	10	0.04	7.92	18070000	35.5	46	2.47	7.92	33280.0	74.4
AAM-1	RTFOT	2	10	0.04	9.98	19860000	35.4	46	2.47	9.98	40170.0	73.8
AAM-1	RTFOT	2	10	0.04	12.56	21550000	34.8	46	2.46	12.56	48340.0	73.3
AAM-1	RTFOT	2	10	0.04	15.00	23120000	34.3	46	2.45	15.00	55790.0	72.8
AAM-1	RTFOT	2	10	0.04	18.88	25030000	33.6	46	2.44	18.88	67020.0	72.3
AAM-1	RTFOT	2	10	0.04	23.77	27470000	33.2	46	2.43	23.77	80390.0	71.8
AAM-1	RTFOT	2	10	0.04	29.93	29580000	32.7	46	2.41	29.93	96360.0	71.3
AAM-1	RTFOT	2	10	0.04	37.68	32060000	32.7	46	2.40	37.68	115200.0	70.7
AAM-1	RTFOT	2	10	0.04	47.43	34870000	32.1	46	2.36	47.43	138000.0	70.2
AAM-1	RTFOT	1	22	0.35	0.50	674200	54.7	58	1.50	0.50	479.4	88.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	RTFOT	1	22	0.35	0.63	768200	54.0	58	1.50	0.63	613.4	85.1
AAM-1	RTFOT	1	22	0.35	0.79	882000	53.5	58	1.50	0.79	770.1	85.5
AAM-1	RTFOT	1	22	0.35	1.00	1015000	53.1	58	1.50	1.00	945.9	85.2
AAM-1	RTFOT	1	22	0.35	1.26	1159000	52.2	58	1.50	1.26	1198.0	84.7
AAM-1	RTFOT	1	22	0.35	1.50	1283000	51.7	58	1.50	1.50	1420.0	84.6
AAM-1	RTFOT	1	22	0.35	1.89	1462000	51.0	58	1.50	1.89	1763.0	84.2
AAM-1	RTFOT	1	22	0.35	2.38	1662000	50.3	58	1.50	2.38	2194.0	83.4
AAM-1	RTFOT	1	22	0.35	2.99	1885000	49.8	58	1.50	2.99	2707.0	83.0
AAM-1	RTFOT	1	22	0.35	3.77	2138000	49.2	58	1.50	3.77	3341.0	82.6
AAM-1	RTFOT	1	22	0.35	4.74	2420000	48.8	58	1.50	4.74	4126.0	81.9
AAM-1	RTFOT	1	22	0.35	5.00	2495000	48.5	58	1.50	5.00	4337.0	82.0
AAM-1	RTFOT	1	22	0.35	6.30	2818000	47.8	58	1.50	6.30	5325.0	81.3
AAM-1	RTFOT	1	22	0.35	7.92	3178000	47.4	58	1.50	7.92	6553.0	80.8
AAM-1	RTFOT	1	22	0.35	9.98	3577000	46.8	58	1.50	9.98	8025.0	80.3
AAM-1	RTFOT	1	22	0.35	12.56	4028000	46.2	58	1.50	12.56	9872.0	79.7
AAM-1	RTFOT	1	22	0.35	15.00	4406000	45.9	58	1.50	15.00	11540.0	79.2
AAM-1	RTFOT	1	22	0.35	18.88	4943000	45.3	58	1.50	18.88	14100.0	78.9
AAM-1	RTFOT	1	22	0.35	23.77	5550000	44.7	58	1.50	23.77	17270.0	78.4
AAM-1	RTFOT	1	22	0.35	29.93	6202000	44.3	58	1.50	29.93	21020.0	77.8
AAM-1	RTFOT	1	22	0.35	37.68	6938000	43.8	58	1.50	37.68	25580.0	77.4
AAM-1	RTFOT	1	22	0.35	47.43	7742000	43.2	58	1.50	47.43	31080.0	76.8
AAM-1	RTFOT	2	22	0.27	0.50	768700	53.0	58	1.50	0.50	474.7	88.4
AAM-1	RTFOT	2	22	0.27	0.63	872600	52.4	58	1.50	0.63	597.6	86.6
AAM-1	RTFOT	2	22	0.27	0.79	996400	51.8	58	1.50	0.79	750.3	85.9
AAM-1	RTFOT	2	22	0.27	1.00	1137000	51.1	58	1.50	1.00	927.8	86.4
AAM-1	RTFOT	2	22	0.27	1.26	1291000	50.7	58	1.50	1.26	1151.0	84.9
AAM-1	RTFOT	2	22	0.27	1.50	1419000	50.5	58	1.50	1.50	1359.0	84.8
AAM-1	RTFOT	2	22	0.27	1.89	1619000	49.2	58	1.50	1.89	1686.0	84.0
AAM-1	RTFOT	2	22	0.27	2.38	1827000	48.9	58	1.50	2.38	2101.0	83.8
AAM-1	RTFOT	2	22	0.27	2.99	2070000	48.2	58	1.50	2.99	2604.0	83.4
AAM-1	RTFOT	2	22	0.27	3.77	2337000	47.6	58	1.50	3.77	3223.0	82.7
AAM-1	RTFOT	2	22	0.27	4.74	2629000	47.1	58	1.50	4.74	3968.0	82.3
AAM-1	RTFOT	2	22	0.27	5.00	2713000	46.8	58	1.50	5.00	4183.0	82.1
AAM-1	RTFOT	2	22	0.27	6.30	3042000	46.3	58	1.50	6.30	5153.0	81.7
AAM-1	RTFOT	2	22	0.27	7.92	3421000	45.7	58	1.50	7.92	6325.0	81.1
AAM-1	RTFOT	2	22	0.27	9.98	3841000	45.3	58	1.50	9.98	7777.0	80.6
AAM-1	RTFOT	2	22	0.27	12.56	4297000	44.8	58	1.50	12.56	9536.0	80.1
AAM-1	RTFOT	2	22	0.26	15.00	4693000	44.4	58	1.50	15.00	11170.0	79.8
AAM-1	RTFOT	2	22	0.27	18.88	5233000	44.0	58	1.50	18.88	13650.0	79.2
AAM-1	RTFOT	2	22	0.26	23.77	5866000	43.4	58	1.50	23.77	16700.0	78.7
AAM-1	RTFOT	2	22	0.27	29.93	6525000	43.0	58	1.50	29.93	20370.0	78.2
AAM-1	RTFOT	2	22	0.26	37.68	7277000	42.6	58	1.50	37.68	24820.0	77.7
AAM-1	RTFOT	2	22	0.27	47.43	8089000	42.1	58	1.50	47.43	30200.0	77.2
AAM-1	RTFOT	1	34	0.45	0.50	48290	69.4	70	7.51	0.50	92.2	93.8
AAM-1	RTFOT	1	34	0.45	0.63	57600	68.6	70	7.51	0.63	117.3	89.6
AAM-1	RTFOT	1	34	0.45	0.79	68510	67.8	70	7.51	0.79	150.5	88.3
AAM-1	RTFOT	1	34	0.45	1.00	81320	67.0	70	7.51	1.00	181.4	88.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	RTFOT	1	34	0.45	1.26	96330	66.1	70	7.51	1.26	228.6	87.1
AAM-1	RTFOT	1	34	0.45	1.50	110000	66.2	70	7.51	1.50	269.3	87.6
AAM-1	RTFOT	1	34	0.45	1.89	129800	65.2	70	7.51	1.89	340.7	87.3
AAM-1	RTFOT	1	34	0.45	2.38	153400	64.3	70	7.51	2.38	424.7	87.3
AAM-1	RTFOT	1	34	0.45	2.99	179800	64.0	70	7.51	2.99	529.1	87.2
AAM-1	RTFOT	1	34	0.45	3.77	211600	63.5	70	7.51	3.77	664.0	86.5
AAM-1	RTFOT	1	34	0.45	4.74	248700	62.9	70	7.52	4.74	826.8	86.1
AAM-1	RTFOT	1	34	0.45	5.00	258300	62.8	70	7.52	5.00	871.4	86.1
AAM-1	RTFOT	1	34	0.45	6.30	302400	62.1	70	7.52	6.30	1087.0	85.7
AAM-1	RTFOT	1	34	0.45	7.92	354100	61.4	70	7.52	7.92	1350.0	85.3
AAM-1	RTFOT	1	34	0.45	9.98	413800	60.9	70	7.52	9.98	1679.0	84.9
AAM-1	RTFOT	1	34	0.45	12.56	482000	60.4	70	7.52	12.56	2087.0	84.5
AAM-1	RTFOT	1	34	0.45	15.00	541800	60.0	70	7.52	15.00	2476.0	84.2
AAM-1	RTFOT	1	34	0.45	18.88	631700	59.4	70	7.52	18.88	3061.0	83.8
AAM-1	RTFOT	1	34	0.45	23.77	735300	58.8	70	7.52	23.77	3787.0	83.3
AAM-1	RTFOT	1	34	0.45	29.93	850900	58.2	70	7.52	29.93	4682.0	83.0
AAM-1	RTFOT	1	34	0.45	37.68	987100	57.8	70	7.52	37.68	5784.0	82.5
AAM-1	RTFOT	1	34	0.45	47.43	1140000	57.1	70	7.52	47.43	7129.0	82.1
AAM-1	RTFOT	2	34	0.33	0.50	63620	66.8	70	7.51	0.50	88.8	90.2
AAM-1	RTFOT	2	34	0.33	0.63	75010	66.2	70	7.51	0.63	110.0	88.0
AAM-1	RTFOT	2	34	0.33	0.79	89180	65.9	70	7.51	0.79	141.9	87.8
AAM-1	RTFOT	2	34	0.33	1.00	105500	64.8	70	7.51	1.00	174.3	89.2
AAM-1	RTFOT	2	34	0.33	1.26	124100	64.2	70	7.51	1.26	219.6	87.9
AAM-1	RTFOT	2	34	0.33	1.50	140400	64.8	70	7.51	1.50	264.9	88.1
AAM-1	RTFOT	2	34	0.33	1.89	165200	62.9	70	7.51	1.89	331.6	88.2
AAM-1	RTFOT	2	34	0.33	2.38	193000	62.1	70	7.51	2.38	413.8	87.1
AAM-1	RTFOT	2	34	0.33	2.99	226400	61.7	70	7.51	2.99	518.6	87.1
AAM-1	RTFOT	2	34	0.33	3.77	264700	61.2	70	7.51	3.77	647.4	86.7
AAM-1	RTFOT	2	34	0.33	4.74	309100	60.4	70	7.51	4.74	805.9	86.2
AAM-1	RTFOT	2	34	0.33	5.00	321400	60.3	70	7.51	5.00	846.9	86.1
AAM-1	RTFOT	2	34	0.33	6.30	374000	59.7	70	7.51	6.30	1056.0	85.7
AAM-1	RTFOT	2	34	0.33	7.92	434700	58.9	70	7.51	7.92	1314.0	85.4
AAM-1	RTFOT	2	34	0.33	9.98	504100	58.2	70	7.52	9.98	1632.0	85.0
AAM-1	RTFOT	2	34	0.33	12.56	583600	57.7	70	7.52	12.56	2029.0	84.6
AAM-1	RTFOT	2	34	0.33	15.00	652000	57.3	70	7.52	15.00	2391.0	84.4
AAM-1	RTFOT	2	34	0.33	18.88	757800	56.7	70	7.52	18.88	2961.0	83.9
AAM-1	RTFOT	2	34	0.33	23.77	870800	57.0	70	7.52	23.77	3669.0	83.5
AAM-1	RTFOT	2	34	0.33	29.93	1003000	55.5	70	7.52	29.93	4534.0	83.2
AAM-1	RTFOT	2	34	0.33	37.68	1153000	55.1	70	7.52	37.68	5603.0	82.7
AAM-1	RTFOT	2	34	0.33	47.43	1323000	54.6	70	7.52	47.43	6906.0	82.3

Table 36. AAM-1 SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	SAFT	1	10	0.04	1.50	9203000	40.6	46	4.19	4.74	14610.0	78.6
AAM-1	SAFT	1	10	0.04	1.89	10180000	40.1	46	4.19	5.00	15320.0	78.4
AAM-1	SAFT	1	10	0.04	2.38	11280000	39.6	46	4.19	6.30	18700.0	77.9
AAM-1	SAFT	1	10	0.04	2.99	12320000	39.2	46	4.18	7.92	22790.0	77.4
AAM-1	SAFT	1	10	0.04	3.77	13700000	38.6	46	4.18	9.98	27690.0	76.9
AAM-1	SAFT	1	10	0.04	4.74	14990000	38.0	46	4.17	12.56	33660.0	76.4
AAM-1	SAFT	1	10	0.04	5.00	15300000	37.9	46	4.17	15.00	39140.0	75.9
AAM-1	SAFT	1	10	0.04	6.30	16860000	37.7	46	4.15	18.88	47420.0	75.4
AAM-1	SAFT	1	10	0.04	7.92	18370000	36.6	46	4.14	23.77	57360.0	75.0
AAM-1	SAFT	1	10	0.04	9.98	20050000	36.7	46	4.12	29.93	69300.0	74.5
AAM-1	SAFT	1	10	0.04	12.56	22080000	35.7	46	4.10	37.68	83590.0	74.0
AAM-1	SAFT	1	10	0.04	15.00	23660000	35.5	46	4.07	47.43	100700.0	73.5
AAM-1	SAFT	1	10	0.04	18.88	25650000	34.9	46	4.20	0.50	1940.0	84.3
AAM-1	SAFT	1	10	0.04	23.77	28080000	34.7	46	4.20	0.63	2401.0	83.6
AAM-1	SAFT	1	10	0.04	29.93	30620000	33.7	46	4.20	0.79	2965.0	82.7
AAM-1	SAFT	1	10	0.04	37.68	33300000	33.0	46	4.20	1.00	3679.0	82.2
AAM-1	SAFT	1	10	0.04	47.43	36040000	32.9	46	4.20	1.26	4533.0	81.8
AAM-1	SAFT	2	10	0.04	1.50	10040000	40.5	46	4.20	1.50	5317.0	81.7
AAM-1	SAFT	2	10	0.04	1.89	11090000	40.0	46	4.20	1.89	6547.0	80.7
AAM-1	SAFT	2	10	0.04	2.38	12230000	39.8	46	4.20	2.38	8052.0	80.3
AAM-1	SAFT	2	10	0.04	2.99	13380000	39.0	46	4.20	2.99	9871.0	79.7
AAM-1	SAFT	2	10	0.04	3.77	14780000	38.7	46	4.20	3.77	12100.0	79.3
AAM-1	SAFT	2	10	0.04	4.74	16210000	38.0	46	4.19	4.74	14810.0	78.7
AAM-1	SAFT	2	10	0.04	5.00	16600000	37.9	46	4.19	5.00	15510.0	78.6
AAM-1	SAFT	2	10	0.04	6.30	18220000	37.3	46	4.19	6.30	18940.0	78.0
AAM-1	SAFT	2	10	0.04	7.92	20130000	36.2	46	4.19	7.92	23080.0	77.5
AAM-1	SAFT	2	10	0.04	9.98	21880000	36.5	46	4.18	9.98	28060.0	77.0
AAM-1	SAFT	2	10	0.04	12.56	23740000	36.0	46	4.18	12.56	34130.0	76.5
AAM-1	SAFT	2	10	0.04	15.00	25310000	35.5	46	4.17	15.00	39690.0	76.1
AAM-1	SAFT	2	10	0.04	18.88	27750000	35.1	46	4.16	18.88	48070.0	75.6
AAM-1	SAFT	2	10	0.04	23.77	30180000	34.6	46	4.15	23.77	58210.0	75.1
AAM-1	SAFT	2	10	0.04	29.93	32520000	34.1	46	4.13	29.93	70350.0	74.6
AAM-1	SAFT	2	10	0.04	37.68	35700000	33.1	46	4.11	37.68	84880.0	74.1
AAM-1	SAFT	2	10	0.04	47.43	38730000	32.8	46	4.08	47.43	102400.0	73.7
AAM-1	SAFT	1	22	0.56	0.50	459800	58.3	58	2.69	0.50	298.1	88.5
AAM-1	SAFT	1	22	0.56	0.63	531200	58.0	58	2.69	0.63	370.9	86.4
AAM-1	SAFT	1	22	0.56	0.79	617400	56.9	58	2.69	0.79	467.7	87.3
AAM-1	SAFT	1	22	0.56	1.00	714100	56.7	58	2.69	1.00	587.4	86.3
AAM-1	SAFT	1	22	0.56	1.26	824800	55.9	58	2.69	1.26	726.4	86.3
AAM-1	SAFT	1	22	0.56	1.50	915200	56.0	58	2.69	1.50	869.9	86.1
AAM-1	SAFT	1	22	0.56	1.89	1060000	54.8	58	2.69	1.89	1083.0	86.0
AAM-1	SAFT	1	22	0.56	2.38	1217000	54.0	58	2.69	2.38	1345.0	85.3
AAM-1	SAFT	1	22	0.56	2.99	1395000	53.6	58	2.69	2.99	1670.0	85.0
AAM-1	SAFT	1	22	0.56	3.77	1594000	52.8	58	2.69	3.77	2075.0	84.5
AAM-1	SAFT	1	22	0.56	4.74	1825000	52.2	58	2.69	4.74	2577.0	84.2

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	SAFT	1	22	0.56	5.00	1890000	51.9	58	2.69	5.00	2706.0	84.1
AAM-1	SAFT	1	22	0.56	6.30	2159000	51.3	58	2.69	6.30	3347.0	83.7
AAM-1	SAFT	1	22	0.56	7.92	2450000	50.8	58	2.69	7.92	4143.0	83.2
AAM-1	SAFT	1	22	0.56	9.98	2775000	50.2	58	2.69	9.98	5120.0	82.7
AAM-1	SAFT	1	22	0.56	12.56	3141000	49.5	58	2.70	12.56	6318.0	82.3
AAM-1	SAFT	1	22	0.56	15.00	3477000	49.0	58	2.70	15.00	7435.0	82.0
AAM-1	SAFT	1	22	0.56	18.88	3938000	48.4	58	2.70	18.88	9159.0	81.6
AAM-1	SAFT	1	22	0.55	23.77	4454000	47.8	58	2.70	23.77	11270.0	81.0
AAM-1	SAFT	1	22	0.55	29.93	5024000	47.3	58	2.70	29.93	13850.0	80.6
AAM-1	SAFT	1	22	0.55	37.68	5654000	46.7	58	2.70	37.68	17020.0	80.2
AAM-1	SAFT	1	22	0.55	47.43	6353000	46.1	58	2.71	47.43	20830.0	79.8
AAM-1	SAFT	2	22	0.53	0.50	488000	58.5	58	2.60	0.50	315.4	87.8
AAM-1	SAFT	2	22	0.53	0.63	560600	58.2	58	2.60	0.63	388.2	87.5
AAM-1	SAFT	2	22	0.53	0.79	651600	57.3	58	2.60	0.79	485.8	87.0
AAM-1	SAFT	2	22	0.53	1.00	749400	56.8	58	2.60	1.00	611.5	86.2
AAM-1	SAFT	2	22	0.53	1.26	869100	56.0	58	2.60	1.26	766.5	86.4
AAM-1	SAFT	2	22	0.53	1.50	978100	56.3	58	2.60	1.50	898.9	85.7
AAM-1	SAFT	2	22	0.53	1.89	1131000	54.8	58	2.60	1.89	1125.0	85.6
AAM-1	SAFT	2	22	0.53	2.38	1300000	54.2	58	2.60	2.38	1398.0	85.3
AAM-1	SAFT	2	22	0.53	2.99	1489000	53.5	58	2.60	2.99	1741.0	84.9
AAM-1	SAFT	2	22	0.53	3.77	1709000	52.9	58	2.60	3.77	2159.0	84.4
AAM-1	SAFT	2	22	0.53	4.74	1952000	52.2	58	2.60	4.74	2675.0	84.1
AAM-1	SAFT	2	22	0.53	5.00	2010000	52.1	58	2.60	5.00	2810.0	83.8
AAM-1	SAFT	2	22	0.53	6.30	2289000	51.5	58	2.60	6.30	3479.0	83.6
AAM-1	SAFT	2	22	0.53	7.92	2606000	50.8	58	2.60	7.92	4309.0	83.2
AAM-1	SAFT	2	22	0.52	9.98	2963000	50.2	58	2.60	9.98	5317.0	82.7
AAM-1	SAFT	2	22	0.52	12.56	3371000	49.6	58	2.61	12.56	6562.0	82.2
AAM-1	SAFT	2	22	0.52	15.00	3696000	49.1	58	2.61	15.00	7702.0	81.9
AAM-1	SAFT	2	22	0.52	18.88	4169000	48.5	58	2.61	18.88	9479.0	81.4
AAM-1	SAFT	2	22	0.52	23.77	4701000	47.9	58	2.61	23.77	11660.0	81.0
AAM-1	SAFT	2	22	0.52	29.93	5298000	47.4	58	2.62	29.93	14310.0	80.5
AAM-1	SAFT	2	22	0.52	37.68	5969000	46.8	58	2.62	37.68	17560.0	80.2
AAM-1	SAFT	2	22	0.52	47.43	6695000	46.2	58	2.62	47.43	21530.0	79.7
AAM-1	SAFT	1	34	9.61	0.50	25330	73.9	70	13.00	0.50	60.3	87.4
AAM-1	SAFT	1	34	9.61	0.63	30700	73.3	70	13.00	0.63	76.3	88.4
AAM-1	SAFT	1	34	9.61	0.79	37040	73.1	70	13.00	0.79	96.1	89.7
AAM-1	SAFT	1	34	9.61	1.00	44450	72.1	70	13.00	1.00	119.3	89.0
AAM-1	SAFT	1	34	9.61	1.26	53700	71.5	70	12.99	1.26	149.7	88.6
AAM-1	SAFT	1	34	9.61	1.50	63000	71.2	70	12.99	1.50	181.1	88.5
AAM-1	SAFT	1	34	9.61	1.89	74790	70.3	70	12.99	1.89	227.9	88.5
AAM-1	SAFT	1	34	9.61	2.38	88610	69.9	70	13.00	2.38	284.1	88.2
AAM-1	SAFT	1	34	9.61	2.99	104800	69.5	70	13.00	2.99	357.5	87.9
AAM-1	SAFT	1	34	9.61	3.77	123700	69.0	70	13.00	3.77	448.1	87.6
AAM-1	SAFT	1	34	9.61	4.74	145700	68.5	70	13.00	4.74	561.0	87.3
AAM-1	SAFT	1	34	9.61	5.00	154400	68.1	70	13.00	5.00	591.3	87.2
AAM-1	SAFT	1	34	9.61	6.30	179000	67.8	70	13.00	6.30	739.8	86.9
AAM-1	SAFT	1	34	9.61	7.92	209000	67.5	70	13.00	7.92	923.5	86.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	SAFT	1	34	9.60	9.98	243100	67.2	70	13.00	9.98	1152.0	86.3
AAM-1	SAFT	1	34	9.60	12.56	283000	66.9	70	13.00	12.56	1437.0	86.0
AAM-1	SAFT	1	34	9.60	15.00	331000	66.0	70	13.00	15.00	1705.0	85.7
AAM-1	SAFT	1	34	9.60	18.88	373700	66.2	70	13.00	18.88	2119.0	85.4
AAM-1	SAFT	1	34	9.60	23.77	427600	66.1	70	13.00	23.77	2635.0	85.1
AAM-1	SAFT	1	34	9.60	29.93	490900	65.9	70	13.00	29.93	3271.0	84.7
AAM-1	SAFT	1	34	9.59	37.68	563700	65.7	70	13.00	37.68	4055.0	84.4
AAM-1	SAFT	1	34	9.58	47.43	646100	65.4	70	12.99	47.43	5021.0	84.0
AAM-1	SAFT	2	34	8.91	0.50	26700	74.4	70	12.71	0.50	63.1	89.5
AAM-1	SAFT	2	34	8.91	0.63	32660	73.7	70	12.71	0.63	80.3	89.5
AAM-1	SAFT	2	34	8.91	0.79	39230	73.0	70	12.71	0.79	100.7	88.5
AAM-1	SAFT	2	34	8.91	1.00	47010	72.4	70	12.71	1.00	128.3	89.0
AAM-1	SAFT	2	34	8.91	1.26	56460	71.8	70	12.70	1.26	158.5	88.6
AAM-1	SAFT	2	34	8.90	1.50	67190	71.3	70	12.70	1.50	193.2	89.1
AAM-1	SAFT	2	34	8.90	1.89	79930	70.4	70	12.70	1.89	238.2	88.4
AAM-1	SAFT	2	34	8.91	2.38	94700	69.9	70	12.71	2.38	298.1	88.3
AAM-1	SAFT	2	34	8.91	2.99	112400	69.4	70	12.70	2.99	374.4	87.8
AAM-1	SAFT	2	34	8.91	3.77	132900	69.0	70	12.71	3.77	469.3	87.6
AAM-1	SAFT	2	34	8.90	4.74	156600	68.5	70	12.71	4.74	587.0	87.3
AAM-1	SAFT	2	34	8.90	5.00	165600	68.1	70	12.71	5.00	618.7	87.2
AAM-1	SAFT	2	34	8.90	6.30	192600	67.8	70	12.71	6.30	771.8	86.9
AAM-1	SAFT	2	34	8.90	7.92	225100	67.5	70	12.71	7.92	963.6	86.6
AAM-1	SAFT	2	34	8.90	9.98	262000	67.1	70	12.71	9.98	1202.0	86.3
AAM-1	SAFT	2	34	8.90	12.56	305100	66.8	70	12.71	12.56	1497.0	86.0
AAM-1	SAFT	2	34	8.90	15.00	350400	66.2	70	12.71	15.00	1779.0	85.7
AAM-1	SAFT	2	34	8.90	18.88	402400	66.1	70	12.71	18.88	2209.0	85.4
AAM-1	SAFT	2	34	8.90	23.77	462400	65.9	70	12.71	23.77	2745.0	85.0
AAM-1	SAFT	2	34	8.89	29.93	531000	65.7	70	12.71	29.93	3409.0	84.7
AAM-1	SAFT	2	34	8.89	37.68	609800	65.4	70	12.70	37.68	4228.0	84.3
AAM-1	SAFT	2	34	8.88	47.43	699900	65.2	70	12.70	47.43	5236.0	84.0
AAM-1	SAFT	1	46	4.20	0.50	1913	84.0	70	20.03	18.88	370.8	89.2
AAM-1	SAFT	1	46	4.20	0.63	2376	83.0	70	20.03	23.77	465.7	89.2
AAM-1	SAFT	1	46	4.20	0.79	2935	82.8	70	20.03	29.93	584.5	89.1
AAM-1	SAFT	1	46	4.20	1.00	3622	82.3	70	20.03	37.68	733.9	89.0
AAM-1	SAFT	1	46	4.20	1.26	4473	81.8	70	20.02	47.43	920.5	88.9
AAM-1	SAFT	1	46	4.20	1.50	5259	81.6	0	0.00	0.00	0.0	0.0
AAM-1	SAFT	1	46	4.20	1.89	6475	80.7	0	0.00	0.00	0.0	0.0
AAM-1	SAFT	1	46	4.20	2.38	7950	80.2	0	0.00	0.00	0.0	0.0
AAM-1	SAFT	1	46	4.20	2.99	9751	79.7	0	0.00	0.00	0.0	0.0
AAM-1	SAFT	1	46	4.20	3.77	11960	79.1	0	0.00	0.00	0.0	0.0

Table 37. AAM-1 MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	MGRF	1	15	5.00	0.10	802702	54.2	46	9.54	0.10	689.5	85.5
AAM-1	MGRF	1	15	5.00	0.13	907650	53.6	46	9.85	0.13	869.0	85.0
AAM-1	MGRF	1	15	5.00	0.16	1024000	53.2	46	10.05	0.16	1090.0	84.4
AAM-1	MGRF	1	15	5.00	0.20	1152450	52.6	46	10.00	0.20	1360.0	83.9
AAM-1	MGRF	1	15	5.00	0.25	1288847	52.1	46	10.00	0.25	1685.0	83.3
AAM-1	MGRF	1	15	5.00	0.32	1443520	51.6	46	10.00	0.32	2095.0	82.8
AAM-1	MGRF	1	15	5.00	0.40	1620000	51.2	46	10.00	0.40	2590.0	82.2
AAM-1	MGRF	1	15	5.00	0.50	1804037	50.7	46	10.00	0.50	3195.0	81.6
AAM-1	MGRF	1	15	5.00	0.63	2005101	50.3	46	10.00	0.63	3940.0	81.0
AAM-1	MGRF	1	15	5.00	0.79	2226217	50.0	46	10.00	0.79	4850.0	80.4
AAM-1	MGRF	1	15	5.00	1.00	2475000	49.6	46	10.00	1.00	5950.0	79.8
AAM-1	MGRF	1	15	5.00	1.26	2737335	49.3	46	10.00	1.26	7290.0	79.2
AAM-1	MGRF	1	15	5.00	1.58	3020593	48.9	46	10.00	1.58	8920.0	78.6
AAM-1	MGRF	1	15	5.00	2.00	3344475	48.6	46	10.00	2.00	10900.0	78.0
AAM-1	MGRF	1	15	5.00	2.51	3685000	48.3	46	10.00	2.51	13250.0	77.4
AAM-1	MGRF	1	15	4.99	3.16	4065678	48.0	46	10.00	3.16	16150.0	76.8
AAM-1	MGRF	1	15	4.99	3.98	4476987	47.7	46	10.00	3.98	19550.0	76.2
AAM-1	MGRF	1	15	4.99	5.01	4921122	47.4	46	10.00	5.01	23700.0	75.7
AAM-1	MGRF	1	15	4.99	6.31	5405000	47.2	46	10.00	6.31	28650.0	75.1
AAM-1	MGRF	1	15	4.99	7.94	5920295	46.9	46	10.00	7.94	34500.0	74.6
AAM-1	MGRF	1	15	4.99	10.00	6476117	46.7	46	10.00	10.00	41550.0	74.1
AAM-1	MGRF	1	15	4.99	12.60	7079441	46.4	46	10.00	12.60	49900.0	73.6
AAM-1	MGRF	1	15	4.99	15.80	7725000	46.2	46	10.00	15.80	59800.0	73.1
AAM-1	MGRF	1	15	4.99	20.00	8423344	45.9	46	10.00	20.00	71400.0	72.6
AAM-1	MGRF	1	15	4.99	25.10	9129377	45.7	46	10.00	25.10	85100.0	72.2
AAM-1	MGRF	1	15	4.98	31.60	9876069	45.5	46	10.00	31.60	101000.0	71.8
AAM-1	MGRF	1	15	4.97	39.80	10650000	45.4	46	10.00	39.80	120000.0	71.4
AAM-1	MGRF	1	15	4.98	50.10	11427923	45.1	46	10.00	50.10	142000.0	71.1
AAM-1	MGRF	1	15	4.98	63.10	12261455	44.7	46	10.00	63.10	167000.0	70.8
AAM-1	MGRF	1	15	4.97	79.40	12911418	44.5	46	10.00	79.40	196500.0	70.5
AAM-1	MGRF	1	15	5.01	100.00	13100000	45.0	46	10.00	100.00	230500.0	70.2
AAM-1	MGRF	2	15	5.00	0.10	950500	53.6	46	9.91	0.10	684.0	85.4
AAM-1	MGRF	2	15	5.00	0.13	1125000	53.7	46	9.97	0.13	857.5	85.0
AAM-1	MGRF	2	15	5.00	0.16	1280000	53.0	46	10.10	0.16	1070.0	84.4
AAM-1	MGRF	2	15	5.00	0.20	1450000	52.4	46	10.10	0.20	1335.0	83.9
AAM-1	MGRF	2	15	5.00	0.25	1635000	51.7	46	10.10	0.25	1655.0	83.3
AAM-1	MGRF	2	15	5.00	0.32	1830000	51.1	46	10.10	0.32	2055.0	82.7
AAM-1	MGRF	2	15	5.00	0.40	2050000	50.4	46	10.05	0.40	2540.0	82.1
AAM-1	MGRF	2	15	5.00	0.50	2285000	49.8	46	10.05	0.50	3145.0	81.5
AAM-1	MGRF	2	15	5.00	0.63	2540000	49.2	46	10.10	0.63	3870.0	81.0
AAM-1	MGRF	2	15	5.00	0.79	2820000	48.6	46	10.10	0.79	4755.0	80.4
AAM-1	MGRF	2	15	5.00	1.00	3115000	48.0	46	10.00	1.00	5835.0	79.8
AAM-1	MGRF	2	15	5.00	1.26	3440000	47.4	46	10.00	1.26	7145.0	79.1
AAM-1	MGRF	2	15	5.00	1.58	3785000	46.9	46	10.00	1.58	8730.0	78.5
AAM-1	MGRF	2	15	5.00	2.00	4165000	46.3	46	10.00	2.00	10650.0	77.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	MGRF	2	15	5.00	2.51	4575000	45.7	46	10.00	2.51	12950.0	77.3
AAM-1	MGRF	2	15	5.00	3.16	5020000	45.1	46	10.00	3.16	15750.0	76.7
AAM-1	MGRF	2	15	5.00	3.98	5495000	44.5	46	10.00	3.98	19050.0	76.1
AAM-1	MGRF	2	15	5.00	5.01	6005000	43.8	46	10.00	5.01	23100.0	75.6
AAM-1	MGRF	2	15	5.00	6.31	6480000	43.4	46	10.00	6.31	27950.0	75.0
AAM-1	MGRF	2	15	5.00	7.94	7020000	43.0	46	10.00	7.94	33700.0	74.5
AAM-1	MGRF	2	15	5.00	10.00	7605000	42.4	46	10.00	10.00	40550.0	73.9
AAM-1	MGRF	2	15	5.00	12.60	8190000	41.9	46	10.00	12.60	48600.0	73.4
AAM-1	MGRF	2	15	5.00	15.80	8830000	41.4	46	9.98	15.80	58200.0	73.0
AAM-1	MGRF	2	15	5.00	20.00	9485000	40.8	46	10.00	20.00	69100.0	72.5
AAM-1	MGRF	2	15	5.01	25.10	10190000	40.3	46	9.99	25.10	82850.0	72.0
AAM-1	MGRF	2	15	5.01	31.60	10900000	39.7	46	10.00	31.60	98450.0	71.6
AAM-1	MGRF	2	15	5.01	39.80	11600000	39.1	46	10.00	39.80	117000.0	71.2
AAM-1	MGRF	2	15	5.02	50.10	12300000	38.5	46	10.00	50.10	138000.0	70.8
AAM-1	MGRF	2	15	5.02	63.10	12900000	38.0	46	10.00	63.10	163000.0	70.5
AAM-1	MGRF	2	15	5.02	79.40	13550000	37.6	46	10.00	79.40	191500.0	70.1
AAM-1	MGRF	2	15	5.01	100.00	14100000	37.4	46	10.00	100.00	224500.0	69.8
AAM-1	MGRF	1	25	5.00	0.10	86060	66.6	58	9.91	0.10	94.1	88.8
AAM-1	MGRF	1	25	5.00	0.13	101487	66.0	58	9.97	0.13	118.5	88.5
AAM-1	MGRF	1	25	5.00	0.16	119500	65.4	58	10.10	0.16	149.5	88.3
AAM-1	MGRF	1	25	5.00	0.20	140751	64.6	58	10.10	0.20	188.0	88.0
AAM-1	MGRF	1	25	5.00	0.25	164127	63.9	58	10.10	0.25	236.0	87.7
AAM-1	MGRF	1	25	5.00	0.32	191356	63.3	58	10.10	0.32	295.0	87.4
AAM-1	MGRF	1	25	5.00	0.40	223000	62.7	58	10.05	0.40	369.5	87.0
AAM-1	MGRF	1	25	5.00	0.50	258454	62.1	58	10.05	0.50	462.5	86.7
AAM-1	MGRF	1	25	5.00	0.63	299321	61.5	58	10.10	0.63	578.0	86.3
AAM-1	MGRF	1	25	5.00	0.79	345768	61.0	58	10.10	0.79	721.0	85.9
AAM-1	MGRF	1	25	5.00	1.00	398500	60.4	58	10.00	1.00	898.0	85.5
AAM-1	MGRF	1	25	5.00	1.26	458320	59.9	58	10.00	1.26	1120.0	85.0
AAM-1	MGRF	1	25	5.00	1.58	524597	59.4	58	10.00	1.58	1390.0	84.6
AAM-1	MGRF	1	25	5.00	2.00	602643	58.9	58	10.00	2.00	1725.0	84.1
AAM-1	MGRF	1	25	5.00	2.51	687500	58.4	58	10.00	2.51	2140.0	83.7
AAM-1	MGRF	1	25	5.00	3.16	784866	57.9	58	10.00	3.16	2650.0	83.2
AAM-1	MGRF	1	25	5.00	3.98	892821	57.4	58	10.00	3.98	3275.0	82.7
AAM-1	MGRF	1	25	5.00	5.01	1014367	57.0	58	10.00	5.01	4040.0	82.2
AAM-1	MGRF	1	25	5.00	6.31	1155000	56.6	58	10.00	6.31	4985.0	81.7
AAM-1	MGRF	1	25	5.00	7.94	1301496	56.2	58	10.00	7.94	6135.0	81.2
AAM-1	MGRF	1	25	5.00	10.00	1466347	55.8	58	10.00	10.00	7540.0	80.7
AAM-1	MGRF	1	25	5.00	12.60	1652723	55.4	58	10.00	12.60	9250.0	80.2
AAM-1	MGRF	1	25	5.00	15.80	1860000	55.1	58	9.98	15.80	11300.0	79.7
AAM-1	MGRF	1	25	5.00	20.00	2092870	54.6	58	10.00	20.00	13850.0	79.2
AAM-1	MGRF	1	25	5.01	25.10	2336193	54.2	58	9.99	25.10	16900.0	78.7
AAM-1	MGRF	1	25	5.01	31.60	2609381	53.8	58	10.00	31.60	20600.0	78.2
AAM-1	MGRF	1	25	5.01	39.80	2920000	53.2	58	10.00	39.80	25050.0	77.8
AAM-1	MGRF	1	25	5.02	50.10	3233174	53.3	58	10.00	50.10	30400.0	77.3
AAM-1	MGRF	1	25	5.02	63.10	3546409	53.2	58	10.00	63.10	36850.0	76.9
AAM-1	MGRF	1	25	5.02	79.40	3860973	53.0	58	10.00	79.40	44550.0	76.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	MGRF	1	25	5.01	100.00	4185000	52.8	58	10.00	100.00	53750.0	76.2
AAM-1	MGRF	2	25	5.00	0.10	93850	67.1	58	9.98	0.10	95.5	88.7
AAM-1	MGRF	2	25	5.00	0.13	118500	66.2	58	10.00	0.13	120.0	88.5
AAM-1	MGRF	2	25	5.00	0.16	141500	65.4	58	10.00	0.16	151.0	88.2
AAM-1	MGRF	2	25	5.00	0.20	168000	64.7	58	10.00	0.20	190.0	88.0
AAM-1	MGRF	2	25	5.00	0.25	198000	64.0	58	10.00	0.25	238.5	87.6
AAM-1	MGRF	2	25	5.00	0.32	231500	63.3	58	10.00	0.32	298.5	87.2
AAM-1	MGRF	2	25	5.00	0.40	270000	62.6	58	10.00	0.40	373.0	86.9
AAM-1	MGRF	2	25	5.00	0.50	314000	62.0	58	10.00	0.50	466.5	86.6
AAM-1	MGRF	2	25	5.00	0.63	364000	61.4	58	10.00	0.63	582.5	86.2
AAM-1	MGRF	2	25	5.00	0.79	421000	60.8	58	10.00	0.79	726.5	85.8
AAM-1	MGRF	2	25	5.00	1.00	485000	60.2	58	10.00	1.00	905.0	85.4
AAM-1	MGRF	2	25	5.00	1.26	557500	59.6	58	10.00	1.26	1125.0	84.9
AAM-1	MGRF	2	25	5.00	1.58	639500	59.0	58	10.00	1.58	1395.0	84.5
AAM-1	MGRF	2	25	5.00	2.00	732500	58.4	58	10.00	2.00	1735.0	84.0
AAM-1	MGRF	2	25	5.00	2.51	837500	57.9	58	10.00	2.51	2145.0	83.5
AAM-1	MGRF	2	25	5.00	3.16	955500	57.3	58	10.05	3.16	2660.0	83.0
AAM-1	MGRF	2	25	5.00	3.98	1085000	56.8	58	10.00	3.98	3280.0	82.5
AAM-1	MGRF	2	25	5.00	5.01	1235000	56.2	58	10.00	5.01	4050.0	82.0
AAM-1	MGRF	2	25	5.00	6.31	1390000	55.8	58	10.00	6.31	4995.0	81.5
AAM-1	MGRF	2	25	5.00	7.94	1565000	55.4	58	10.00	7.94	6140.0	81.0
AAM-1	MGRF	2	25	5.00	10.00	1760000	54.9	58	10.00	10.00	7545.0	80.4
AAM-1	MGRF	2	25	5.00	12.60	1975000	54.6	58	10.00	12.60	9260.0	79.9
AAM-1	MGRF	2	25	5.00	15.80	2210000	54.1	58	9.88	15.80	11350.0	79.4
AAM-1	MGRF	2	25	5.01	20.00	2465000	53.7	58	10.00	20.00	13850.0	78.9
AAM-1	MGRF	2	25	5.01	25.10	2740000	53.4	58	10.00	25.10	16750.0	78.2
AAM-1	MGRF	2	25	5.01	31.60	3035000	53.1	58	10.00	31.60	20550.0	77.8
AAM-1	MGRF	2	25	5.01	39.80	3350000	52.8	58	10.00	39.80	25000.0	77.3
AAM-1	MGRF	2	25	5.01	50.10	3690000	52.6	58	10.00	50.10	30350.0	76.8
AAM-1	MGRF	2	25	5.01	63.10	4035000	52.5	58	10.00	63.10	36750.0	76.3
AAM-1	MGRF	2	25	5.01	79.40	4405000	52.4	58	10.00	79.40	44400.0	75.8
AAM-1	MGRF	2	25	5.00	100.00	4775000	52.4	58	10.00	100.00	53600.0	75.3
AAM-1	MGRF	1	35	5.00	0.10	51450	81.0	70	9.98	0.10	17.8	89.8
AAM-1	MGRF	1	35	5.00	0.13	63010	80.6	70	10.00	0.13	22.3	89.7
AAM-1	MGRF	1	35	5.00	0.16	73800	80.3	70	10.00	0.16	28.1	89.7
AAM-1	MGRF	1	35	5.00	0.20	90430	79.9	70	10.00	0.20	35.3	89.5
AAM-1	MGRF	1	35	5.00	0.25	110300	79.4	70	10.00	0.25	44.5	89.4
AAM-1	MGRF	1	35	5.00	0.32	134800	79.0	70	10.00	0.32	55.9	89.3
AAM-1	MGRF	1	35	5.00	0.40	164500	78.6	70	10.00	0.40	70.2	89.2
AAM-1	MGRF	1	35	5.00	0.50	200200	78.1	70	10.00	0.50	88.3	89.0
AAM-1	MGRF	1	35	5.00	0.63	9256	75.1	70	10.10	0.63	110.5	88.8
AAM-1	MGRF	1	35	5.00	0.79	11187	74.4	70	10.10	0.79	139.0	88.6
AAM-1	MGRF	1	35	5.00	1.00	13555	73.8	70	10.00	1.00	175.0	88.4
AAM-1	MGRF	1	35	5.00	1.26	16373	73.0	70	10.10	1.26	219.0	88.2
AAM-1	MGRF	1	35	5.00	1.58	19582	72.2	70	10.00	1.58	274.5	87.9
AAM-1	MGRF	1	35	5.00	2.00	23449	71.6	70	10.10	2.00	343.5	87.6
AAM-1	MGRF	1	35	5.00	2.51	28100	71.0	70	10.10	2.51	430.0	87.3

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
AAM-1	MGRF	1	35	5.00	3.16	33483	70.2	70	10.10	3.16	537.5	87.0
AAM-1	MGRF	1	35	5.00	3.98	39812	69.6	70	10.00	3.98	671.0	86.7
AAM-1	MGRF	1	35	5.00	5.01	47224	69.1	70	10.00	5.01	838.0	86.3
AAM-1	MGRF	1	35	5.00	6.31	56000	68.5	70	10.00	6.31	1045.0	86.0
AAM-1	MGRF	1	35	5.00	7.94	66226	67.8	70	10.00	7.94	1305.0	85.6
AAM-1	MGRF	1	35	5.00	10.00	77932	67.3	70	10.00	10.00	1620.0	85.3
AAM-1	MGRF	1	35	5.00	12.60	92150	66.7	70	10.00	12.60	2010.0	84.9
AAM-1	MGRF	1	35	5.00	15.80	108050	66.1	70	9.94	15.80	2500.0	84.6
AAM-1	MGRF	1	35	5.01	20.00	126701	65.5	70	10.00	20.00	3095.0	84.2
AAM-1	MGRF	1	35	5.01	25.10	148502	65.0	70	10.00	25.10	3835.0	83.9
AAM-1	MGRF	1	35	5.01	31.60	173759	64.5	70	10.00	31.60	4735.0	83.6
AAM-1	MGRF	1	35	5.01	39.80	203000	64.0	70	10.00	39.80	5850.0	83.3
AAM-1	MGRF	1	35	5.01	50.10	235785	63.5	70	10.00	50.10	7215.0	83.1
AAM-1	MGRF	1	35	5.01	63.10	273113	62.9	70	10.00	63.10	8875.0	82.9
AAM-1	MGRF	1	35	5.01	79.40	316269	62.4	70	10.00	79.40	10950.0	82.8
AAM-1	MGRF	1	35	5.00	100.00	366000	62.0	70	10.00	100.00	13400.0	82.8
AAM-1	MGRF	2	35	9.54	0.10	8450	78.0	70	9.99	0.10	23.8	89.8
AAM-1	MGRF	2	35	9.85	0.13	10550	77.2	70	10.05	0.13	29.9	89.8
AAM-1	MGRF	2	35	10.05	0.16	13000	76.4	70	10.00	0.16	38.0	89.5
AAM-1	MGRF	2	35	10.00	0.20	16050	75.6	70	10.00	0.20	47.4	89.5
AAM-1	MGRF	2	35	10.00	0.25	19550	74.9	70	10.00	0.25	59.2	89.2
AAM-1	MGRF	2	35	10.00	0.32	23750	74.2	70	10.00	0.32	75.2	89.0
AAM-1	MGRF	2	35	10.00	0.40	28700	73.5	70	10.00	0.40	94.6	88.9
AAM-1	MGRF	2	35	10.00	0.50	34650	72.8	70	10.00	0.50	118.3	88.6
AAM-1	MGRF	2	35	10.00	0.63	41700	72.1	70	10.00	0.63	146.5	88.5
AAM-1	MGRF	2	35	10.00	0.79	50000	71.4	70	10.00	0.79	186.0	88.2
AAM-1	MGRF	2	35	10.00	1.00	59850	70.7	70	10.00	1.00	233.0	88.0
AAM-1	MGRF	2	35	10.00	1.26	71500	70.1	70	10.00	1.26	291.5	87.6
AAM-1	MGRF	2	35	10.00	1.58	85200	69.5	70	10.00	1.58	361.5	87.4
AAM-1	MGRF	2	35	10.00	2.00	101100	68.8	70	10.00	2.00	448.0	87.1
AAM-1	MGRF	2	35	10.00	2.51	120500	68.2	70	10.00	2.51	559.0	86.7
AAM-1	MGRF	2	35	10.00	3.16	142000	67.7	70	10.00	3.16	700.0	86.3
AAM-1	MGRF	2	35	10.00	3.98	167500	67.1	70	10.00	3.98	868.0	85.9
AAM-1	MGRF	2	35	10.00	5.01	198000	66.5	70	10.00	5.01	1088.5	85.6
AAM-1	MGRF	2	35	10.00	6.31	232500	66.0	70	10.00	6.31	1365.0	85.1
AAM-1	MGRF	2	35	10.00	7.94	272500	65.5	70	10.00	7.94	1685.0	84.7
AAM-1	MGRF	2	35	10.00	10.00	318500	65.1	70	10.00	10.00	2085.0	84.3
AAM-1	MGRF	2	35	10.00	12.60	372500	64.6	70	10.00	12.60	2575.0	83.9
AAM-1	MGRF	2	35	10.00	15.80	434000	64.2	70	9.99	15.80	3190.0	83.4
AAM-1	MGRF	2	35	10.00	20.00	502500	63.8	70	10.00	20.00	3940.0	83.0
AAM-1	MGRF	2	35	10.00	25.10	581000	63.6	70	10.00	25.10	4855.0	82.5
AAM-1	MGRF	2	35	10.00	31.60	667500	63.4	70	10.00	31.60	5930.0	81.7
AAM-1	MGRF	2	35	10.00	39.80	766500	63.3	70	10.00	39.80	7265.0	80.7
AAM-1	MGRF	2	35	10.00	50.10	875500	63.4	70	10.00	50.10	8970.0	79.7
AAM-1	MGRF	2	35	10.00	63.10	992000	63.8	70	10.00	63.10	11100.0	79.6
AAM-1	MGRF	2	35	10.00	79.40	1125000	64.5	70	10.00	79.40	13600.0	79.8
AAM-1	MGRF	2	35	10.00	100.00	1265000	65.7	70	10.00	100.00	16650.0	79.3

Table 38. ABL-1 Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	TANK	1	10	0.20	0.50	1123000	59.8	46	6.41	0.50	1172.0	83.4
ABL-1	TANK	1	10	0.20	0.63	1310000	59.3	46	6.41	0.63	1444.0	82.9
ABL-1	TANK	1	10	0.20	0.79	1526000	58.7	46	6.41	0.79	1786.0	82.6
ABL-1	TANK	1	10	0.20	1.00	1780000	58.0	46	6.41	1.00	2203.0	81.7
ABL-1	TANK	1	10	0.20	1.26	2065000	57.2	46	6.41	1.26	2719.0	81.3
ABL-1	TANK	1	10	0.20	1.50	2318000	56.5	46	6.04	1.50	3265.0	81.0
ABL-1	TANK	1	10	0.20	1.89	2695000	55.9	46	6.04	1.89	4010.0	80.1
ABL-1	TANK	1	10	0.20	2.38	3109000	55.4	46	6.04	2.38	4922.0	79.6
ABL-1	TANK	1	10	0.20	2.99	3591000	54.5	46	6.04	2.99	6026.0	79.1
ABL-1	TANK	1	10	0.20	3.77	4142000	54.0	46	6.04	3.77	7372.0	78.5
ABL-1	TANK	1	10	0.20	4.74	4755000	53.0	46	6.04	4.74	9001.0	78.0
ABL-1	TANK	1	10	0.20	5.00	4930000	52.6	46	5.65	5.00	9480.0	77.8
ABL-1	TANK	1	10	0.20	6.30	5637000	51.8	46	5.65	6.30	11550.0	77.3
ABL-1	TANK	1	10	0.19	7.92	6453000	51.2	46	5.65	7.92	14050.0	76.8
ABL-1	TANK	1	10	0.19	9.98	7356000	50.3	46	5.64	9.98	17080.0	76.3
ABL-1	TANK	1	10	0.19	12.56	8384000	49.5	46	5.63	12.56	20720.0	75.8
ABL-1	TANK	1	10	0.19	15.00	9251000	48.8	46	4.98	15.00	24090.0	75.5
ABL-1	TANK	1	10	0.19	18.88	10510000	47.9	46	4.97	18.88	29140.0	75.0
ABL-1	TANK	1	10	0.19	23.77	11860000	47.1	46	4.96	23.77	35260.0	74.6
ABL-1	TANK	1	10	0.19	29.93	13420000	46.2	46	4.95	29.93	42600.0	74.2
ABL-1	TANK	1	10	0.19	37.68	15090000	45.3	46	4.93	37.68	51440.0	73.9
ABL-1	TANK	1	10	0.19	47.43	16930000	44.6	46	4.91	47.43	62010.0	73.5
ABL-1	TANK	2	10	0.20	0.50	1043000	60.6	46	7.01	0.50	1186.0	83.4
ABL-1	TANK	2	10	0.20	0.63	1216000	60.3	46	7.01	0.63	1460.0	82.6
ABL-1	TANK	2	10	0.20	0.79	1417000	59.6	46	7.01	0.79	1772.0	82.2
ABL-1	TANK	2	10	0.20	1.00	1657000	58.9	46	7.01	1.00	2155.0	81.4
ABL-1	TANK	2	10	0.20	1.26	1924000	58.4	46	7.00	1.26	2616.0	81.0
ABL-1	TANK	2	10	0.20	1.50	2168000	57.8	46	7.00	1.50	2860.0	81.0
ABL-1	TANK	2	10	0.20	1.89	2507000	57.1	46	7.00	1.89	3507.0	80.3
ABL-1	TANK	2	10	0.20	2.38	2902000	56.2	46	7.00	2.38	4303.0	79.9
ABL-1	TANK	2	10	0.20	2.99	3357000	55.8	46	7.00	2.99	5269.0	79.2
ABL-1	TANK	2	10	0.20	3.77	3866000	55.1	46	7.00	3.77	6448.0	78.6
ABL-1	TANK	2	10	0.20	4.74	4445000	54.1	46	7.00	4.74	7890.0	78.1
ABL-1	TANK	2	10	0.20	5.00	4612000	54.0	46	7.00	5.00	8446.0	77.9
ABL-1	TANK	2	10	0.20	6.30	5266000	53.1	46	6.99	6.30	10330.0	77.4
ABL-1	TANK	2	10	0.20	7.92	6028000	52.6	46	6.99	7.92	12620.0	76.8
ABL-1	TANK	2	10	0.19	9.98	6888000	51.6	46	6.99	9.98	15370.0	76.3
ABL-1	TANK	2	10	0.19	12.56	7846000	50.8	46	6.98	12.56	18730.0	75.9
ABL-1	TANK	2	10	0.19	15.00	8680000	50.2	46	6.97	15.00	22430.0	75.4
ABL-1	TANK	2	10	0.19	18.88	9835000	49.4	46	6.96	18.88	27250.0	75.0
ABL-1	TANK	2	10	0.19	23.77	11150000	48.5	46	6.95	23.77	33060.0	74.5
ABL-1	TANK	2	10	0.19	29.93	12580000	47.8	46	6.93	29.93	40050.0	74.1
ABL-1	TANK	2	10	0.19	37.68	14160000	46.7	46	6.90	37.68	48450.0	73.8
ABL-1	TANK	2	10	0.19	47.43	15950000	46.0	46	6.87	47.43	58440.0	73.4
ABL-1	TANK	1	22	2.00	0.50	109100	68.1	58	40.07	0.50	207.0	87.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	TANK	1	22	2.00	0.63	128900	67.8	58	40.07	0.63	260.2	87.2
ABL-1	TANK	1	22	2.00	0.79	154300	67.3	58	40.07	0.79	325.0	86.8
ABL-1	TANK	1	22	2.00	1.00	182800	67.1	58	40.06	1.00	407.0	86.4
ABL-1	TANK	1	22	2.00	1.26	216000	66.6	58	40.06	1.26	505.6	86.0
ABL-1	TANK	1	22	2.00	1.50	248200	66.2	58	21.58	1.50	599.5	85.6
ABL-1	TANK	1	22	2.00	1.89	292200	65.8	58	21.57	1.89	745.2	85.0
ABL-1	TANK	1	22	2.00	2.38	345500	65.3	58	21.58	2.38	926.6	84.6
ABL-1	TANK	1	22	2.00	2.99	407500	65.0	58	21.58	2.99	1152.0	84.1
ABL-1	TANK	1	22	2.00	3.77	481100	64.5	58	21.58	3.77	1428.0	83.6
ABL-1	TANK	1	22	2.00	4.74	567600	64.1	58	21.58	4.74	1764.0	83.1
ABL-1	TANK	1	22	2.00	5.00	591100	64.0	58	10.96	5.00	1857.0	83.0
ABL-1	TANK	1	22	2.00	6.30	695200	63.5	58	10.96	6.30	2295.0	82.5
ABL-1	TANK	1	22	2.00	7.92	816500	63.1	58	10.96	7.92	2828.0	81.9
ABL-1	TANK	1	22	2.00	9.98	958300	62.6	58	10.95	9.98	3486.0	81.4
ABL-1	TANK	1	22	2.00	12.56	1124000	62.1	58	10.96	12.56	4288.0	80.9
ABL-1	TANK	1	22	2.00	15.00	1273000	61.6	58	3.00	15.00	5038.0	80.7
ABL-1	TANK	1	22	2.00	18.88	1484000	61.2	58	3.00	18.88	6179.0	80.0
ABL-1	TANK	1	22	2.00	23.77	1728000	60.7	58	3.00	23.77	7572.0	79.6
ABL-1	TANK	1	22	2.00	29.93	2012000	60.1	58	3.00	29.93	9270.0	79.1
ABL-1	TANK	1	22	1.99	37.68	2337000	59.5	58	3.00	37.68	11320.0	78.7
ABL-1	TANK	1	22	1.99	47.43	2709000	58.9	58	3.00	47.43	13820.0	78.2
ABL-1	TANK	2	22	2.10	0.50	100100	68.5	58	38.86	0.50	207.0	87.7
ABL-1	TANK	2	22	2.10	0.63	120000	67.6	58	38.86	0.63	260.1	87.2
ABL-1	TANK	2	22	2.10	0.79	143600	67.6	58	38.86	0.79	323.7	86.7
ABL-1	TANK	2	22	2.10	1.00	170900	67.0	58	38.85	1.00	405.8	86.4
ABL-1	TANK	2	22	2.10	1.26	201300	66.7	58	38.85	1.26	505.8	85.9
ABL-1	TANK	2	22	2.10	1.50	231100	66.2	58	22.58	1.50	597.2	85.5
ABL-1	TANK	2	22	2.10	1.89	272900	65.9	58	22.58	1.89	748.7	85.1
ABL-1	TANK	2	22	2.10	2.38	322800	65.5	58	22.59	2.38	931.7	84.5
ABL-1	TANK	2	22	2.10	2.99	381200	65.2	58	22.59	2.99	1155.0	84.1
ABL-1	TANK	2	22	2.10	3.77	449700	64.8	58	22.59	3.77	1430.0	83.6
ABL-1	TANK	2	22	2.10	4.74	530000	64.3	58	22.59	4.74	1769.0	83.1
ABL-1	TANK	2	22	2.10	5.00	552300	64.1	58	12.47	5.00	1860.0	82.9
ABL-1	TANK	2	22	2.10	6.30	649100	63.7	58	12.47	6.30	2298.0	82.3
ABL-1	TANK	2	22	2.10	7.92	762000	63.2	58	12.47	7.92	2836.0	81.8
ABL-1	TANK	2	22	2.10	9.98	894700	62.8	58	12.47	9.98	3492.0	81.3
ABL-1	TANK	2	22	2.10	12.56	1049000	62.3	58	12.47	12.56	4293.0	80.8
ABL-1	TANK	2	22	2.10	15.00	1189000	61.8	58	4.01	15.00	5028.0	80.6
ABL-1	TANK	2	22	2.10	18.88	1386000	61.4	58	4.01	18.88	6172.0	80.0
ABL-1	TANK	2	22	2.10	23.77	1615000	60.8	58	4.01	23.77	7572.0	79.5
ABL-1	TANK	2	22	2.10	29.93	1879000	60.3	58	4.01	29.93	9259.0	79.1
ABL-1	TANK	2	22	2.10	37.68	2183000	59.7	58	4.00	37.68	11320.0	78.6
ABL-1	TANK	2	22	2.09	47.43	2532000	59.1	58	4.00	47.43	13800.0	78.1
ABL-1	TANK	1	34	1.90	0.50	11000	75.7	70	18.02	0.50	44.6	89.1
ABL-1	TANK	1	34	1.90	0.63	13390	74.9	70	18.02	0.63	56.6	89.9
ABL-1	TANK	1	34	1.90	0.79	16180	75.0	70	18.02	0.79	70.1	90.2
ABL-1	TANK	1	34	1.90	1.00	19590	74.2	70	18.02	1.00	88.3	89.2

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	TANK	1	34	1.90	1.26	23600	73.6	70	18.02	1.26	111.2	89.0
ABL-1	TANK	1	34	1.90	1.50	27400	73.5	70	14.84	1.50	132.6	88.6
ABL-1	TANK	1	34	1.90	1.89	33020	72.6	70	14.84	1.89	166.5	88.4
ABL-1	TANK	1	34	1.90	2.38	39580	72.1	70	14.84	2.38	209.1	88.1
ABL-1	TANK	1	34	1.90	2.99	47490	71.6	70	14.84	2.99	261.6	87.8
ABL-1	TANK	1	34	1.90	3.77	57140	71.3	70	14.84	3.77	328.1	87.4
ABL-1	TANK	1	34	1.90	4.74	68390	70.9	70	14.84	4.74	409.5	87.0
ABL-1	TANK	1	34	1.90	5.00	71270	70.7	70	12.02	5.00	433.0	86.7
ABL-1	TANK	1	34	1.90	6.30	85290	70.3	70	12.02	6.30	539.6	86.4
ABL-1	TANK	1	34	1.90	7.92	101800	69.9	70	12.02	7.92	672.6	85.9
ABL-1	TANK	1	34	1.90	9.98	121600	69.5	70	12.02	9.98	836.8	85.5
ABL-1	TANK	1	34	1.90	12.56	145100	69.2	70	12.02	12.56	1042.0	85.1
ABL-1	TANK	1	34	1.90	15.00	166400	68.8	70	8.02	15.00	1235.0	84.7
ABL-1	TANK	1	34	1.91	18.88	198200	68.5	70	8.02	18.88	1532.0	84.2
ABL-1	TANK	1	34	1.91	23.77	235200	68.1	70	8.02	23.77	1896.0	83.8
ABL-1	TANK	1	34	1.91	29.93	280300	67.8	70	8.02	29.93	2349.0	83.3
ABL-1	TANK	1	34	1.91	37.68	332600	67.4	70	8.02	37.68	2902.0	82.8
ABL-1	TANK	1	34	1.91	47.43	394200	67.0	70	8.02	47.43	3583.0	82.4
ABL-1	TANK	2	34	2.00	0.50	10320	75.4	70	18.02	0.50	45.0	90.5
ABL-1	TANK	2	34	2.00	0.63	12540	75.4	70	18.02	0.63	56.1	89.3
ABL-1	TANK	2	34	2.00	0.79	15090	75.2	70	18.02	0.79	70.2	89.0
ABL-1	TANK	2	34	2.00	1.00	18350	74.5	70	18.02	1.00	88.4	89.4
ABL-1	TANK	2	34	2.00	1.26	22130	73.8	70	18.02	1.26	111.8	88.7
ABL-1	TANK	2	34	2.00	1.50	25520	73.4	70	14.84	1.50	132.8	88.9
ABL-1	TANK	2	34	2.00	1.89	30790	73.0	70	14.84	1.89	166.6	88.2
ABL-1	TANK	2	34	2.00	2.38	37010	72.4	70	14.84	2.38	208.0	88.2
ABL-1	TANK	2	34	2.00	2.99	44460	71.9	70	14.84	2.99	261.9	87.6
ABL-1	TANK	2	34	2.00	3.77	53290	71.5	70	14.84	3.77	328.3	87.3
ABL-1	TANK	2	34	2.00	4.74	63960	71.1	70	14.85	4.74	410.8	86.8
ABL-1	TANK	2	34	2.00	5.00	66460	71.0	70	12.02	5.00	431.6	86.8
ABL-1	TANK	2	34	2.00	6.30	79780	70.6	70	12.02	6.30	538.9	86.4
ABL-1	TANK	2	34	2.00	7.92	95600	70.0	70	12.02	7.92	670.9	86.0
ABL-1	TANK	2	34	2.00	9.98	114000	69.6	70	12.02	9.98	835.7	85.5
ABL-1	TANK	2	34	2.00	12.56	136200	69.3	70	12.01	12.56	1040.0	85.0
ABL-1	TANK	2	34	2.00	15.00	156000	69.0	70	8.02	15.00	1232.0	84.8
ABL-1	TANK	2	34	2.00	18.88	185700	68.6	70	8.02	18.88	1521.0	84.1
ABL-1	TANK	2	34	2.00	23.77	221100	68.3	70	8.02	23.77	1885.0	83.8
ABL-1	TANK	2	34	2.00	29.93	262700	67.9	70	8.02	29.93	2334.0	83.3
ABL-1	TANK	2	34	2.00	37.68	312200	67.6	70	8.02	37.68	2883.0	82.9
ABL-1	TANK	2	34	2.00	47.43	370600	67.2	70	8.02	47.43	3556.0	82.4

Table 39. ABL-1 RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	RTFOT	1	10	0.90	0.50	2448000	54.0	46	2.00	0.50	3760.0	76.6
ABL-1	RTFOT	1	10	0.89	0.63	2815000	52.8	46	2.00	0.63	4561.0	76.1
ABL-1	RTFOT	1	10	0.89	0.79	3216000	52.2	46	2.00	0.79	5531.0	75.3
ABL-1	RTFOT	1	10	0.89	1.00	3679000	51.4	46	2.00	1.00	6671.0	74.6
ABL-1	RTFOT	1	10	0.89	1.26	4195000	50.7	46	2.00	1.26	8060.0	74.0
ABL-1	RTFOT	1	10	0.89	1.50	4672000	50.8	46	2.00	1.50	9404.0	73.4
ABL-1	RTFOT	1	10	0.89	1.89	5318000	49.4	46	2.00	1.89	11360.0	72.4
ABL-1	RTFOT	1	10	0.88	2.38	6027000	48.8	46	2.00	2.38	13630.0	71.9
ABL-1	RTFOT	1	10	0.88	2.99	6818000	48.1	46	2.00	2.99	16390.0	71.5
ABL-1	RTFOT	1	10	0.88	3.77	7692000	47.4	46	1.99	3.77	19600.0	70.9
ABL-1	RTFOT	1	10	0.88	4.74	8667000	46.7	46	1.99	4.74	23450.0	70.5
ABL-1	RTFOT	1	10	0.87	5.00	8932000	46.5	46	1.99	5.00	24480.0	70.3
ABL-1	RTFOT	1	10	0.87	6.30	10020000	45.9	46	1.99	6.30	29250.0	69.8
ABL-1	RTFOT	1	10	0.87	7.92	11250000	45.2	46	1.99	7.92	34790.0	69.3
ABL-1	RTFOT	1	10	0.86	9.98	12580000	44.5	46	1.98	9.98	41530.0	69.0
ABL-1	RTFOT	1	10	0.86	12.56	14070000	43.8	46	1.97	12.56	49570.0	68.7
ABL-1	RTFOT	1	10	0.85	15.00	15440000	43.2	46	1.97	15.00	56400.0	68.3
ABL-1	RTFOT	1	10	0.85	18.88	17170000	42.5	46	1.96	18.88	66990.0	68.0
ABL-1	RTFOT	1	10	0.84	23.77	19090000	41.9	46	1.95	23.77	79640.0	67.8
ABL-1	RTFOT	1	10	0.83	29.93	21190000	41.2	46	1.94	29.93	94570.0	67.5
ABL-1	RTFOT	1	10	0.83	37.68	23460000	40.5	46	1.92	37.68	112300.0	67.2
ABL-1	RTFOT	1	10	0.82	47.43	25940000	39.8	46	1.90	47.43	133100.0	67.0
ABL-1	RTFOT	2	10	0.75	0.50	2753000	53.4	46	2.00	0.50	3735.0	76.6
ABL-1	RTFOT	2	10	0.74	0.63	3180000	52.1	46	2.00	0.63	4531.0	76.3
ABL-1	RTFOT	2	10	0.74	0.79	3625000	51.5	46	2.00	0.79	5506.0	75.5
ABL-1	RTFOT	2	10	0.74	1.00	4149000	50.8	46	2.00	1.00	6664.0	74.8
ABL-1	RTFOT	2	10	0.74	1.26	4706000	50.1	46	2.00	1.26	8066.0	74.2
ABL-1	RTFOT	2	10	0.74	1.50	5216000	49.4	46	2.00	1.50	9301.0	74.2
ABL-1	RTFOT	2	10	0.74	1.89	5913000	48.9	46	2.00	1.89	11230.0	73.0
ABL-1	RTFOT	2	10	0.73	2.38	6691000	48.2	46	1.99	2.38	13540.0	72.6
ABL-1	RTFOT	2	10	0.73	2.99	7553000	47.6	46	2.00	2.99	16210.0	71.9
ABL-1	RTFOT	2	10	0.73	3.77	8523000	46.9	46	1.99	3.77	19470.0	71.5
ABL-1	RTFOT	2	10	0.73	4.74	9588000	46.2	46	1.99	4.74	23300.0	71.1
ABL-1	RTFOT	2	10	0.73	5.00	9868000	46.0	46	1.99	5.00	24270.0	70.9
ABL-1	RTFOT	2	10	0.72	6.30	11080000	45.3	46	1.99	6.30	29030.0	70.4
ABL-1	RTFOT	2	10	0.72	7.92	12420000	44.7	46	1.98	7.92	34720.0	70.0
ABL-1	RTFOT	2	10	0.72	9.98	13910000	44.0	46	1.98	9.98	41370.0	69.6
ABL-1	RTFOT	2	10	0.71	12.56	15540000	43.3	46	1.97	12.56	49350.0	69.3
ABL-1	RTFOT	2	10	0.71	15.00	16950000	42.6	46	1.97	15.00	56550.0	68.9
ABL-1	RTFOT	2	10	0.70	18.88	18850000	42.1	46	1.96	18.88	67210.0	68.5
ABL-1	RTFOT	2	10	0.70	23.77	20950000	41.4	46	1.95	23.77	80070.0	68.3
ABL-1	RTFOT	2	10	0.69	29.93	23230000	40.7	46	1.94	29.93	95120.0	68.0
ABL-1	RTFOT	2	10	0.69	37.68	25730000	40.0	46	1.92	37.68	113000.0	67.7
ABL-1	RTFOT	2	10	0.68	47.43	28430000	39.3	46	1.90	47.43	134200.0	67.5
ABL-1	RTFOT	1	22	0.70	0.50	300200	61.1	58	1.00	0.50	650.6	82.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	RTFOT	1	22	0.70	0.63	347700	60.6	58	1.00	0.63	800.5	81.8
ABL-1	RTFOT	1	22	0.70	0.79	405400	60.5	58	1.00	0.79	1008.0	81.9
ABL-1	RTFOT	1	22	0.70	1.00	474700	60.2	58	1.00	1.00	1218.0	81.6
ABL-1	RTFOT	1	22	0.70	1.26	552800	59.6	58	1.00	1.26	1489.0	80.9
ABL-1	RTFOT	1	22	0.70	1.50	622300	59.2	58	1.00	1.50	1750.0	80.2
ABL-1	RTFOT	1	22	0.70	1.89	725000	58.9	58	1.00	1.89	2154.0	79.6
ABL-1	RTFOT	1	22	0.70	2.38	844300	58.4	58	1.00	2.38	2648.0	78.6
ABL-1	RTFOT	1	22	0.70	2.99	978400	58.0	58	1.00	2.99	3230.0	78.0
ABL-1	RTFOT	1	22	0.70	3.77	1135000	57.6	58	1.00	3.77	3929.0	77.5
ABL-1	RTFOT	1	22	0.70	4.74	1311000	57.1	58	1.00	4.74	4779.0	77.0
ABL-1	RTFOT	1	22	0.70	5.00	1363000	56.9	58	1.00	5.00	5038.0	76.9
ABL-1	RTFOT	1	22	0.70	6.30	1573000	56.3	58	1.00	6.30	6123.0	76.3
ABL-1	RTFOT	1	22	0.70	7.92	1817000	55.9	58	1.00	7.92	7424.0	75.6
ABL-1	RTFOT	1	22	0.70	9.98	2092000	55.3	58	1.00	9.98	8985.0	75.0
ABL-1	RTFOT	1	22	0.70	12.56	2411000	54.9	58	1.00	12.56	10850.0	74.6
ABL-1	RTFOT	1	22	0.70	15.00	2686000	54.4	58	1.00	15.00	12550.0	74.1
ABL-1	RTFOT	1	22	0.70	18.88	3082000	53.9	58	1.00	18.88	15120.0	73.8
ABL-1	RTFOT	1	22	0.70	23.77	3529000	53.3	58	1.00	23.77	18200.0	72.9
ABL-1	RTFOT	1	22	0.69	29.93	4042000	52.7	58	1.00	29.93	21890.0	72.9
ABL-1	RTFOT	1	22	0.69	37.68	4616000	52.2	58	1.00	37.68	26300.0	72.3
ABL-1	RTFOT	1	22	0.69	47.43	5256000	51.6	58	1.00	47.43	31630.0	72.0
ABL-1	RTFOT	2	22	0.65	0.50	318800	60.8	58	1.00	0.50	640.1	81.4
ABL-1	RTFOT	2	22	0.65	0.63	370000	60.5	58	1.00	0.63	794.0	82.9
ABL-1	RTFOT	2	22	0.65	0.79	433100	60.2	58	1.00	0.79	985.5	80.5
ABL-1	RTFOT	2	22	0.65	1.00	506200	59.9	58	1.00	1.00	1194.0	82.5
ABL-1	RTFOT	2	22	0.65	1.26	591400	59.6	58	1.00	1.26	1478.0	81.0
ABL-1	RTFOT	2	22	0.65	1.50	666000	58.9	58	1.00	1.50	1749.0	81.1
ABL-1	RTFOT	2	22	0.65	1.89	772800	58.5	58	1.00	1.89	2114.0	79.8
ABL-1	RTFOT	2	22	0.65	2.38	893700	58.3	58	1.00	2.38	2609.0	78.9
ABL-1	RTFOT	2	22	0.65	2.99	1042000	57.8	58	1.00	2.99	3168.0	78.7
ABL-1	RTFOT	2	22	0.65	3.77	1206000	57.3	58	1.00	3.77	3894.0	77.9
ABL-1	RTFOT	2	22	0.65	4.74	1395000	56.8	58	0.99	4.74	4744.0	77.3
ABL-1	RTFOT	2	22	0.65	5.00	1445000	56.7	58	1.00	5.00	4964.0	77.1
ABL-1	RTFOT	2	22	0.65	6.30	1667000	56.2	58	1.00	6.30	6015.0	76.6
ABL-1	RTFOT	2	22	0.65	7.92	1925000	55.7	58	1.00	7.92	7288.0	76.1
ABL-1	RTFOT	2	22	0.65	9.98	2217000	55.2	58	1.00	9.98	8841.0	75.5
ABL-1	RTFOT	2	22	0.65	12.56	2554000	54.6	58	1.00	12.56	10670.0	75.0
ABL-1	RTFOT	2	22	0.65	15.00	2842000	54.1	58	1.00	15.00	12390.0	74.6
ABL-1	RTFOT	2	22	0.65	18.88	3263000	53.7	58	1.00	18.88	14930.0	73.9
ABL-1	RTFOT	2	22	0.65	23.77	3742000	53.1	58	1.00	23.77	17960.0	73.5
ABL-1	RTFOT	2	22	0.65	29.93	4281000	52.6	58	1.00	29.93	21580.0	73.2
ABL-1	RTFOT	2	22	0.65	37.68	4893000	52.0	58	1.00	37.68	26050.0	72.6
ABL-1	RTFOT	2	22	0.65	47.43	5570000	51.4	58	1.00	47.43	31220.0	72.3
ABL-1	RTFOT	1	34	0.60	0.50	36940	66.8	70	6.01	0.50	126.2	87.9
ABL-1	RTFOT	1	34	0.60	0.63	43530	66.2	70	6.01	0.63	158.3	87.6
ABL-1	RTFOT	1	34	0.60	0.79	51250	66.4	70	6.01	0.79	195.5	86.5
ABL-1	RTFOT	1	34	0.60	1.00	61090	66.1	70	6.01	1.00	243.1	86.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	RTFOT	1	34	0.60	1.26	71910	65.5	70	6.01	1.26	308.5	85.4
ABL-1	RTFOT	1	34	0.60	1.50	82020	65.7	70	6.01	1.50	363.3	85.2
ABL-1	RTFOT	1	34	0.60	1.89	96230	64.6	70	6.01	1.89	454.5	84.5
ABL-1	RTFOT	1	34	0.60	2.38	113700	64.4	70	6.02	2.38	564.5	84.2
ABL-1	RTFOT	1	34	0.60	2.99	133700	64.4	70	6.02	2.99	697.2	83.4
ABL-1	RTFOT	1	34	0.60	3.77	157500	63.9	70	6.01	3.77	863.3	82.9
ABL-1	RTFOT	1	34	0.60	4.74	185500	63.6	70	6.02	4.74	1070.0	82.3
ABL-1	RTFOT	1	34	0.60	5.00	192200	63.5	70	6.01	5.00	1129.0	82.1
ABL-1	RTFOT	1	34	0.60	6.30	224600	63.2	70	6.02	6.30	1390.0	81.5
ABL-1	RTFOT	1	34	0.60	7.92	264600	62.9	70	6.01	7.92	1710.0	80.9
ABL-1	RTFOT	1	34	0.60	9.98	310000	62.6	70	6.01	9.98	2102.0	80.3
ABL-1	RTFOT	1	34	0.60	12.56	364300	62.3	70	6.01	12.56	2580.0	79.7
ABL-1	RTFOT	1	34	0.60	15.00	413100	62.0	70	6.02	15.00	3004.0	79.3
ABL-1	RTFOT	1	34	0.60	18.88	483200	61.7	70	6.02	18.88	3676.0	78.7
ABL-1	RTFOT	1	34	0.60	23.77	564800	61.3	70	6.02	23.77	4494.0	78.2
ABL-1	RTFOT	1	34	0.60	29.93	661700	61.0	70	6.02	29.93	5475.0	77.7
ABL-1	RTFOT	1	34	0.60	37.68	771300	60.7	70	6.02	37.68	6663.0	77.2
ABL-1	RTFOT	1	34	0.60	47.43	900000	60.3	70	6.02	47.43	8096.0	76.7
ABL-1	RTFOT	2	34	0.55	0.50	37500	67.2	70	6.01	0.50	125.6	88.7
ABL-1	RTFOT	2	34	0.55	0.63	44390	66.7	70	6.01	0.63	159.2	87.4
ABL-1	RTFOT	2	34	0.55	0.79	52400	66.4	70	6.01	0.79	199.7	86.5
ABL-1	RTFOT	2	34	0.55	1.00	62710	65.8	70	6.01	1.00	248.8	86.3
ABL-1	RTFOT	2	34	0.55	1.26	74000	65.4	70	6.01	1.26	311.0	85.6
ABL-1	RTFOT	2	34	0.55	1.50	84000	65.2	70	6.01	1.50	364.7	86.0
ABL-1	RTFOT	2	34	0.55	1.89	98940	64.8	70	6.01	1.89	456.1	84.8
ABL-1	RTFOT	2	34	0.55	2.38	116800	64.6	70	6.01	2.38	561.7	84.0
ABL-1	RTFOT	2	34	0.55	2.99	137500	64.1	70	6.01	2.99	700.4	83.7
ABL-1	RTFOT	2	34	0.55	3.77	162400	64.0	70	6.01	3.77	868.7	82.9
ABL-1	RTFOT	2	34	0.55	4.74	190800	63.5	70	6.02	4.74	1073.0	82.5
ABL-1	RTFOT	2	34	0.55	5.00	197700	63.5	70	6.01	5.00	1127.0	82.2
ABL-1	RTFOT	2	34	0.55	6.30	231600	63.3	70	6.01	6.30	1389.0	81.6
ABL-1	RTFOT	2	34	0.55	7.92	273300	62.9	70	6.02	7.92	1709.0	81.0
ABL-1	RTFOT	2	34	0.55	9.98	320600	62.6	70	6.01	9.98	2096.0	80.4
ABL-1	RTFOT	2	34	0.55	12.56	375700	62.3	70	6.01	12.56	2576.0	79.9
ABL-1	RTFOT	2	34	0.55	15.00	425700	61.9	70	6.01	15.00	3016.0	79.6
ABL-1	RTFOT	2	34	0.55	18.88	497300	61.7	70	6.02	18.88	3686.0	78.9
ABL-1	RTFOT	2	34	0.55	23.77	582600	61.3	70	6.02	23.77	4501.0	78.4
ABL-1	RTFOT	2	34	0.55	29.93	681900	61.0	70	6.02	29.93	5493.0	77.8
ABL-1	RTFOT	2	34	0.55	37.68	796100	60.7	70	6.02	37.68	6689.0	77.3
ABL-1	RTFOT	2	34	0.56	47.43	929500	60.2	70	6.02	47.43	8135.0	76.8

Table 40. ABL-1 SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	SAFT	1	10	0.16	0.50	1628000	57.2	46	4.00	0.50	2038.0	79.4
ABL-1	SAFT	1	10	0.16	0.63	1888000	55.8	46	4.00	0.63	2504.0	78.2
ABL-1	SAFT	1	10	0.16	0.79	2173000	55.5	46	4.00	0.79	3062.0	77.6
ABL-1	SAFT	1	10	0.16	1.00	2512000	54.8	46	4.00	1.00	3721.0	77.0
ABL-1	SAFT	1	10	0.16	1.26	2875000	54.5	46	4.00	1.26	4522.0	76.4
ABL-1	SAFT	1	10	0.16	1.50	3174000	54.6	46	4.00	1.50	5257.0	76.3
ABL-1	SAFT	1	10	0.16	1.89	3676000	53.1	46	4.00	1.89	6362.0	75.3
ABL-1	SAFT	1	10	0.16	2.38	4215000	52.5	46	4.00	2.38	7709.0	74.7
ABL-1	SAFT	1	10	0.16	2.99	4808000	52.0	46	4.00	2.99	9318.0	74.1
ABL-1	SAFT	1	10	0.16	3.77	5477000	51.5	46	4.00	3.77	11240.0	73.5
ABL-1	SAFT	1	10	0.16	4.74	6242000	50.4	46	3.99	4.74	13550.0	73.0
ABL-1	SAFT	1	10	0.16	5.00	6436000	50.4	46	3.99	5.00	14140.0	72.9
ABL-1	SAFT	1	10	0.16	6.30	7312000	49.8	46	3.99	6.30	16990.0	72.4
ABL-1	SAFT	1	10	0.16	7.92	8356000	49.2	46	3.99	7.92	20410.0	71.9
ABL-1	SAFT	1	10	0.16	9.98	9412000	48.3	46	3.98	9.98	24460.0	71.5
ABL-1	SAFT	1	10	0.16	12.56	10680000	47.7	46	3.98	12.56	29290.0	71.0
ABL-1	SAFT	1	10	0.16	15.00	11670000	47.2	46	3.98	15.00	33670.0	70.7
ABL-1	SAFT	1	10	0.16	18.88	13080000	46.6	46	3.97	18.88	40240.0	70.4
ABL-1	SAFT	1	10	0.15	23.77	14790000	45.7	46	3.96	23.77	48100.0	70.1
ABL-1	SAFT	1	10	0.15	29.93	16540000	44.9	46	3.96	29.93	57390.0	69.7
ABL-1	SAFT	1	10	0.15	37.68	18560000	44.3	46	3.94	37.68	68480.0	69.5
ABL-1	SAFT	1	10	0.16	47.43	20680000	43.6	46	3.93	47.43	81680.0	69.2
ABL-1	SAFT	2	10	0.16	0.50	1595000	56.9	46	4.40	0.50	1851.0	79.6
ABL-1	SAFT	2	10	0.16	0.63	1843000	56.4	46	4.40	0.63	2272.0	78.6
ABL-1	SAFT	2	10	0.16	0.79	2127000	56.0	46	4.40	0.79	2772.0	78.2
ABL-1	SAFT	2	10	0.16	1.00	2457000	55.5	46	4.40	1.00	3385.0	77.3
ABL-1	SAFT	2	10	0.16	1.26	2844000	54.7	46	4.40	1.26	4121.0	76.8
ABL-1	SAFT	2	10	0.16	1.50	3173000	54.2	46	4.08	1.50	4773.0	76.6
ABL-1	SAFT	2	10	0.16	1.89	3630000	53.8	46	4.08	1.89	5806.0	75.7
ABL-1	SAFT	2	10	0.16	2.38	4155000	53.1	46	4.08	2.38	7034.0	75.2
ABL-1	SAFT	2	10	0.16	2.99	4761000	52.5	46	4.07	2.99	8515.0	74.6
ABL-1	SAFT	2	10	0.16	3.77	5423000	51.9	46	4.07	3.77	10290.0	73.9
ABL-1	SAFT	2	10	0.16	4.74	6214000	51.1	46	4.07	4.74	12410.0	73.5
ABL-1	SAFT	2	10	0.16	5.00	6383000	51.1	46	3.74	5.00	12960.0	73.3
ABL-1	SAFT	2	10	0.16	6.30	7250000	50.4	46	3.73	6.30	15590.0	72.8
ABL-1	SAFT	2	10	0.16	7.92	8250000	49.7	46	3.73	7.92	18740.0	72.4
ABL-1	SAFT	2	10	0.16	9.98	9352000	49.0	46	3.73	9.98	22490.0	71.9
ABL-1	SAFT	2	10	0.16	12.56	10560000	48.3	46	3.73	12.56	26980.0	71.4
ABL-1	SAFT	2	10	0.15	15.00	11690000	47.7	46	3.18	15.00	31060.0	71.2
ABL-1	SAFT	2	10	0.15	18.88	13140000	47.0	46	3.17	18.88	37120.0	70.8
ABL-1	SAFT	2	10	0.15	23.77	14790000	46.2	46	3.17	23.77	44430.0	70.4
ABL-1	SAFT	2	10	0.15	29.93	16620000	45.5	46	3.17	29.93	53070.0	70.2
ABL-1	SAFT	2	10	0.15	37.68	18640000	44.8	46	3.16	37.68	63390.0	69.8
ABL-1	SAFT	2	10	0.15	47.43	20840000	44.0	46	3.16	47.43	75580.0	69.6
ABL-1	SAFT	1	22	1.50	0.50	177800	63.5	58	22.11	0.50	362.6	84.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	SAFT	1	22	1.50	0.63	208100	63.0	58	22.11	0.63	454.5	83.9
ABL-1	SAFT	1	22	1.50	0.79	244400	62.5	58	22.11	0.79	560.4	83.5
ABL-1	SAFT	1	22	1.50	1.00	287400	62.2	58	22.11	1.00	691.4	82.9
ABL-1	SAFT	1	22	1.50	1.26	337300	61.7	58	22.11	1.26	858.3	82.3
ABL-1	SAFT	1	22	1.50	1.50	379500	62.1	58	22.10	1.50	1008.0	82.1
ABL-1	SAFT	1	22	1.50	1.89	445300	61.2	58	22.10	1.89	1242.0	81.3
ABL-1	SAFT	1	22	1.50	2.38	520300	60.8	58	22.11	2.38	1528.0	80.6
ABL-1	SAFT	1	22	1.50	2.99	607300	60.5	58	22.11	2.99	1877.0	80.1
ABL-1	SAFT	1	22	1.50	3.77	708800	60.1	58	22.10	3.77	2298.0	79.4
ABL-1	SAFT	1	22	1.50	4.74	825800	59.7	58	22.10	4.74	2808.0	78.9
ABL-1	SAFT	1	22	1.50	5.00	857300	59.6	58	22.10	5.00	2942.0	78.7
ABL-1	SAFT	1	22	1.50	6.30	996500	59.3	58	22.10	6.30	3592.0	78.1
ABL-1	SAFT	1	22	1.50	7.92	1158000	58.9	58	22.10	7.92	4376.0	77.6
ABL-1	SAFT	1	22	1.50	9.98	1344000	58.5	58	22.09	9.98	5317.0	77.1
ABL-1	SAFT	1	22	1.50	12.56	1559000	58.1	58	22.08	12.56	6460.0	76.5
ABL-1	SAFT	1	22	1.50	15.00	1749000	57.7	58	22.08	15.00	7509.0	76.1
ABL-1	SAFT	1	22	1.50	18.88	2018000	57.3	58	22.07	18.88	9084.0	75.6
ABL-1	SAFT	1	22	1.49	23.77	2329000	56.8	58	22.05	23.77	10980.0	75.1
ABL-1	SAFT	1	22	1.49	29.93	2689000	56.3	58	22.03	29.93	13250.0	74.7
ABL-1	SAFT	1	22	1.49	37.68	3096000	55.9	58	22.00	37.68	15960.0	74.3
ABL-1	SAFT	1	22	1.49	47.43	3562000	55.3	58	21.96	47.43	19200.0	73.9
ABL-1	SAFT	2	22	1.50	0.50	169200	64.4	58	24.71	0.50	329.7	85.2
ABL-1	SAFT	2	22	1.50	0.63	199600	63.3	58	24.71	0.63	408.5	84.4
ABL-1	SAFT	2	22	1.50	0.79	234500	63.1	58	24.71	0.79	506.4	84.0
ABL-1	SAFT	2	22	1.50	1.00	275500	62.8	58	24.71	1.00	627.8	83.4
ABL-1	SAFT	2	22	1.50	1.26	323500	62.5	58	24.70	1.26	776.5	82.8
ABL-1	SAFT	2	22	1.50	1.50	363600	62.7	58	24.70	1.50	913.7	82.5
ABL-1	SAFT	2	22	1.50	1.89	428500	61.8	58	24.70	1.89	1126.0	81.7
ABL-1	SAFT	2	22	1.50	2.38	500900	61.6	58	24.71	2.38	1386.0	81.1
ABL-1	SAFT	2	22	1.50	2.99	585900	61.1	58	24.70	2.99	1705.0	80.5
ABL-1	SAFT	2	22	1.50	3.77	684700	60.8	58	24.71	3.77	2091.0	79.9
ABL-1	SAFT	2	22	1.50	4.74	799800	60.4	58	24.70	4.74	2559.0	79.3
ABL-1	SAFT	2	22	1.50	5.00	830700	60.2	58	24.70	5.00	2681.0	79.2
ABL-1	SAFT	2	22	1.50	6.30	967000	59.9	58	24.70	6.30	3274.0	78.7
ABL-1	SAFT	2	22	1.50	7.92	1127000	59.5	58	24.69	7.92	3996.0	78.1
ABL-1	SAFT	2	22	1.50	9.98	1310000	59.1	58	24.69	9.98	4860.0	77.6
ABL-1	SAFT	2	22	1.50	12.56	1523000	58.7	58	24.68	12.56	5913.0	77.0
ABL-1	SAFT	2	22	1.50	15.00	1714000	58.3	58	24.68	15.00	6874.0	76.6
ABL-1	SAFT	2	22	1.50	18.88	1982000	57.9	58	24.67	18.88	8324.0	76.1
ABL-1	SAFT	2	22	1.49	23.77	2291000	57.4	58	24.66	23.77	10070.0	75.7
ABL-1	SAFT	2	22	1.49	29.93	2647000	56.9	58	24.63	29.93	12170.0	75.2
ABL-1	SAFT	2	22	1.49	37.68	3053000	56.4	58	24.61	37.68	14670.0	74.8
ABL-1	SAFT	2	22	1.49	47.43	3516000	55.9	58	24.57	47.43	17660.0	74.4
ABL-1	SAFT	1	34	12.99	0.50	20060	70.8	70	10.70	0.50	76.3	89.0
ABL-1	SAFT	1	34	12.99	0.63	23870	69.9	70	10.70	0.63	94.2	89.4
ABL-1	SAFT	1	34	12.99	0.79	28250	69.3	70	10.71	0.79	120.1	88.4
ABL-1	SAFT	1	34	12.99	1.00	33720	69.0	70	10.70	1.00	147.9	87.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	SAFT	1	34	12.98	1.26	40170	68.6	70	10.70	1.26	187.4	87.0
ABL-1	SAFT	1	34	11.03	1.50	46030	68.6	70	10.70	1.50	224.8	86.4
ABL-1	SAFT	1	34	11.02	1.89	54490	67.8	70	10.70	1.89	279.4	86.0
ABL-1	SAFT	1	34	11.03	2.38	64560	67.5	70	10.71	2.38	347.6	85.3
ABL-1	SAFT	1	34	11.03	2.99	76250	67.0	70	10.71	2.99	432.0	84.9
ABL-1	SAFT	1	34	11.03	3.77	90120	66.6	70	10.70	3.77	536.7	84.3
ABL-1	SAFT	1	34	11.03	4.74	106400	66.4	70	10.71	4.74	665.3	83.7
ABL-1	SAFT	1	34	9.19	5.00	111700	66.2	70	10.71	5.00	698.6	83.6
ABL-1	SAFT	1	34	9.19	6.30	131300	65.9	70	10.71	6.30	864.8	83.0
ABL-1	SAFT	1	34	9.19	7.92	154700	65.7	70	10.70	7.92	1067.0	82.5
ABL-1	SAFT	1	34	9.19	9.98	181800	65.5	70	10.71	9.98	1316.0	82.0
ABL-1	SAFT	1	34	9.19	12.56	213400	65.3	70	10.71	12.56	1622.0	81.4
ABL-1	SAFT	1	34	6.50	15.00	246700	64.8	70	10.71	15.00	1906.0	80.8
ABL-1	SAFT	1	34	6.50	18.88	288400	64.7	70	10.71	18.88	2340.0	80.4
ABL-1	SAFT	1	34	6.50	23.77	337700	64.5	70	10.71	23.77	2867.0	79.8
ABL-1	SAFT	1	34	6.50	29.93	395500	64.3	70	10.71	29.93	3511.0	79.3
ABL-1	SAFT	1	34	6.49	37.68	462500	64.1	70	10.70	37.68	4290.0	78.8
ABL-1	SAFT	1	34	6.49	47.43	539600	63.9	70	10.69	47.43	5236.0	78.3
ABL-1	SAFT	2	34	12.99	0.50	18940	71.2	70	11.90	0.50	69.3	88.0
ABL-1	SAFT	2	34	12.99	0.63	22630	70.6	70	11.90	0.63	85.1	88.6
ABL-1	SAFT	2	34	12.99	0.79	27010	70.3	70	11.90	0.79	108.0	87.3
ABL-1	SAFT	2	34	12.99	1.00	32270	69.8	70	11.90	1.00	134.9	87.9
ABL-1	SAFT	2	34	12.98	1.26	38560	69.1	70	11.89	1.26	168.2	86.9
ABL-1	SAFT	2	34	12.21	1.50	44290	69.3	70	8.51	1.50	200.4	86.4
ABL-1	SAFT	2	34	12.20	1.89	52660	68.3	70	8.51	1.89	249.0	86.1
ABL-1	SAFT	2	34	12.21	2.38	62200	68.0	70	8.52	2.38	312.6	85.7
ABL-1	SAFT	2	34	12.21	2.99	73620	67.7	70	8.52	2.99	387.9	85.5
ABL-1	SAFT	2	34	12.21	3.77	87140	67.2	70	8.52	3.77	483.2	84.7
ABL-1	SAFT	2	34	12.21	4.74	102800	67.1	70	8.52	4.74	600.4	84.2
ABL-1	SAFT	2	34	11.39	5.00	108000	66.8	70	5.87	5.00	628.6	84.1
ABL-1	SAFT	2	34	11.39	6.30	126800	66.6	70	5.87	6.30	779.3	83.6
ABL-1	SAFT	2	34	11.39	7.92	149200	66.4	70	5.87	7.92	964.8	83.0
ABL-1	SAFT	2	34	11.39	9.98	175000	66.2	70	5.87	9.98	1190.0	82.5
ABL-1	SAFT	2	34	11.38	12.56	205500	66.0	70	5.87	12.56	1468.0	81.9
ABL-1	SAFT	2	34	9.98	15.00	237800	65.5	70	2.91	15.00	1728.0	81.5
ABL-1	SAFT	2	34	9.98	18.88	276000	65.5	70	2.91	18.88	2120.0	81.1
ABL-1	SAFT	2	34	9.98	23.77	321300	65.3	70	2.91	23.77	2604.0	80.3
ABL-1	SAFT	2	34	9.98	29.93	374800	65.2	70	2.91	29.93	3190.0	80.0
ABL-1	SAFT	2	34	9.97	37.68	436500	65.1	70	2.91	37.68	3908.0	79.4
ABL-1	SAFT	2	34	9.96	47.43	507300	64.9	70	2.91	47.43	4771.0	79.0

Table 41. ABL-1 MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	MGRF	1	15	0.10	0.10	359646	60.3	46	5.00	0.10	738.7	82.1
ABL-1	MGRF	1	15	0.10	0.13	419848	59.9	46	5.00	0.13	912.1	81.4
ABL-1	MGRF	1	15	0.10	0.16	490500	59.6	46	5.00	0.16	1125.0	80.8
ABL-1	MGRF	1	15	0.10	0.20	573371	59.1	46	5.00	0.20	1387.7	80.0
ABL-1	MGRF	1	15	0.10	0.25	665381	58.6	46	5.00	0.25	1694.5	79.3
ABL-1	MGRF	1	15	0.10	0.32	773134	58.2	46	5.00	0.32	2072.4	78.6
ABL-1	MGRF	1	15	0.10	0.40	898500	57.8	46	5.00	0.40	2535.0	78.0
ABL-1	MGRF	1	15	0.10	0.50	1042126	57.3	46	5.00	0.50	3089.3	77.2
ABL-1	MGRF	1	15	0.10	0.63	1206779	56.9	46	5.00	0.63	3760.3	76.6
ABL-1	MGRF	1	15	0.10	0.79	1395462	56.4	46	5.00	0.79	4566.2	76.0
ABL-1	MGRF	1	15	0.10	1.00	1615000	56.0	46	5.00	1.00	5540.0	75.3
ABL-1	MGRF	1	15	0.10	1.26	1860809	55.4	46	5.00	1.26	6703.9	74.6
ABL-1	MGRF	1	15	0.10	1.58	2135608	54.9	46	5.00	1.58	8070.2	74.0
ABL-1	MGRF	1	15	0.10	2.00	2464302	54.4	46	5.00	2.00	9777.6	73.4
ABL-1	MGRF	1	15	0.10	2.51	2830000	53.8	46	5.00	2.51	11750.0	72.8
ABL-1	MGRF	1	15	0.10	3.16	3248458	53.2	46	5.00	3.16	14152.3	72.2
ABL-1	MGRF	1	15	0.10	3.98	3721181	52.6	46	5.00	3.98	16984.2	71.7
ABL-1	MGRF	1	15	0.10	5.01	4256417	52.0	46	5.00	5.01	20343.6	71.2
ABL-1	MGRF	1	15	0.10	6.31	4870000	51.4	46	5.00	6.31	24400.0	70.7
ABL-1	MGRF	1	15	0.10	7.94	5546273	50.8	46	5.00	7.94	29148.0	70.2
ABL-1	MGRF	1	15	0.10	10.00	6300717	50.1	46	5.00	10.00	34802.4	69.8
ABL-1	MGRF	1	15	0.10	12.60	7152029	49.5	46	5.00	12.60	41593.0	69.4
ABL-1	MGRF	1	15	0.10	15.80	8105000	48.8	46	5.00	15.80	49650.0	69.0
ABL-1	MGRF	1	15	0.10	20.00	9181791	48.1	46	5.00	20.00	58813.1	68.6
ABL-1	MGRF	1	15	0.10	25.10	10383045	47.4	46	4.99	25.10	69893.6	68.3
ABL-1	MGRF	1	15	0.10	31.60	11752683	46.8	46	5.00	31.60	83476.7	68.0
ABL-1	MGRF	1	15	0.10	39.80	13250000	46.1	46	4.97	39.80	99350.0	67.7
ABL-1	MGRF	1	15	0.10	50.10	14903453	45.3	46	4.97	50.10	117664.7	67.4
ABL-1	MGRF	1	15	0.10	63.10	16726320	44.6	46	4.96	63.10	139360.9	67.2
ABL-1	MGRF	1	15	0.10	79.40	18738977	44.0	46	4.95	79.40	165065.3	66.9
ABL-1	MGRF	1	15	0.10	100.00	21000000	43.2	46	4.94	100.00	196000.0	66.7
ABL-1	MGRF	2	15	5.00	0.10	261000	61.5	46	5.38	0.10	827.5	82.4
ABL-1	MGRF	2	15	5.00	0.13	349500	60.9	46	9.94	0.13	1040.0	81.6
ABL-1	MGRF	2	15	5.00	0.16	430500	60.2	46	10.25	0.16	1280.0	80.8
ABL-1	MGRF	2	15	5.00	0.20	514000	59.8	46	10.25	0.20	1575.0	80.2
ABL-1	MGRF	2	15	5.00	0.25	605000	59.3	46	10.03	0.25	1940.0	79.5
ABL-1	MGRF	2	15	5.00	0.32	707000	58.8	46	10.09	0.32	2370.0	78.8
ABL-1	MGRF	2	15	5.00	0.40	822000	58.4	46	10.10	0.40	2895.0	78.1
ABL-1	MGRF	2	15	5.00	0.50	952000	58.1	46	10.10	0.50	3530.0	77.4
ABL-1	MGRF	2	15	5.00	0.63	1100000	57.8	46	10.10	0.63	4295.0	76.7
ABL-1	MGRF	2	15	5.00	0.79	1265000	57.4	46	10.05	0.79	5225.0	76.0
ABL-1	MGRF	2	15	5.00	1.00	1450000	57.1	46	10.04	1.00	6325.0	75.4
ABL-1	MGRF	2	15	5.00	1.26	1660000	56.7	46	10.05	1.26	7670.0	74.7
ABL-1	MGRF	2	15	5.00	1.58	1900000	56.4	46	9.93	1.58	9265.0	74.1
ABL-1	MGRF	2	15	5.00	2.00	2170000	56.1	46	10.10	2.00	11200.0	73.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	MGRF	2	15	5.00	2.51	2470000	55.7	46	10.05	2.51	13450.0	72.9
ABL-1	MGRF	2	15	5.00	3.16	2810000	55.4	46	10.00	3.16	16150.0	72.3
ABL-1	MGRF	2	15	5.00	3.98	3185000	55.1	46	10.10	3.98	19400.0	71.8
ABL-1	MGRF	2	15	4.99	5.01	3605000	54.7	46	10.00	5.01	23250.0	71.3
ABL-1	MGRF	2	15	4.99	6.31	4075000	54.4	46	9.95	6.31	27850.0	70.8
ABL-1	MGRF	2	15	4.99	7.94	4590000	54.1	46	9.95	7.94	33200.0	70.4
ABL-1	MGRF	2	15	4.99	10.00	5160000	53.7	46	10.05	10.00	39600.0	69.9
ABL-1	MGRF	2	15	4.99	12.60	5780000	53.4	46	10.00	12.60	47200.0	69.5
ABL-1	MGRF	2	15	4.99	15.80	6460000	53.1	46	10.00	15.80	56150.0	69.2
ABL-1	MGRF	2	15	4.99	20.00	7195000	52.7	46	10.00	20.00	66750.0	68.8
ABL-1	MGRF	2	15	4.98	25.10	7980000	52.4	46	10.00	25.10	79150.0	68.5
ABL-1	MGRF	2	15	4.97	31.60	8830000	52.0	46	10.00	31.60	93850.0	68.3
ABL-1	MGRF	2	15	4.98	39.80	9700000	51.8	46	10.00	39.80	111000.0	68.0
ABL-1	MGRF	2	15	4.98	50.10	10550000	51.6	46	10.00	50.10	131000.0	67.8
ABL-1	MGRF	2	15	4.98	63.10	11450000	51.2	46	10.00	63.10	155000.0	67.6
ABL-1	MGRF	2	15	4.99	79.40	12450000	50.6	46	10.00	79.40	182500.0	67.5
ABL-1	MGRF	2	15	5.02	100.00	12550000	51.3	46	10.00	100.00	214500.0	67.4
ABL-1	MGRF	1	25	0.10	0.10	45452	64.9	58	5.00	0.10	106.2	87.5
ABL-1	MGRF	1	25	0.10	0.13	53744	64.6	58	5.00	0.13	133.0	87.1
ABL-1	MGRF	1	25	0.10	0.16	63450	64.4	58	5.00	0.16	167.0	86.6
ABL-1	MGRF	1	25	0.10	0.20	75110	63.9	58	5.00	0.20	209.4	85.9
ABL-1	MGRF	1	25	0.10	0.25	88227	63.6	58	5.00	0.25	260.0	85.4
ABL-1	MGRF	1	25	0.10	0.32	103760	63.3	58	5.00	0.32	323.3	84.9
ABL-1	MGRF	1	25	0.10	0.40	122000	63.0	58	5.00	0.40	402.0	84.3
ABL-1	MGRF	1	25	0.10	0.50	143153	62.6	58	5.00	0.50	498.8	83.7
ABL-1	MGRF	1	25	0.10	0.63	167812	62.4	58	5.00	0.63	617.5	83.1
ABL-1	MGRF	1	25	0.10	0.79	196537	62.1	58	5.00	0.79	762.7	82.5
ABL-1	MGRF	1	25	0.10	1.00	230500	61.8	58	5.00	1.00	942.0	81.9
ABL-1	MGRF	1	25	0.10	1.26	270009	61.5	58	5.00	1.26	1161.7	81.2
ABL-1	MGRF	1	25	0.10	1.58	315163	61.2	58	5.00	1.58	1421.8	80.6
ABL-1	MGRF	1	25	0.10	2.00	370017	60.9	58	5.00	2.00	1751.4	79.9
ABL-1	MGRF	1	25	0.10	2.51	431500	60.6	58	5.00	2.51	2140.0	79.3
ABL-1	MGRF	1	25	0.10	3.16	504317	60.3	58	5.00	3.16	2619.1	78.6
ABL-1	MGRF	1	25	0.10	3.98	588394	59.9	58	5.00	3.98	3202.8	78.0
ABL-1	MGRF	1	25	0.10	5.01	685863	59.6	58	5.00	5.01	3909.1	77.4
ABL-1	MGRF	1	25	0.10	6.31	800500	59.2	58	5.00	6.31	4765.0	76.8
ABL-1	MGRF	1	25	0.10	7.94	930172	58.8	58	5.00	7.94	5787.6	76.2
ABL-1	MGRF	1	25	0.10	10.00	1080004	58.4	58	5.00	10.00	7020.1	75.7
ABL-1	MGRF	1	25	0.10	12.60	1253398	58.0	58	5.00	12.60	8514.6	75.1
ABL-1	MGRF	1	25	0.10	15.80	1450000	57.6	58	5.00	15.80	10300.0	74.5
ABL-1	MGRF	1	25	0.10	20.00	1681735	57.0	58	5.00	20.00	12489.3	74.0
ABL-1	MGRF	1	25	0.10	25.10	1938511	56.4	58	5.00	25.10	14920.3	73.3
ABL-1	MGRF	1	25	0.10	31.60	2237097	55.8	58	5.01	31.60	17905.3	72.8
ABL-1	MGRF	1	25	0.10	39.80	2580000	55.1	58	5.00	39.80	21750.0	72.5
ABL-1	MGRF	1	25	0.10	50.10	2985819	54.4	58	4.98	50.10	26179.3	72.0
ABL-1	MGRF	1	25	0.10	63.10	3456019	54.1	58	4.98	63.10	31442.7	71.6
ABL-1	MGRF	1	25	0.10	79.40	3988637	53.9	58	4.98	79.40	37686.8	71.2

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	MGRF	1	25	0.10	100.00	4585000	53.4	58	4.98	100.00	45200.0	70.7
ABL-1	MGRF	2	25	5.00	0.10	40350	67.0	58	9.49	0.10	115.5	87.6
ABL-1	MGRF	2	25	5.00	0.13	51750	66.3	58	10.10	0.13	145.0	87.2
ABL-1	MGRF	2	25	5.00	0.16	63400	65.5	58	10.11	0.16	181.5	86.7
ABL-1	MGRF	2	25	5.00	0.20	76150	65.1	58	10.08	0.20	226.5	86.2
ABL-1	MGRF	2	25	5.00	0.25	90600	64.5	58	10.25	0.25	282.0	85.7
ABL-1	MGRF	2	25	5.00	0.32	107000	64.0	58	9.99	0.32	352.0	85.1
ABL-1	MGRF	2	25	5.00	0.40	126500	63.6	58	10.00	0.40	437.5	84.5
ABL-1	MGRF	2	25	5.00	0.50	149000	63.2	58	10.05	0.50	543.0	83.9
ABL-1	MGRF	2	25	5.00	0.63	175000	62.9	58	10.15	0.63	673.0	83.3
ABL-1	MGRF	2	25	5.00	0.79	205000	62.6	58	10.05	0.79	833.0	82.7
ABL-1	MGRF	2	25	5.00	1.00	240000	62.3	58	10.05	1.00	1030.0	82.0
ABL-1	MGRF	2	25	5.00	1.26	281000	61.9	58	10.06	1.26	1275.0	81.2
ABL-1	MGRF	2	25	5.00	1.58	328000	61.6	58	10.10	1.58	1560.0	80.8
ABL-1	MGRF	2	25	5.00	2.00	382500	61.4	58	10.00	2.00	1915.0	80.1
ABL-1	MGRF	2	25	5.00	2.51	445000	61.1	58	10.00	2.51	2350.0	79.5
ABL-1	MGRF	2	25	5.00	3.16	518500	60.8	58	10.10	3.16	2870.0	78.9
ABL-1	MGRF	2	25	5.00	3.98	601500	60.5	58	10.10	3.98	3515.0	78.2
ABL-1	MGRF	2	25	5.00	5.01	698500	60.2	58	10.08	5.01	4285.0	77.6
ABL-1	MGRF	2	25	5.00	6.31	810500	59.9	58	9.96	6.31	5215.0	77.0
ABL-1	MGRF	2	25	5.00	7.94	937500	59.6	58	10.00	7.94	6335.0	76.4
ABL-1	MGRF	2	25	5.00	10.00	1080000	59.3	58	10.00	10.00	7690.0	75.8
ABL-1	MGRF	2	25	5.00	12.60	1250000	59.0	58	10.00	12.60	9315.0	75.3
ABL-1	MGRF	2	25	5.01	15.80	1435000	58.7	58	9.97	15.80	11250.0	74.8
ABL-1	MGRF	2	25	5.01	20.00	1645000	58.4	58	9.99	20.00	13600.0	74.3
ABL-1	MGRF	2	25	5.01	25.10	1880000	58.0	58	9.98	25.10	16400.0	73.8
ABL-1	MGRF	2	25	5.01	31.60	2150000	57.5	58	10.00	31.60	19750.0	73.4
ABL-1	MGRF	2	25	5.02	39.80	2450000	57.0	58	10.00	39.80	23700.0	73.0
ABL-1	MGRF	2	25	5.02	50.10	2790000	57.1	58	9.99	50.10	28400.0	72.7
ABL-1	MGRF	2	25	5.01	63.10	3140000	56.9	58	10.00	63.10	34050.0	72.4
ABL-1	MGRF	2	25	5.01	79.40	3500000	56.7	58	10.00	79.40	40700.0	72.2
ABL-1	MGRF	2	25	5.01	100.00	3875000	56.4	58	10.00	100.00	48600.0	72.1
ABL-1	MGRF	1	35	0.10	0.10	51450	81.0	70	15.00	0.10	19.8	89.7
ABL-1	MGRF	1	35	0.10	0.13	63010	80.6	70	15.00	0.13	24.9	89.6
ABL-1	MGRF	1	35	0.10	0.16	73800	80.3	70	15.00	0.16	31.5	89.4
ABL-1	MGRF	1	35	0.10	0.20	90430	79.9	70	15.00	0.20	39.7	89.1
ABL-1	MGRF	1	35	0.10	0.25	110300	79.4	70	15.00	0.25	49.7	88.8
ABL-1	MGRF	1	35	0.10	0.32	134800	79.0	70	15.00	0.32	62.4	88.6
ABL-1	MGRF	1	35	0.10	0.40	164500	78.6	70	15.00	0.40	78.5	88.3
ABL-1	MGRF	1	35	0.10	0.50	200200	78.1	70	15.00	0.50	98.7	87.9
ABL-1	MGRF	1	35	0.10	0.63	6173	72.4	70	15.00	0.63	123.6	87.5
ABL-1	MGRF	1	35	0.10	0.79	7441	71.9	70	15.00	0.79	154.4	87.2
ABL-1	MGRF	1	35	0.10	1.00	8965	71.5	70	15.00	1.00	193.0	86.7
ABL-1	MGRF	1	35	0.10	1.26	10775	70.9	70	15.00	1.26	240.8	86.2
ABL-1	MGRF	1	35	0.10	1.58	12880	70.3	70	15.00	1.58	298.9	85.7
ABL-1	MGRF	1	35	0.10	2.00	15428	69.8	70	15.00	2.00	373.9	85.1
ABL-1	MGRF	1	35	0.10	2.51	18450	69.4	70	15.00	2.51	463.0	84.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABL-1	MGRF	1	35	0.10	3.16	22014	68.9	70	15.00	3.16	575.6	83.9
ABL-1	MGRF	1	35	0.10	3.98	26223	68.4	70	15.00	3.98	713.4	83.3
ABL-1	MGRF	1	35	0.10	5.01	31182	68.0	70	15.00	5.01	883.0	82.7
ABL-1	MGRF	1	35	0.10	6.31	37100	67.6	70	15.00	6.31	1095.0	82.1
ABL-1	MGRF	1	35	0.10	7.94	44035	67.1	70	15.00	7.94	1347.4	81.5
ABL-1	MGRF	1	35	0.10	10.00	52040	66.8	70	15.00	10.00	1654.1	80.9
ABL-1	MGRF	1	35	0.10	12.60	61899	66.4	70	15.00	12.60	2033.1	80.3
ABL-1	MGRF	1	35	0.10	15.80	73150	66.0	70	15.00	15.80	2500.0	79.7
ABL-1	MGRF	1	35	0.10	20.00	86586	65.6	70	15.00	20.00	3070.2	79.1
ABL-1	MGRF	1	35	0.10	25.10	102426	65.3	70	15.00	25.10	3736.8	78.5
ABL-1	MGRF	1	35	0.10	31.60	121136	64.9	70	15.00	31.60	4558.4	77.9
ABL-1	MGRF	1	35	0.10	39.80	143500	64.7	70	15.00	39.80	5565.0	77.3
ABL-1	MGRF	1	35	0.10	50.10	168584	64.3	70	15.00	50.10	6764.6	76.6
ABL-1	MGRF	1	35	0.10	63.10	198293	63.9	70	15.00	63.10	8220.5	75.5
ABL-1	MGRF	1	35	0.10	79.40	234060	63.5	70	15.00	79.40	9984.2	74.7
ABL-1	MGRF	1	35	0.10	100.00	277000	63.2	70	14.90	100.00	12150.0	74.8
ABL-1	MGRF	2	35	5.00	0.10	6710	73.5	70	9.90	0.10	20.5	89.5
ABL-1	MGRF	2	35	5.00	0.13	8205	72.8	70	10.03	0.13	25.8	89.3
ABL-1	MGRF	2	35	5.00	0.16	9950	71.9	70	10.00	0.16	32.3	89.2
ABL-1	MGRF	2	35	5.00	0.20	12000	71.3	70	10.00	0.20	40.6	89.0
ABL-1	MGRF	2	35	5.00	0.25	14400	70.6	70	10.15	0.25	51.2	88.8
ABL-1	MGRF	2	35	5.00	0.32	17200	69.9	70	10.10	0.32	64.2	88.5
ABL-1	MGRF	2	35	5.00	0.40	20600	69.3	70	10.10	0.40	80.7	88.4
ABL-1	MGRF	2	35	5.00	0.50	24550	68.7	70	10.10	0.50	101.0	88.0
ABL-1	MGRF	2	35	5.00	0.63	29200	68.2	70	10.10	0.63	127.0	87.7
ABL-1	MGRF	2	35	5.00	0.79	34650	67.7	70	10.20	0.79	159.5	87.3
ABL-1	MGRF	2	35	5.00	1.00	41150	67.2	70	10.10	1.00	199.0	86.8
ABL-1	MGRF	2	35	5.00	1.26	48750	66.8	70	10.10	1.26	248.5	86.4
ABL-1	MGRF	2	35	5.00	1.58	57650	66.3	70	10.10	1.58	310.0	85.9
ABL-1	MGRF	2	35	5.00	2.00	68150	66.0	70	10.10	2.00	386.0	85.4
ABL-1	MGRF	2	35	5.00	2.51	80450	65.6	70	10.05	2.51	480.0	84.8
ABL-1	MGRF	2	35	5.00	3.16	95000	65.2	70	10.15	3.16	597.0	84.2
ABL-1	MGRF	2	35	5.00	3.98	111500	64.8	70	10.10	3.98	740.0	83.7
ABL-1	MGRF	2	35	5.00	5.01	131500	64.5	70	10.00	5.01	915.0	83.1
ABL-1	MGRF	2	35	5.00	6.31	155000	64.2	70	10.00	6.31	1130.0	82.6
ABL-1	MGRF	2	35	5.00	7.94	182500	64.0	70	10.00	7.94	1395.0	82.0
ABL-1	MGRF	2	35	5.00	10.00	214000	63.6	70	10.00	10.00	1720.0	81.5
ABL-1	MGRF	2	35	5.01	12.60	251000	63.3	70	10.00	12.60	2115.0	81.0
ABL-1	MGRF	2	35	5.01	15.80	294500	63.0	70	9.77	15.80	2585.0	80.5
ABL-1	MGRF	2	35	5.01	20.00	345000	62.7	70	9.96	20.00	3180.0	80.1
ABL-1	MGRF	2	35	5.01	25.10	404000	62.4	70	9.99	25.10	3890.0	79.7
ABL-1	MGRF	2	35	5.01	31.60	472000	62.1	70	9.99	31.60	4750.0	79.3
ABL-1	MGRF	2	35	5.01	39.80	550000	61.8	70	9.99	39.80	5790.0	79.1
ABL-1	MGRF	2	35	5.01	50.10	640500	61.4	70	9.99	50.10	7040.0	78.9
ABL-1	MGRF	2	35	5.01	63.10	745000	60.9	70	9.99	63.10	8555.0	78.8
ABL-1	MGRF	2	35	5.00	79.40	866000	60.2	70	9.99	79.40	10350.0	78.9
ABL-1	MGRF	2	35	4.99	100.00	1003500	59.6	70	9.99	100.00	12550.0	79.2

Table 42. ABM-2 Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	TANK	1	10	0.04	0.50	5874000	68.6	46	11.62	0.50	703.1	89.6
ABM-2	TANK	1	10	0.04	0.63	7018000	66.9	46	11.62	0.63	885.1	89.6
ABM-2	TANK	1	10	0.04	0.79	8352000	65.4	46	11.62	0.79	1112.0	89.7
ABM-2	TANK	1	10	0.04	1.00	9883000	63.6	46	11.62	1.00	1400.0	89.7
ABM-2	TANK	1	10	0.04	1.26	11650000	62.1	46	11.62	1.26	1764.0	89.6
ABM-2	TANK	1	10	0.04	1.50	13150000	60.5	46	9.01	1.50	2097.0	89.6
ABM-2	TANK	1	10	0.04	1.89	15400000	58.7	46	9.01	1.89	2636.0	89.6
ABM-2	TANK	1	10	0.04	2.38	18030000	56.9	46	9.01	2.38	3310.0	89.4
ABM-2	TANK	1	10	0.04	2.99	20680000	55.1	46	9.01	2.99	4166.0	89.3
ABM-2	TANK	1	10	0.04	3.77	24480000	52.0	46	9.01	3.77	5233.0	89.2
ABM-2	TANK	1	10	0.04	4.74	27360000	51.5	46	9.01	4.74	6572.0	89.1
ABM-2	TANK	1	10	0.04	5.00	28370000	50.7	46	6.81	5.00	6926.0	89.1
ABM-2	TANK	1	10	0.04	6.30	32130000	49.2	46	6.81	6.30	8703.0	88.9
ABM-2	TANK	1	10	0.03	7.92	36570000	47.1	46	6.81	7.92	10930.0	88.8
ABM-2	TANK	1	10	0.03	9.98	41070000	45.2	46	6.81	9.98	13710.0	88.7
ABM-2	TANK	1	10	0.03	12.56	46100000	42.9	46	6.81	12.56	17190.0	88.5
ABM-2	TANK	1	10	0.03	15.00	50440000	41.2	46	4.01	15.00	20540.0	88.5
ABM-2	TANK	1	10	0.03	18.88	55050000	40.3	46	4.01	18.88	25710.0	88.3
ABM-2	TANK	1	10	0.03	23.77	61800000	38.4	46	4.01	23.77	32210.0	88.1
ABM-2	TANK	1	10	0.03	29.93	68800000	36.0	46	4.01	29.93	40340.0	87.9
ABM-2	TANK	1	10	0.03	37.68	75100000	34.7	46	4.00	37.68	50480.0	87.7
ABM-2	TANK	1	10	0.03	47.43	82950000	32.3	46	4.00	47.43	63110.0	87.5
ABM-2	TANK	2	10	0.04	0.50	6164000	68.1	46	11.01	0.50	739.1	89.9
ABM-2	TANK	2	10	0.04	0.63	7357000	66.7	46	11.01	0.63	926.6	89.9
ABM-2	TANK	2	10	0.04	0.79	8712000	64.4	46	11.01	0.79	1162.0	89.6
ABM-2	TANK	2	10	0.04	1.00	10250000	62.9	46	11.01	1.00	1468.0	89.6
ABM-2	TANK	2	10	0.04	1.26	12030000	61.2	46	11.00	1.26	1856.0	89.6
ABM-2	TANK	2	10	0.04	1.50	13500000	60.1	46	8.61	1.50	2190.0	89.5
ABM-2	TANK	2	10	0.04	1.89	15750000	58.1	46	8.61	1.89	2751.0	89.4
ABM-2	TANK	2	10	0.04	2.38	18240000	56.6	46	8.62	2.38	3462.0	89.3
ABM-2	TANK	2	10	0.04	2.99	20990000	54.3	46	8.62	2.99	4350.0	89.2
ABM-2	TANK	2	10	0.04	3.77	24330000	52.6	46	8.62	3.77	5461.0	89.2
ABM-2	TANK	2	10	0.04	4.74	27840000	50.6	46	8.61	4.74	6858.0	89.0
ABM-2	TANK	2	10	0.04	5.00	28190000	49.8	46	6.61	5.00	7227.0	89.0
ABM-2	TANK	2	10	0.04	6.30	32490000	48.6	46	6.61	6.30	9079.0	88.9
ABM-2	TANK	2	10	0.03	7.92	36830000	46.8	46	6.61	7.92	11390.0	88.7
ABM-2	TANK	2	10	0.03	9.98	41470000	45.2	46	6.61	9.98	14280.0	88.5
ABM-2	TANK	2	10	0.03	12.56	46170000	42.3	46	6.61	12.56	17920.0	88.4
ABM-2	TANK	2	10	0.03	15.00	49760000	41.7	46	4.01	15.00	21400.0	88.3
ABM-2	TANK	2	10	0.03	18.88	55360000	39.8	46	4.01	18.88	26800.0	88.1
ABM-2	TANK	2	10	0.03	23.77	61040000	38.6	46	4.01	23.77	33560.0	87.9
ABM-2	TANK	2	10	0.03	29.93	68410000	35.8	46	4.01	29.93	42030.0	87.7
ABM-2	TANK	2	10	0.03	37.68	73910000	34.2	46	4.00	37.68	52580.0	87.5
ABM-2	TANK	2	10	0.03	47.43	80280000	32.1	46	3.99	47.43	65780.0	87.3
ABM-2	TANK	1	22	1.00	0.50	211300	83.8	58	8.72	0.50	93.8	90.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	TANK	1	22	1.00	0.63	263200	84.1	58	8.72	0.63	116.4	89.7
ABM-2	TANK	1	22	1.00	0.79	326400	83.7	58	8.72	0.79	146.9	89.7
ABM-2	TANK	1	22	1.00	1.00	404100	83.0	58	8.72	1.00	185.4	90.2
ABM-2	TANK	1	22	1.00	1.26	499900	82.3	58	8.72	1.26	233.1	89.9
ABM-2	TANK	1	22	1.00	1.50	587600	81.9	58	5.20	1.50	276.9	90.1
ABM-2	TANK	1	22	1.00	1.89	725600	81.3	58	5.20	1.89	348.9	90.2
ABM-2	TANK	1	22	1.00	2.38	895500	80.7	58	5.20	2.38	441.8	89.8
ABM-2	TANK	1	22	1.00	2.99	1102000	79.9	58	5.20	2.99	556.0	90.1
ABM-2	TANK	1	22	1.00	3.77	1355000	79.1	58	5.20	3.77	697.3	89.9
ABM-2	TANK	1	22	1.00	4.74	1660000	78.2	58	5.21	4.74	880.2	89.8
ABM-2	TANK	1	22	1.00	5.00	1737000	78.0	58	2.91	5.00	929.6	89.9
ABM-2	TANK	1	22	1.00	6.30	2123000	77.1	58	2.91	6.30	1166.0	90.0
ABM-2	TANK	1	22	1.00	7.92	2589000	76.1	58	2.91	7.92	1471.0	89.8
ABM-2	TANK	1	22	1.00	9.98	3150000	75.0	58	2.90	9.98	1852.0	89.7
ABM-2	TANK	1	22	1.00	12.56	3819000	73.8	58	2.91	12.56	2327.0	89.8
ABM-2	TANK	1	22	1.00	15.00	4421000	72.9	58	1.00	15.00	2788.0	90.0
ABM-2	TANK	1	22	0.99	18.88	5327000	71.6	58	1.01	18.88	3483.0	89.6
ABM-2	TANK	1	22	0.99	23.77	6405000	70.2	58	1.00	23.77	4402.0	90.2
ABM-2	TANK	1	22	0.99	29.93	7658000	68.9	58	1.00	29.93	5553.0	89.7
ABM-2	TANK	1	22	0.99	37.68	9125000	67.4	58	1.01	37.68	6960.0	89.8
ABM-2	TANK	1	22	0.98	47.43	10830000	65.9	58	1.01	47.43	8753.0	89.6
ABM-2	TANK	2	22	1.00	0.50	212200	84.3	58	8.52	0.50	96.3	91.1
ABM-2	TANK	2	22	1.00	0.63	264400	84.0	58	8.52	0.63	121.9	89.4
ABM-2	TANK	2	22	1.00	0.79	328300	83.3	58	8.52	0.79	155.4	89.9
ABM-2	TANK	2	22	1.00	1.00	405300	82.7	58	8.52	1.00	193.4	89.5
ABM-2	TANK	2	22	1.00	1.26	501800	82.1	58	8.52	1.26	243.0	89.3
ABM-2	TANK	2	22	1.00	1.50	590500	81.8	58	7.11	1.50	292.2	90.1
ABM-2	TANK	2	22	1.00	1.89	726800	81.1	58	7.11	1.89	367.0	90.2
ABM-2	TANK	2	22	1.00	2.38	896700	80.4	58	7.12	2.38	461.8	90.1
ABM-2	TANK	2	22	1.00	2.99	1103000	79.6	58	7.12	2.99	579.1	89.9
ABM-2	TANK	2	22	1.00	3.77	1355000	78.8	58	7.12	3.77	730.0	89.9
ABM-2	TANK	2	22	1.00	4.74	1663000	77.9	58	7.12	4.74	919.0	89.8
ABM-2	TANK	2	22	1.00	5.00	1741000	77.7	58	5.82	5.00	970.3	89.8
ABM-2	TANK	2	22	1.00	6.30	2125000	76.8	58	5.82	6.30	1224.0	89.8
ABM-2	TANK	2	22	1.00	7.92	2590000	75.7	58	5.82	7.92	1538.0	89.8
ABM-2	TANK	2	22	1.00	9.98	3148000	74.6	58	5.82	9.98	1933.0	89.7
ABM-2	TANK	2	22	1.00	12.56	3810000	73.4	58	5.82	12.56	2433.0	89.7
ABM-2	TANK	2	22	1.00	15.00	4414000	72.5	58	4.01	15.00	2906.0	89.6
ABM-2	TANK	2	22	0.99	18.88	5307000	71.2	58	4.02	18.88	3653.0	89.6
ABM-2	TANK	2	22	0.99	23.77	6365000	69.8	58	4.02	23.77	4594.0	89.5
ABM-2	TANK	2	22	0.99	29.93	7607000	68.4	58	4.02	29.93	5775.0	89.4
ABM-2	TANK	2	22	0.99	37.68	9045000	67.0	58	4.02	37.68	7248.0	89.3
ABM-2	TANK	2	22	0.98	47.43	10710000	65.4	58	4.02	47.43	9099.0	89.2
ABM-2	TANK	1	34	2.00	0.50	10790	88.1	70	44.07	0.50	18.6	88.9
ABM-2	TANK	1	34	2.00	0.63	13530	88.5	70	44.07	0.63	23.2	89.5
ABM-2	TANK	1	34	2.00	0.79	16940	88.2	70	44.07	0.79	28.9	89.8
ABM-2	TANK	1	34	2.00	1.00	21280	88.2	70	44.07	1.00	36.8	89.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	TANK	1	34	2.00	1.26	26490	87.8	70	44.07	1.26	45.7	89.9
ABM-2	TANK	1	34	2.00	1.50	31590	87.6	70	24.83	1.50	54.3	89.5
ABM-2	TANK	1	34	2.00	1.89	39540	87.1	70	24.83	1.89	67.9	90.2
ABM-2	TANK	1	34	2.00	2.38	49500	87.0	70	24.84	2.38	86.5	89.7
ABM-2	TANK	1	34	2.00	2.99	61800	86.7	70	24.84	2.99	108.8	90.0
ABM-2	TANK	1	34	2.00	3.77	77260	86.4	70	24.84	3.77	137.1	89.8
ABM-2	TANK	1	34	2.00	4.74	96380	86.0	70	24.84	4.74	172.7	89.9
ABM-2	TANK	1	34	2.00	5.00	101200	86.0	70	13.32	5.00	182.0	90.0
ABM-2	TANK	1	34	2.00	6.30	126200	85.6	70	13.32	6.30	230.1	89.9
ABM-2	TANK	1	34	2.00	7.92	157000	85.3	70	13.32	7.92	289.1	89.9
ABM-2	TANK	1	34	2.00	9.98	195200	84.9	70	13.32	9.98	363.6	89.9
ABM-2	TANK	1	34	2.00	12.56	242700	84.5	70	13.32	12.56	458.3	89.9
ABM-2	TANK	1	34	2.00	15.00	286700	84.2	70	4.01	15.00	547.9	90.0
ABM-2	TANK	1	34	2.00	18.88	355700	83.7	70	4.01	18.88	686.4	89.9
ABM-2	TANK	1	34	2.00	23.77	440800	83.2	70	4.02	23.77	861.2	90.2
ABM-2	TANK	1	34	2.00	29.93	545400	82.7	70	4.02	29.93	1093.0	90.0
ABM-2	TANK	1	34	2.00	37.68	673900	82.2	70	4.02	37.68	1374.0	89.9
ABM-2	TANK	1	34	2.00	47.43	830800	81.6	70	4.02	47.43	1729.0	90.0
ABM-2	TANK	2	34	2.10	0.50	10090	88.7	70	43.57	0.50	19.0	89.7
ABM-2	TANK	2	34	2.10	0.63	12750	88.2	70	43.57	0.63	24.2	89.3
ABM-2	TANK	2	34	2.10	0.79	16090	88.3	70	43.57	0.79	29.6	90.1
ABM-2	TANK	2	34	2.10	1.00	20080	88.0	70	43.57	1.00	38.4	91.0
ABM-2	TANK	2	34	2.10	1.26	25210	87.8	70	43.56	1.26	47.4	89.9
ABM-2	TANK	2	34	2.10	1.50	30160	87.6	70	24.64	1.50	57.2	90.9
ABM-2	TANK	2	34	2.10	1.89	37550	87.2	70	24.63	1.89	71.8	89.6
ABM-2	TANK	2	34	2.10	2.38	46850	87.0	70	24.64	2.38	90.1	90.1
ABM-2	TANK	2	34	2.10	2.99	58540	86.6	70	24.64	2.99	114.1	90.1
ABM-2	TANK	2	34	2.10	3.77	73280	86.3	70	24.64	3.77	143.1	90.0
ABM-2	TANK	2	34	2.10	4.74	91240	86.0	70	24.64	4.74	180.5	90.0
ABM-2	TANK	2	34	2.10	5.00	96030	85.9	70	13.23	5.00	189.6	90.2
ABM-2	TANK	2	34	2.10	6.30	119700	85.7	70	13.23	6.30	238.5	89.9
ABM-2	TANK	2	34	2.10	7.92	148900	85.2	70	13.23	7.92	301.2	90.0
ABM-2	TANK	2	34	2.11	9.98	185000	84.9	70	13.23	9.98	378.8	90.0
ABM-2	TANK	2	34	2.11	12.56	230100	84.4	70	13.23	12.56	477.0	90.0
ABM-2	TANK	2	34	2.11	15.00	272100	84.1	70	4.01	15.00	570.3	90.1
ABM-2	TANK	2	34	2.11	18.88	337300	83.7	70	4.02	18.88	716.4	90.1
ABM-2	TANK	2	34	2.11	23.77	417600	83.2	70	4.02	23.77	891.6	90.1
ABM-2	TANK	2	34	2.11	29.93	516900	82.7	70	4.02	29.93	1133.0	90.0
ABM-2	TANK	2	34	2.11	37.68	638200	82.2	70	4.02	37.68	1425.0	90.0
ABM-2	TANK	2	34	2.11	47.43	787100	81.6	70	4.02	47.43	1793.0	90.0

Table 43. ABM-2 RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	RTFOT	1	10	0.03	0.50	9338000	66.2	46	6.21	0.50	1307.0	89.5
ABM-2	RTFOT	1	10	0.03	0.63	11100000	64.7	46	6.21	0.63	1642.0	89.7
ABM-2	RTFOT	1	10	0.03	0.79	12980000	63.0	46	6.21	0.79	2063.0	89.4
ABM-2	RTFOT	1	10	0.03	1.00	15120000	61.4	46	6.21	1.00	2598.0	89.2
ABM-2	RTFOT	1	10	0.03	1.26	17590000	59.8	46	6.21	1.26	3261.0	89.2
ABM-2	RTFOT	1	10	0.02	1.50	20140000	58.4	46	4.50	1.50	3865.0	89.2
ABM-2	RTFOT	1	10	0.02	1.89	23340000	56.6	46	4.50	1.89	4858.0	88.9
ABM-2	RTFOT	1	10	0.02	2.38	27290000	55.7	46	4.50	2.38	6092.0	88.8
ABM-2	RTFOT	1	10	0.02	2.99	30750000	54.0	46	4.50	2.99	7638.0	88.7
ABM-2	RTFOT	1	10	0.02	3.77	35140000	51.4	46	4.50	3.77	9603.0	88.4
ABM-2	RTFOT	1	10	0.02	4.74	40660000	50.8	46	4.50	4.74	12030.0	88.2
ABM-2	RTFOT	1	10	0.01	5.00	41420000	49.2	46	3.11	5.00	12650.0	88.2
ABM-2	RTFOT	1	10	0.01	6.30	46570000	47.8	46	3.11	6.30	15880.0	88.0
ABM-2	RTFOT	1	10	0.01	7.92	51500000	44.6	46	3.11	7.92	19880.0	87.8
ABM-2	RTFOT	1	10	0.01	9.98	60620000	43.5	46	3.10	9.98	24890.0	87.6
ABM-2	RTFOT	1	10	0.01	12.56	67930000	44.3	46	3.11	12.56	31140.0	87.4
ABM-2	RTFOT	1	10	0.00	15.00	74320000	44.1	46	1.59	15.00	37160.0	87.3
ABM-2	RTFOT	1	10	0.00	18.88	75020000	40.4	46	1.59	18.88	46350.0	87.0
ABM-2	RTFOT	1	10	0.00	23.77	82190000	41.5	46	1.59	23.77	57880.0	86.7
ABM-2	RTFOT	1	10	0.00	29.93	93290000	34.8	46	1.59	29.93	72220.0	86.5
ABM-2	RTFOT	1	10	0.00	37.68	103500000	34.2	46	1.59	37.68	89920.0	86.3
ABM-2	RTFOT	1	10	0.00	47.43	111900000	36.3	46	1.58	47.43	112200.0	86.1
ABM-2	RTFOT	2	10	0.02	0.50	11440000	65.2	46	6.50	0.50	1246.0	89.6
ABM-2	RTFOT	2	10	0.02	0.63	13510000	64.0	46	6.50	0.63	1566.0	89.5
ABM-2	RTFOT	2	10	0.02	0.79	15830000	62.8	46	6.50	0.79	1975.0	89.4
ABM-2	RTFOT	2	10	0.02	1.00	18660000	60.5	46	6.50	1.00	2481.0	89.2
ABM-2	RTFOT	2	10	0.02	1.26	21840000	58.7	46	6.50	1.26	3108.0	89.1
ABM-2	RTFOT	2	10	0.01	1.50	24290000	56.9	46	3.70	1.50	3700.0	89.3
ABM-2	RTFOT	2	10	0.01	1.89	28340000	55.2	46	3.70	1.89	4662.0	88.9
ABM-2	RTFOT	2	10	0.01	2.38	32870000	54.7	46	3.70	2.38	5853.0	88.7
ABM-2	RTFOT	2	10	0.01	2.99	37790000	53.7	46	3.69	2.99	7361.0	88.5
ABM-2	RTFOT	2	10	0.01	3.77	42820000	50.5	46	3.70	3.77	9194.0	88.4
ABM-2	RTFOT	2	10	0.01	4.74	47060000	49.3	46	3.70	4.74	11540.0	88.2
ABM-2	RTFOT	2	10	0.00	5.00	51500000	52.2	46	2.01	5.00	12150.0	88.4
ABM-2	RTFOT	2	10	0.00	6.30	55900000	47.5	46	2.01	6.30	15230.0	88.2
ABM-2	RTFOT	2	10	0.00	7.92	62370000	45.5	46	2.01	7.92	19070.0	87.9
ABM-2	RTFOT	2	10	0.00	9.98	69640000	42.9	46	2.01	9.98	23860.0	87.7
ABM-2	RTFOT	2	10	0.00	12.56	79050000	43.8	46	2.01	12.56	29830.0	87.5
ABM-2	RTFOT	2	10	0.00	15.00	86150000	43.6	46	0.60	15.00	35750.0	87.5
ABM-2	RTFOT	2	10	0.00	18.88	93090000	44.3	46	0.60	18.88	44470.0	87.3
ABM-2	RTFOT	2	10	0.00	23.77	107700000	40.0	46	0.60	23.77	55730.0	87.2
ABM-2	RTFOT	2	10	0.00	29.93	118600000	37.1	46	0.60	29.93	69560.0	86.9
ABM-2	RTFOT	2	10	0.00	37.68	139100000	37.1	46	0.60	37.68	86500.0	86.5
ABM-2	RTFOT	2	10	0.00	47.43	141900000	38.3	46	0.60	47.43	108100.0	86.4
ABM-2	RTFOT	1	22	0.60	0.50	362300	82.0	58	5.20	0.50	159.8	90.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	RTFOT	1	22	0.60	0.63	448500	81.7	58	5.20	0.63	201.3	90.2
ABM-2	RTFOT	1	22	0.60	0.79	549300	81.0	58	5.20	0.79	254.5	89.9
ABM-2	RTFOT	1	22	0.60	1.00	674000	80.3	58	5.20	1.00	317.2	89.3
ABM-2	RTFOT	1	22	0.60	1.26	829000	79.6	58	5.20	1.26	400.0	90.1
ABM-2	RTFOT	1	22	0.27	1.50	969100	79.6	58	3.40	1.50	481.4	89.8
ABM-2	RTFOT	1	22	0.27	1.89	1186000	78.4	58	3.40	1.89	604.0	89.5
ABM-2	RTFOT	1	22	0.27	2.38	1454000	77.4	58	3.40	2.38	754.4	89.9
ABM-2	RTFOT	1	22	0.27	2.99	1772000	77.0	58	3.40	2.99	951.3	89.9
ABM-2	RTFOT	1	22	0.27	3.77	2157000	76.0	58	3.40	3.77	1196.0	89.7
ABM-2	RTFOT	1	22	0.27	4.74	2618000	74.9	58	3.40	4.74	1506.0	89.7
ABM-2	RTFOT	1	22	0.11	5.00	2771000	74.7	58	2.21	5.00	1589.0	89.8
ABM-2	RTFOT	1	22	0.11	6.30	3301000	73.7	58	2.21	6.30	1993.0	89.7
ABM-2	RTFOT	1	22	0.11	7.92	4038000	72.8	58	2.21	7.92	2511.0	89.6
ABM-2	RTFOT	1	22	0.11	9.98	4832000	71.2	58	2.21	9.98	3157.0	89.4
ABM-2	RTFOT	1	22	0.11	12.56	5811000	70.2	58	2.21	12.56	3967.0	89.3
ABM-2	RTFOT	1	22	0.02	15.00	6885000	70.3	58	0.89	15.00	4717.0	89.8
ABM-2	RTFOT	1	22	0.02	18.88	8276000	67.5	58	0.89	18.88	5955.0	89.3
ABM-2	RTFOT	1	22	0.02	23.77	9779000	67.6	58	0.89	23.77	7496.0	89.4
ABM-2	RTFOT	1	22	0.02	29.93	11690000	65.3	58	0.90	29.93	9399.0	89.1
ABM-2	RTFOT	1	22	0.02	37.68	13540000	63.4	58	0.90	37.68	11730.0	88.9
ABM-2	RTFOT	1	22	0.02	47.43	15970000	62.0	58	0.90	47.43	14750.0	88.9
ABM-2	RTFOT	2	22	0.50	0.50	425100	81.3	58	5.20	0.50	154.8	89.7
ABM-2	RTFOT	2	22	0.50	0.63	519900	81.6	58	5.20	0.63	196.1	89.6
ABM-2	RTFOT	2	22	0.50	0.79	638800	80.9	58	5.20	0.79	251.1	90.1
ABM-2	RTFOT	2	22	0.50	1.00	788300	80.4	58	5.20	1.00	318.2	89.9
ABM-2	RTFOT	2	22	0.50	1.26	967400	79.7	58	5.20	1.26	392.7	90.0
ABM-2	RTFOT	2	22	0.50	1.50	1133000	79.3	58	3.00	1.50	473.1	90.0
ABM-2	RTFOT	2	22	0.50	1.89	1391000	78.3	58	3.00	1.89	592.8	89.7
ABM-2	RTFOT	2	22	0.50	2.38	1701000	77.5	58	3.00	2.38	748.9	89.8
ABM-2	RTFOT	2	22	0.50	2.99	2073000	76.6	58	3.00	2.99	941.7	89.6
ABM-2	RTFOT	2	22	0.50	3.77	2524000	75.6	58	3.00	3.77	1187.0	89.7
ABM-2	RTFOT	2	22	0.50	4.74	3068000	74.6	58	3.00	4.74	1490.0	89.6
ABM-2	RTFOT	2	22	0.50	5.00	3177000	74.4	58	1.59	5.00	1571.0	89.8
ABM-2	RTFOT	2	22	0.50	6.30	3843000	73.3	58	1.59	6.30	1972.0	89.7
ABM-2	RTFOT	2	22	0.50	7.92	4636000	72.2	58	1.59	7.92	2484.0	89.7
ABM-2	RTFOT	2	22	0.50	9.98	5580000	71.0	58	1.60	9.98	3122.0	89.5
ABM-2	RTFOT	2	22	0.50	12.56	6690000	69.7	58	1.60	12.56	3918.0	89.4
ABM-2	RTFOT	2	22	0.49	15.00	7754000	68.6	58	0.50	15.00	4696.0	89.7
ABM-2	RTFOT	2	22	0.49	18.88	9235000	67.2	58	0.50	18.88	5907.0	89.5
ABM-2	RTFOT	2	22	0.49	23.77	10960000	65.7	58	0.50	23.77	7369.0	89.2
ABM-2	RTFOT	2	22	0.49	29.93	12960000	64.2	58	0.50	29.93	9294.0	89.4
ABM-2	RTFOT	2	22	0.48	37.68	15270000	62.7	58	0.50	37.68	11630.0	89.2
ABM-2	RTFOT	2	22	0.48	47.43	17930000	61.1	58	0.50	47.43	14610.0	89.0
ABM-2	RTFOT	1	34	1.20	0.50	18550	87.8	70	28.65	0.50	28.7	91.5
ABM-2	RTFOT	1	34	1.20	0.63	23250	87.6	70	28.65	0.63	36.6	88.7
ABM-2	RTFOT	1	34	1.20	0.79	28740	87.4	70	28.65	0.79	45.8	89.8
ABM-2	RTFOT	1	34	1.20	1.00	36010	86.5	70	28.65	1.00	57.0	89.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	RTFOT	1	34	1.20	1.26	44790	86.3	70	28.64	1.26	72.3	89.9
ABM-2	RTFOT	1	34	1.20	1.50	53540	86.2	70	17.93	1.50	87.0	90.5
ABM-2	RTFOT	1	34	1.20	1.89	66520	85.7	70	17.93	1.89	108.6	89.9
ABM-2	RTFOT	1	34	1.20	2.38	82780	85.5	70	17.93	2.38	136.7	90.0
ABM-2	RTFOT	1	34	1.20	2.99	102600	85.2	70	17.93	2.99	172.4	90.1
ABM-2	RTFOT	1	34	1.20	3.77	127400	84.7	70	17.93	3.77	217.0	89.9
ABM-2	RTFOT	1	34	1.20	4.74	158000	84.4	70	17.93	4.74	273.5	90.0
ABM-2	RTFOT	1	34	1.20	5.00	165400	84.2	70	10.72	5.00	289.2	90.0
ABM-2	RTFOT	1	34	1.20	6.30	205200	83.8	70	10.72	6.30	364.4	90.1
ABM-2	RTFOT	1	34	1.20	7.92	253900	83.4	70	10.72	7.92	458.0	89.8
ABM-2	RTFOT	1	34	1.20	9.98	314300	82.9	70	10.72	9.98	576.8	89.9
ABM-2	RTFOT	1	34	1.20	12.56	388500	82.4	70	10.72	12.56	726.1	89.8
ABM-2	RTFOT	1	34	1.20	15.00	458700	82.0	70	4.02	15.00	868.8	89.9
ABM-2	RTFOT	1	34	1.20	18.88	565900	81.5	70	4.02	18.88	1092.0	90.0
ABM-2	RTFOT	1	34	1.20	23.77	696900	80.9	70	4.02	23.77	1376.0	89.9
ABM-2	RTFOT	1	34	1.20	29.93	858700	80.3	70	4.02	29.93	1729.0	89.7
ABM-2	RTFOT	1	34	1.20	37.68	1055000	79.7	70	4.02	37.68	2174.0	89.8
ABM-2	RTFOT	1	34	1.20	47.43	1293000	78.9	70	4.02	47.43	2731.0	89.7
ABM-2	RTFOT	2	34	1.00	0.50	21440	87.3	70	28.34	0.50	29.5	88.7
ABM-2	RTFOT	2	34	1.00	0.63	26900	87.5	70	28.34	0.63	36.0	89.8
ABM-2	RTFOT	2	34	1.00	0.79	33600	87.0	70	28.34	0.79	45.7	90.7
ABM-2	RTFOT	2	34	1.00	1.00	42040	86.7	70	28.34	1.00	57.4	90.3
ABM-2	RTFOT	2	34	1.00	1.26	52340	86.4	70	28.34	1.26	72.0	89.5
ABM-2	RTFOT	2	34	1.00	1.50	62140	86.1	70	17.73	1.50	86.7	90.0
ABM-2	RTFOT	2	34	1.00	1.89	76850	85.7	70	17.73	1.89	108.2	90.3
ABM-2	RTFOT	2	34	1.00	2.38	95180	85.3	70	17.73	2.38	135.9	90.2
ABM-2	RTFOT	2	34	1.00	2.99	118600	85.0	70	17.73	2.99	170.6	90.2
ABM-2	RTFOT	2	34	1.00	3.77	147400	84.7	70	17.73	3.77	214.6	89.8
ABM-2	RTFOT	2	34	1.00	4.74	183300	84.3	70	17.73	4.74	271.1	90.0
ABM-2	RTFOT	2	34	1.00	5.00	194900	84.2	70	10.61	5.00	284.7	90.1
ABM-2	RTFOT	2	34	1.00	6.30	241900	83.8	70	10.61	6.30	357.7	89.9
ABM-2	RTFOT	2	34	1.00	7.92	299600	83.4	70	10.61	7.92	450.8	90.0
ABM-2	RTFOT	2	34	1.00	9.98	371300	82.9	70	10.61	9.98	566.0	89.9
ABM-2	RTFOT	2	34	1.00	12.56	459600	82.4	70	10.61	12.56	712.9	89.9
ABM-2	RTFOT	2	34	1.00	15.00	541800	81.9	70	4.02	15.00	853.1	90.0
ABM-2	RTFOT	2	34	1.00	18.88	667500	81.4	70	4.02	18.88	1073.0	89.9
ABM-2	RTFOT	2	34	1.00	23.77	821400	80.8	70	4.02	23.77	1359.0	90.1
ABM-2	RTFOT	2	34	1.00	29.93	1011000	80.2	70	4.02	29.93	1701.0	89.8
ABM-2	RTFOT	2	34	1.00	37.68	1240000	79.5	70	4.02	37.68	2137.0	89.8
ABM-2	RTFOT	2	34	1.00	47.43	1520000	78.8	70	4.02	47.43	2685.0	89.6

Table 44. ABM-2 SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-1	SAFT	1	10	0.03	0.50	8702000	67.2	46	7.90	0.50	1007.0	89.8
ABM-1	SAFT	1	10	0.03	0.63	10310000	65.6	46	7.90	0.63	1291.0	89.6
ABM-1	SAFT	1	10	0.03	0.79	12130000	64.7	46	7.90	0.79	1683.0	89.5
ABM-1	SAFT	1	10	0.03	1.00	14300000	62.7	46	7.90	1.00	2173.0	89.3
ABM-1	SAFT	1	10	0.03	1.26	16670000	61.1	46	7.90	1.26	2793.0	89.0
ABM-1	SAFT	1	10	0.03	1.50	18840000	59.9	46	7.90	1.50	3748.0	88.9
ABM-1	SAFT	1	10	0.03	1.89	21800000	58.4	46	7.90	1.89	4663.0	88.8
ABM-1	SAFT	1	10	0.03	2.38	25070000	56.9	46	7.90	2.38	5808.0	88.7
ABM-1	SAFT	1	10	0.03	2.99	29040000	55.5	46	7.90	2.99	7223.0	88.5
ABM-1	SAFT	1	10	0.03	3.77	32900000	53.7	46	7.90	3.77	9001.0	88.3
ABM-1	SAFT	1	10	0.03	4.74	38020000	52.8	46	7.90	4.74	11200.0	88.1
ABM-1	SAFT	1	10	0.03	5.00	38850000	52.5	46	7.90	5.00	11310.0	88.1
ABM-1	SAFT	1	10	0.03	6.30	43920000	50.2	46	7.90	6.30	14090.0	87.9
ABM-1	SAFT	1	10	0.02	7.92	49670000	48.8	46	7.89	7.92	17630.0	87.7
ABM-1	SAFT	1	10	0.02	9.98	56090000	47.0	46	7.90	9.98	21990.0	87.5
ABM-1	SAFT	1	10	0.02	12.56	62990000	46.3	46	7.89	12.56	27470.0	87.2
ABM-1	SAFT	1	10	0.02	15.00	67900000	44.5	46	7.89	15.00	32760.0	87.0
ABM-1	SAFT	1	10	0.02	18.88	75800000	43.2	46	7.88	18.88	40990.0	86.8
ABM-1	SAFT	1	10	0.02	23.77	84660000	41.5	46	7.87	23.77	51320.0	86.5
ABM-1	SAFT	1	10	0.02	29.93	92550000	40.3	46	7.85	29.93	64170.0	86.2
ABM-1	SAFT	1	10	0.02	37.68	102000000	38.1	46	7.82	37.68	80130.0	86.0
ABM-1	SAFT	1	10	0.02	47.43	114100000	39.2	46	7.78	47.43	100000.0	85.7
ABM-1	SAFT	2	10	0.03	0.50	8677000	67.0	46	6.01	0.50	1346.0	89.4
ABM-1	SAFT	2	10	0.03	0.63	10210000	65.9	46	6.01	0.63	1677.0	89.6
ABM-1	SAFT	2	10	0.03	0.79	12030000	64.2	46	6.01	0.79	2109.0	89.2
ABM-1	SAFT	2	10	0.03	1.00	14160000	62.6	46	6.01	1.00	2660.0	89.1
ABM-1	SAFT	2	10	0.03	1.26	16640000	60.9	46	6.01	1.26	3344.0	89.1
ABM-1	SAFT	2	10	0.03	1.50	18780000	59.6	46	6.01	1.50	3980.0	89.0
ABM-1	SAFT	2	10	0.03	1.89	21790000	58.3	46	6.01	1.89	5001.0	88.9
ABM-1	SAFT	2	10	0.03	2.38	25030000	57.0	46	6.01	2.38	6281.0	88.6
ABM-1	SAFT	2	10	0.03	2.99	28740000	54.9	46	6.01	2.99	7863.0	88.5
ABM-1	SAFT	2	10	0.03	3.77	32760000	53.4	46	6.01	3.77	9868.0	88.2
ABM-1	SAFT	2	10	0.03	4.74	37200000	52.5	46	6.01	4.74	12360.0	88.0
ABM-1	SAFT	2	10	0.03	5.00	38300000	51.7	46	6.01	5.00	13010.0	88.0
ABM-1	SAFT	2	10	0.03	6.30	43590000	50.1	46	6.01	6.30	16290.0	87.8
ABM-1	SAFT	2	10	0.02	7.92	49140000	48.5	46	6.01	7.92	20370.0	87.6
ABM-1	SAFT	2	10	0.02	9.98	54120000	47.6	46	6.00	9.98	25470.0	87.3
ABM-1	SAFT	2	10	0.02	12.56	62450000	46.0	46	6.00	12.56	31850.0	87.1
ABM-1	SAFT	2	10	0.02	15.00	67560000	44.6	46	6.00	15.00	37830.0	86.9
ABM-1	SAFT	2	10	0.02	18.88	75010000	42.1	46	5.99	18.88	47210.0	86.6
ABM-1	SAFT	2	10	0.02	23.77	83350000	41.7	46	5.98	23.77	58920.0	86.4
ABM-1	SAFT	2	10	0.02	29.93	91770000	40.2	46	5.97	29.93	73460.0	86.1
ABM-1	SAFT	2	10	0.02	37.68	100300000	38.8	46	5.94	37.68	91490.0	85.8
ABM-1	SAFT	2	10	0.02	47.43	110900000	37.3	46	5.91	47.43	113900.0	85.6
ABM-1	SAFT	1	22	0.75	0.50	347100	82.6	58	5.40	0.50	153.8	89.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-1	SAFT	1	22	0.75	0.63	430100	81.6	58	5.40	0.63	193.1	90.2
ABM-1	SAFT	1	22	0.75	0.79	530000	81.1	58	5.40	0.79	240.9	90.4
ABM-1	SAFT	1	22	0.75	1.00	652700	80.4	58	5.40	1.00	304.3	90.2
ABM-1	SAFT	1	22	0.75	1.26	800800	79.8	58	5.40	1.26	380.7	90.0
ABM-1	SAFT	1	22	0.75	1.50	937000	79.5	58	5.40	1.50	455.0	89.8
ABM-1	SAFT	1	22	0.75	1.89	1151000	78.5	58	5.40	1.89	573.8	89.8
ABM-1	SAFT	1	22	0.75	2.38	1409000	77.8	58	5.40	2.38	720.6	89.7
ABM-1	SAFT	1	22	0.75	2.99	1720000	76.9	58	5.40	2.99	906.6	89.8
ABM-1	SAFT	1	22	0.75	3.77	2095000	76.1	58	5.40	3.77	1142.0	89.7
ABM-1	SAFT	1	22	0.75	4.74	2549000	75.0	58	5.40	4.74	1436.0	89.6
ABM-1	SAFT	1	22	0.75	5.00	2666000	74.7	58	5.40	5.00	1514.0	89.6
ABM-1	SAFT	1	22	0.75	6.30	3230000	73.7	58	5.40	6.30	1904.0	89.5
ABM-1	SAFT	1	22	0.75	7.92	3900000	72.6	58	5.40	7.92	2394.0	89.4
ABM-1	SAFT	1	22	0.75	9.98	4689000	71.4	58	5.40	9.98	3008.0	89.3
ABM-1	SAFT	1	22	0.74	12.56	5631000	70.2	58	5.40	12.56	3781.0	89.2
ABM-1	SAFT	1	22	0.74	15.00	6480000	69.1	58	5.41	15.00	4512.0	89.1
ABM-1	SAFT	1	22	0.74	18.88	7721000	67.8	58	5.41	18.88	5664.0	88.9
ABM-1	SAFT	1	22	0.74	23.77	9179000	66.4	58	5.41	23.77	7113.0	88.8
ABM-1	SAFT	1	22	0.73	29.93	10870000	65.1	58	5.41	29.93	8924.0	88.7
ABM-1	SAFT	1	22	0.73	37.68	12800000	63.6	58	5.41	37.68	11190.0	88.5
ABM-1	SAFT	1	22	0.73	47.43	15020000	62.1	58	5.41	47.43	14020.0	88.4
ABM-1	SAFT	2	22	0.75	0.50	357000	82.5	58	4.91	0.50	165.0	89.8
ABM-1	SAFT	2	22	0.75	0.63	442700	81.6	58	4.91	0.63	204.8	90.0
ABM-1	SAFT	2	22	0.75	0.79	545900	80.8	58	4.91	0.79	258.7	90.3
ABM-1	SAFT	2	22	0.75	1.00	670300	80.2	58	4.91	1.00	327.1	89.6
ABM-1	SAFT	2	22	0.75	1.26	823600	79.6	58	4.91	1.26	410.3	89.3
ABM-1	SAFT	2	22	0.75	1.50	962900	79.3	58	4.91	1.50	492.5	89.9
ABM-1	SAFT	2	22	0.75	1.89	1182000	78.2	58	4.91	1.89	617.5	89.8
ABM-1	SAFT	2	22	0.75	2.38	1443000	77.4	58	4.91	2.38	778.9	89.9
ABM-1	SAFT	2	22	0.75	2.99	1763000	76.7	58	4.91	2.99	979.6	89.7
ABM-1	SAFT	2	22	0.75	3.77	2147000	75.7	58	4.91	3.77	1231.0	89.7
ABM-1	SAFT	2	22	0.75	4.74	2608000	74.7	58	4.91	4.74	1549.0	89.6
ABM-1	SAFT	2	22	0.75	5.00	2726000	74.4	58	4.91	5.00	1632.0	89.5
ABM-1	SAFT	2	22	0.75	6.30	3296000	73.4	58	4.91	6.30	2050.0	89.5
ABM-1	SAFT	2	22	0.75	7.92	3978000	72.2	58	4.91	7.92	2584.0	89.3
ABM-1	SAFT	2	22	0.75	9.98	4776000	71.0	58	4.91	9.98	3240.0	89.2
ABM-1	SAFT	2	22	0.74	12.56	5734000	69.8	58	4.91	12.56	4073.0	89.1
ABM-1	SAFT	2	22	0.74	15.00	6572000	68.8	58	4.91	15.00	4861.0	89.0
ABM-1	SAFT	2	22	0.74	18.88	7834000	67.4	58	4.91	18.88	6106.0	88.9
ABM-1	SAFT	2	22	0.74	23.77	9309000	66.0	58	4.92	23.77	7659.0	88.7
ABM-1	SAFT	2	22	0.73	29.93	11010000	64.6	58	4.92	29.93	9611.0	88.6
ABM-1	SAFT	2	22	0.73	37.68	12960000	63.1	58	4.92	37.68	12040.0	88.5
ABM-1	SAFT	2	22	0.73	47.43	15190000	61.6	58	4.91	47.43	15090.0	88.3
ABM-1	SAFT	1	34	13.98	0.50	18380	87.5	70	28.02	0.50	27.0	90.6
ABM-1	SAFT	1	34	13.98	0.63	22900	87.2	70	28.02	0.63	34.5	90.9
ABM-1	SAFT	1	34	13.98	0.79	28470	86.9	70	28.02	0.79	44.0	90.6
ABM-1	SAFT	1	34	13.98	1.00	35580	86.8	70	28.02	1.00	55.5	89.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-1	SAFT	1	34	13.98	1.26	44430	86.3	70	28.02	1.26	69.7	90.0
ABM-1	SAFT	1	34	12.89	1.50	53010	86.0	70	28.02	1.50	83.9	89.8
ABM-1	SAFT	1	34	12.89	1.89	65910	85.7	70	28.01	1.89	105.1	89.9
ABM-1	SAFT	1	34	12.89	2.38	82130	85.5	70	28.02	2.38	132.8	89.9
ABM-1	SAFT	1	34	12.89	2.99	102200	85.1	70	28.03	2.99	167.9	90.0
ABM-1	SAFT	1	34	12.89	3.77	127000	84.7	70	28.03	3.77	210.3	89.9
ABM-1	SAFT	1	34	12.89	4.74	157500	84.3	70	28.02	4.74	264.9	89.9
ABM-1	SAFT	1	34	11.82	5.00	165400	84.2	70	28.03	5.00	280.2	89.9
ABM-1	SAFT	1	34	11.83	6.30	204700	83.8	70	28.03	6.30	352.6	90.0
ABM-1	SAFT	1	34	11.82	7.92	253300	83.3	70	28.03	7.92	443.9	89.9
ABM-1	SAFT	1	34	11.82	9.98	312200	82.9	70	28.02	9.98	558.4	89.8
ABM-1	SAFT	1	34	11.82	12.56	384500	82.4	70	28.03	12.56	703.3	89.9
ABM-1	SAFT	1	34	9.99	15.00	456500	82.0	70	28.03	15.00	842.3	89.8
ABM-1	SAFT	1	34	9.99	18.88	556400	81.6	70	28.03	18.88	1059.0	89.8
ABM-1	SAFT	1	34	9.98	23.77	676000	81.1	70	28.02	23.77	1333.0	89.7
ABM-1	SAFT	1	34	9.98	29.93	818800	80.5	70	28.02	29.93	1676.0	89.7
ABM-1	SAFT	1	34	9.97	37.68	990700	80.0	70	28.01	37.68	2107.0	89.6
ABM-1	SAFT	1	34	9.96	47.43	1192000	79.4	70	27.99	47.43	2649.0	89.6
ABM-1	SAFT	2	34	13.47	0.50	18950	87.0	70	27.02	0.50	29.8	90.1
ABM-1	SAFT	2	34	13.47	0.63	23720	86.9	70	27.02	0.63	37.3	88.7
ABM-1	SAFT	2	34	13.47	0.79	29430	86.9	70	27.02	0.79	47.7	89.1
ABM-1	SAFT	2	34	13.47	1.00	36880	86.4	70	27.01	1.00	59.9	90.1
ABM-1	SAFT	2	34	13.47	1.26	45910	86.2	70	27.01	1.26	74.6	90.1
ABM-1	SAFT	2	34	12.55	1.50	54470	86.0	70	27.01	1.50	89.4	90.1
ABM-1	SAFT	2	34	12.55	1.89	67710	85.6	70	27.01	1.89	112.4	90.1
ABM-1	SAFT	2	34	12.55	2.38	84390	85.2	70	27.02	2.38	141.7	90.0
ABM-1	SAFT	2	34	12.55	2.99	104800	84.9	70	27.02	2.99	178.4	89.9
ABM-1	SAFT	2	34	12.55	3.77	130400	84.5	70	27.02	3.77	224.8	90.1
ABM-1	SAFT	2	34	12.55	4.74	161800	84.1	70	27.02	4.74	283.1	90.0
ABM-1	SAFT	2	34	11.61	5.00	169700	84.1	70	27.02	5.00	297.6	90.0
ABM-1	SAFT	2	34	11.61	6.30	209700	83.6	70	27.02	6.30	375.2	89.9
ABM-1	SAFT	2	34	11.61	7.92	259200	83.2	70	27.02	7.92	471.9	89.9
ABM-1	SAFT	2	34	11.60	9.98	319400	82.8	70	27.02	9.98	593.4	89.8
ABM-1	SAFT	2	34	11.60	12.56	393500	82.3	70	27.02	12.56	747.6	89.8
ABM-1	SAFT	2	34	9.99	15.00	465700	81.8	70	27.02	15.00	892.4	89.8
ABM-1	SAFT	2	34	9.99	18.88	568500	81.4	70	27.02	18.88	1123.0	89.8
ABM-1	SAFT	2	34	9.98	23.77	692800	80.8	70	27.02	23.77	1413.0	89.7
ABM-1	SAFT	2	34	9.98	29.93	840800	80.3	70	27.01	29.93	1778.0	89.7
ABM-1	SAFT	2	34	9.97	37.68	1014000	79.7	70	27.00	37.68	2235.0	89.6
ABM-1	SAFT	2	34	9.96	47.43	1213000	79.2	70	26.99	47.43	2808.0	89.5

Table 45. ABM-2 MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	MGRF	1	10	1.50	0.10	2935000	73.4	46	1.50	0.10	297.0	89.9
ABM-2	MGRF	1	10	1.50	0.13	3630000	71.7	46	1.50	0.13	372.5	89.9
ABM-2	MGRF	1	10	1.50	0.16	4360000	69.9	46	1.50	0.16	468.5	89.7
ABM-2	MGRF	1	10	1.50	0.20	5190000	68.1	46	1.50	0.20	589.0	89.8
ABM-2	MGRF	1	10	1.50	0.25	6125000	66.0	46	1.50	0.25	740.0	89.6
ABM-2	MGRF	1	10	1.50	0.32	7180000	63.8	46	1.50	0.32	930.5	89.5
ABM-2	MGRF	1	10	1.50	0.40	8340000	61.4	46	1.50	0.40	1165.0	89.5
ABM-2	MGRF	1	10	1.50	0.50	9600000	59.0	46	1.50	0.50	1470.0	89.4
ABM-2	MGRF	1	10	1.50	0.63	11000000	56.3	46	1.50	0.63	1850.0	89.3
ABM-2	MGRF	1	10	1.50	0.79	12400000	53.7	46	1.50	0.79	2320.0	89.2
ABM-2	MGRF	1	10	1.50	1.00	13900000	50.9	46	1.50	1.00	2915.0	89.1
ABM-2	MGRF	1	10	1.50	1.26	15500000	48.2	46	1.50	1.26	3665.0	88.9
ABM-2	MGRF	1	10	1.50	1.58	17150000	45.7	46	1.50	1.58	4595.0	88.8
ABM-2	MGRF	1	10	1.50	2.00	18750000	43.1	46	1.50	2.00	5760.0	88.6
ABM-2	MGRF	1	10	1.50	2.51	20400000	40.8	46	1.50	2.51	7220.0	88.4
ABM-2	MGRF	1	10	1.50	3.16	22100000	38.6	46	1.50	3.16	9065.0	88.2
ABM-2	MGRF	1	10	1.50	3.98	23750000	36.5	46	1.50	3.98	11350.0	88.0
ABM-2	MGRF	1	10	1.50	5.01	25350000	34.7	46	1.50	5.01	14200.0	87.8
ABM-2	MGRF	1	10	1.50	6.31	26950000	33.0	46	1.50	6.31	17850.0	87.6
ABM-2	MGRF	1	10	1.50	7.94	28550000	31.5	46	1.50	7.94	22350.0	87.3
ABM-2	MGRF	1	10	1.50	10.00	30100000	30.2	46	1.50	10.00	27950.0	87.1
ABM-2	MGRF	1	10	1.50	12.60	31650000	29.1	46	1.50	12.60	34900.0	86.8
ABM-2	MGRF	1	10	1.50	15.80	33250000	28.1	46	1.50	15.80	43550.0	86.5
ABM-2	MGRF	1	10	1.50	20.00	34800000	27.4	46	1.50	20.00	54350.0	86.2
ABM-2	MGRF	1	10	1.50	25.10	36400000	26.7	46	1.50	25.10	67700.0	85.9
ABM-2	MGRF	1	10	1.50	31.60	37950000	26.2	46	1.50	31.60	84300.0	85.6
ABM-2	MGRF	1	10	1.50	39.80	39550000	25.8	46	1.50	39.80	105000.0	85.3
ABM-2	MGRF	1	10	1.50	50.10	41150000	25.4	46	1.50	50.10	130500.0	84.9
ABM-2	MGRF	1	10	1.50	63.10	42750000	25.1	46	1.50	63.10	161000.0	84.6
ABM-2	MGRF	1	10	1.50	79.40	44250000	24.9	46	1.50	79.40	199500.0	84.2
ABM-2	MGRF	1	10	1.50	100.00	45650000	24.8	46	1.50	100.00	245500.0	83.8
ABM-2	MGRF	2	10	1.50	0.10	3015000	73.8	46	1.50	0.10	308.0	89.9
ABM-2	MGRF	2	10	1.50	0.13	3890000	72.0	46	1.50	0.13	387.5	89.9
ABM-2	MGRF	2	10	1.50	0.16	4780000	70.1	46	1.50	0.16	488.0	89.8
ABM-2	MGRF	2	10	1.50	0.20	5740000	68.5	46	1.50	0.20	614.5	89.8
ABM-2	MGRF	2	10	1.50	0.25	6825000	66.8	46	1.50	0.25	772.5	89.7
ABM-2	MGRF	2	10	1.50	0.32	8065000	65.0	46	1.50	0.32	971.5	89.5
ABM-2	MGRF	2	10	1.50	0.40	9440000	63.1	46	1.50	0.40	1220.0	89.5
ABM-2	MGRF	2	10	1.50	0.50	11000000	61.4	46	1.50	0.50	1535.0	89.4
ABM-2	MGRF	2	10	1.50	0.63	12600000	59.5	46	1.50	0.63	1930.0	89.3
ABM-2	MGRF	2	10	1.50	0.79	14500000	57.6	46	1.50	0.79	2430.0	89.2
ABM-2	MGRF	2	10	1.50	1.00	16400000	55.7	46	1.50	1.00	3050.0	89.1
ABM-2	MGRF	2	10	1.50	1.26	18550000	53.9	46	1.50	1.26	3830.0	88.9
ABM-2	MGRF	2	10	1.50	1.58	20750000	52.1	46	1.50	1.58	4810.0	88.7
ABM-2	MGRF	2	10	1.50	2.00	22350000	50.3	46	1.50	2.00	6030.0	88.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	MGRF	2	10	1.50	2.51	22050000	47.9	46	1.50	2.51	7555.0	88.4
ABM-2	MGRF	2	10	1.50	3.16	23650000	46.2	46	1.50	3.16	9480.0	88.2
ABM-2	MGRF	2	10	1.50	3.98	25850000	43.9	46	1.50	3.98	11900.0	88.0
ABM-2	MGRF	2	10	1.50	5.01	27850000	44.2	46	1.50	5.01	14900.0	87.8
ABM-2	MGRF	2	10	1.50	6.31	30250000	44.8	46	1.50	6.31	18650.0	87.5
ABM-2	MGRF	2	10	1.50	7.94	32650000	44.6	46	1.50	7.94	23400.0	87.3
ABM-2	MGRF	2	10	1.50	10.00	35150000	44.2	46	1.50	10.00	29250.0	87.0
ABM-2	MGRF	2	10	1.50	12.60	37450000	43.7	46	1.50	12.60	36500.0	86.8
ABM-2	MGRF	2	10	1.50	15.80	41600000	41.8	46	1.50	15.80	45600.0	86.5
ABM-2	MGRF	2	10	1.50	20.00	18851500	32.2	46	1.50	20.00	56850.0	86.2
ABM-2	MGRF	2	10	1.50	25.10	19385500	34.1	46	1.50	25.10	70800.0	85.9
ABM-2	MGRF	2	10	1.50	31.60	20017000	27.5	46	1.50	31.60	88200.0	85.5
ABM-2	MGRF	2	10	1.50	39.80	20708000	27.9	46	1.50	39.80	109500.0	85.2
ABM-2	MGRF	2	10	1.50	50.10	21389000	22.8	46	1.50	50.10	136000.0	84.8
ABM-2	MGRF	2	10	1.50	63.10	21987350	23.4	46	1.50	63.10	168500.0	84.5
ABM-2	MGRF	2	10	1.50	79.40	22537650	23.1	46	1.50	79.40	208500.0	84.1
ABM-2	MGRF	2	10	1.50	100.00	23034950	22.5	46	1.50	100.00	256500.0	83.7
ABM-2	MGRF	1	25	1.50	0.10	28300	86.7	58	1.50	0.10	34.5	90.0
ABM-2	MGRF	1	25	1.50	0.13	36550	86.4	58	1.50	0.13	43.3	90.0
ABM-2	MGRF	1	25	1.50	0.16	46500	86.0	58	1.50	0.16	54.3	90.0
ABM-2	MGRF	1	25	1.50	0.20	58650	85.7	58	1.50	0.20	68.3	90.0
ABM-2	MGRF	1	25	1.50	0.25	73450	85.2	58	1.50	0.25	85.7	90.0
ABM-2	MGRF	1	25	1.50	0.32	91800	84.8	58	1.50	0.32	108.0	89.9
ABM-2	MGRF	1	25	1.50	0.40	114500	84.4	58	1.50	0.40	135.5	89.9
ABM-2	MGRF	1	25	1.50	0.50	142500	84.0	58	1.50	0.50	170.5	89.9
ABM-2	MGRF	1	25	1.50	0.63	177500	83.6	58	1.50	0.63	214.0	89.9
ABM-2	MGRF	1	25	1.50	0.79	220000	83.2	58	1.50	0.79	269.5	89.9
ABM-2	MGRF	1	25	1.50	1.00	272500	82.7	58	1.50	1.00	338.5	89.9
ABM-2	MGRF	1	25	1.50	1.26	337000	82.2	58	1.50	1.26	426.0	89.8
ABM-2	MGRF	1	25	1.50	1.58	416000	81.7	58	1.50	1.58	536.0	89.8
ABM-2	MGRF	1	25	1.50	2.00	513000	81.1	58	1.50	2.00	673.5	89.7
ABM-2	MGRF	1	25	1.50	2.51	630500	80.5	58	1.50	2.51	846.5	89.7
ABM-2	MGRF	1	25	1.50	3.16	775500	79.8	58	1.50	3.16	1070.0	89.6
ABM-2	MGRF	1	25	1.50	3.98	949000	79.2	58	1.50	3.98	1335.0	89.5
ABM-2	MGRF	1	25	1.50	5.01	1165000	78.5	58	1.50	5.01	1685.0	89.4
ABM-2	MGRF	1	25	1.50	6.31	1425000	77.7	58	1.50	6.31	2120.0	89.3
ABM-2	MGRF	1	25	1.50	7.94	1725000	76.9	58	1.50	7.94	2665.0	89.1
ABM-2	MGRF	1	25	1.50	10.00	2090000	76.1	58	1.50	10.00	3350.0	89.0
ABM-2	MGRF	1	25	1.50	12.60	2525000	75.2	58	1.50	12.60	4120.0	88.3
ABM-2	MGRF	1	25	1.50	15.80	3030000	74.3	58	1.50	15.80	5070.0	87.8
ABM-2	MGRF	1	25	1.50	20.00	3610000	73.4	58	1.50	20.00	6250.0	87.1
ABM-2	MGRF	1	25	1.50	25.10	4260000	72.4	58	1.50	25.10	7610.0	86.1
ABM-2	MGRF	1	25	1.50	31.60	5020000	71.3	58	1.50	31.60	9390.0	85.3
ABM-2	MGRF	1	25	1.50	39.80	5860000	70.5	58	1.50	39.80	11350.0	84.1
ABM-2	MGRF	1	25	1.50	50.10	6715000	69.6	58	1.50	50.10	13150.0	83.2
ABM-2	MGRF	1	25	1.50	63.10	7600000	68.7	58	1.50	63.10	15400.0	82.6
ABM-2	MGRF	1	25	1.50	79.40	8525000	67.5	58	1.50	79.40	19250.0	81.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	MGRF	1	25	1.50	100.00	9445000	66.1	58	1.50	100.00	23500.0	80.8
ABM-2	MGRF	2	25	1.50	0.10	40800	86.2	58	1.50	0.10	36.6	89.7
ABM-2	MGRF	2	25	1.50	0.13	50700	85.7	58	1.50	0.13	45.8	89.9
ABM-2	MGRF	2	25	1.50	0.16	62950	85.4	58	1.50	0.16	57.5	89.9
ABM-2	MGRF	2	25	1.50	0.20	78400	85.1	58	1.50	0.20	72.1	89.9
ABM-2	MGRF	2	25	1.50	0.25	97850	84.7	58	1.50	0.25	90.5	89.9
ABM-2	MGRF	2	25	1.50	0.32	121500	84.2	58	1.50	0.32	113.5	89.8
ABM-2	MGRF	2	25	1.50	0.40	151000	83.9	58	1.50	0.40	142.5	89.8
ABM-2	MGRF	2	25	1.50	0.50	187000	83.4	58	1.50	0.50	179.5	89.9
ABM-2	MGRF	2	25	1.50	0.63	231500	82.9	58	1.50	0.63	226.0	89.9
ABM-2	MGRF	2	25	1.50	0.79	286500	82.4	58	1.50	0.79	284.0	89.9
ABM-2	MGRF	2	25	1.50	1.00	354000	81.9	58	1.50	1.00	356.5	89.9
ABM-2	MGRF	2	25	1.50	1.26	437500	81.3	58	1.50	1.26	448.5	89.8
ABM-2	MGRF	2	25	1.50	1.58	539000	80.7	58	1.50	1.58	564.0	89.8
ABM-2	MGRF	2	25	1.50	2.00	662000	80.1	58	1.50	2.00	709.0	89.7
ABM-2	MGRF	2	25	1.50	2.51	815000	79.4	58	1.50	2.51	891.0	89.7
ABM-2	MGRF	2	25	1.50	3.16	998500	78.6	58	1.50	3.16	1125.0	89.6
ABM-2	MGRF	2	25	1.50	3.98	1225000	77.8	58	1.50	3.98	1405.0	89.5
ABM-2	MGRF	2	25	1.50	5.01	1490000	76.9	58	1.50	5.01	1775.0	89.4
ABM-2	MGRF	2	25	1.50	6.31	1815000	75.9	58	1.50	6.31	2235.0	89.3
ABM-2	MGRF	2	25	1.50	7.94	2200000	74.8	58	1.50	7.94	2805.0	89.2
ABM-2	MGRF	2	25	1.50	10.00	2665000	73.6	58	1.50	10.00	3530.0	89.0
ABM-2	MGRF	2	25	1.50	12.60	3215000	72.4	58	1.50	12.60	4430.0	88.9
ABM-2	MGRF	2	25	1.50	15.80	3870000	70.9	58	1.50	15.80	5565.0	88.7
ABM-2	MGRF	2	25	1.50	20.00	4630000	69.4	58	1.50	20.00	6980.0	88.5
ABM-2	MGRF	2	25	1.50	25.10	5510000	67.8	58	1.50	25.10	8650.0	88.1
ABM-2	MGRF	2	25	1.50	31.60	6525000	66.1	58	1.50	31.60	10950.0	88.1
ABM-2	MGRF	2	25	1.50	39.80	7685000	64.3	58	1.50	39.80	13750.0	87.9
ABM-2	MGRF	2	25	1.50	50.10	8985000	62.5	58	1.50	50.10	17250.0	87.7
ABM-2	MGRF	2	25	1.50	63.10	10435000	60.6	58	1.50	63.10	21600.0	87.4
ABM-2	MGRF	2	25	1.50	79.40	12000000	58.7	58	1.50	79.40	27000.0	87.1
ABM-2	MGRF	2	25	1.50	100.00	13750000	56.8	58	1.50	100.00	33750.0	86.8
ABM-2	MGRF	1	35	1.50	0.10	5030	88.6	70	1.50	0.10	6.2	89.7
ABM-2	MGRF	1	35	1.50	0.13	6405	88.5	70	1.50	0.13	7.8	89.7
ABM-2	MGRF	1	35	1.50	0.16	8090	88.2	70	1.50	0.16	9.7	89.7
ABM-2	MGRF	1	35	1.50	0.20	10210	88.1	70	1.50	0.20	12.2	89.7
ABM-2	MGRF	1	35	1.50	0.25	12850	87.8	70	1.50	0.25	15.4	89.7
ABM-2	MGRF	1	35	1.50	0.32	16050	87.5	70	1.50	0.32	19.3	89.7
ABM-2	MGRF	1	35	1.50	0.40	20150	87.2	70	1.50	0.40	24.2	89.7
ABM-2	MGRF	1	35	1.50	0.50	25300	87.0	70	1.50	0.50	30.5	89.7
ABM-2	MGRF	1	35	1.50	0.63	31600	86.7	70	1.50	0.63	38.3	89.8
ABM-2	MGRF	1	35	1.50	0.79	39500	86.4	70	1.50	0.79	48.2	89.8
ABM-2	MGRF	1	35	1.50	1.00	49300	86.1	70	1.50	1.00	60.6	89.8
ABM-2	MGRF	1	35	1.50	1.26	61450	85.7	70	1.50	1.26	76.2	89.8
ABM-2	MGRF	1	35	1.50	1.58	76550	85.4	70	1.50	1.58	95.9	89.8
ABM-2	MGRF	1	35	1.50	2.00	95200	85.0	70	1.50	2.00	120.5	90.0
ABM-2	MGRF	1	35	1.50	2.51	118500	84.6	70	1.50	2.51	152.0	89.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase °
ABM-2	MGRF	1	35	1.50	3.16	147000	84.2	70	1.50	3.16	191.0	89.9
ABM-2	MGRF	1	35	1.50	3.98	182000	83.8	70	1.50	3.98	240.0	89.9
ABM-2	MGRF	1	35	1.50	5.01	226000	83.4	70	1.50	5.01	302.0	90.0
ABM-2	MGRF	1	35	1.50	6.31	280500	82.9	70	1.50	6.31	380.5	90.0
ABM-2	MGRF	1	35	1.50	7.94	346500	82.4	70	1.50	7.94	478.5	90.0
ABM-2	MGRF	1	35	1.50	10.00	428500	81.9	70	1.50	10.00	601.5	90.0
ABM-2	MGRF	1	35	1.50	12.60	528000	81.3	70	1.50	12.60	757.0	90.0
ABM-2	MGRF	1	35	1.50	15.80	649500	80.7	70	1.50	15.80	954.0	90.0
ABM-2	MGRF	1	35	1.50	20.00	797000	80.1	70	1.50	20.00	1200.0	90.0
ABM-2	MGRF	1	35	1.50	25.10	974500	79.4	70	1.50	25.10	1510.0	90.0
ABM-2	MGRF	1	35	1.50	31.60	1190000	78.5	70	1.50	31.60	1895.0	90.0
ABM-2	MGRF	1	35	1.50	39.80	1430000	77.0	70	1.50	39.80	2390.0	90.0
ABM-2	MGRF	1	35	1.50	50.10	1730000	75.4	70	1.50	50.10	3000.0	90.0
ABM-2	MGRF	1	35	1.50	63.10	2090000	73.7	70	1.50	63.10	3790.0	90.0
ABM-2	MGRF	1	35	1.50	79.40	2520000	72.2	70	1.50	79.40	4745.0	90.0
ABM-2	MGRF	1	35	1.50	100.00	2995000	72.1	70	1.50	100.00	5975.0	90.0
ABM-2	MGRF	2	35	1.50	0.10	3685	88.5	70	1.50	0.10	6.0	90.0
ABM-2	MGRF	2	35	1.50	0.13	4650	88.4	70	1.50	0.13	7.5	90.0
ABM-2	MGRF	2	35	1.50	0.16	5845	88.3	70	1.50	0.16	9.4	90.0
ABM-2	MGRF	2	35	1.50	0.20	7350	88.2	70	1.50	0.20	11.8	90.0
ABM-2	MGRF	2	35	1.50	0.25	9220	88.0	70	1.50	0.25	14.8	90.0
ABM-2	MGRF	2	35	1.50	0.32	11550	87.8	70	1.50	0.32	18.7	90.0
ABM-2	MGRF	2	35	1.50	0.40	14450	87.6	70	1.50	0.40	23.5	90.0
ABM-2	MGRF	2	35	1.50	0.50	18100	87.4	70	1.50	0.50	29.5	90.0
ABM-2	MGRF	2	35	1.50	0.63	22650	87.2	70	1.50	0.63	37.1	90.0
ABM-2	MGRF	2	35	1.50	0.79	28350	86.9	70	1.50	0.79	46.6	90.0
ABM-2	MGRF	2	35	1.50	1.00	35450	86.6	70	1.50	1.00	58.6	90.0
ABM-2	MGRF	2	35	1.50	1.26	44250	86.4	70	1.50	1.26	73.6	89.9
ABM-2	MGRF	2	35	1.50	1.58	55150	86.1	70	1.50	1.58	92.6	89.9
ABM-2	MGRF	2	35	1.50	2.00	68750	85.7	70	1.50	2.00	116.5	89.9
ABM-2	MGRF	2	35	1.50	2.51	85550	85.4	70	1.50	2.51	146.0	89.8
ABM-2	MGRF	2	35	1.50	3.16	106500	85.0	70	1.50	3.16	184.5	89.8
ABM-2	MGRF	2	35	1.50	3.98	132500	84.7	70	1.50	3.98	231.5	89.7
ABM-2	MGRF	2	35	1.50	5.01	164500	84.3	70	1.50	5.01	292.0	89.7
ABM-2	MGRF	2	35	1.50	6.31	205500	83.0	70	1.50	6.31	368.0	89.7
ABM-2	MGRF	2	35	1.50	7.94	253500	83.5	70	1.50	7.94	463.0	89.6
ABM-2	MGRF	2	35	1.50	10.00	313500	83.1	70	1.50	10.00	582.5	89.6
ABM-2	MGRF	2	35	1.50	12.60	388000	82.7	70	1.50	12.60	733.5	89.5
ABM-2	MGRF	2	35	1.50	15.80	479500	82.3	70	1.50	15.80	923.0	89.4
ABM-2	MGRF	2	35	1.50	20.00	591500	81.9	70	1.50	20.00	1160.0	89.3
ABM-2	MGRF	2	35	1.50	25.10	728500	81.5	70	1.50	25.10	1460.0	89.1
ABM-2	MGRF	2	35	1.50	31.60	895000	81.1	70	1.50	31.60	1840.0	88.9
ABM-2	MGRF	2	35	1.50	39.80	1095000	80.6	70	1.50	39.80	2305.0	88.0
ABM-2	MGRF	2	35	1.50	50.10	1345000	80.2	70	1.50	50.10	2905.0	88.3
ABM-2	MGRF	2	35	1.50	63.10	1635000	79.9	70	1.50	63.10	3655.0	88.0
ABM-2	MGRF	2	35	1.50	79.40	1995000	79.6	70	1.50	79.40	4595.0	87.7
ABM-2	MGRF	2	35	1.50	100.00	2415000	79.4	70	1.50	100.00	5775.0	87.2

Table 46. Airblown Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	TANK	1	10	0.04	0.50	5946000	44.1	46	1.10	0.50	6250.0	79.6
Airblown	TANK	1	10	0.04	0.63	6651000	43.5	46	1.10	0.63	7687.0	78.8
Airblown	TANK	1	10	0.04	0.79	7365000	42.9	46	1.10	0.79	9359.0	78.0
Airblown	TANK	1	10	0.04	1.00	8172000	42.1	46	1.10	1.00	11460.0	77.3
Airblown	TANK	1	10	0.04	1.26	9072000	41.9	46	1.10	1.26	13960.0	76.6
Airblown	TANK	1	10	0.04	1.50	9899000	41.4	46	1.10	1.50	16380.0	76.1
Airblown	TANK	1	10	0.04	1.89	10940000	40.5	46	1.10	1.89	19840.0	75.1
Airblown	TANK	1	10	0.04	2.38	12150000	40.2	46	1.10	2.38	24060.0	74.5
Airblown	TANK	1	10	0.04	2.99	13380000	39.5	46	1.09	2.99	29030.0	73.8
Airblown	TANK	1	10	0.04	3.77	14680000	38.4	46	1.09	3.77	34930.0	73.1
Airblown	TANK	1	10	0.04	4.74	16230000	38.3	46	1.09	4.74	42010.0	72.4
Airblown	TANK	1	10	0.04	5.00	16600000	38.2	46	1.09	5.00	43870.0	72.1
Airblown	TANK	1	10	0.04	6.30	18060000	38.1	46	1.09	6.30	52610.0	71.5
Airblown	TANK	1	10	0.04	7.92	20090000	37.3	46	1.08	7.92	63440.0	70.9
Airblown	TANK	1	10	0.04	9.98	21920000	36.8	46	1.08	9.98	75400.0	70.1
Airblown	TANK	1	10	0.04	12.56	23950000	36.2	46	1.08	12.56	89650.0	69.9
Airblown	TANK	1	10	0.04	15.00	25570000	35.9	46	1.07	15.00	103100.0	69.3
Airblown	TANK	1	10	0.04	18.88	27990000	35.6	46	1.07	18.88	122600.0	68.8
Airblown	TANK	1	10	0.04	23.77	30680000	35.4	46	1.06	23.77	146300.0	68.1
Airblown	TANK	1	10	0.04	29.93	33040000	34.4	46	1.05	29.93	173200.0	67.7
Airblown	TANK	1	10	0.04	37.68	35960000	33.4	46	1.04	37.68	206000.0	67.1
Airblown	TANK	1	10	0.04	47.43	38800000	33.9	46	1.03	47.43	245300.0	66.8
Airblown	TANK	2	10	0.04	0.50	5838000	44.5	46	1.30	0.50	6336.0	79.5
Airblown	TANK	2	10	0.04	0.63	6532000	43.6	46	1.30	0.63	7722.0	78.4
Airblown	TANK	2	10	0.04	0.79	7220000	42.6	46	1.30	0.79	9400.0	77.6
Airblown	TANK	2	10	0.04	1.00	8054000	42.2	46	1.30	1.00	11530.0	76.9
Airblown	TANK	2	10	0.04	1.26	8974000	41.8	46	1.30	1.26	13970.0	76.1
Airblown	TANK	2	10	0.04	1.50	9778000	40.9	46	1.29	1.50	16290.0	75.8
Airblown	TANK	2	10	0.04	1.89	10780000	40.4	46	1.29	1.89	19680.0	74.9
Airblown	TANK	2	10	0.04	2.38	11820000	39.8	46	1.29	2.38	23720.0	74.1
Airblown	TANK	2	10	0.04	2.99	13110000	39.6	46	1.29	2.99	28590.0	73.5
Airblown	TANK	2	10	0.04	3.77	14490000	38.8	46	1.29	3.77	34390.0	72.8
Airblown	TANK	2	10	0.04	4.74	15880000	38.5	46	1.28	4.74	41510.0	72.1
Airblown	TANK	2	10	0.04	5.00	16410000	38.0	46	1.29	5.00	43130.0	72.1
Airblown	TANK	2	10	0.04	6.30	17830000	37.8	46	1.28	6.30	51840.0	71.4
Airblown	TANK	2	10	0.04	7.92	19570000	37.3	46	1.28	7.92	62030.0	70.7
Airblown	TANK	2	10	0.04	9.98	21580000	37.0	46	1.27	9.98	74210.0	70.2
Airblown	TANK	2	10	0.04	12.56	23500000	36.4	46	1.26	12.56	88520.0	69.5
Airblown	TANK	2	10	0.04	15.00	25620000	35.6	46	1.26	15.00	101600.0	69.2
Airblown	TANK	2	10	0.04	18.88	27590000	35.4	46	1.25	18.88	121100.0	68.6
Airblown	TANK	2	10	0.04	23.77	30190000	34.9	46	1.24	23.77	144000.0	68.1
Airblown	TANK	2	10	0.04	29.93	32950000	34.7	46	1.23	29.93	171100.0	67.6
Airblown	TANK	2	10	0.04	37.68	35600000	34.1	46	1.21	37.68	202700.0	67.0
Airblown	TANK	2	10	0.04	47.43	39120000	33.6	46	1.19	47.43	241200.0	66.6
Airblown	TANK	1	22	0.30	0.50	777300	56.0	58	8.01	0.50	892.9	85.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	TANK	1	22	0.30	0.63	893500	55.8	58	8.01	0.63	1124.0	84.6
Airblown	TANK	1	22	0.30	0.79	1035000	54.6	58	8.01	0.79	1394.0	84.5
Airblown	TANK	1	22	0.30	1.00	1182000	54.0	58	8.01	1.00	1729.0	84.0
Airblown	TANK	1	22	0.30	1.26	1355000	53.4	58	8.01	1.26	2138.0	83.1
Airblown	TANK	1	22	0.30	1.50	1517000	52.7	58	8.01	1.50	2532.0	83.0
Airblown	TANK	1	22	0.30	1.89	1728000	51.9	58	8.00	1.89	3132.0	82.3
Airblown	TANK	1	22	0.30	2.38	1968000	51.4	58	8.01	2.38	3866.0	81.7
Airblown	TANK	1	22	0.30	2.99	2242000	50.8	58	8.01	2.99	4762.0	81.0
Airblown	TANK	1	22	0.30	3.77	2546000	50.1	58	8.00	3.77	5853.0	80.4
Airblown	TANK	1	22	0.30	4.74	2887000	49.4	58	8.00	4.74	7178.0	79.8
Airblown	TANK	1	22	0.30	5.00	2969000	49.1	58	8.00	5.00	7515.0	79.6
Airblown	TANK	1	22	0.30	6.30	3368000	48.6	58	8.00	6.30	9195.0	79.0
Airblown	TANK	1	22	0.30	7.92	3799000	47.9	58	7.99	7.92	11240.0	78.3
Airblown	TANK	1	22	0.30	9.98	4291000	47.3	58	8.00	9.98	13670.0	77.7
Airblown	TANK	1	22	0.30	12.56	4831000	46.8	58	7.99	12.56	16630.0	77.1
Airblown	TANK	1	22	0.30	15.00	5307000	46.2	58	7.99	15.00	19320.0	76.6
Airblown	TANK	1	22	0.30	18.88	5953000	45.7	58	7.98	18.88	23380.0	76.0
Airblown	TANK	1	22	0.30	23.77	6666000	45.1	58	7.97	23.77	28300.0	75.4
Airblown	TANK	1	22	0.30	29.93	7462000	44.5	58	7.96	29.93	34170.0	74.9
Airblown	TANK	1	22	0.30	37.68	8335000	44.0	58	7.95	37.68	41170.0	74.3
Airblown	TANK	1	22	0.30	47.43	9316000	43.6	58	7.93	47.43	49560.0	73.8
Airblown	TANK	2	22	0.30	0.50	778500	55.8	58	10.00	0.50	820.7	85.3
Airblown	TANK	2	22	0.30	0.63	890600	55.0	58	10.00	0.63	1029.0	85.1
Airblown	TANK	2	22	0.30	0.79	1029000	54.5	58	10.00	0.79	1272.0	84.1
Airblown	TANK	2	22	0.30	1.00	1178000	54.0	58	10.00	1.00	1578.0	83.9
Airblown	TANK	2	22	0.30	1.26	1350000	53.4	58	10.00	1.26	1955.0	83.3
Airblown	TANK	2	22	0.30	1.50	1508000	52.5	58	10.00	1.50	2302.0	83.0
Airblown	TANK	2	22	0.30	1.89	1723000	51.9	58	10.00	1.89	2833.0	82.3
Airblown	TANK	2	22	0.30	2.38	1958000	51.3	58	10.00	2.38	3503.0	81.7
Airblown	TANK	2	22	0.30	2.99	2227000	50.6	58	10.00	2.99	4317.0	81.1
Airblown	TANK	2	22	0.30	3.77	2532000	49.9	58	9.99	3.77	5313.0	80.4
Airblown	TANK	2	22	0.30	4.74	2867000	49.3	58	10.00	4.74	6518.0	79.8
Airblown	TANK	2	22	0.30	5.00	2955000	49.0	58	10.00	5.00	6866.0	79.7
Airblown	TANK	2	22	0.30	6.30	3350000	48.4	58	9.99	6.30	8398.0	79.0
Airblown	TANK	2	22	0.30	7.92	3789000	48.0	58	9.99	7.92	10250.0	78.4
Airblown	TANK	2	22	0.30	9.98	4270000	47.2	58	9.98	9.98	12500.0	77.8
Airblown	TANK	2	22	0.30	12.56	4805000	46.6	58	9.97	12.56	15220.0	77.2
Airblown	TANK	2	22	0.30	15.00	5290000	46.3	58	9.97	15.00	17700.0	76.7
Airblown	TANK	2	22	0.30	18.88	5906000	45.6	58	9.97	18.88	21420.0	76.1
Airblown	TANK	2	22	0.30	23.77	6629000	45.0	58	9.95	23.77	25920.0	75.6
Airblown	TANK	2	22	0.30	29.93	7420000	44.5	58	9.93	29.93	31310.0	75.0
Airblown	TANK	2	22	0.30	37.68	8293000	44.0	58	9.91	37.68	37730.0	74.5
Airblown	TANK	2	22	0.30	47.43	9257000	43.4	58	9.88	47.43	45410.0	74.0
Airblown	TANK	1	34	3.00	0.50	73960	68.0	70	4.49	0.50	147.4	91.9
Airblown	TANK	1	34	3.00	0.63	86810	67.5	70	4.49	0.63	201.2	86.3
Airblown	TANK	1	34	3.00	0.79	103100	66.8	70	4.49	0.79	238.5	87.0
Airblown	TANK	1	34	3.00	1.00	122300	65.8	70	4.49	1.00	305.0	88.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	TANK	1	34	3.00	1.26	144400	65.3	70	4.49	1.26	376.7	87.8
Airblown	TANK	1	34	3.00	1.50	166000	64.6	70	4.49	1.50	454.5	87.5
Airblown	TANK	1	34	3.00	1.89	194000	64.1	70	4.49	1.89	563.2	86.5
Airblown	TANK	1	34	3.00	2.38	227100	63.6	70	4.49	2.38	704.3	86.3
Airblown	TANK	1	34	3.00	2.99	265900	63.0	70	4.50	2.99	880.2	86.0
Airblown	TANK	1	34	3.00	3.77	310900	62.3	70	4.50	3.77	1093.0	85.5
Airblown	TANK	1	34	3.00	4.74	363200	61.8	70	4.50	4.74	1361.0	85.1
Airblown	TANK	1	34	3.00	5.00	381000	61.5	70	4.50	5.00	1430.0	85.0
Airblown	TANK	1	34	3.00	6.30	442100	61.0	70	4.50	6.30	1773.0	84.4
Airblown	TANK	1	34	3.00	7.92	513900	60.5	70	4.50	7.92	2198.0	84.0
Airblown	TANK	1	34	3.00	9.98	595800	60.0	70	4.50	9.98	2725.0	83.5
Airblown	TANK	1	34	3.00	12.56	690200	59.5	70	4.51	12.56	3371.0	83.0
Airblown	TANK	1	34	3.00	15.00	782900	58.9	70	4.51	15.00	3971.0	82.6
Airblown	TANK	1	34	3.00	18.88	897100	58.5	70	4.51	18.88	4894.0	82.1
Airblown	TANK	1	34	3.00	23.77	1032000	58.1	70	4.52	23.77	6034.0	81.5
Airblown	TANK	1	34	3.00	29.93	1185000	57.7	70	4.52	29.93	7426.0	81.0
Airblown	TANK	1	34	2.99	37.68	1359000	57.3	70	4.54	37.68	9117.0	80.4
Airblown	TANK	1	34	2.99	47.43	1556000	56.9	70	4.54	47.43	11180.0	79.9
Airblown	TANK	2	34	3.00	0.50	72060	68.3	70	5.40	0.50	139.1	86.9
Airblown	TANK	2	34	3.00	0.63	85840	67.7	70	5.40	0.63	185.1	86.1
Airblown	TANK	2	34	3.00	0.79	101800	66.8	70	5.40	0.79	221.3	86.6
Airblown	TANK	2	34	3.00	1.00	120300	66.1	70	5.40	1.00	290.6	88.2
Airblown	TANK	2	34	3.00	1.26	142200	65.3	70	5.40	1.26	350.9	87.4
Airblown	TANK	2	34	3.00	1.50	163300	64.7	70	3.68	1.50	429.5	86.2
Airblown	TANK	2	34	3.00	1.89	191800	64.2	70	3.68	1.89	525.6	87.0
Airblown	TANK	2	34	3.00	2.38	225200	63.5	70	3.69	2.38	658.2	86.4
Airblown	TANK	2	34	3.00	2.99	263300	63.0	70	3.69	2.99	821.4	85.9
Airblown	TANK	2	34	3.00	3.77	308600	62.4	70	3.69	3.77	1022.0	85.5
Airblown	TANK	2	34	3.00	4.74	360000	61.8	70	3.69	4.74	1277.0	85.1
Airblown	TANK	2	34	3.00	5.00	375600	61.6	70	2.43	5.00	1342.0	85.0
Airblown	TANK	2	34	3.00	6.30	436000	61.0	70	2.43	6.30	1669.0	84.5
Airblown	TANK	2	34	3.00	7.92	506400	60.6	70	2.44	7.92	2072.0	84.1
Airblown	TANK	2	34	3.00	9.98	587300	60.1	70	2.43	9.98	2568.0	83.7
Airblown	TANK	2	34	3.00	12.56	679800	59.6	70	2.44	12.56	3177.0	83.1
Airblown	TANK	2	34	3.00	15.00	773800	58.9	70	1.11	15.00	3764.0	82.8
Airblown	TANK	2	34	3.00	18.88	885800	58.6	70	1.11	18.88	4633.0	82.5
Airblown	TANK	2	34	3.00	23.77	1017000	58.2	70	1.11	23.77	5713.0	81.9
Airblown	TANK	2	34	3.00	29.93	1166000	57.8	70	1.12	29.93	7025.0	81.4
Airblown	TANK	2	34	3.00	37.68	1336000	57.4	70	1.12	37.68	8650.0	80.9
Airblown	TANK	2	34	2.99	47.43	1530000	56.9	70	1.13	47.43	10620.0	80.2

Table 47. Airblown RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	RTFOT	1	10	0.03	0.50	8941000	37.8	46	0.34	0.50	24100.0	71.5
Airblown	RTFOT	1	10	0.03	0.63	9828000	37.4	46	0.33	0.63	28810.0	70.5
Airblown	RTFOT	1	10	0.03	0.79	10740000	36.2	46	0.33	0.79	34300.0	69.7
Airblown	RTFOT	1	10	0.03	1.00	11750000	36.5	46	0.33	1.00	40860.0	68.8
Airblown	RTFOT	1	10	0.03	1.26	12850000	35.7	46	0.33	1.26	48720.0	68.0
Airblown	RTFOT	1	10	0.03	1.50	13780000	35.1	46	0.26	1.50	55750.0	67.5
Airblown	RTFOT	1	10	0.03	1.89	15000000	34.5	46	0.25	1.89	66070.0	66.8
Airblown	RTFOT	1	10	0.03	2.38	16260000	34.1	46	0.25	2.38	78260.0	66.1
Airblown	RTFOT	1	10	0.03	2.99	17790000	33.4	46	0.25	2.99	90790.0	65.2
Airblown	RTFOT	1	10	0.03	3.77	19540000	32.4	46	0.25	3.77	107600.0	64.4
Airblown	RTFOT	1	10	0.03	4.74	20970000	32.6	46	0.25	4.74	127400.0	64.0
Airblown	RTFOT	1	10	0.03	5.00	21260000	32.8	46	0.19	5.00	132400.0	64.1
Airblown	RTFOT	1	10	0.03	6.30	23050000	32.6	46	0.19	6.30	152100.0	64.0
Airblown	RTFOT	1	10	0.03	7.92	24760000	32.7	46	0.18	7.92	181000.0	63.3
Airblown	RTFOT	1	10	0.03	9.98	27030000	32.8	46	0.18	9.98	213500.0	63.2
Airblown	RTFOT	1	10	0.03	12.56	29110000	32.1	46	0.18	12.56	247300.0	62.3
Airblown	RTFOT	1	10	0.03	15.00	30780000	31.4	46	0.11	15.00	280600.0	62.3
Airblown	RTFOT	1	10	0.03	18.88	33460000	30.2	46	0.11	18.88	330200.0	61.0
Airblown	RTFOT	1	10	0.03	23.77	35440000	30.5	46	0.10	23.77	385500.0	61.0
Airblown	RTFOT	1	10	0.03	29.93	38550000	30.3	46	0.10	29.93	449000.0	61.0
Airblown	RTFOT	1	10	0.03	37.68	41680000	29.8	46	0.10	37.68	521500.0	59.9
Airblown	RTFOT	1	10	0.03	47.43	44760000	29.6	46	0.09	47.43	609300.0	59.6
Airblown	RTFOT	2	10	0.02	0.50	9928000	37.5	46	0.34	0.50	23740.0	70.9
Airblown	RTFOT	2	10	0.02	0.63	10960000	37.0	46	0.33	0.63	28220.0	70.1
Airblown	RTFOT	2	10	0.02	0.79	11940000	36.8	46	0.33	0.79	33520.0	69.3
Airblown	RTFOT	2	10	0.02	1.00	13000000	36.2	46	0.33	1.00	40200.0	68.5
Airblown	RTFOT	2	10	0.02	1.26	14210000	35.8	46	0.33	1.26	47530.0	67.9
Airblown	RTFOT	2	10	0.02	1.50	15270000	35.4	46	0.33	1.50	54140.0	67.1
Airblown	RTFOT	2	10	0.02	1.89	16610000	34.7	46	0.33	1.89	64050.0	66.3
Airblown	RTFOT	2	10	0.02	2.38	18110000	34.6	46	0.33	2.38	75600.0	66.1
Airblown	RTFOT	2	10	0.02	2.99	19750000	34.4	46	0.32	2.99	89030.0	65.0
Airblown	RTFOT	2	10	0.02	3.77	21370000	34.0	46	0.32	3.77	105100.0	64.5
Airblown	RTFOT	2	10	0.02	4.74	23210000	33.4	46	0.32	4.74	122900.0	63.9
Airblown	RTFOT	2	10	0.02	5.00	23590000	32.9	46	0.32	5.00	127500.0	63.7
Airblown	RTFOT	2	10	0.02	6.30	25440000	33.0	46	0.31	6.30	150200.0	62.5
Airblown	RTFOT	2	10	0.02	7.92	27460000	33.0	46	0.31	7.92	174500.0	62.6
Airblown	RTFOT	2	10	0.02	9.98	29880000	31.4	46	0.31	9.98	203900.0	61.9
Airblown	RTFOT	2	10	0.02	12.56	32420000	32.1	46	0.30	12.56	238100.0	61.6
Airblown	RTFOT	2	10	0.02	15.00	34180000	29.9	46	0.30	15.00	267700.0	60.8
Airblown	RTFOT	2	10	0.02	18.88	37110000	30.9	46	0.29	18.88	312300.0	60.7
Airblown	RTFOT	2	10	0.02	23.77	40940000	31.6	46	0.28	23.77	362600.0	60.2
Airblown	RTFOT	2	10	0.02	29.93	43390000	30.1	46	0.27	29.93	424900.0	59.7
Airblown	RTFOT	2	10	0.02	37.68	47150000	30.9	46	0.27	37.68	486700.0	59.3
Airblown	RTFOT	2	10	0.02	47.43	50160000	29.4	46	0.25	47.43	579100.0	59.3
Airblown	RTFOT	1	22	0.17	0.50	1543000	48.0	58	2.20	0.50	3680.0	79.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	RTFOT	1	22	0.17	0.63	1738000	47.0	58	2.20	0.63	4504.0	78.6
Airblown	RTFOT	1	22	0.17	0.79	1971000	46.1	58	2.20	0.79	5517.0	77.7
Airblown	RTFOT	1	22	0.17	1.00	2199000	45.6	58	2.20	1.00	6715.0	76.9
Airblown	RTFOT	1	22	0.17	1.26	2472000	44.9	58	2.20	1.26	8169.0	76.1
Airblown	RTFOT	1	22	0.17	1.50	2702000	44.4	58	2.20	1.50	9491.0	75.9
Airblown	RTFOT	1	22	0.17	1.89	3020000	43.9	58	2.20	1.89	11530.0	74.7
Airblown	RTFOT	1	22	0.17	2.38	3365000	43.4	58	2.19	2.38	13910.0	73.8
Airblown	RTFOT	1	22	0.17	2.99	3755000	42.9	58	2.19	2.99	16760.0	73.0
Airblown	RTFOT	1	22	0.17	3.77	4179000	42.1	58	2.19	3.77	20160.0	72.3
Airblown	RTFOT	1	22	0.17	4.74	4626000	41.8	58	2.19	4.74	24220.0	71.6
Airblown	RTFOT	1	22	0.17	5.00	4779000	41.6	58	2.19	5.00	25260.0	71.3
Airblown	RTFOT	1	22	0.17	6.30	5291000	41.2	58	2.18	6.30	30210.0	70.6
Airblown	RTFOT	1	22	0.17	7.92	5870000	40.6	58	2.18	7.92	36110.0	69.9
Airblown	RTFOT	1	22	0.17	9.98	6491000	40.4	58	2.17	9.98	43100.0	69.1
Airblown	RTFOT	1	22	0.17	12.56	7182000	39.5	58	2.16	12.56	51260.0	68.5
Airblown	RTFOT	1	22	0.17	15.00	7775000	39.3	58	2.16	15.00	58630.0	68.0
Airblown	RTFOT	1	22	0.17	18.88	8568000	38.9	58	2.15	18.88	69600.0	67.4
Airblown	RTFOT	1	22	0.17	23.77	9457000	38.4	58	2.14	23.77	82350.0	66.7
Airblown	RTFOT	1	22	0.17	29.93	10450000	38.1	58	2.12	29.93	97440.0	66.2
Airblown	RTFOT	1	22	0.17	37.68	11480000	37.6	58	2.11	37.68	114900.0	65.5
Airblown	RTFOT	1	22	0.17	47.43	12560000	37.2	58	2.09	47.43	135700.0	65.0
Airblown	RTFOT	2	22	0.15	0.50	1671000	47.7	58	2.80	0.50	2881.0	80.5
Airblown	RTFOT	2	22	0.15	0.63	1869000	47.1	58	2.80	0.63	3563.0	80.0
Airblown	RTFOT	2	22	0.15	0.79	2112000	46.4	58	2.80	0.79	4356.0	79.0
Airblown	RTFOT	2	22	0.15	1.00	2375000	46.1	58	2.80	1.00	5320.0	78.3
Airblown	RTFOT	2	22	0.15	1.26	2662000	45.1	58	2.79	1.26	6514.0	77.5
Airblown	RTFOT	2	22	0.15	1.50	2901000	44.7	58	2.79	1.50	7604.0	77.0
Airblown	RTFOT	2	22	0.15	1.89	3240000	44.1	58	2.79	1.89	9228.0	76.0
Airblown	RTFOT	2	22	0.15	2.38	3623000	43.7	58	2.79	2.38	11190.0	75.1
Airblown	RTFOT	2	22	0.15	2.99	4031000	43.1	58	2.79	2.99	13530.0	74.5
Airblown	RTFOT	2	22	0.15	3.77	4507000	42.4	58	2.79	3.77	16320.0	73.5
Airblown	RTFOT	2	22	0.15	4.74	4975000	42.2	58	2.78	4.74	19660.0	72.8
Airblown	RTFOT	2	22	0.15	5.00	5099000	42.0	58	2.78	5.00	20530.0	72.6
Airblown	RTFOT	2	22	0.15	6.30	5662000	41.5	58	2.78	6.30	24670.0	71.9
Airblown	RTFOT	2	22	0.15	7.92	6300000	41.2	58	2.77	7.92	29560.0	71.2
Airblown	RTFOT	2	22	0.15	9.98	6986000	40.2	58	2.77	9.98	35370.0	70.5
Airblown	RTFOT	2	22	0.15	12.56	7764000	39.9	58	2.76	12.56	42220.0	69.8
Airblown	RTFOT	2	22	0.15	15.00	8405000	39.7	58	2.76	15.00	48400.0	69.3
Airblown	RTFOT	2	22	0.15	18.88	9286000	39.2	58	2.74	18.88	57630.0	68.7
Airblown	RTFOT	2	22	0.15	23.77	10220000	38.8	58	2.73	23.77	68500.0	68.1
Airblown	RTFOT	2	22	0.15	29.93	11280000	38.4	58	2.72	29.93	81300.0	67.5
Airblown	RTFOT	2	22	0.15	37.68	12410000	38.0	58	2.70	37.68	96230.0	67.0
Airblown	RTFOT	2	22	0.15	47.43	13650000	37.5	58	2.68	47.43	114000.0	66.4
Airblown	RTFOT	1	34	1.28	0.50	199300	58.6	70	13.81	0.50	582.0	85.6
Airblown	RTFOT	1	34	1.28	0.63	230200	58.4	70	13.81	0.63	725.3	85.0
Airblown	RTFOT	1	34	1.28	0.79	268400	57.2	70	13.81	0.79	896.9	84.4
Airblown	RTFOT	1	34	1.28	1.00	308500	56.6	70	13.81	1.00	1119.0	83.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	RTFOT	1	34	1.28	1.26	356500	55.9	70	13.80	1.26	1382.0	83.2
Airblown	RTFOT	1	34	1.28	1.50	398700	55.4	70	13.80	1.50	1631.0	82.8
Airblown	RTFOT	1	34	1.28	1.89	457800	55.0	70	13.80	1.89	2014.0	82.1
Airblown	RTFOT	1	34	1.28	2.38	526400	54.1	70	13.80	2.38	2483.0	81.4
Airblown	RTFOT	1	34	1.28	2.99	602300	53.7	70	13.80	2.99	3061.0	80.8
Airblown	RTFOT	1	34	1.28	3.77	689300	53.1	70	13.80	3.77	3757.0	80.1
Airblown	RTFOT	1	34	1.28	4.74	788000	52.5	70	13.80	4.74	4604.0	79.4
Airblown	RTFOT	1	34	1.28	5.00	810700	52.4	70	13.80	5.00	4826.0	79.2
Airblown	RTFOT	1	34	1.28	6.30	921500	51.9	70	13.79	6.30	5895.0	78.5
Airblown	RTFOT	1	34	1.28	7.92	1047000	51.4	70	13.79	7.92	7189.0	77.9
Airblown	RTFOT	1	34	1.28	9.98	1190000	50.9	70	13.78	9.98	8737.0	77.1
Airblown	RTFOT	1	34	1.28	12.56	1350000	50.3	70	13.77	12.56	10610.0	76.4
Airblown	RTFOT	1	34	1.28	15.00	1500000	49.9	70	13.77	15.00	12340.0	75.9
Airblown	RTFOT	1	34	1.28	18.88	1693000	49.5	70	13.75	18.88	14890.0	75.2
Airblown	RTFOT	1	34	1.28	23.77	1913000	48.9	70	13.74	23.77	17940.0	74.6
Airblown	RTFOT	1	34	1.27	29.93	2159000	48.6	70	13.72	29.93	21590.0	74.0
Airblown	RTFOT	1	34	1.27	37.68	2436000	48.1	70	13.69	37.68	25910.0	73.4
Airblown	RTFOT	1	34	1.27	47.43	2744000	47.7	70	13.65	47.43	31030.0	72.8
Airblown	RTFOT	2	34	1.25	0.50	208600	58.9	70	17.30	0.50	458.9	85.9
Airblown	RTFOT	2	34	1.25	0.63	242000	58.5	70	17.30	0.63	576.5	85.3
Airblown	RTFOT	2	34	1.25	0.79	279700	57.7	70	17.30	0.79	715.5	85.0
Airblown	RTFOT	2	34	1.25	1.00	322400	57.3	70	17.30	1.00	891.5	84.5
Airblown	RTFOT	2	34	1.25	1.26	373600	56.4	70	17.30	1.26	1104.0	83.8
Airblown	RTFOT	2	34	1.25	1.50	414100	56.6	70	17.30	1.50	1308.0	83.7
Airblown	RTFOT	2	34	1.25	1.89	479900	55.3	70	17.30	1.89	1617.0	82.8
Airblown	RTFOT	2	34	1.25	2.38	552600	54.4	70	17.30	2.38	2002.0	82.2
Airblown	RTFOT	2	34	1.25	2.99	634300	54.1	70	17.30	2.99	2467.0	81.7
Airblown	RTFOT	2	34	1.25	3.77	729500	53.4	70	17.30	3.77	3038.0	81.0
Airblown	RTFOT	2	34	1.25	4.74	832800	52.9	70	17.29	4.74	3733.0	80.4
Airblown	RTFOT	2	34	1.25	5.00	854800	52.7	70	17.28	5.00	3921.0	80.2
Airblown	RTFOT	2	34	1.25	6.30	974700	52.3	70	17.29	6.30	4802.0	79.5
Airblown	RTFOT	2	34	1.25	7.92	1111000	51.7	70	17.29	7.92	5870.0	78.9
Airblown	RTFOT	2	34	1.25	9.98	1263000	51.2	70	17.28	9.98	7153.0	78.2
Airblown	RTFOT	2	34	1.25	12.56	1436000	50.7	70	17.28	12.56	8707.0	77.5
Airblown	RTFOT	2	34	1.25	15.00	1606000	50.1	70	17.27	15.00	10150.0	77.0
Airblown	RTFOT	2	34	1.25	18.88	1815000	49.7	70	17.26	18.88	12280.0	76.3
Airblown	RTFOT	2	34	1.25	23.77	2052000	49.3	70	17.24	23.77	14840.0	75.7
Airblown	RTFOT	2	34	1.24	29.93	2316000	48.8	70	17.22	29.93	17890.0	75.1
Airblown	RTFOT	2	34	1.24	37.68	2612000	48.4	70	17.19	37.68	21510.0	74.5
Airblown	RTFOT	2	34	1.24	47.43	2938000	48.0	70	17.14	47.43	25810.0	74.0

Table 48. Airblown SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Air Blown	SAFT	1	10	0.03	0.50	7775000	40.7	46	0.66	0.50	12360.0	74.9
Air Blown	SAFT	1	10	0.03	0.63	8637000	40.1	46	0.66	0.63	15020.0	73.9
Air Blown	SAFT	1	10	0.03	0.79	9522000	39.3	46	0.65	0.79	18090.0	73.5
Air Blown	SAFT	1	10	0.03	1.00	10460000	38.6	46	0.65	1.00	21810.0	72.2
Air Blown	SAFT	1	10	0.03	1.26	11470000	38.1	46	0.65	1.26	26180.0	71.6
Air Blown	SAFT	1	10	0.03	1.50	12410000	37.6	46	0.65	1.50	30060.0	71.2
Air Blown	SAFT	1	10	0.03	1.89	13590000	37.6	46	0.65	1.89	36050.0	70.2
Air Blown	SAFT	1	10	0.03	2.38	14990000	37.1	46	0.65	2.38	43020.0	69.6
Air Blown	SAFT	1	10	0.03	2.99	16260000	36.8	46	0.65	2.99	51280.0	69.0
Air Blown	SAFT	1	10	0.03	3.77	17840000	35.8	46	0.64	3.77	60870.0	68.1
Air Blown	SAFT	1	10	0.03	4.74	19470000	35.5	46	0.64	4.74	72230.0	67.6
Air Blown	SAFT	1	10	0.02	5.00	19870000	36.2	46	0.64	5.00	75170.0	67.4
Air Blown	SAFT	1	10	0.02	6.30	21930000	34.5	46	0.64	6.30	88950.0	66.7
Air Blown	SAFT	1	10	0.02	7.92	23950000	34.0	46	0.63	7.92	105500.0	66.3
Air Blown	SAFT	1	10	0.02	9.98	26030000	34.2	46	0.63	9.98	124200.0	65.7
Air Blown	SAFT	1	10	0.02	12.56	28300000	34.3	46	0.62	12.56	146600.0	65.1
Air Blown	SAFT	1	10	0.01	15.00	29990000	33.0	46	0.62	15.00	165700.0	64.7
Air Blown	SAFT	1	10	0.01	18.88	33950000	33.8	46	0.60	18.88	196500.0	64.4
Air Blown	SAFT	1	10	0.01	23.77	35930000	32.9	46	0.59	23.77	230100.0	63.6
Air Blown	SAFT	1	10	0.01	29.93	39280000	32.8	46	0.58	29.93	270500.0	63.2
Air Blown	SAFT	1	10	0.01	37.68	42630000	31.8	46	0.57	37.68	317100.0	62.7
Air Blown	SAFT	1	10	0.01	47.43	45650000	31.0	46	0.55	47.43	372100.0	62.3
Air Blown	SAFT	2	10	0.03	0.50	8519000	40.3	46	0.59	0.50	13880.0	74.5
Air Blown	SAFT	2	10	0.03	0.63	9343000	39.5	46	0.59	0.63	16660.0	73.5
Air Blown	SAFT	2	10	0.03	0.79	10360000	39.1	46	0.59	0.79	20130.0	72.9
Air Blown	SAFT	2	10	0.03	1.00	11470000	38.4	46	0.59	1.00	24150.0	72.1
Air Blown	SAFT	2	10	0.03	1.26	12610000	37.7	46	0.59	1.26	28920.0	71.2
Air Blown	SAFT	2	10	0.03	1.50	13710000	37.4	46	0.59	1.50	33170.0	70.5
Air Blown	SAFT	2	10	0.03	1.89	15040000	37.1	46	0.59	1.89	39620.0	69.8
Air Blown	SAFT	2	10	0.03	2.38	16280000	37.0	46	0.59	2.38	47320.0	69.2
Air Blown	SAFT	2	10	0.03	2.99	17860000	36.5	46	0.58	2.99	56440.0	68.2
Air Blown	SAFT	2	10	0.03	3.77	19440000	35.7	46	0.58	3.77	66840.0	67.8
Air Blown	SAFT	2	10	0.03	4.74	20980000	35.5	46	0.58	4.74	78750.0	67.1
Air Blown	SAFT	2	10	0.02	5.00	21730000	35.7	46	0.58	5.00	82280.0	66.8
Air Blown	SAFT	2	10	0.02	6.30	23690000	35.0	46	0.57	6.30	97210.0	66.1
Air Blown	SAFT	2	10	0.02	7.92	25790000	35.2	46	0.57	7.92	114900.0	65.8
Air Blown	SAFT	2	10	0.02	9.98	27890000	34.3	46	0.57	9.98	134900.0	65.1
Air Blown	SAFT	2	10	0.02	12.56	30490000	34.1	46	0.56	12.56	159200.0	64.4
Air Blown	SAFT	2	10	0.02	15.00	32650000	32.4	46	0.55	15.00	180900.0	63.9
Air Blown	SAFT	2	10	0.02	18.88	35920000	32.9	46	0.54	18.88	211900.0	63.4
Air Blown	SAFT	2	10	0.02	23.77	38540000	31.7	46	0.54	23.77	248000.0	63.1
Air Blown	SAFT	2	10	0.02	29.93	42060000	30.8	46	0.52	29.93	292300.0	62.5
Air Blown	SAFT	2	10	0.02	37.68	45450000	31.4	46	0.51	37.68	341900.0	62.2
Air Blown	SAFT	2	10	0.02	47.43	49500000	31.2	46	0.50	47.43	399100.0	61.9
Air Blown	SAFT	1	22	0.23	0.50	1138000	51.4	58	4.80	0.50	1686.0	82.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Air Blown	SAFT	1	22	0.23	0.63	1274000	50.6	58	4.80	0.63	2077.0	82.2
Air Blown	SAFT	1	22	0.23	0.79	1447000	50.1	58	4.80	0.79	2549.0	81.6
Air Blown	SAFT	1	22	0.23	1.00	1632000	49.6	58	4.80	1.00	3140.0	80.8
Air Blown	SAFT	1	22	0.23	1.26	1847000	48.5	58	4.80	1.26	3872.0	80.0
Air Blown	SAFT	1	22	0.23	1.50	2055000	48.2	58	4.80	1.50	4531.0	79.5
Air Blown	SAFT	1	22	0.23	1.89	2318000	47.6	58	4.79	1.89	5546.0	78.9
Air Blown	SAFT	1	22	0.23	2.38	2605000	47.1	58	4.79	2.38	6780.0	78.1
Air Blown	SAFT	1	22	0.23	2.99	2940000	46.3	58	4.79	2.99	8261.0	77.4
Air Blown	SAFT	1	22	0.23	3.77	3309000	46.0	58	4.79	3.77	10060.0	76.6
Air Blown	SAFT	1	22	0.23	4.74	3719000	45.3	58	4.79	4.74	12220.0	75.9
Air Blown	SAFT	1	22	0.23	5.00	3834000	45.2	58	4.79	5.00	12810.0	75.7
Air Blown	SAFT	1	22	0.23	6.30	4288000	44.7	58	4.79	6.30	15500.0	75.0
Air Blown	SAFT	1	22	0.23	7.92	4804000	44.1	58	4.78	7.92	18760.0	74.3
Air Blown	SAFT	1	22	0.23	9.98	5357000	43.5	58	4.77	9.98	22610.0	73.6
Air Blown	SAFT	1	22	0.23	12.56	5984000	42.9	58	4.77	12.56	27230.0	73.0
Air Blown	SAFT	1	22	0.23	15.00	6519000	42.6	58	4.76	15.00	31440.0	72.4
Air Blown	SAFT	1	22	0.23	18.88	7251000	42.2	58	4.75	18.88	37730.0	71.8
Air Blown	SAFT	1	22	0.23	23.77	8067000	41.8	58	4.74	23.77	45180.0	71.2
Air Blown	SAFT	1	22	0.23	29.93	8978000	41.3	58	4.72	29.93	54040.0	70.7
Air Blown	SAFT	1	22	0.23	37.68	9960000	40.8	58	4.71	37.68	64480.0	70.1
Air Blown	SAFT	1	22	0.23	47.43	11040000	40.3	58	4.68	47.43	76860.0	69.6
Air Blown	SAFT	2	22	0.21	0.50	1246000	51.4	58	4.40	0.50	1827.0	82.8
Air Blown	SAFT	2	22	0.21	0.63	1409000	50.8	58	4.40	0.63	2260.0	81.9
Air Blown	SAFT	2	22	0.21	0.79	1599000	49.9	58	4.40	0.79	2777.0	81.1
Air Blown	SAFT	2	22	0.21	1.00	1811000	49.1	58	4.40	1.00	3431.0	80.4
Air Blown	SAFT	2	22	0.21	1.26	2049000	48.6	58	4.40	1.26	4202.0	79.7
Air Blown	SAFT	2	22	0.21	1.50	2270000	48.0	58	4.40	1.50	4913.0	79.6
Air Blown	SAFT	2	22	0.21	1.89	2546000	47.5	58	4.40	1.89	6031.0	78.5
Air Blown	SAFT	2	22	0.21	2.38	2863000	47.0	58	4.39	2.38	7361.0	77.7
Air Blown	SAFT	2	22	0.21	2.99	3216000	46.2	58	4.40	2.99	8968.0	76.9
Air Blown	SAFT	2	22	0.21	3.77	3608000	45.7	58	4.39	3.77	10920.0	76.2
Air Blown	SAFT	2	22	0.21	4.74	4050000	45.0	58	4.39	4.74	13230.0	75.5
Air Blown	SAFT	2	22	0.21	5.00	4167000	45.1	58	4.39	5.00	13870.0	75.3
Air Blown	SAFT	2	22	0.21	6.30	4665000	44.3	58	4.39	6.30	16770.0	74.6
Air Blown	SAFT	2	22	0.21	7.92	5216000	43.9	58	4.38	7.92	20250.0	73.9
Air Blown	SAFT	2	22	0.21	9.98	5833000	43.5	58	4.38	9.98	24370.0	73.2
Air Blown	SAFT	2	22	0.21	12.56	6513000	42.9	58	4.37	12.56	29330.0	72.5
Air Blown	SAFT	2	22	0.21	15.00	7141000	42.5	58	4.36	15.00	33840.0	72.0
Air Blown	SAFT	2	22	0.21	18.88	7926000	41.9	58	4.35	18.88	40500.0	71.4
Air Blown	SAFT	2	22	0.21	23.77	8808000	41.5	58	4.34	23.77	48440.0	70.7
Air Blown	SAFT	2	22	0.21	29.93	9762000	41.0	58	4.32	29.93	57900.0	70.2
Air Blown	SAFT	2	22	0.21	37.68	10810000	40.5	58	4.30	37.68	69010.0	69.6
Air Blown	SAFT	2	22	0.21	47.43	11990000	40.3	58	4.28	47.43	82160.0	69.1
Air Blown	SAFT	1	34	2.10	0.50	121900	63.0	70	2.91	0.50	273.0	87.6
Air Blown	SAFT	1	34	2.10	0.63	142700	62.6	70	2.91	0.63	337.4	85.1
Air Blown	SAFT	1	34	2.10	0.79	166800	61.8	70	2.90	0.79	423.0	87.0
Air Blown	SAFT	1	34	2.10	1.00	194700	61.1	70	2.91	1.00	520.9	86.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Air Blown	SAFT	1	34	2.10	1.26	228800	60.2	70	2.90	1.26	660.8	85.7
Air Blown	SAFT	1	34	2.10	1.50	260200	60.2	70	2.91	1.50	793.4	85.9
Air Blown	SAFT	1	34	2.10	1.89	302900	59.1	70	2.90	1.89	980.9	84.7
Air Blown	SAFT	1	34	2.10	2.38	351900	58.5	70	2.91	2.38	1207.0	84.3
Air Blown	SAFT	1	34	2.10	2.99	407000	57.9	70	2.91	2.99	1507.0	83.7
Air Blown	SAFT	1	34	2.10	3.77	470600	57.4	70	2.91	3.77	1859.0	83.2
Air Blown	SAFT	1	34	2.10	4.74	543000	56.9	70	2.91	4.74	2300.0	82.7
Air Blown	SAFT	1	34	2.10	5.00	562600	56.7	70	2.91	5.00	2424.0	82.6
Air Blown	SAFT	1	34	2.10	6.30	645100	56.2	70	2.91	6.30	2986.0	82.0
Air Blown	SAFT	1	34	2.10	7.92	741800	55.7	70	2.91	7.92	3682.0	81.4
Air Blown	SAFT	1	34	2.10	9.98	849700	55.2	70	2.91	9.98	4528.0	80.7
Air Blown	SAFT	1	34	2.10	12.56	973000	54.7	70	2.90	12.56	5574.0	80.3
Air Blown	SAFT	1	34	2.10	15.00	1092000	54.2	70	2.91	15.00	6512.0	79.7
Air Blown	SAFT	1	34	2.09	18.88	1242000	53.8	70	2.91	18.88	7976.0	79.1
Air Blown	SAFT	1	34	2.09	23.77	1412000	53.4	70	2.91	23.77	9753.0	78.4
Air Blown	SAFT	1	34	2.09	29.93	1605000	53.0	70	2.91	29.93	11900.0	77.9
Air Blown	SAFT	1	34	2.09	37.68	1823000	52.6	70	2.92	37.68	14480.0	77.2
Air Blown	SAFT	1	34	2.09	47.43	2068000	52.2	70	2.92	47.43	17600.0	76.6
Air Blown	SAFT	2	34	1.80	0.50	137600	63.3	70	2.80	0.50	284.6	86.1
Air Blown	SAFT	2	34	1.80	0.63	160300	62.4	70	2.80	0.63	381.4	88.3
Air Blown	SAFT	2	34	1.80	0.79	188600	61.6	70	2.80	0.79	472.8	85.8
Air Blown	SAFT	2	34	1.80	1.00	221500	60.5	70	2.80	1.00	575.8	86.5
Air Blown	SAFT	2	34	1.80	1.26	258100	60.2	70	2.80	1.26	724.2	86.2
Air Blown	SAFT	2	34	1.80	1.50	290200	60.2	70	2.80	1.50	847.3	85.1
Air Blown	SAFT	2	34	1.80	1.89	337500	59.0	70	2.80	1.89	1056.0	84.8
Air Blown	SAFT	2	34	1.80	2.38	392000	58.3	70	2.80	2.38	1307.0	84.2
Air Blown	SAFT	2	34	1.80	2.99	453400	57.7	70	2.80	2.99	1623.0	83.5
Air Blown	SAFT	2	34	1.80	3.77	524200	57.1	70	2.80	3.77	2009.0	83.0
Air Blown	SAFT	2	34	1.80	4.74	603800	56.6	70	2.80	4.74	2481.0	82.4
Air Blown	SAFT	2	34	1.80	5.00	626700	56.4	70	2.80	5.00	2609.0	82.3
Air Blown	SAFT	2	34	1.80	6.30	720100	55.8	70	2.80	6.30	3211.0	81.7
Air Blown	SAFT	2	34	1.80	7.92	827700	55.3	70	2.80	7.92	3956.0	81.1
Air Blown	SAFT	2	34	1.80	9.98	951000	54.8	70	2.80	9.98	4865.0	80.5
Air Blown	SAFT	2	34	1.80	12.56	1092000	54.3	70	2.80	12.56	5974.0	79.8
Air Blown	SAFT	2	34	1.80	15.00	1208000	53.9	70	2.80	15.00	6987.0	79.3
Air Blown	SAFT	2	34	1.79	18.88	1375000	53.4	70	2.81	18.88	8540.0	78.7
Air Blown	SAFT	2	34	1.79	23.77	1566000	53.0	70	2.80	23.77	10440.0	78.1
Air Blown	SAFT	2	34	1.79	29.93	1782000	52.6	70	2.81	29.93	12710.0	77.4
Air Blown	SAFT	2	34	1.79	37.68	2023000	52.1	70	2.81	37.68	15460.0	76.8
Air Blown	SAFT	2	34	1.79	47.43	2298000	51.7	70	2.81	47.43	18770.0	76.2

Table 49. Airblown MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	MGRF	1	15	0.50	0.10	2228701	45.4	46	10.00	0.10	5010.0	78.0
Airblown	MGRF	1	15	0.50	0.13	2501942	44.6	46	10.00	0.13	6200.0	77.2
Airblown	MGRF	1	15	0.50	0.16	2805000	44.0	46	10.00	0.16	7620.0	76.1
Airblown	MGRF	1	15	0.50	0.20	3139565	43.2	46	10.00	0.20	9310.0	75.2
Airblown	MGRF	1	15	0.50	0.25	3495790	42.5	46	10.00	0.25	11300.0	74.2
Airblown	MGRF	1	15	0.50	0.32	3893253	41.9	46	10.00	0.32	13700.0	73.3
Airblown	MGRF	1	15	0.50	0.40	4330000	41.3	46	10.00	0.40	16500.0	72.4
Airblown	MGRF	1	15	0.50	0.50	4801482	40.7	46	10.00	0.50	19850.0	71.6
Airblown	MGRF	1	15	0.50	0.63	5315448	40.1	46	10.00	0.63	23750.0	70.7
Airblown	MGRF	1	15	0.50	0.79	5874394	39.5	46	10.00	0.79	28400.0	69.9
Airblown	MGRF	1	15	0.50	1.00	6490000	39.0	46	10.00	1.00	33800.0	69.1
Airblown	MGRF	1	15	0.50	1.26	7155432	38.4	46	10.00	1.26	40100.0	68.4
Airblown	MGRF	1	15	0.50	1.58	7866016	37.9	46	10.00	1.58	47450.0	67.6
Airblown	MGRF	1	15	0.50	2.00	8675326	37.4	46	10.00	2.00	56000.0	67.0
Airblown	MGRF	1	15	0.50	2.51	9530000	36.9	46	10.00	2.51	65850.0	66.3
Airblown	MGRF	1	15	0.50	3.16	10433003	36.4	46	10.00	3.16	77350.0	65.7
Airblown	MGRF	1	15	0.50	3.98	11431165	35.9	46	10.00	3.98	90400.0	65.1
Airblown	MGRF	1	15	0.50	5.01	12519577	35.5	46	10.00	5.01	105500.0	64.6
Airblown	MGRF	1	15	0.50	6.31	13700000	35.0	46	10.00	6.31	123000.0	64.1
Airblown	MGRF	1	15	0.50	7.94	14915903	34.6	46	10.00	7.94	142500.0	63.6
Airblown	MGRF	1	15	0.50	10.00	16260503	34.2	46	10.00	10.00	165500.0	63.2
Airblown	MGRF	1	15	0.50	12.60	17745835	33.8	46	10.00	12.60	191000.0	62.8
Airblown	MGRF	1	15	0.50	15.80	19350000	33.4	46	10.00	15.80	220000.0	62.5
Airblown	MGRF	1	15	0.49	20.00	21049313	33.0	46	10.00	20.00	253000.0	62.2
Airblown	MGRF	1	15	0.49	25.10	22839832	32.6	46	10.00	25.10	289500.0	61.9
Airblown	MGRF	1	15	0.49	31.60	24789833	32.2	46	10.00	31.60	330500.0	61.7
Airblown	MGRF	1	15	0.49	39.80	26850000	31.8	46	10.00	39.80	377000.0	61.5
Airblown	MGRF	1	15	0.49	50.10	29105737	31.5	46	10.00	50.10	429000.0	61.3
Airblown	MGRF	1	15	0.49	63.10	31506623	31.1	46	10.00	63.10	486500.0	61.1
Airblown	MGRF	1	15	0.49	79.40	34056659	30.7	46	10.00	79.40	550000.0	61.0
Airblown	MGRF	1	15	0.49	100.00	36800000	30.4	46	10.00	100.00	619500.0	61.0
Airblown	MGRF	2	15	5.00	0.10	968000	53.4	46	10.00	0.10	5140.0	78.1
Airblown	MGRF	2	15	5.00	0.13	1130000	52.7	46	10.00	0.13	6310.0	77.2
Airblown	MGRF	2	15	5.00	0.16	1290000	52.1	46	10.00	0.16	7710.0	76.1
Airblown	MGRF	2	15	5.00	0.20	1455000	51.7	46	10.00	0.20	9395.0	75.3
Airblown	MGRF	2	15	5.00	0.25	1625000	51.2	46	10.00	0.25	11400.0	74.3
Airblown	MGRF	2	15	5.00	0.32	1815000	50.7	46	10.00	0.32	13750.0	73.4
Airblown	MGRF	2	15	5.00	0.40	2010000	50.4	46	9.99	0.40	16600.0	72.5
Airblown	MGRF	2	15	5.00	0.50	2230000	50.1	46	9.99	0.50	19900.0	71.6
Airblown	MGRF	2	15	4.99	0.63	2460000	49.9	46	9.99	0.63	23850.0	70.8
Airblown	MGRF	2	15	4.99	0.79	2710000	49.6	46	9.99	0.79	28500.0	70.0
Airblown	MGRF	2	15	4.99	1.00	2985000	49.4	46	9.99	1.00	33900.0	69.2
Airblown	MGRF	2	15	4.99	1.26	3280000	49.1	46	9.98	1.26	40250.0	68.4
Airblown	MGRF	2	15	4.99	1.58	3600000	49.0	46	9.98	1.58	47600.0	67.7
Airblown	MGRF	2	15	4.99	2.00	3945000	48.8	46	9.98	2.00	56150.0	67.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	MGRF	2	15	4.99	2.51	4310000	48.6	46	9.97	2.51	66050.0	66.4
Airblown	MGRF	2	15	4.99	3.16	4715000	48.5	46	9.97	3.16	77650.0	65.7
Airblown	MGRF	2	15	4.99	3.98	5140000	48.4	46	9.97	3.98	90750.0	65.1
Airblown	MGRF	2	15	4.99	5.01	5605000	48.3	46	9.95	5.01	106000.0	64.6
Airblown	MGRF	2	15	4.99	6.31	6105000	48.2	46	9.93	6.31	123500.0	64.1
Airblown	MGRF	2	15	4.99	7.94	6640000	48.1	46	9.92	7.94	143500.0	63.6
Airblown	MGRF	2	15	4.99	10.00	7210000	48.1	46	9.90	10.00	166000.0	63.2
Airblown	MGRF	2	15	4.99	12.60	7810000	48.0	46	9.90	12.60	192000.0	62.8
Airblown	MGRF	2	15	4.98	15.80	8450000	47.9	46	9.88	15.80	221000.0	62.5
Airblown	MGRF	2	15	4.98	20.00	9130000	47.8	46	9.86	20.00	254000.0	62.2
Airblown	MGRF	2	15	4.98	25.10	9820000	47.8	46	9.83	25.10	290500.0	61.9
Airblown	MGRF	2	15	4.98	31.60	10550000	47.7	46	9.80	31.60	332000.0	61.7
Airblown	MGRF	2	15	4.98	39.80	11300000	47.7	46	9.77	39.80	378500.0	61.5
Airblown	MGRF	2	15	4.98	50.10	12050000	47.7	46	9.74	50.10	431000.0	61.3
Airblown	MGRF	2	15	4.98	63.10	12750000	47.4	46	9.70	63.10	489000.0	61.2
Airblown	MGRF	2	15	5.01	79.40	13500000	47.3	46	9.66	79.40	552500.0	61.1
Airblown	MGRF	2	15	5.02	100.00	12600000	48.4	46	9.62	100.00	622500.0	61.0
Airblown	MGRF	1	25	5.00	0.10	333507	57.1	58	10.00	0.10	610.5	85.3
Airblown	MGRF	1	25	5.00	0.13	381753	56.5	58	10.00	0.13	765.5	84.8
Airblown	MGRF	1	25	5.00	0.16	436000	55.9	58	10.00	0.16	957.5	84.1
Airblown	MGRF	1	25	5.00	0.20	497093	55.3	58	10.00	0.20	1190.0	83.5
Airblown	MGRF	1	25	5.00	0.25	562554	54.7	58	10.00	0.25	1480.0	82.8
Airblown	MGRF	1	25	5.00	0.32	636647	54.2	58	10.00	0.32	1840.0	82.0
Airblown	MGRF	1	25	5.00	0.40	720000	53.7	58	10.00	0.40	2270.0	81.3
Airblown	MGRF	1	25	5.00	0.50	811459	53.2	58	10.00	0.50	2800.0	80.6
Airblown	MGRF	1	25	5.00	0.63	911114	52.8	58	10.00	0.63	3445.0	79.9
Airblown	MGRF	1	25	5.00	0.79	1021919	52.4	58	10.00	0.79	4225.0	79.2
Airblown	MGRF	1	25	5.00	1.00	1150000	52.0	58	10.00	1.00	5170.0	78.4
Airblown	MGRF	1	25	5.00	1.26	1282819	51.6	58	10.00	1.26	6315.0	77.6
Airblown	MGRF	1	25	5.00	1.58	1426228	51.3	58	10.00	1.58	7690.0	76.8
Airblown	MGRF	1	25	5.00	2.00	1591903	51.0	58	10.00	2.00	9335.0	76.0
Airblown	MGRF	1	25	5.00	2.51	1770000	50.7	58	10.00	2.51	11300.0	75.2
Airblown	MGRF	1	25	5.00	3.16	1965663	50.4	58	10.00	3.16	13700.0	74.4
Airblown	MGRF	1	25	5.00	3.98	2182740	50.2	58	10.00	3.98	16450.0	73.6
Airblown	MGRF	1	25	5.00	5.01	2419455	50.0	58	10.00	5.01	19850.0	72.9
Airblown	MGRF	1	25	5.00	6.31	2675000	49.8	58	10.00	6.31	23850.0	72.1
Airblown	MGRF	1	25	5.00	7.94	2954328	49.5	58	10.00	7.94	28550.0	71.4
Airblown	MGRF	1	25	5.00	10.00	3255634	49.3	58	10.00	10.00	34050.0	70.7
Airblown	MGRF	1	25	4.99	12.60	3585461	49.1	58	10.00	12.60	40600.0	70.0
Airblown	MGRF	1	25	4.99	15.80	3945000	49.0	58	10.00	15.80	48300.0	69.4
Airblown	MGRF	1	25	5.00	20.00	4337072	48.8	58	10.00	20.00	57050.0	68.8
Airblown	MGRF	1	25	5.00	25.10	4741530	48.6	58	10.00	25.10	67350.0	68.2
Airblown	MGRF	1	25	5.00	31.60	5185867	48.4	58	10.00	31.60	79800.0	67.7
Airblown	MGRF	1	25	4.99	39.80	5675000	48.2	58	10.00	39.80	93900.0	67.2
Airblown	MGRF	1	25	4.99	50.10	6188485	47.8	58	10.00	50.10	110500.0	66.8
Airblown	MGRF	1	25	5.01	63.10	6694207	47.9	58	10.00	63.10	129000.0	66.4
Airblown	MGRF	1	25	5.03	79.40	7143774	48.2	58	10.00	79.40	150500.0	66.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	MGRF	1	25	5.01	100.00	7485000	48.5	58	10.00	100.00	175500.0	65.6
Airblown	MGRF	2	25	5.00	0.10	296500	58.6	58	10.00	0.10	578.0	85.4
Airblown	MGRF	2	25	5.00	0.13	350500	57.8	58	10.00	0.13	725.0	84.9
Airblown	MGRF	2	25	5.00	0.16	408500	57.0	58	10.00	0.16	904.5	84.2
Airblown	MGRF	2	25	5.00	0.20	471500	56.4	58	10.00	0.20	1130.0	83.7
Airblown	MGRF	2	25	5.00	0.25	541000	55.7	58	10.00	0.25	1400.0	82.9
Airblown	MGRF	2	25	5.00	0.32	617000	55.0	58	10.00	0.32	1735.0	82.2
Airblown	MGRF	2	25	5.00	0.40	701000	54.5	58	10.00	0.40	2145.0	81.5
Airblown	MGRF	2	25	5.00	0.50	794000	54.0	58	10.00	0.50	2645.0	80.8
Airblown	MGRF	2	25	5.00	0.63	896000	53.6	58	10.00	0.63	3255.0	80.1
Airblown	MGRF	2	25	5.00	0.79	1011000	53.2	58	10.00	0.79	3995.0	79.4
Airblown	MGRF	2	25	5.00	1.00	1130000	52.8	58	10.00	1.00	4890.0	78.6
Airblown	MGRF	2	25	5.00	1.26	1270000	52.4	58	10.00	1.26	5970.0	77.8
Airblown	MGRF	2	25	5.00	1.58	1420000	52.1	58	10.00	1.58	7270.0	77.0
Airblown	MGRF	2	25	5.00	2.00	1585000	51.8	58	10.00	2.00	8835.0	76.2
Airblown	MGRF	2	25	5.00	2.51	1765000	51.5	58	10.00	2.51	10700.0	75.4
Airblown	MGRF	2	25	5.00	3.16	1960000	51.2	58	10.00	3.16	12950.0	74.6
Airblown	MGRF	2	25	5.00	3.98	2180000	50.9	58	10.00	3.98	15600.0	73.8
Airblown	MGRF	2	25	5.00	5.01	2415000	50.7	58	10.00	5.01	18800.0	73.1
Airblown	MGRF	2	25	4.99	6.31	2675000	50.5	58	9.99	6.31	22650.0	72.3
Airblown	MGRF	2	25	4.99	7.94	2960000	50.3	58	10.00	7.94	27150.0	71.6
Airblown	MGRF	2	25	4.99	10.00	3265000	50.1	58	10.00	10.00	32350.0	70.9
Airblown	MGRF	2	25	5.00	12.60	3600000	50.0	58	9.99	12.60	38650.0	70.3
Airblown	MGRF	2	25	5.00	15.80	3955000	49.8	58	9.99	15.80	45950.0	69.6
Airblown	MGRF	2	25	5.00	20.00	4350000	49.7	58	10.00	20.00	54400.0	69.0
Airblown	MGRF	2	25	5.00	25.10	4770000	49.5	58	9.93	25.10	64000.0	68.4
Airblown	MGRF	2	25	4.99	31.60	5220000	49.3	58	9.95	31.60	76200.0	67.9
Airblown	MGRF	2	25	4.99	39.80	5710000	49.1	58	9.94	39.80	89700.0	67.4
Airblown	MGRF	2	25	5.00	50.10	6240000	48.8	58	9.93	50.10	105500.0	66.9
Airblown	MGRF	2	25	5.02	63.10	6800000	48.5	58	9.92	63.10	123500.0	66.5
Airblown	MGRF	2	25	5.01	79.40	7235000	49.1	58	9.91	79.40	144500.0	66.1
Airblown	MGRF	2	25	5.01	100.00	7610000	49.2	58	9.90	100.00	167500.0	65.7
Airblown	MGRF	1	35	5.00	0.10	51450	81.0	70	10.00	0.10	85.3	88.7
Airblown	MGRF	1	35	5.00	0.13	63010	80.6	70	10.00	0.13	107.5	88.5
Airblown	MGRF	1	35	5.00	0.16	73800	80.3	70	10.00	0.16	135.5	88.2
Airblown	MGRF	1	35	5.00	0.20	90430	79.9	70	10.00	0.20	170.0	87.9
Airblown	MGRF	1	35	5.00	0.25	110300	79.4	70	10.00	0.25	213.5	87.5
Airblown	MGRF	1	35	5.00	0.32	134800	79.0	70	10.00	0.32	268.0	87.0
Airblown	MGRF	1	35	5.00	0.40	164500	78.6	70	10.00	0.40	335.0	86.6
Airblown	MGRF	1	35	5.00	0.50	200200	78.1	70	10.00	0.50	418.5	86.2
Airblown	MGRF	1	35	5.00	0.63	52173	66.5	70	10.00	0.63	522.5	85.8
Airblown	MGRF	1	35	5.00	0.79	61734	65.7	70	10.00	0.79	651.5	85.3
Airblown	MGRF	1	35	5.00	1.00	72950	65.0	70	10.00	1.00	810.0	84.8
Airblown	MGRF	1	35	5.00	1.26	85961	64.0	70	10.00	1.26	1008.5	84.2
Airblown	MGRF	1	35	5.00	1.58	100400	63.2	70	10.00	1.58	1250.0	83.7
Airblown	MGRF	1	35	5.00	2.00	117312	62.5	70	10.00	2.00	1545.0	83.1
Airblown	MGRF	1	35	5.00	2.51	137000	61.8	70	10.00	2.51	1910.0	82.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Airblown	MGRF	1	35	5.00	3.16	159284	61.0	70	10.00	3.16	2360.0	81.8
Airblown	MGRF	1	35	5.00	3.98	184622	60.4	70	10.00	3.98	2905.0	81.2
Airblown	MGRF	1	35	5.00	5.01	213493	59.8	70	10.00	5.01	3575.0	80.5
Airblown	MGRF	1	35	5.00	6.31	247000	59.2	70	10.00	6.31	4400.0	79.8
Airblown	MGRF	1	35	5.00	7.94	284784	58.5	70	10.00	7.94	5390.0	79.2
Airblown	MGRF	1	35	5.00	10.00	326367	58.0	70	10.00	10.00	6590.0	78.4
Airblown	MGRF	1	35	5.00	12.60	375329	57.5	70	10.00	12.60	8050.0	77.7
Airblown	MGRF	1	35	5.00	15.80	429000	57.0	70	10.00	15.80	9795.0	77.0
Airblown	MGRF	1	35	5.00	20.00	489986	56.5	70	10.00	20.00	11900.0	76.3
Airblown	MGRF	1	35	5.01	25.10	558346	56.1	70	10.00	25.10	14300.0	75.5
Airblown	MGRF	1	35	5.01	31.60	635035	55.8	70	10.00	31.60	17250.0	74.7
Airblown	MGRF	1	35	5.02	39.80	722000	55.4	70	10.00	39.80	21100.0	74.2
Airblown	MGRF	1	35	5.01	50.10	817149	55.0	70	10.00	50.10	25400.0	73.6
Airblown	MGRF	1	35	5.01	63.10	923713	54.6	70	10.00	63.10	30550.0	72.9
Airblown	MGRF	1	35	5.01	79.40	1042229	54.3	70	10.00	79.40	36600.0	72.2
Airblown	MGRF	1	35	5.02	100.00	1170000	54.0	70	10.00	100.00	43750.0	71.6
Airblown	MGRF	2	35	5.00	0.10	77500	65.7	70	10.00	0.10	81.7	88.7
Airblown	MGRF	2	35	5.00	0.13	93000	64.7	70	10.00	0.13	103.0	88.5
Airblown	MGRF	2	35	5.00	0.16	110500	63.7	70	10.00	0.16	129.5	88.2
Airblown	MGRF	2	35	5.00	0.20	130500	62.9	70	10.00	0.20	163.0	87.9
Airblown	MGRF	2	35	5.00	0.25	153000	62.0	70	10.00	0.25	204.5	87.5
Airblown	MGRF	2	35	5.00	0.32	178500	61.2	70	10.00	0.32	256.0	87.1
Airblown	MGRF	2	35	5.00	0.40	208000	60.5	70	10.00	0.40	320.0	86.7
Airblown	MGRF	2	35	5.00	0.50	241000	59.8	70	10.00	0.50	400.0	86.3
Airblown	MGRF	2	35	5.00	0.63	278000	59.2	70	10.00	0.63	499.5	85.8
Airblown	MGRF	2	35	5.00	0.79	320500	58.6	70	10.00	0.79	622.5	85.3
Airblown	MGRF	2	35	5.00	1.00	368000	58.1	70	10.00	1.00	774.5	84.8
Airblown	MGRF	2	35	5.00	1.26	422000	57.5	70	10.00	1.26	963.0	84.3
Airblown	MGRF	2	35	5.00	1.58	482000	57.0	70	10.00	1.58	1195.0	83.7
Airblown	MGRF	2	35	5.00	2.00	549500	56.5	70	10.00	2.00	1480.0	83.2
Airblown	MGRF	2	35	5.00	2.51	625000	56.1	70	10.00	2.51	1825.0	82.6
Airblown	MGRF	2	35	5.00	3.16	710500	55.7	70	10.00	3.16	2260.0	81.9
Airblown	MGRF	2	35	5.00	3.98	803500	55.3	70	10.00	3.98	2775.0	81.3
Airblown	MGRF	2	35	5.00	5.01	909500	54.9	70	10.00	5.01	3425.0	80.6
Airblown	MGRF	2	35	5.00	6.31	1030000	54.6	70	10.00	6.31	4215.0	79.9
Airblown	MGRF	2	35	5.00	7.94	1160000	54.3	70	10.00	7.94	5165.0	79.3
Airblown	MGRF	2	35	5.00	10.00	1300000	54.0	70	10.00	10.00	6315.0	78.6
Airblown	MGRF	2	35	5.00	12.60	1460000	53.7	70	10.00	12.60	7715.0	77.9
Airblown	MGRF	2	35	5.00	15.80	1630000	53.4	70	10.00	15.80	9395.0	77.2
Airblown	MGRF	2	35	5.00	20.00	1820000	53.2	70	10.00	20.00	11400.0	76.5
Airblown	MGRF	2	35	5.01	25.10	2030000	52.9	70	10.00	25.10	13750.0	75.6
Airblown	MGRF	2	35	5.01	31.60	2265000	52.5	70	9.96	31.60	16550.0	74.9
Airblown	MGRF	2	35	5.03	39.80	2520000	52.1	70	9.97	39.80	20250.0	74.4
Airblown	MGRF	2	35	5.01	50.10	2785000	52.5	70	9.97	50.10	24400.0	73.7
Airblown	MGRF	2	35	5.01	63.10	3065000	52.4	70	9.96	63.10	29350.0	73.1
Airblown	MGRF	2	35	5.01	79.40	3355000	52.4	70	9.96	79.40	35200.0	72.4
Airblown	MGRF	2	35	5.01	100.00	3660000	52.3	70	9.96	100.00	42150.0	71.7

Table 50. ALF Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	TANK	1	10	1.00	0.50	207200	57.0	46	6.00	0.50	1192.0	58.6
ALF	TANK	1	10	1.00	0.63	239000	56.8	46	6.00	0.63	1373.0	58.4
ALF	TANK	1	10	1.00	0.79	276600	56.9	46	6.00	0.79	1593.0	58.5
ALF	TANK	1	10	1.00	1.00	320400	57.1	46	6.00	1.00	1844.0	58.2
ALF	TANK	1	10	1.00	1.26	370500	56.9	46	6.00	1.26	2139.0	57.9
ALF	TANK	1	10	1.00	1.50	416600	56.8	46	6.00	1.50	2411.0	58.0
ALF	TANK	1	10	1.00	1.89	480500	56.8	46	6.00	1.89	2779.0	58.2
ALF	TANK	1	10	1.00	2.38	554500	56.7	46	6.00	2.38	3217.0	58.1
ALF	TANK	1	10	1.00	2.99	641000	56.5	46	6.00	2.99	3742.0	58.3
ALF	TANK	1	10	1.00	3.77	741200	56.4	46	6.00	3.77	4343.0	58.4
ALF	TANK	1	10	1.00	4.74	855300	56.2	46	6.00	4.74	5033.0	58.4
ALF	TANK	1	10	1.00	5.00	892100	56.1	46	5.99	5.00	5220.0	58.4
ALF	TANK	1	10	1.00	6.30	1028000	55.9	46	6.00	6.30	6053.0	58.6
ALF	TANK	1	10	1.00	7.92	1185000	55.7	46	6.00	7.92	7033.0	58.7
ALF	TANK	1	10	1.00	9.98	1365000	55.3	46	5.99	9.98	8164.0	58.9
ALF	TANK	1	10	1.00	12.56	1570000	55.1	46	5.99	12.56	9491.0	59.0
ALF	TANK	1	10	1.00	15.00	1752000	54.8	46	6.00	15.00	10650.0	59.1
ALF	TANK	1	10	1.00	18.88	2010000	54.6	46	5.99	18.88	12390.0	59.3
ALF	TANK	1	10	0.99	23.77	2304000	54.2	46	5.99	23.77	14400.0	59.5
ALF	TANK	1	10	0.99	29.93	2639000	53.9	46	5.99	29.93	16740.0	59.7
ALF	TANK	1	10	0.99	37.68	3023000	53.5	46	5.99	37.68	19440.0	60.0
ALF	TANK	1	10	0.99	47.43	3454000	53.2	46	5.99	47.43	22620.0	60.2
ALF	TANK	2	10	1.00	0.50	223600	57.2	46	6.80	0.50	1194.0	58.1
ALF	TANK	2	10	1.00	0.63	256900	57.3	46	6.80	0.63	1377.0	57.9
ALF	TANK	2	10	1.00	0.79	298600	57.2	46	6.80	0.79	1607.0	58.0
ALF	TANK	2	10	1.00	1.00	345400	57.2	46	6.79	1.00	1862.0	58.0
ALF	TANK	2	10	1.00	1.26	399800	57.2	46	6.79	1.26	2151.0	58.0
ALF	TANK	2	10	1.00	1.50	454200	57.0	46	6.79	1.50	2411.0	58.6
ALF	TANK	2	10	1.00	1.89	525000	56.9	46	6.79	1.89	2806.0	58.1
ALF	TANK	2	10	1.00	2.38	606400	56.7	46	6.79	2.38	3248.0	58.1
ALF	TANK	2	10	1.00	2.99	700100	56.6	46	6.79	2.99	3776.0	58.4
ALF	TANK	2	10	1.00	3.77	811300	56.4	46	6.79	3.77	4382.0	58.6
ALF	TANK	2	10	1.00	4.74	933300	56.2	46	6.79	4.74	5086.0	58.7
ALF	TANK	2	10	1.00	5.00	969900	56.1	46	6.79	5.00	5272.0	58.7
ALF	TANK	2	10	1.00	6.30	1117000	56.0	46	6.79	6.30	6120.0	58.9
ALF	TANK	2	10	1.00	7.92	1287000	55.7	46	6.78	7.92	7118.0	59.0
ALF	TANK	2	10	1.00	9.98	1482000	55.5	46	6.78	9.98	8263.0	59.2
ALF	TANK	2	10	1.00	12.56	1705000	55.1	46	6.78	12.56	9611.0	59.4
ALF	TANK	2	10	1.00	15.00	1911000	54.8	46	6.78	15.00	10810.0	59.5
ALF	TANK	2	10	0.99	18.88	2186000	54.5	46	6.78	18.88	12550.0	59.6
ALF	TANK	2	10	0.99	23.77	2503000	54.2	46	6.77	23.77	14610.0	59.9
ALF	TANK	2	10	0.99	29.93	2870000	53.9	46	6.77	29.93	16990.0	60.1
ALF	TANK	2	10	0.99	37.68	3288000	53.5	46	6.76	37.68	19770.0	60.4
ALF	TANK	2	10	0.99	47.43	3762000	53.1	46	6.76	47.43	23020.0	60.7
ALF	TANK	1	22	7.00	0.50	31120	56.9	58	17.01	0.50	408.2	63.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	TANK	1	22	7.00	0.63	35670	57.6	58	17.00	0.63	478.6	62.7
ALF	TANK	1	22	7.00	0.79	41330	57.5	58	17.00	0.79	562.6	62.2
ALF	TANK	1	22	7.00	1.00	47700	57.7	58	17.00	1.00	657.0	61.8
ALF	TANK	1	22	7.00	1.26	55070	58.0	58	17.00	1.26	769.3	61.5
ALF	TANK	1	22	6.60	1.50	62210	58.0	58	17.00	1.50	866.6	61.4
ALF	TANK	1	22	6.60	1.89	71740	58.4	58	17.00	1.89	1012.0	61.1
ALF	TANK	1	22	6.60	2.38	82990	58.8	58	17.00	2.38	1180.0	60.9
ALF	TANK	1	22	6.60	2.99	96320	58.9	58	17.00	2.99	1373.0	60.8
ALF	TANK	1	22	6.60	3.77	111200	59.0	58	17.00	3.77	1600.0	60.6
ALF	TANK	1	22	6.60	4.74	128600	59.3	58	17.00	4.74	1867.0	60.5
ALF	TANK	1	22	6.20	5.00	135100	59.2	58	17.00	5.00	1932.0	60.5
ALF	TANK	1	22	6.20	6.30	155500	59.4	58	17.00	6.30	2250.0	60.4
ALF	TANK	1	22	6.20	7.92	179600	59.6	58	17.00	7.92	2622.0	60.4
ALF	TANK	1	22	6.20	9.98	207500	59.8	58	16.99	9.98	3052.0	60.4
ALF	TANK	1	22	6.20	12.56	239400	60.1	58	16.99	12.56	3558.0	60.4
ALF	TANK	1	22	5.60	15.00	275400	59.9	58	17.00	15.00	4006.0	60.4
ALF	TANK	1	22	5.60	18.88	314400	60.1	58	17.00	18.88	4666.0	60.4
ALF	TANK	1	22	5.60	23.77	361300	60.3	58	16.99	23.77	5433.0	60.5
ALF	TANK	1	22	5.59	29.93	416200	60.5	58	16.99	29.93	6321.0	60.5
ALF	TANK	1	22	5.59	37.68	479300	60.7	58	16.99	37.68	7355.0	60.6
ALF	TANK	1	22	5.59	47.43	551700	60.9	58	16.98	47.43	8557.0	60.6
ALF	TANK	2	22	7.00	0.50	33440	56.8	58	20.00	0.50	402.5	61.2
ALF	TANK	2	22	7.00	0.63	38610	57.6	58	20.00	0.63	469.8	61.5
ALF	TANK	2	22	7.00	0.79	44580	57.9	58	20.00	0.79	547.0	61.3
ALF	TANK	2	22	7.00	1.00	51520	58.1	58	19.99	1.00	638.9	61.1
ALF	TANK	2	22	7.00	1.26	59580	58.4	58	19.99	1.26	748.1	61.0
ALF	TANK	2	22	6.72	1.50	67680	58.3	58	19.99	1.50	845.5	61.1
ALF	TANK	2	22	6.72	1.89	77810	58.5	58	19.99	1.89	986.3	60.8
ALF	TANK	2	22	6.72	2.38	90370	58.9	58	19.99	2.38	1151.0	60.8
ALF	TANK	2	22	6.72	2.99	104300	59.0	58	19.99	2.99	1341.0	60.6
ALF	TANK	2	22	6.72	3.77	120500	59.2	58	19.99	3.77	1562.0	60.7
ALF	TANK	2	22	6.72	4.74	139400	59.4	58	19.99	4.74	1824.0	60.7
ALF	TANK	2	22	6.43	5.00	146200	59.3	58	19.99	5.00	1895.0	60.6
ALF	TANK	2	22	6.43	6.30	168000	59.5	58	19.99	6.30	2208.0	60.6
ALF	TANK	2	22	6.43	7.92	194100	59.8	58	19.99	7.92	2574.0	60.7
ALF	TANK	2	22	6.43	9.98	223900	59.9	58	19.98	9.98	3001.0	60.7
ALF	TANK	2	22	6.43	12.56	258400	60.1	58	19.98	12.56	3501.0	60.8
ALF	TANK	2	22	5.90	15.00	298900	59.9	58	19.99	15.00	3948.0	60.8
ALF	TANK	2	22	5.90	18.88	340600	60.2	58	19.98	18.88	4600.0	60.8
ALF	TANK	2	22	5.90	23.77	390500	60.4	58	19.97	23.77	5358.0	60.9
ALF	TANK	2	22	5.90	29.93	448800	60.6	58	19.97	29.93	6244.0	61.0
ALF	TANK	2	22	5.89	37.68	516200	60.8	58	19.96	37.68	7275.0	61.0
ALF	TANK	2	22	5.89	47.43	593000	60.9	58	19.94	47.43	8476.0	61.1
ALF	TANK	1	34	4.00	0.50	5845	55.7	70	5.00	0.50	145.4	65.6
ALF	TANK	1	34	4.00	0.63	6819	56.2	70	5.00	0.63	169.4	66.3
ALF	TANK	1	34	4.00	0.79	7884	56.0	70	5.00	0.79	198.2	66.4
ALF	TANK	1	34	4.00	1.00	9099	56.7	70	5.00	1.00	232.6	65.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	TANK	1	34	4.00	1.26	10450	57.0	70	5.00	1.26	276.2	65.8
ALF	TANK	1	34	4.00	1.50	11820	57.8	70	5.00	1.50	315.2	65.8
ALF	TANK	1	34	4.00	1.89	13590	57.2	70	5.00	1.89	372.1	65.1
ALF	TANK	1	34	4.00	2.38	15770	57.5	70	5.00	2.38	435.4	64.8
ALF	TANK	1	34	4.00	2.99	18270	57.7	70	5.00	2.99	514.7	64.5
ALF	TANK	1	34	4.00	3.77	21160	58.0	70	5.00	3.77	606.7	64.2
ALF	TANK	1	34	4.00	4.74	24600	58.3	70	5.00	4.74	717.1	64.0
ALF	TANK	1	34	4.00	5.00	25520	58.4	70	5.00	5.00	745.1	64.0
ALF	TANK	1	34	4.00	6.30	29620	58.7	70	5.00	6.30	876.2	63.6
ALF	TANK	1	34	4.00	7.92	34360	58.8	70	5.00	7.92	1032.0	63.4
ALF	TANK	1	34	4.00	9.98	39780	59.2	70	5.00	9.98	1212.0	63.4
ALF	TANK	1	34	4.00	12.56	46430	59.4	70	5.01	12.56	1428.0	63.1
ALF	TANK	1	34	4.00	15.00	52300	59.7	70	5.01	15.00	1606.0	62.8
ALF	TANK	1	34	4.00	18.88	60890	60.0	70	5.01	18.88	1886.0	63.0
ALF	TANK	1	34	4.00	23.77	70750	60.3	70	5.02	23.77	2214.0	62.9
ALF	TANK	1	34	4.00	29.93	82320	60.6	70	5.02	29.93	2610.0	62.7
ALF	TANK	1	34	4.00	37.68	95920	60.9	70	5.03	37.68	3056.0	62.6
ALF	TANK	1	34	4.00	47.43	111900	61.1	70	5.04	47.43	3585.0	62.6
ALF	TANK	2	34	4.00	0.50	6118	55.4	70	5.81	0.50	141.2	64.3
ALF	TANK	2	34	4.00	0.63	7057	56.2	70	5.81	0.63	164.6	63.6
ALF	TANK	2	34	4.00	0.79	8151	56.1	70	5.81	0.79	194.0	64.3
ALF	TANK	2	34	4.00	1.00	9415	56.9	70	5.81	1.00	229.6	64.4
ALF	TANK	2	34	4.00	1.26	10890	56.7	70	5.81	1.26	273.5	64.2
ALF	TANK	2	34	4.00	1.50	12090	57.9	70	5.81	1.50	306.2	64.4
ALF	TANK	2	34	4.00	1.89	14100	57.5	70	5.81	1.89	363.8	63.7
ALF	TANK	2	34	4.00	2.38	16400	57.8	70	5.81	2.38	428.8	63.4
ALF	TANK	2	34	4.00	2.99	18920	57.9	70	5.81	2.99	503.1	63.6
ALF	TANK	2	34	4.00	3.77	21950	58.2	70	5.81	3.77	590.7	63.5
ALF	TANK	2	34	4.00	4.74	25470	58.6	70	5.81	4.74	695.1	63.3
ALF	TANK	2	34	4.00	5.00	26340	58.5	70	5.81	5.00	724.6	63.4
ALF	TANK	2	34	4.00	6.30	30620	58.9	70	5.81	6.30	849.3	63.3
ALF	TANK	2	34	4.00	7.92	35520	59.1	70	5.81	7.92	998.9	63.2
ALF	TANK	2	34	4.00	9.98	41270	59.4	70	5.81	9.98	1172.0	63.2
ALF	TANK	2	34	4.00	12.56	48030	59.6	70	5.82	12.56	1377.0	63.1
ALF	TANK	2	34	4.00	15.00	54140	59.9	70	5.82	15.00	1555.0	63.0
ALF	TANK	2	34	4.00	18.88	62920	60.2	70	5.82	18.88	1828.0	63.0
ALF	TANK	2	34	4.00	23.77	73450	60.6	70	5.83	23.77	2143.0	63.1
ALF	TANK	2	34	4.00	29.93	85430	60.7	70	5.83	29.93	2516.0	62.9
ALF	TANK	2	34	4.00	37.68	99570	61.1	70	5.83	37.68	2953.0	62.8
ALF	TANK	2	34	4.00	47.43	116200	61.3	70	5.84	47.43	3464.0	62.8

Table 51. ALF RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	RTFOT	1	10	0.75	0.50	345200	52.4	46	2.49	0.50	3309.0	48.2
ALF	RTFOT	1	10	0.75	0.63	396900	51.8	46	2.49	0.63	3737.0	48.6
ALF	RTFOT	1	10	0.75	0.79	451600	51.8	46	2.49	0.79	4239.0	49.0
ALF	RTFOT	1	10	0.75	1.00	518300	51.7	46	2.48	1.00	4804.0	49.1
ALF	RTFOT	1	10	0.75	1.26	588700	51.6	46	2.48	1.26	5418.0	49.4
ALF	RTFOT	1	10	0.75	1.50	655000	51.3	46	2.48	1.50	6001.0	49.7
ALF	RTFOT	1	10	0.75	1.89	745000	51.2	46	2.48	1.89	6800.0	50.0
ALF	RTFOT	1	10	0.75	2.38	851200	51.2	46	2.48	2.38	7741.0	50.5
ALF	RTFOT	1	10	0.75	2.99	968500	51.1	46	2.48	2.99	8821.0	50.8
ALF	RTFOT	1	10	0.75	3.77	1105000	50.9	46	2.48	3.77	10030.0	51.1
ALF	RTFOT	1	10	0.75	4.74	1257000	50.7	46	2.48	4.74	11430.0	51.6
ALF	RTFOT	1	10	0.75	5.00	1300000	50.6	46	2.48	5.00	11810.0	51.6
ALF	RTFOT	1	10	0.75	6.30	1479000	50.5	46	2.47	6.30	13470.0	52.0
ALF	RTFOT	1	10	0.75	7.92	1680000	50.2	46	2.47	7.92	15380.0	52.3
ALF	RTFOT	1	10	0.75	9.98	1907000	49.9	46	2.47	9.98	17590.0	52.7
ALF	RTFOT	1	10	0.75	12.56	2165000	49.7	46	2.47	12.56	20130.0	53.2
ALF	RTFOT	1	10	0.75	15.00	2392000	49.5	46	2.46	15.00	22390.0	53.5
ALF	RTFOT	1	10	0.75	18.88	2709000	49.3	46	2.46	18.88	25670.0	53.9
ALF	RTFOT	1	10	0.74	23.77	3065000	49.0	46	2.46	23.77	29480.0	54.4
ALF	RTFOT	1	10	0.74	29.93	3472000	48.7	46	2.45	29.93	33860.0	54.9
ALF	RTFOT	1	10	0.74	37.68	3926000	48.4	46	2.45	37.68	38880.0	55.3
ALF	RTFOT	1	10	0.74	47.43	4434000	48.1	46	2.44	47.43	44810.0	55.9
ALF	RTFOT	2	10	0.61	0.50	417900	52.2	46	2.49	0.50	3351.0	47.9
ALF	RTFOT	2	10	0.61	0.63	482200	51.2	46	2.49	0.63	3789.0	48.1
ALF	RTFOT	2	10	0.61	0.79	548900	51.3	46	2.49	0.79	4295.0	48.5
ALF	RTFOT	2	10	0.61	1.00	627200	51.1	46	2.48	1.00	4850.0	48.8
ALF	RTFOT	2	10	0.61	1.26	710600	51.1	46	2.48	1.26	5504.0	49.2
ALF	RTFOT	2	10	0.61	1.50	792500	50.9	46	2.48	1.50	6041.0	49.4
ALF	RTFOT	2	10	0.61	1.89	901700	50.8	46	2.48	1.89	6858.0	49.9
ALF	RTFOT	2	10	0.61	2.38	1022000	50.7	46	2.48	2.38	7783.0	50.2
ALF	RTFOT	2	10	0.61	2.99	1169000	50.6	46	2.48	2.99	8857.0	50.6
ALF	RTFOT	2	10	0.61	3.77	1327000	50.4	46	2.48	3.77	10080.0	51.1
ALF	RTFOT	2	10	0.61	4.74	1509000	50.2	46	2.48	4.74	11480.0	51.4
ALF	RTFOT	2	10	0.61	5.00	1557000	50.2	46	2.48	5.00	11820.0	51.5
ALF	RTFOT	2	10	0.61	6.30	1769000	49.9	46	2.48	6.30	13490.0	52.0
ALF	RTFOT	2	10	0.61	7.92	2009000	49.8	46	2.47	7.92	15410.0	52.4
ALF	RTFOT	2	10	0.61	9.98	2279000	49.6	46	2.47	9.98	17600.0	52.8
ALF	RTFOT	2	10	0.61	12.56	2587000	49.3	46	2.46	12.56	20160.0	53.2
ALF	RTFOT	2	10	0.61	15.00	2858000	49.1	46	2.47	15.00	22380.0	53.6
ALF	RTFOT	2	10	0.61	18.88	3233000	48.9	46	2.46	18.88	25670.0	54.0
ALF	RTFOT	2	10	0.61	23.77	3645000	48.6	46	2.46	23.77	29470.0	54.4
ALF	RTFOT	2	10	0.60	29.93	4119000	48.3	46	2.46	29.93	33860.0	55.0
ALF	RTFOT	2	10	0.60	37.68	4651000	47.9	46	2.45	37.68	38960.0	55.5
ALF	RTFOT	2	10	0.60	47.43	5245000	47.6	46	2.45	47.43	44810.0	56.0
ALF	RTFOT	1	22	4.50	0.50	57540	52.3	58	6.49	0.50	1258.0	50.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	RTFOT	1	22	4.50	0.63	66360	52.1	58	6.49	0.63	1420.0	50.0
ALF	RTFOT	1	22	4.50	0.79	75020	52.4	58	6.49	0.79	1620.0	50.2
ALF	RTFOT	1	22	4.50	1.00	85680	52.7	58	6.49	1.00	1833.0	50.3
ALF	RTFOT	1	22	4.50	1.26	98280	52.9	58	6.49	1.26	2085.0	50.3
ALF	RTFOT	1	22	4.50	1.50	110100	53.1	58	6.49	1.50	2310.0	50.3
ALF	RTFOT	1	22	4.50	1.89	125600	53.5	58	6.49	1.89	2617.0	50.5
ALF	RTFOT	1	22	4.50	2.38	143300	53.5	58	6.49	2.38	2983.0	50.7
ALF	RTFOT	1	22	4.50	2.99	163600	53.8	58	6.49	2.99	3386.0	51.0
ALF	RTFOT	1	22	4.50	3.77	186900	54.1	58	6.48	3.77	3858.0	51.2
ALF	RTFOT	1	22	4.50	4.74	213200	54.3	58	6.48	4.74	4396.0	51.5
ALF	RTFOT	1	22	4.50	5.00	222900	54.2	58	6.48	5.00	4534.0	51.5
ALF	RTFOT	1	22	4.50	6.30	253300	54.5	58	6.48	6.30	5171.0	51.7
ALF	RTFOT	1	22	4.50	7.92	288900	54.7	58	6.48	7.92	5894.0	52.0
ALF	RTFOT	1	22	4.50	9.98	329300	54.9	58	6.48	9.98	6736.0	52.3
ALF	RTFOT	1	22	4.50	12.56	376000	55.1	58	6.47	12.56	7697.0	52.7
ALF	RTFOT	1	22	4.50	15.00	424900	54.9	58	6.47	15.00	8545.0	52.9
ALF	RTFOT	1	22	4.50	18.88	478700	55.3	58	6.47	18.88	9774.0	53.3
ALF	RTFOT	1	22	4.50	23.77	542900	55.5	58	6.46	23.77	11200.0	53.7
ALF	RTFOT	1	22	4.49	29.93	618000	55.7	58	6.45	29.93	12830.0	54.0
ALF	RTFOT	1	22	4.49	37.68	703300	55.8	58	6.45	37.68	14710.0	54.4
ALF	RTFOT	1	22	4.49	47.43	799500	56.0	58	6.44	47.43	16860.0	54.8
ALF	RTFOT	2	22	4.00	0.50	64500	51.3	58	6.49	0.50	1256.0	50.5
ALF	RTFOT	2	22	4.00	0.63	73020	51.9	58	6.49	0.63	1438.0	50.0
ALF	RTFOT	2	22	4.00	0.79	83590	52.1	58	6.49	0.79	1623.0	50.3
ALF	RTFOT	2	22	4.00	1.00	95480	52.5	58	6.49	1.00	1856.0	50.2
ALF	RTFOT	2	22	4.00	1.26	108900	52.6	58	6.49	1.26	2105.0	50.2
ALF	RTFOT	2	22	4.00	1.50	122400	52.8	58	6.49	1.50	2331.0	50.2
ALF	RTFOT	2	22	4.00	1.89	139300	53.0	58	6.49	1.89	2645.0	50.5
ALF	RTFOT	2	22	4.00	2.38	158700	53.3	58	6.49	2.38	3003.0	50.6
ALF	RTFOT	2	22	4.00	2.99	181600	53.6	58	6.49	2.99	3416.0	50.9
ALF	RTFOT	2	22	4.00	3.77	207700	53.8	58	6.48	3.77	3890.0	51.2
ALF	RTFOT	2	22	4.00	4.74	237400	54.0	58	6.48	4.74	4428.0	51.4
ALF	RTFOT	2	22	4.00	5.00	246500	53.9	58	6.48	5.00	4573.0	51.5
ALF	RTFOT	2	22	4.00	6.30	280200	54.2	58	6.48	6.30	5211.0	51.8
ALF	RTFOT	2	22	4.00	7.92	320200	54.4	58	6.48	7.92	5943.0	52.1
ALF	RTFOT	2	22	4.00	9.98	365200	54.6	58	6.47	9.98	6780.0	52.3
ALF	RTFOT	2	22	4.00	12.56	417100	54.8	58	6.47	12.56	7758.0	52.7
ALF	RTFOT	2	22	4.00	15.00	469900	54.7	58	6.47	15.00	8606.0	52.9
ALF	RTFOT	2	22	4.00	18.88	530900	55.0	58	6.47	18.88	9841.0	53.3
ALF	RTFOT	2	22	4.00	23.77	603900	55.2	58	6.46	23.77	11270.0	53.7
ALF	RTFOT	2	22	3.99	29.93	687400	55.4	58	6.46	29.93	12910.0	54.1
ALF	RTFOT	2	22	3.99	37.68	783200	55.5	58	6.45	37.68	14800.0	54.5
ALF	RTFOT	2	22	3.99	47.43	891800	55.7	58	6.44	47.43	16970.0	54.8
ALF	RTFOT	1	34	2.20	0.50	11820	50.1	70	1.79	0.50	458.3	57.5
ALF	RTFOT	1	34	2.20	0.63	13560	50.2	70	1.79	0.63	536.6	56.2
ALF	RTFOT	1	34	2.20	0.79	15350	50.2	70	1.79	0.79	608.1	55.5
ALF	RTFOT	1	34	2.20	1.00	17560	50.7	70	1.79	1.00	710.7	55.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	RTFOT	1	34	2.20	1.26	19880	51.3	70	1.79	1.26	811.4	55.2
ALF	RTFOT	1	34	2.20	1.50	21900	52.0	70	1.79	1.50	892.9	54.4
ALF	RTFOT	1	34	2.20	1.89	25100	51.7	70	1.79	1.89	1039.0	54.6
ALF	RTFOT	1	34	2.20	2.38	28680	52.0	70	1.79	2.38	1192.0	54.2
ALF	RTFOT	1	34	2.20	2.99	32750	52.6	70	1.79	2.99	1363.0	54.3
ALF	RTFOT	1	34	2.20	3.77	37590	53.0	70	1.79	3.77	1560.0	54.0
ALF	RTFOT	1	34	2.20	4.74	42990	53.4	70	1.79	4.74	1787.0	54.1
ALF	RTFOT	1	34	2.20	5.00	44300	53.2	70	1.79	5.00	1848.0	54.1
ALF	RTFOT	1	34	2.20	6.30	50720	53.8	70	1.79	6.30	2119.0	54.3
ALF	RTFOT	1	34	2.20	7.92	58170	54.0	70	1.79	7.92	2433.0	54.0
ALF	RTFOT	1	34	2.20	9.98	67010	54.4	70	1.79	9.98	2780.0	54.2
ALF	RTFOT	1	34	2.20	12.56	76840	54.9	70	1.79	12.56	3190.0	54.3
ALF	RTFOT	1	34	2.20	15.00	85550	54.9	70	1.79	15.00	3615.0	54.7
ALF	RTFOT	1	34	2.20	18.88	98280	55.5	70	1.79	18.88	4075.0	54.7
ALF	RTFOT	1	34	2.20	23.77	113400	55.6	70	1.79	23.77	4695.0	54.7
ALF	RTFOT	1	34	2.20	29.93	130800	56.0	70	1.80	29.93	5370.0	54.8
ALF	RTFOT	1	34	2.20	37.68	150800	56.4	70	1.80	37.68	6181.0	55.2
ALF	RTFOT	1	34	2.20	47.43	174200	56.7	70	1.80	47.43	7108.0	55.6
ALF	RTFOT	2	34	2.01	0.50	12630	49.7	70	1.79	0.50	489.4	58.6
ALF	RTFOT	2	34	2.01	0.63	14540	49.8	70	1.79	0.63	538.7	54.8
ALF	RTFOT	2	34	2.01	0.79	16360	50.0	70	1.79	0.79	628.7	56.6
ALF	RTFOT	2	34	2.01	1.00	18600	50.4	70	1.79	1.00	716.5	55.7
ALF	RTFOT	2	34	2.01	1.26	21150	50.6	70	1.79	1.26	826.2	54.6
ALF	RTFOT	2	34	2.01	1.50	23330	51.6	70	1.79	1.50	903.2	55.8
ALF	RTFOT	2	34	2.01	1.89	26740	51.3	70	1.79	1.89	1044.0	54.5
ALF	RTFOT	2	34	2.01	2.38	30630	52.3	70	1.79	2.38	1200.0	53.8
ALF	RTFOT	2	34	2.01	2.99	34840	52.3	70	1.79	2.99	1375.0	54.0
ALF	RTFOT	2	34	2.01	3.77	39860	52.8	70	1.79	3.77	1579.0	54.4
ALF	RTFOT	2	34	2.01	4.74	45520	53.3	70	1.79	4.74	1803.0	54.0
ALF	RTFOT	2	34	2.01	5.00	46810	53.1	70	1.79	5.00	1849.0	53.8
ALF	RTFOT	2	34	2.01	6.30	53860	53.5	70	1.79	6.30	2138.0	53.9
ALF	RTFOT	2	34	2.01	7.92	61650	53.9	70	1.79	7.92	2451.0	54.0
ALF	RTFOT	2	34	2.01	9.98	70830	54.3	70	1.79	9.98	2801.0	54.2
ALF	RTFOT	2	34	2.01	12.56	81340	54.6	70	1.79	12.56	3221.0	54.3
ALF	RTFOT	2	34	2.01	15.00	91360	54.9	70	1.79	15.00	3577.0	54.3
ALF	RTFOT	2	34	2.01	18.88	105000	55.3	70	1.79	18.88	4109.0	54.7
ALF	RTFOT	2	34	2.01	23.77	120900	55.7	70	1.79	23.77	4690.0	54.7
ALF	RTFOT	2	34	2.01	29.93	139200	55.9	70	1.79	29.93	5464.0	54.8
ALF	RTFOT	2	34	2.01	37.68	160800	56.3	70	1.80	37.68	6212.0	55.1
ALF	RTFOT	2	34	2.01	47.43	185400	56.5	70	1.80	47.43	7147.0	55.4

Table 52. ALF SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	SAFT	1	10	0.85	0.50	301100	54.4	46	4.20	0.50	1953.0	52.4
ALF	SAFT	1	10	0.85	0.63	344100	54.5	46	4.20	0.63	2224.0	52.7
ALF	SAFT	1	10	0.85	0.79	398200	54.6	46	4.20	0.79	2549.0	52.9
ALF	SAFT	1	10	0.85	1.00	457400	54.5	46	4.20	1.00	2910.0	53.1
ALF	SAFT	1	10	0.85	1.26	522900	54.4	46	4.20	1.26	3342.0	53.2
ALF	SAFT	1	10	0.85	1.50	586600	54.3	46	4.19	1.50	3719.0	53.4
ALF	SAFT	1	10	0.85	1.89	674300	54.2	46	4.19	1.89	4260.0	53.7
ALF	SAFT	1	10	0.85	2.38	775800	54.2	46	4.19	2.38	4872.0	53.9
ALF	SAFT	1	10	0.85	2.99	886600	53.9	46	4.19	2.99	5600.0	54.2
ALF	SAFT	1	10	0.85	3.77	1016000	53.8	46	4.19	3.77	6427.0	54.6
ALF	SAFT	1	10	0.85	4.74	1165000	53.7	46	4.19	4.74	7391.0	54.8
ALF	SAFT	1	10	0.85	5.00	1207000	53.6	46	4.19	5.00	7640.0	54.9
ALF	SAFT	1	10	0.85	6.30	1383000	53.4	46	4.19	6.30	8783.0	55.2
ALF	SAFT	1	10	0.85	7.92	1584000	53.2	46	4.19	7.92	10100.0	55.5
ALF	SAFT	1	10	0.85	9.98	1814000	52.9	46	4.19	9.98	11640.0	55.8
ALF	SAFT	1	10	0.85	12.56	2074000	52.7	46	4.18	12.56	13420.0	56.3
ALF	SAFT	1	10	0.85	15.00	2310000	52.4	46	4.19	15.00	14980.0	56.5
ALF	SAFT	1	10	0.85	18.88	2634000	52.1	46	4.18	18.88	17300.0	56.8
ALF	SAFT	1	10	0.85	23.77	3003000	51.8	46	4.18	23.77	20000.0	57.2
ALF	SAFT	1	10	0.84	29.93	3424000	51.5	46	4.18	29.93	23110.0	57.6
ALF	SAFT	1	10	0.84	37.68	3892000	51.1	46	4.18	37.68	26710.0	58.0
ALF	SAFT	1	10	0.84	47.43	4422000	50.8	46	4.18	47.43	30930.0	58.4
ALF	SAFT	2	10	0.85	0.50	300100	54.3	46	4.09	0.50	2006.0	52.8
ALF	SAFT	2	10	0.85	0.63	346700	54.7	46	4.09	0.63	2312.0	52.4
ALF	SAFT	2	10	0.85	0.79	397600	54.5	46	4.09	0.79	2634.0	52.1
ALF	SAFT	2	10	0.85	1.00	457300	54.1	46	4.09	1.00	3018.0	52.6
ALF	SAFT	2	10	0.85	1.26	527700	54.3	46	4.09	1.26	3448.0	53.0
ALF	SAFT	2	10	0.85	1.50	588100	54.1	46	4.09	1.50	3833.0	53.0
ALF	SAFT	2	10	0.85	1.89	671000	53.9	46	4.09	1.89	4384.0	53.4
ALF	SAFT	2	10	0.85	2.38	771300	54.1	46	4.08	2.38	5034.0	53.7
ALF	SAFT	2	10	0.85	2.99	884300	53.9	46	4.09	2.99	5754.0	54.0
ALF	SAFT	2	10	0.85	3.77	1018000	53.7	46	4.08	3.77	6608.0	54.3
ALF	SAFT	2	10	0.85	4.74	1166000	53.7	46	4.08	4.74	7578.0	54.6
ALF	SAFT	2	10	0.85	5.00	1207000	53.6	46	4.08	5.00	7869.0	54.6
ALF	SAFT	2	10	0.85	6.30	1377000	53.4	46	4.08	6.30	9037.0	54.9
ALF	SAFT	2	10	0.85	7.92	1577000	53.2	46	4.08	7.92	10390.0	55.3
ALF	SAFT	2	10	0.85	9.98	1803000	53.0	46	4.08	9.98	11970.0	55.6
ALF	SAFT	2	10	0.85	12.56	2063000	52.7	46	4.08	12.56	13790.0	56.0
ALF	SAFT	2	10	0.85	15.00	2301000	52.4	46	4.08	15.00	15410.0	56.2
ALF	SAFT	2	10	0.84	18.88	2626000	52.2	46	4.07	18.88	17770.0	56.6
ALF	SAFT	2	10	0.84	23.77	2998000	51.9	46	4.07	23.77	20520.0	57.0
ALF	SAFT	2	10	0.84	29.93	3419000	51.6	46	4.07	29.93	23730.0	57.4
ALF	SAFT	2	10	0.84	37.68	3889000	51.2	46	4.07	37.68	27400.0	57.8
ALF	SAFT	2	10	0.84	47.43	4429000	50.9	46	4.07	47.43	31740.0	58.3
ALF	SAFT	1	22	5.80	0.50	43460	54.5	58	11.50	0.50	702.4	55.3

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	SAFT	1	22	5.80	0.63	49610	55.0	58	11.50	0.63	808.9	55.0
ALF	SAFT	1	22	5.80	0.79	57160	55.1	58	11.50	0.79	928.1	54.8
ALF	SAFT	1	22	5.80	1.00	65850	55.4	58	11.49	1.00	1070.0	54.9
ALF	SAFT	1	22	5.80	1.26	75490	55.5	58	11.49	1.26	1225.0	54.8
ALF	SAFT	1	22	5.24	1.50	85480	55.5	58	11.49	1.50	1371.0	54.8
ALF	SAFT	1	22	5.24	1.89	97860	56.2	58	11.49	1.89	1569.0	55.0
ALF	SAFT	1	22	5.24	2.38	112500	56.2	58	11.49	2.38	1802.0	55.2
ALF	SAFT	1	22	5.24	2.99	129100	56.5	58	11.49	2.99	2070.0	55.2
ALF	SAFT	1	22	5.24	3.77	148000	56.8	58	11.50	3.77	2385.0	55.3
ALF	SAFT	1	22	5.24	4.74	171200	56.9	58	11.49	4.74	2744.0	55.5
ALF	SAFT	1	22	4.69	5.00	179800	56.9	58	11.48	5.00	2842.0	55.5
ALF	SAFT	1	22	4.69	6.30	206400	57.1	58	11.48	6.30	3268.0	55.8
ALF	SAFT	1	22	4.69	7.92	237600	57.3	58	11.48	7.92	3763.0	55.9
ALF	SAFT	1	22	4.69	9.98	273400	57.7	58	11.48	9.98	4338.0	56.1
ALF	SAFT	1	22	4.69	12.56	314600	57.8	58	11.48	12.56	5004.0	56.3
ALF	SAFT	1	22	3.80	15.00	360400	57.6	58	11.47	15.00	5596.0	56.5
ALF	SAFT	1	22	3.80	18.88	412400	57.8	58	11.47	18.88	6458.0	56.7
ALF	SAFT	1	22	3.80	23.77	473900	58.0	58	11.46	23.77	7453.0	57.0
ALF	SAFT	1	22	3.80	29.93	544700	58.1	58	11.45	29.93	8611.0	57.2
ALF	SAFT	1	22	3.80	37.68	627000	58.2	58	11.44	37.68	9935.0	57.5
ALF	SAFT	1	22	3.79	47.43	721000	58.3	58	11.43	47.43	11480.0	57.8
ALF	SAFT	2	22	5.70	0.50	44370	54.5	58	11.30	0.50	728.6	55.3
ALF	SAFT	2	22	5.70	0.63	51050	54.5	58	11.30	0.63	842.1	54.6
ALF	SAFT	2	22	5.70	0.79	58540	54.8	58	11.30	0.79	960.0	54.5
ALF	SAFT	2	22	5.70	1.00	67830	55.0	58	11.30	1.00	1102.0	54.5
ALF	SAFT	2	22	5.70	1.26	77120	55.4	58	11.29	1.26	1261.0	54.2
ALF	SAFT	2	22	5.70	1.50	86810	56.0	58	11.29	1.50	1413.0	54.4
ALF	SAFT	2	22	5.70	1.89	100200	55.7	58	11.29	1.89	1616.0	54.4
ALF	SAFT	2	22	5.70	2.38	114900	56.0	58	11.30	2.38	1855.0	54.7
ALF	SAFT	2	22	5.70	2.99	132000	56.4	58	11.29	2.99	2130.0	54.9
ALF	SAFT	2	22	5.70	3.77	151800	56.6	58	11.29	3.77	2446.0	54.8
ALF	SAFT	2	22	5.70	4.74	174700	56.8	58	11.29	4.74	2817.0	55.1
ALF	SAFT	2	22	5.70	5.00	182900	56.8	58	11.29	5.00	2911.0	55.2
ALF	SAFT	2	22	5.70	6.30	208700	57.1	58	11.29	6.30	3345.0	55.3
ALF	SAFT	2	22	5.70	7.92	239600	57.3	58	11.28	7.92	3848.0	55.5
ALF	SAFT	2	22	5.70	9.98	274500	57.6	58	11.28	9.98	4433.0	55.8
ALF	SAFT	2	22	5.70	12.56	314800	57.9	58	11.28	12.56	5108.0	56.0
ALF	SAFT	2	22	5.70	15.00	358900	57.7	58	11.27	15.00	5708.0	56.2
ALF	SAFT	2	22	5.70	18.88	405300	58.1	58	11.27	18.88	6578.0	56.4
ALF	SAFT	2	22	5.70	23.77	461800	58.4	58	11.26	23.77	7588.0	56.7
ALF	SAFT	2	22	5.69	29.93	527800	58.6	58	11.25	29.93	8756.0	56.9
ALF	SAFT	2	22	5.69	37.68	602900	58.8	58	11.24	37.68	10100.0	57.2
ALF	SAFT	2	22	5.69	47.43	689400	59.0	58	11.23	47.43	11660.0	57.6
ALF	SAFT	1	34	3.00	0.50	8331	53.4	70	3.24	0.50	247.0	62.1
ALF	SAFT	1	34	3.00	0.63	9744	53.0	70	3.24	0.63	288.6	59.2
ALF	SAFT	1	34	3.00	0.79	11120	53.1	70	3.24	0.79	332.8	59.9
ALF	SAFT	1	34	3.00	1.00	12700	53.4	70	3.24	1.00	390.1	60.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	SAFT	1	34	3.00	1.26	14570	54.0	70	3.24	1.26	453.1	59.3
ALF	SAFT	1	34	3.00	1.50	16210	54.8	70	3.24	1.50	512.9	59.9
ALF	SAFT	1	34	3.00	1.89	18690	54.6	70	3.24	1.89	593.8	59.2
ALF	SAFT	1	34	3.00	2.38	21480	54.9	70	3.24	2.38	689.0	59.6
ALF	SAFT	1	34	3.00	2.99	24690	55.2	70	3.24	2.99	802.1	58.9
ALF	SAFT	1	34	3.00	3.77	28490	55.4	70	3.24	3.77	932.3	58.5
ALF	SAFT	1	34	3.00	4.74	32920	55.9	70	3.24	4.74	1082.0	58.7
ALF	SAFT	1	34	3.00	5.00	33790	55.9	70	3.24	5.00	1119.0	58.5
ALF	SAFT	1	34	3.00	6.30	39080	56.2	70	3.24	6.30	1293.0	58.4
ALF	SAFT	1	34	3.00	7.92	45090	56.6	70	3.25	7.92	1491.0	58.3
ALF	SAFT	1	34	3.00	9.98	51980	56.9	70	3.24	9.98	1734.0	58.2
ALF	SAFT	1	34	3.00	12.56	60180	57.4	70	3.25	12.56	2013.0	58.4
ALF	SAFT	1	34	3.00	15.00	67650	57.5	70	3.25	15.00	2259.0	58.8
ALF	SAFT	1	34	3.00	18.88	78320	57.9	70	3.25	18.88	2617.0	58.4
ALF	SAFT	1	34	3.00	23.77	91080	58.4	70	3.25	23.77	3042.0	58.6
ALF	SAFT	1	34	3.00	29.93	105600	58.6	70	3.26	29.93	3518.0	58.6
ALF	SAFT	1	34	3.00	37.68	122400	59.0	70	3.26	37.68	4083.0	58.7
ALF	SAFT	1	34	3.00	47.43	142200	59.4	70	3.27	47.43	4736.0	58.9
ALF	SAFT	2	34	2.90	0.50	9047	51.8	70	3.15	0.50	256.5	62.4
ALF	SAFT	2	34	2.90	0.63	10240	51.9	70	3.15	0.63	296.3	61.0
ALF	SAFT	2	34	2.90	0.79	11800	52.3	70	3.15	0.79	344.5	61.0
ALF	SAFT	2	34	2.90	1.00	13450	52.9	70	3.15	1.00	400.5	59.7
ALF	SAFT	2	34	2.90	1.26	15470	53.3	70	3.15	1.26	472.0	59.6
ALF	SAFT	2	34	2.90	1.50	17410	53.3	70	3.15	1.50	526.1	59.2
ALF	SAFT	2	34	2.90	1.89	19850	53.8	70	3.15	1.89	605.5	58.5
ALF	SAFT	2	34	2.90	2.38	22820	54.5	70	3.15	2.38	707.8	58.7
ALF	SAFT	2	34	2.90	2.99	26120	54.7	70	3.15	2.99	814.8	58.7
ALF	SAFT	2	34	2.90	3.77	30090	55.0	70	3.14	3.77	948.1	58.5
ALF	SAFT	2	34	2.90	4.74	34760	55.4	70	3.15	4.74	1097.0	58.3
ALF	SAFT	2	34	2.90	5.00	35790	55.3	70	3.15	5.00	1138.0	58.1
ALF	SAFT	2	34	2.90	6.30	41220	55.8	70	3.15	6.30	1318.0	58.2
ALF	SAFT	2	34	2.90	7.92	47400	56.2	70	3.15	7.92	1523.0	58.0
ALF	SAFT	2	34	2.90	9.98	54650	56.5	70	3.15	9.98	1763.0	58.0
ALF	SAFT	2	34	2.90	12.56	63100	56.9	70	3.15	12.56	2044.0	58.0
ALF	SAFT	2	34	2.90	15.00	70070	57.0	70	3.16	15.00	2290.0	58.2
ALF	SAFT	2	34	2.90	18.88	81530	57.4	70	3.16	18.88	2653.0	58.2
ALF	SAFT	2	34	2.90	23.77	94340	57.9	70	3.16	23.77	3073.0	58.3
ALF	SAFT	2	34	2.90	29.93	109500	58.2	70	3.16	29.93	3564.0	58.4
ALF	SAFT	2	34	2.90	37.68	126800	58.6	70	3.17	37.68	4131.0	58.5
ALF	SAFT	2	34	2.90	47.43	147000	59.0	70	3.17	47.43	4791.0	58.6

Table 53. ALF MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	MGRF	1	10	1.00	0.10	133000	51.9	46	9.70	0.10	1590.0	46.6
ALF	MGRF	1	10	1.00	0.13	184500	52.2	46	9.96	0.13	1805.0	46.5
ALF	MGRF	1	10	1.00	0.16	227000	52.2	46	10.00	0.16	2035.0	46.6
ALF	MGRF	1	10	1.00	0.20	269000	52.2	46	10.00	0.20	2295.0	46.7
ALF	MGRF	1	10	1.00	0.25	314000	52.2	46	10.00	0.25	2585.0	46.8
ALF	MGRF	1	10	1.00	0.32	363500	52.1	46	10.00	0.32	2915.0	47.0
ALF	MGRF	1	10	1.00	0.40	419000	52.1	46	10.00	0.40	3290.0	47.2
ALF	MGRF	1	10	1.00	0.50	481500	52.1	46	10.00	0.50	3710.0	47.5
ALF	MGRF	1	10	1.00	0.63	552500	52.1	46	10.00	0.63	4185.0	47.7
ALF	MGRF	1	10	1.00	0.79	633500	52.0	46	10.00	0.79	4730.0	48.0
ALF	MGRF	1	10	1.00	1.00	725500	51.9	46	10.00	1.00	5345.0	48.3
ALF	MGRF	1	10	1.00	1.26	830000	51.8	46	10.00	1.26	6045.0	48.7
ALF	MGRF	1	10	1.00	1.58	948500	51.7	46	10.00	1.58	6845.0	49.0
ALF	MGRF	1	10	1.00	2.00	1080000	51.6	46	10.00	2.00	7755.0	49.4
ALF	MGRF	1	10	1.00	2.51	1235000	51.4	46	10.00	2.51	8795.0	49.8
ALF	MGRF	1	10	1.00	3.16	1410000	51.2	46	10.00	3.16	9975.0	50.2
ALF	MGRF	1	10	1.00	3.98	1610000	51.0	46	10.00	3.98	11300.0	50.6
ALF	MGRF	1	10	1.00	5.01	1830000	50.8	46	10.00	5.01	12900.0	51.0
ALF	MGRF	1	10	1.00	6.31	2090000	50.6	46	10.00	6.31	14700.0	51.5
ALF	MGRF	1	10	1.00	7.94	2370000	50.4	46	10.00	7.94	16700.0	51.9
ALF	MGRF	1	10	1.00	10.00	2700000	50.1	46	10.00	10.00	19100.0	52.4
ALF	MGRF	1	10	1.00	12.60	3060000	49.8	46	10.00	12.60	21800.0	52.9
ALF	MGRF	1	10	1.00	15.80	3465000	49.5	46	9.99	15.80	24900.0	53.4
ALF	MGRF	1	10	1.00	20.00	3925000	49.2	46	10.00	20.00	28500.0	53.9
ALF	MGRF	1	10	1.00	25.10	4435000	48.8	46	10.00	25.10	32600.0	54.4
ALF	MGRF	1	10	1.00	31.60	5005000	48.4	46	10.00	31.60	37400.0	55.0
ALF	MGRF	1	10	1.00	39.80	5650000	47.9	46	10.00	39.80	42900.0	55.5
ALF	MGRF	1	10	0.99	50.10	6370000	47.4	46	10.00	50.10	49250.0	56.1
ALF	MGRF	1	10	0.99	63.10	7195000	46.8	46	10.00	63.10	56600.0	56.7
ALF	MGRF	1	10	1.00	79.40	8135000	46.1	46	10.00	79.40	65100.0	57.3
ALF	MGRF	1	10	1.00	100.00	9195000	46.0	46	10.00	100.00	74850.0	58.0
ALF	MGRF	2	10	2.58	0.10	181500	53.2	46	2.72	0.10	1755.0	45.0
ALF	MGRF	2	10	4.91	0.13	219000	53.0	46	9.91	0.13	2040.0	45.0
ALF	MGRF	2	10	5.05	0.16	251000	53.1	46	10.20	0.16	2290.0	45.1
ALF	MGRF	2	10	5.02	0.20	286500	53.2	46	9.99	0.20	2565.0	45.3
ALF	MGRF	2	10	5.07	0.25	327500	53.4	46	9.92	0.25	2885.0	45.5
ALF	MGRF	2	10	5.07	0.32	373500	53.4	46	9.93	0.32	3235.0	45.7
ALF	MGRF	2	10	5.02	0.40	425500	53.5	46	9.98	0.40	3635.0	46.0
ALF	MGRF	2	10	5.03	0.50	484500	53.6	46	10.05	0.50	4085.0	46.2
ALF	MGRF	2	10	5.06	0.63	551500	53.7	46	10.01	0.63	4600.0	46.5
ALF	MGRF	2	10	5.05	0.79	627500	53.7	46	10.00	0.79	5175.0	46.9
ALF	MGRF	2	10	5.04	1.00	711500	53.8	46	10.00	1.00	5830.0	47.2
ALF	MGRF	2	10	5.04	1.26	806000	53.8	46	10.00	1.26	6570.0	47.6
ALF	MGRF	2	10	5.04	1.58	913000	53.8	46	9.95	1.58	7420.0	48.0
ALF	MGRF	2	10	5.05	2.00	1033500	53.8	46	9.97	2.00	8395.0	48.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	MGRF	2	10	5.03	2.51	1170000	53.8	46	9.97	2.51	9490.0	48.8
ALF	MGRF	2	10	5.02	3.16	1320000	53.7	46	10.05	3.16	10750.0	49.3
ALF	MGRF	2	10	5.02	3.98	1500000	53.7	46	10.05	3.98	12150.0	49.7
ALF	MGRF	2	10	5.02	5.01	1690000	53.6	46	10.00	5.01	13800.0	50.2
ALF	MGRF	2	10	4.99	6.31	1885000	53.6	46	9.99	6.31	15700.0	50.6
ALF	MGRF	2	10	5.03	7.94	2110000	53.6	46	9.96	7.94	17800.0	51.1
ALF	MGRF	2	10	5.00	10.00	2360000	53.5	46	10.00	10.00	20300.0	51.6
ALF	MGRF	2	10	5.01	12.60	2630000	53.5	46	10.00	12.60	23100.0	52.1
ALF	MGRF	2	10	5.01	15.80	2930000	53.4	46	10.00	15.80	26350.0	52.7
ALF	MGRF	2	10	5.01	20.00	3260000	53.4	46	10.00	20.00	30100.0	53.2
ALF	MGRF	2	10	5.01	25.10	3615000	53.3	46	9.99	25.10	34350.0	53.8
ALF	MGRF	2	10	5.01	31.60	3995000	53.2	46	10.00	31.60	39250.0	54.3
ALF	MGRF	2	10	5.01	39.80	4395000	53.1	46	9.99	39.80	44950.0	54.9
ALF	MGRF	2	10	5.01	50.10	4830000	53.0	46	10.00	50.10	51500.0	55.6
ALF	MGRF	2	10	5.01	63.10	5275000	53.0	46	10.00	63.10	59050.0	56.2
ALF	MGRF	2	10	5.01	79.40	5720000	53.0	46	10.00	79.40	67750.0	56.9
ALF	MGRF	2	10	5.01	100.00	6150000	53.2	46	10.00	100.00	77750.0	57.6
ALF	MGRF	1	25	1.00	0.10	17500	45.5	58	9.84	0.10	546.0	51.2
ALF	MGRF	1	25	1.00	0.13	20550	46.2	58	9.95	0.13	627.5	50.6
ALF	MGRF	1	25	1.00	0.16	23700	46.7	58	10.00	0.16	716.0	50.2
ALF	MGRF	1	25	1.00	0.20	27000	47.4	58	10.00	0.20	814.5	49.9
ALF	MGRF	1	25	1.00	0.25	30700	47.9	58	10.00	0.25	925.0	49.7
ALF	MGRF	1	25	1.00	0.32	34900	48.3	58	10.00	0.32	1050.0	49.5
ALF	MGRF	1	25	1.00	0.40	39650	48.8	58	10.00	0.40	1190.0	49.4
ALF	MGRF	1	25	1.00	0.50	45000	49.4	58	10.00	0.50	1350.0	49.4
ALF	MGRF	1	25	1.00	0.63	51150	49.9	58	10.00	0.63	1525.0	49.4
ALF	MGRF	1	25	1.00	0.79	58250	50.3	58	10.00	0.79	1735.0	49.4
ALF	MGRF	1	25	1.00	1.00	66350	50.8	58	10.00	1.00	1965.0	49.5
ALF	MGRF	1	25	1.00	1.26	75700	51.2	58	10.00	1.26	2225.0	49.6
ALF	MGRF	1	25	1.00	1.58	86400	51.7	58	10.00	1.58	2520.0	49.7
ALF	MGRF	1	25	1.00	2.00	98550	52.1	58	10.00	2.00	2860.0	49.9
ALF	MGRF	1	25	1.00	2.51	113000	52.5	58	10.00	2.51	3250.0	50.1
ALF	MGRF	1	25	1.00	3.16	129500	52.9	58	10.00	3.16	3685.0	50.3
ALF	MGRF	1	25	1.00	3.98	148000	53.2	58	10.00	3.98	4185.0	50.5
ALF	MGRF	1	25	1.00	5.01	170000	53.6	58	10.00	5.01	4760.0	50.8
ALF	MGRF	1	25	1.00	6.31	195500	53.9	58	10.00	6.31	5420.0	51.1
ALF	MGRF	1	25	1.00	7.94	224500	54.1	58	10.00	7.94	6165.0	51.4
ALF	MGRF	1	25	1.00	10.00	258500	54.4	58	10.00	10.00	7025.0	51.7
ALF	MGRF	1	25	1.00	12.60	297500	54.5	58	10.00	12.60	8010.0	52.1
ALF	MGRF	1	25	1.00	15.80	342000	54.6	58	9.98	15.80	9140.0	52.5
ALF	MGRF	1	25	1.00	20.00	395000	54.8	58	10.00	20.00	10450.0	52.9
ALF	MGRF	1	25	1.00	25.10	455500	55.0	58	9.99	25.10	11950.0	53.3
ALF	MGRF	1	25	1.00	31.60	525500	55.0	58	10.00	31.60	13650.0	53.7
ALF	MGRF	1	25	1.00	39.80	607000	55.0	58	10.00	39.80	15600.0	54.2
ALF	MGRF	1	25	1.00	50.10	700500	54.9	58	10.00	50.10	17900.0	54.7
ALF	MGRF	1	25	1.00	63.10	810000	54.7	58	10.00	63.10	20500.0	55.3
ALF	MGRF	1	25	1.00	79.40	937500	54.4	58	10.00	79.40	23500.0	56.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	MGRF	1	25	0.99	100.00	1100000	53.1	58	10.00	100.00	26950.0	56.7
ALF	MGRF	2	25	4.88	0.10	18200	49.2	58	5.98	0.10	571.5	49.8
ALF	MGRF	2	25	4.94	0.13	21050	49.3	58	9.84	0.13	665.5	49.2
ALF	MGRF	2	25	5.01	0.16	24100	49.6	58	10.05	0.16	757.5	48.8
ALF	MGRF	2	25	5.01	0.20	27450	49.9	58	10.05	0.20	858.0	48.6
ALF	MGRF	2	25	5.04	0.25	31250	50.2	58	10.05	0.25	970.0	48.4
ALF	MGRF	2	25	5.04	0.32	35600	50.5	58	10.00	0.32	1100.0	48.3
ALF	MGRF	2	25	5.01	0.40	40500	50.9	58	10.05	0.40	1240.0	48.2
ALF	MGRF	2	25	5.01	0.50	46150	51.3	58	10.10	0.50	1400.0	48.2
ALF	MGRF	2	25	5.01	0.63	52650	51.6	58	10.05	0.63	1585.0	48.3
ALF	MGRF	2	25	5.02	0.79	60000	52.0	58	10.05	0.79	1785.0	48.3
ALF	MGRF	2	25	5.02	1.00	68550	52.3	58	10.00	1.00	2020.0	48.4
ALF	MGRF	2	25	5.02	1.26	78250	52.7	58	10.05	1.26	2285.0	48.5
ALF	MGRF	2	25	5.02	1.58	89400	53.1	58	10.00	1.58	2585.0	48.7
ALF	MGRF	2	25	5.02	2.00	102000	53.5	58	10.05	2.00	2925.0	48.9
ALF	MGRF	2	25	5.04	2.51	117000	53.8	58	10.00	2.51	3310.0	49.1
ALF	MGRF	2	25	5.02	3.16	134000	54.2	58	10.05	3.16	3745.0	49.4
ALF	MGRF	2	25	5.04	3.98	153500	54.6	58	10.00	3.98	4250.0	49.7
ALF	MGRF	2	25	5.03	5.01	175500	54.9	58	10.00	5.01	4825.0	50.0
ALF	MGRF	2	25	5.03	6.31	201500	55.3	58	10.00	6.31	5470.0	50.3
ALF	MGRF	2	25	5.02	7.94	231000	55.6	58	10.00	7.94	6220.0	50.6
ALF	MGRF	2	25	5.02	10.00	265000	56.0	58	9.99	10.00	7075.0	51.0
ALF	MGRF	2	25	5.00	12.60	303500	56.4	58	10.00	12.60	8050.0	51.4
ALF	MGRF	2	25	4.96	15.80	348000	56.8	58	10.00	15.80	9170.0	51.8
ALF	MGRF	2	25	5.00	20.00	397000	57.2	58	10.00	20.00	10450.0	52.2
ALF	MGRF	2	25	5.00	25.10	453500	57.7	58	10.00	25.10	11900.0	52.7
ALF	MGRF	2	25	5.00	31.60	516500	58.2	58	9.99	31.60	13600.0	53.2
ALF	MGRF	2	25	5.00	39.80	588000	58.9	58	9.99	39.80	15550.0	53.7
ALF	MGRF	2	25	5.00	50.10	666500	59.8	58	10.00	50.10	17750.0	54.3
ALF	MGRF	2	25	5.00	63.10	753500	61.0	58	9.99	63.10	20300.0	55.0
ALF	MGRF	2	25	5.00	79.40	847500	62.6	58	9.99	79.40	23200.0	55.8
ALF	MGRF	2	25	5.00	100.00	947500	64.9	58	10.00	100.00	26550.0	56.7
ALF	MGRF	1	35	1.00	0.10	5355	46.4	70	9.92	0.10	153.5	63.6
ALF	MGRF	1	35	1.00	0.13	6115	46.4	70	9.97	0.13	181.5	62.2
ALF	MGRF	1	35	1.00	0.16	6960	46.4	70	10.00	0.16	213.0	61.0
ALF	MGRF	1	35	1.00	0.20	7880	46.7	70	10.00	0.20	249.0	60.0
ALF	MGRF	1	35	1.00	0.25	8920	46.9	70	10.00	0.25	289.5	59.0
ALF	MGRF	1	35	1.00	0.32	10080	47.2	70	10.00	0.32	336.0	58.1
ALF	MGRF	1	35	1.00	0.40	11400	47.5	70	10.00	0.40	388.5	57.4
ALF	MGRF	1	35	1.00	0.50	12900	47.8	70	10.00	0.50	448.5	56.7
ALF	MGRF	1	35	1.00	0.63	14550	48.2	70	10.00	0.63	516.5	56.0
ALF	MGRF	1	35	1.00	0.79	16450	48.7	70	10.00	0.79	594.5	55.5
ALF	MGRF	1	35	1.00	1.00	18700	49.1	70	10.00	1.00	682.5	55.1
ALF	MGRF	1	35	1.00	1.26	21200	49.5	70	10.00	1.26	784.0	54.7
ALF	MGRF	1	35	1.00	1.58	24050	50.0	70	10.00	1.58	899.0	54.3
ALF	MGRF	1	35	1.00	2.00	27350	50.4	70	10.00	2.00	1030.0	54.1
ALF	MGRF	1	35	1.00	2.51	31100	50.9	70	10.00	2.51	1180.0	53.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
ALF	MGRF	1	35	1.00	3.16	35500	51.3	70	10.00	3.16	1350.0	53.7
ALF	MGRF	1	35	1.00	3.98	40450	51.7	70	10.00	3.98	1550.0	53.6
ALF	MGRF	1	35	1.00	5.01	46250	52.2	70	10.00	5.01	1770.0	53.6
ALF	MGRF	1	35	1.00	6.31	53000	52.7	70	10.00	6.31	2025.0	53.6
ALF	MGRF	1	35	1.00	7.94	60700	53.0	70	10.00	7.94	2320.0	53.6
ALF	MGRF	1	35	1.00	10.00	69700	53.4	70	10.00	10.00	2655.0	53.7
ALF	MGRF	1	35	1.00	12.60	80100	53.7	70	10.00	12.60	3035.0	53.8
ALF	MGRF	1	35	1.00	15.80	92200	54.2	70	9.96	15.80	3480.0	54.0
ALF	MGRF	1	35	1.00	20.00	106500	54.4	70	9.99	20.00	3985.0	54.2
ALF	MGRF	1	35	1.00	25.10	123000	54.6	70	10.00	25.10	4560.0	54.4
ALF	MGRF	1	35	1.00	31.60	142000	54.7	70	10.00	31.60	5230.0	54.7
ALF	MGRF	1	35	1.00	39.80	165000	54.7	70	10.00	39.80	5990.0	55.1
ALF	MGRF	1	35	1.00	50.10	191500	54.5	70	10.00	50.10	6865.0	55.6
ALF	MGRF	1	35	1.00	63.10	224500	54.0	70	10.00	63.10	7855.0	56.1
ALF	MGRF	1	35	1.00	79.40	263500	53.5	70	10.00	79.40	8995.0	56.8
ALF	MGRF	1	35	1.00	100.00	310000	52.5	70	10.00	100.00	10300.0	57.7
ALF	MGRF	2	35	4.97	0.10	5290	46.5	70	9.67	0.10	169.0	62.2
ALF	MGRF	2	35	5.00	0.13	6045	46.5	70	9.76	0.13	199.0	60.9
ALF	MGRF	2	35	5.01	0.16	6850	46.7	70	10.00	0.16	233.0	59.7
ALF	MGRF	2	35	5.00	0.20	7740	47.0	70	9.94	0.20	272.0	58.6
ALF	MGRF	2	35	5.01	0.25	8750	47.2	70	10.10	0.25	314.5	57.7
ALF	MGRF	2	35	5.01	0.32	9885	47.6	70	10.20	0.32	363.5	56.9
ALF	MGRF	2	35	5.01	0.40	11200	47.9	70	10.00	0.40	419.0	56.1
ALF	MGRF	2	35	5.01	0.50	12650	48.3	70	10.10	0.50	482.5	55.5
ALF	MGRF	2	35	5.01	0.63	14300	48.7	70	10.10	0.63	554.5	54.9
ALF	MGRF	2	35	5.01	0.79	16200	49.1	70	10.10	0.79	635.5	54.4
ALF	MGRF	2	35	5.02	1.00	18400	49.5	70	10.10	1.00	728.5	54.0
ALF	MGRF	2	35	5.02	1.26	20850	50.0	70	10.00	1.26	833.5	53.6
ALF	MGRF	2	35	5.02	1.58	23700	50.4	70	10.05	1.58	953.0	53.3
ALF	MGRF	2	35	5.02	2.00	27000	50.9	70	10.00	2.00	1090.0	53.1
ALF	MGRF	2	35	5.02	2.51	30700	51.4	70	10.00	2.51	1245.0	52.9
ALF	MGRF	2	35	5.02	3.16	34950	51.9	70	10.10	3.16	1425.0	52.8
ALF	MGRF	2	35	5.01	3.98	39850	52.4	70	10.10	3.98	1620.0	52.7
ALF	MGRF	2	35	5.01	5.01	45500	53.0	70	10.00	5.01	1850.0	52.7
ALF	MGRF	2	35	5.03	6.31	51900	53.6	70	10.10	6.31	2115.0	52.7
ALF	MGRF	2	35	5.02	7.94	59250	54.3	70	9.99	7.94	2415.0	52.8
ALF	MGRF	2	35	5.00	10.00	67700	55.0	70	9.98	10.00	2760.0	52.9
ALF	MGRF	2	35	5.00	12.60	77400	55.8	70	10.00	12.60	3155.0	53.1
ALF	MGRF	2	35	4.97	15.80	88400	56.7	70	9.91	15.80	3605.0	53.3
ALF	MGRF	2	35	4.99	20.00	101000	57.9	70	9.99	20.00	4115.0	53.5
ALF	MGRF	2	35	5.00	25.10	115000	59.2	70	9.98	25.10	4705.0	53.9
ALF	MGRF	2	35	5.00	31.60	130500	61.1	70	10.00	31.60	5375.0	54.2
ALF	MGRF	2	35	5.00	39.80	147500	63.4	70	9.99	39.80	6145.0	54.7
ALF	MGRF	2	35	5.00	50.10	166500	66.6	70	10.00	50.10	7020.0	55.3
ALF	MGRF	2	35	5.00	63.10	187500	71.1	70	10.00	63.10	8010.0	56.0
ALF	MGRF	2	35	5.00	79.40	211000	77.4	70	10.00	79.40	9125.0	57.0
ALF	MGRF	2	35	5.00	100.00	239500	86.2	70	10.00	100.00	10400.0	58.2

Table 54. Citgoflex Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	TANK	1	10	0.05	0.50	4438000	56.5	46	0.59	0.50	11020.0	61.2
Citgoflex	TANK	1	10	0.05	0.63	5172000	55.4	46	0.59	0.63	12870.0	61.5
Citgoflex	TANK	1	10	0.05	0.79	5935000	54.2	46	0.59	0.79	15080.0	61.7
Citgoflex	TANK	1	10	0.05	1.00	6801000	53.5	46	0.59	1.00	17530.0	61.8
Citgoflex	TANK	1	10	0.05	1.26	7815000	52.6	46	0.59	1.26	20550.0	62.4
Citgoflex	TANK	1	10	0.05	1.50	8699000	51.7	46	0.59	1.50	23160.0	62.4
Citgoflex	TANK	1	10	0.05	1.89	9885000	51.1	46	0.59	1.89	27230.0	62.7
Citgoflex	TANK	1	10	0.05	2.38	11110000	50.3	46	0.59	2.38	31820.0	63.0
Citgoflex	TANK	1	10	0.05	2.99	12710000	49.2	46	0.59	2.99	37360.0	63.2
Citgoflex	TANK	1	10	0.05	3.77	14550000	48.2	46	0.59	3.77	43880.0	63.5
Citgoflex	TANK	1	10	0.05	4.74	16270000	47.4	46	0.58	4.74	51510.0	63.8
Citgoflex	TANK	1	10	0.05	5.00	16580000	47.2	46	0.58	5.00	53610.0	63.8
Citgoflex	TANK	1	10	0.05	6.30	18800000	46.5	46	0.58	6.30	62940.0	64.2
Citgoflex	TANK	1	10	0.05	7.92	21050000	45.6	46	0.58	7.92	74170.0	64.6
Citgoflex	TANK	1	10	0.05	9.98	23590000	44.7	46	0.58	9.98	87480.0	65.0
Citgoflex	TANK	1	10	0.05	12.56	26430000	44.3	46	0.58	12.56	102800.0	65.2
Citgoflex	TANK	1	10	0.05	15.00	28780000	43.3	46	0.58	15.00	117200.0	65.4
Citgoflex	TANK	1	10	0.05	18.88	31930000	41.9	46	0.57	18.88	138100.0	65.4
Citgoflex	TANK	1	10	0.05	23.77	35430000	41.4	46	0.57	23.77	162700.0	65.7
Citgoflex	TANK	1	10	0.05	29.93	39340000	40.9	46	0.57	29.93	192800.0	65.9
Citgoflex	TANK	1	10	0.05	37.68	43460000	39.8	46	0.57	37.68	227500.0	66.1
Citgoflex	TANK	1	10	0.05	47.43	47990000	38.8	46	0.57	47.43	271400.0	66.2
Citgoflex	TANK	2	10	0.06	0.50	3417000	56.5	46	0.88	0.50	7505.0	61.8
Citgoflex	TANK	2	10	0.06	0.63	3905000	55.3	46	0.88	0.63	8815.0	62.1
Citgoflex	TANK	2	10	0.06	0.79	4511000	54.9	46	0.88	0.79	10320.0	62.0
Citgoflex	TANK	2	10	0.06	1.00	5173000	54.2	46	0.88	1.00	12030.0	62.5
Citgoflex	TANK	2	10	0.06	1.26	5953000	53.2	46	0.88	1.26	14050.0	62.5
Citgoflex	TANK	2	10	0.06	1.50	6583000	52.5	46	0.88	1.50	15950.0	62.5
Citgoflex	TANK	2	10	0.06	1.89	7519000	51.7	46	0.88	1.89	18680.0	62.9
Citgoflex	TANK	2	10	0.06	2.38	8567000	50.9	46	0.88	2.38	21940.0	62.9
Citgoflex	TANK	2	10	0.06	2.99	9725000	49.9	46	0.88	2.99	25690.0	63.5
Citgoflex	TANK	2	10	0.06	3.77	11060000	49.3	46	0.88	3.77	30140.0	63.7
Citgoflex	TANK	2	10	0.06	4.74	12460000	48.6	46	0.87	4.74	35520.0	64.3
Citgoflex	TANK	2	10	0.06	5.00	12820000	48.3	46	0.88	5.00	36920.0	64.1
Citgoflex	TANK	2	10	0.06	6.30	14390000	47.5	46	0.87	6.30	43450.0	64.4
Citgoflex	TANK	2	10	0.06	7.92	16260000	46.5	46	0.87	7.92	51170.0	64.7
Citgoflex	TANK	2	10	0.06	9.98	18280000	45.6	46	0.87	9.98	60600.0	65.0
Citgoflex	TANK	2	10	0.06	12.56	20160000	45.1	46	0.87	12.56	71140.0	65.4
Citgoflex	TANK	2	10	0.06	15.00	22470000	44.1	46	0.87	15.00	80910.0	65.6
Citgoflex	TANK	2	10	0.06	18.88	24910000	42.9	46	0.87	18.88	95670.0	65.9
Citgoflex	TANK	2	10	0.06	23.77	28030000	42.5	46	0.87	23.77	112900.0	66.2
Citgoflex	TANK	2	10	0.06	29.93	30710000	41.6	46	0.86	29.93	134000.0	66.4
Citgoflex	TANK	2	10	0.06	37.68	34270000	40.9	46	0.86	37.68	159000.0	66.9
Citgoflex	TANK	2	10	0.06	47.43	37800000	39.7	46	0.86	47.43	188700.0	66.9
Citgoflex	TANK	1	22	0.46	0.50	470900	62.7	58	2.49	0.50	2841.0	60.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	TANK	1	22	0.46	0.63	554100	62.7	58	2.49	0.63	3298.0	60.7
Citgoflex	TANK	1	22	0.46	0.79	652100	62.3	58	2.49	0.79	3860.0	60.8
Citgoflex	TANK	1	22	0.46	1.00	763400	62.1	58	2.49	1.00	4507.0	60.9
Citgoflex	TANK	1	22	0.46	1.26	893500	61.5	58	2.49	1.26	5253.0	61.1
Citgoflex	TANK	1	22	0.46	1.50	1017000	61.3	58	2.49	1.50	5926.0	61.2
Citgoflex	TANK	1	22	0.46	1.89	1191000	61.1	58	2.48	1.89	6943.0	61.3
Citgoflex	TANK	1	22	0.46	2.38	1392000	60.5	58	2.49	2.38	8116.0	61.5
Citgoflex	TANK	1	22	0.46	2.99	1628000	60.2	58	2.49	2.99	9468.0	61.8
Citgoflex	TANK	1	22	0.46	3.77	1893000	59.7	58	2.48	3.77	11090.0	61.9
Citgoflex	TANK	1	22	0.46	4.74	2207000	59.1	58	2.48	4.74	13000.0	62.1
Citgoflex	TANK	1	22	0.46	5.00	2283000	59.0	58	2.48	5.00	13470.0	62.2
Citgoflex	TANK	1	22	0.46	6.30	2657000	58.3	58	2.48	6.30	15780.0	62.5
Citgoflex	TANK	1	22	0.46	7.92	3079000	57.8	58	2.48	7.92	18510.0	62.6
Citgoflex	TANK	1	22	0.46	9.98	3569000	57.1	58	2.48	9.98	21680.0	62.9
Citgoflex	TANK	1	22	0.46	12.56	4130000	56.4	58	2.48	12.56	25480.0	63.3
Citgoflex	TANK	1	22	0.46	15.00	4615000	55.9	58	2.48	15.00	28850.0	63.5
Citgoflex	TANK	1	22	0.46	18.88	5312000	55.3	58	2.48	18.88	33910.0	63.8
Citgoflex	TANK	1	22	0.46	23.77	6118000	54.5	58	2.48	23.77	39910.0	64.1
Citgoflex	TANK	1	22	0.46	29.93	7024000	53.8	58	2.48	29.93	46970.0	64.5
Citgoflex	TANK	1	22	0.46	37.68	8037000	53.0	58	2.49	37.68	55360.0	64.9
Citgoflex	TANK	1	22	0.46	47.43	9190000	52.3	58	2.50	47.43	65320.0	65.2
Citgoflex	TANK	2	22	0.58	0.50	355300	63.2	58	3.30	0.50	1994.0	61.6
Citgoflex	TANK	2	22	0.58	0.63	416200	62.9	58	3.30	0.63	2319.0	62.0
Citgoflex	TANK	2	22	0.58	0.79	490200	62.8	58	3.30	0.79	2731.0	62.0
Citgoflex	TANK	2	22	0.58	1.00	578500	62.5	58	3.30	1.00	3180.0	62.1
Citgoflex	TANK	2	22	0.58	1.26	675600	62.1	58	3.30	1.26	3730.0	61.9
Citgoflex	TANK	2	22	0.58	1.50	767500	62.0	58	3.30	1.50	4227.0	61.9
Citgoflex	TANK	2	22	0.58	1.89	899900	61.6	58	3.29	1.89	4934.0	62.0
Citgoflex	TANK	2	22	0.58	2.38	1052000	61.1	58	3.30	2.38	5774.0	62.3
Citgoflex	TANK	2	22	0.58	2.99	1229000	60.6	58	3.29	2.99	6778.0	62.5
Citgoflex	TANK	2	22	0.58	3.77	1438000	60.1	58	3.29	3.77	7945.0	62.5
Citgoflex	TANK	2	22	0.58	4.74	1677000	59.7	58	3.29	4.74	9322.0	62.8
Citgoflex	TANK	2	22	0.58	5.00	1736000	59.5	58	3.29	5.00	9688.0	62.7
Citgoflex	TANK	2	22	0.58	6.30	2021000	59.0	58	3.29	6.30	11350.0	62.9
Citgoflex	TANK	2	22	0.58	7.92	2352000	58.4	58	3.29	7.92	13330.0	63.1
Citgoflex	TANK	2	22	0.58	9.98	2730000	57.8	58	3.29	9.98	15650.0	63.4
Citgoflex	TANK	2	22	0.58	12.56	3161000	57.2	58	3.29	12.56	18420.0	63.7
Citgoflex	TANK	2	22	0.58	15.00	3534000	56.7	58	3.29	15.00	20880.0	63.9
Citgoflex	TANK	2	22	0.57	18.88	4087000	56.0	58	3.29	18.88	24550.0	64.1
Citgoflex	TANK	2	22	0.57	23.77	4708000	55.3	58	3.29	23.77	28900.0	64.5
Citgoflex	TANK	2	22	0.57	29.93	5419000	54.6	58	3.30	29.93	34060.0	64.8
Citgoflex	TANK	2	22	0.57	37.68	6213000	53.9	58	3.30	37.68	40160.0	65.2
Citgoflex	TANK	2	22	0.57	47.43	7123000	53.1	58	3.31	47.43	47440.0	65.5
Citgoflex	TANK	1	34	3.50	0.50	60290	62.5	70	0.80	0.50	879.2	59.9
Citgoflex	TANK	1	34	3.50	0.63	70990	62.9	70	0.80	0.63	1025.0	59.8
Citgoflex	TANK	1	34	3.50	0.79	83510	63.2	70	0.80	0.79	1202.0	61.9
Citgoflex	TANK	1	34	3.50	1.00	98030	63.2	70	0.80	1.00	1403.0	62.5

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	TANK	1	34	3.50	1.26	115500	63.4	70	0.80	1.26	1640.0	61.7
Citgoflex	TANK	1	34	3.50	1.50	131000	63.3	70	0.80	1.50	1846.0	62.5
Citgoflex	TANK	1	34	3.50	1.89	153900	63.6	70	0.80	1.89	2157.0	62.4
Citgoflex	TANK	1	34	3.50	2.38	180900	63.7	70	0.80	2.38	2527.0	62.4
Citgoflex	TANK	1	34	3.50	2.99	213300	63.9	70	0.80	2.99	2975.0	62.8
Citgoflex	TANK	1	34	3.50	3.77	251400	63.9	70	0.80	3.77	3495.0	62.7
Citgoflex	TANK	1	34	3.50	4.74	295900	63.9	70	0.80	4.74	4091.0	62.5
Citgoflex	TANK	1	34	3.50	5.00	308600	63.9	70	0.80	5.00	4222.0	62.7
Citgoflex	TANK	1	34	3.50	6.30	362900	63.9	70	0.79	6.30	4968.0	63.0
Citgoflex	TANK	1	34	3.50	7.92	426900	63.8	70	0.80	7.92	5797.0	63.1
Citgoflex	TANK	1	34	3.50	9.98	502300	63.7	70	0.80	9.98	6774.0	63.0
Citgoflex	TANK	1	34	3.50	12.56	590600	63.7	70	0.80	12.56	7969.0	63.2
Citgoflex	TANK	1	34	3.50	15.00	672000	63.5	70	0.80	15.00	9032.0	63.3
Citgoflex	TANK	1	34	3.50	18.88	786200	63.4	70	0.81	18.88	10540.0	63.6
Citgoflex	TANK	1	34	3.50	23.77	922200	63.1	70	0.81	23.77	12430.0	63.8
Citgoflex	TANK	1	34	3.49	29.93	1078000	62.9	70	0.82	29.93	14640.0	64.0
Citgoflex	TANK	1	34	3.49	37.68	1260000	62.7	70	0.83	37.68	17180.0	64.3
Citgoflex	TANK	1	34	3.49	47.43	1471000	62.4	70	0.84	47.43	20140.0	64.6
Citgoflex	TANK	2	34	5.00	0.50	45540	62.5	70	1.10	0.50	618.4	64.2
Citgoflex	TANK	2	34	5.00	0.63	53370	63.3	70	1.10	0.63	736.1	63.3
Citgoflex	TANK	2	34	5.00	0.79	63220	63.2	70	1.10	0.79	848.1	64.0
Citgoflex	TANK	2	34	5.00	1.00	74270	63.5	70	1.10	1.00	1018.0	63.5
Citgoflex	TANK	2	34	5.00	1.26	87280	63.5	70	1.10	1.26	1183.0	63.6
Citgoflex	TANK	2	34	5.00	1.50	99510	63.7	70	1.10	1.50	1330.0	64.0
Citgoflex	TANK	2	34	5.00	1.89	116900	63.8	70	1.10	1.89	1588.0	63.2
Citgoflex	TANK	2	34	5.00	2.38	137800	64.1	70	1.10	2.38	1861.0	63.4
Citgoflex	TANK	2	34	5.00	2.99	162200	64.1	70	1.10	2.99	2188.0	63.4
Citgoflex	TANK	2	34	5.00	3.77	191000	64.2	70	1.10	3.77	2559.0	63.7
Citgoflex	TANK	2	34	5.00	4.74	225200	64.3	70	1.10	4.74	3016.0	63.6
Citgoflex	TANK	2	34	5.00	5.00	234100	64.2	70	1.10	5.00	3128.0	63.6
Citgoflex	TANK	2	34	5.00	6.30	275500	64.3	70	1.10	6.30	3688.0	63.4
Citgoflex	TANK	2	34	5.00	7.92	324300	64.3	70	1.11	7.92	4289.0	63.5
Citgoflex	TANK	2	34	5.00	9.98	381700	64.3	70	1.11	9.98	5070.0	63.7
Citgoflex	TANK	2	34	5.00	12.56	449100	64.2	70	1.11	12.56	5961.0	63.9
Citgoflex	TANK	2	34	5.00	15.00	512600	64.1	70	1.11	15.00	6773.0	64.1
Citgoflex	TANK	2	34	5.00	18.88	599200	64.0	70	1.11	18.88	7956.0	64.0
Citgoflex	TANK	2	34	5.00	23.77	700700	63.9	70	1.12	23.77	9410.0	64.9
Citgoflex	TANK	2	34	4.99	29.93	819400	63.7	70	1.13	29.93	10990.0	64.6
Citgoflex	TANK	2	34	4.99	37.68	957800	63.5	70	1.14	37.68	12940.0	64.7
Citgoflex	TANK	2	34	4.98	47.43	1117000	63.3	70	1.15	47.43	15220.0	65.0

Table 55. Citgoflex RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	RTFOT	1	10	0.05	0.50	5704000	52.5	46	0.62	0.50	12890.0	58.9
Citgoflex	RTFOT	1	10	0.05	0.63	6540000	51.7	46	0.62	0.63	15080.0	59.4
Citgoflex	RTFOT	1	10	0.05	0.79	7435000	50.9	46	0.62	0.79	17510.0	59.8
Citgoflex	RTFOT	1	10	0.04	1.00	8500000	50.0	46	0.62	1.00	20350.0	59.8
Citgoflex	RTFOT	1	10	0.04	1.26	9624000	49.4	46	0.62	1.26	23640.0	60.1
Citgoflex	RTFOT	1	10	0.04	1.50	10630000	48.7	46	0.62	1.50	26700.0	60.2
Citgoflex	RTFOT	1	10	0.04	1.89	12060000	47.9	46	0.62	1.89	31210.0	60.6
Citgoflex	RTFOT	1	10	0.04	2.38	13510000	47.2	46	0.62	2.38	36360.0	61.0
Citgoflex	RTFOT	1	10	0.04	2.99	15240000	46.3	46	0.62	2.99	42580.0	61.1
Citgoflex	RTFOT	1	10	0.04	3.77	17190000	45.7	46	0.61	3.77	49920.0	61.6
Citgoflex	RTFOT	1	10	0.04	4.74	19160000	45.1	46	0.61	4.74	58240.0	61.8
Citgoflex	RTFOT	1	10	0.04	5.00	19630000	44.6	46	0.62	5.00	60060.0	62.1
Citgoflex	RTFOT	1	10	0.04	6.30	21900000	43.9	46	0.60	6.30	71390.0	62.2
Citgoflex	RTFOT	1	10	0.04	7.92	24480000	42.5	46	0.60	7.92	83210.0	62.4
Citgoflex	RTFOT	1	10	0.04	9.98	27470000	42.4	46	0.60	9.98	97580.0	62.8
Citgoflex	RTFOT	1	10	0.04	12.56	30370000	41.6	46	0.60	12.56	115000.0	63.1
Citgoflex	RTFOT	1	10	0.04	15.00	33110000	40.7	46	0.59	15.00	130100.0	63.5
Citgoflex	RTFOT	1	10	0.04	18.88	36350000	40.1	46	0.59	18.88	153000.0	63.3
Citgoflex	RTFOT	1	10	0.04	23.77	39980000	39.2	46	0.58	23.77	179700.0	63.6
Citgoflex	RTFOT	1	10	0.04	29.93	44080000	38.4	46	0.57	29.93	212400.0	64.0
Citgoflex	RTFOT	1	10	0.04	37.68	48470000	37.7	46	0.56	37.68	251100.0	63.9
Citgoflex	RTFOT	1	10	0.04	47.43	53280000	36.9	46	0.55	47.43	295700.0	64.3
Citgoflex	RTFOT	2	10	0.05	0.50	5098000	53.3	46	0.65	0.50	12210.0	59.2
Citgoflex	RTFOT	2	10	0.05	0.63	5840000	52.2	46	0.65	0.63	14150.0	59.2
Citgoflex	RTFOT	2	10	0.05	0.79	6642000	51.7	46	0.65	0.79	16480.0	59.7
Citgoflex	RTFOT	2	10	0.05	1.00	7597000	50.9	46	0.65	1.00	19120.0	59.7
Citgoflex	RTFOT	2	10	0.05	1.26	8634000	50.1	46	0.65	1.26	22300.0	60.2
Citgoflex	RTFOT	2	10	0.05	1.50	9551000	49.7	46	0.65	1.50	25070.0	60.2
Citgoflex	RTFOT	2	10	0.05	1.89	10760000	48.7	46	0.65	1.89	29230.0	60.4
Citgoflex	RTFOT	2	10	0.05	2.38	12250000	47.9	46	0.65	2.38	34210.0	60.9
Citgoflex	RTFOT	2	10	0.05	2.99	13720000	47.3	46	0.65	2.99	39830.0	61.1
Citgoflex	RTFOT	2	10	0.05	3.77	15430000	46.3	46	0.64	3.77	46580.0	61.4
Citgoflex	RTFOT	2	10	0.05	4.74	17280000	45.7	46	0.64	4.74	54380.0	61.8
Citgoflex	RTFOT	2	10	0.05	5.00	17840000	45.3	46	0.64	5.00	56300.0	61.9
Citgoflex	RTFOT	2	10	0.05	6.30	19860000	44.8	46	0.64	6.30	65750.0	62.3
Citgoflex	RTFOT	2	10	0.04	7.92	22310000	44.0	46	0.64	7.92	77060.0	62.6
Citgoflex	RTFOT	2	10	0.04	9.98	24820000	43.2	46	0.63	9.98	90740.0	62.8
Citgoflex	RTFOT	2	10	0.04	12.56	27720000	41.8	46	0.63	12.56	106300.0	63.1
Citgoflex	RTFOT	2	10	0.04	15.00	30120000	41.5	46	0.63	15.00	119900.0	63.6
Citgoflex	RTFOT	2	10	0.04	18.88	33190000	41.0	46	0.62	18.88	141300.0	63.7
Citgoflex	RTFOT	2	10	0.04	23.77	36410000	40.5	46	0.61	23.77	166300.0	64.0
Citgoflex	RTFOT	2	10	0.04	29.93	40480000	38.8	46	0.61	29.93	195500.0	64.1
Citgoflex	RTFOT	2	10	0.04	37.68	44830000	38.7	46	0.59	37.68	231400.0	64.0
Citgoflex	RTFOT	2	10	0.04	47.43	49160000	37.7	46	0.58	47.43	273400.0	64.6
Citgoflex	RTFOT	1	22	0.40	0.50	644400	60.5	58	2.29	0.50	3438.0	59.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	RTFOT	1	22	0.40	0.63	753000	60.1	58	2.29	0.63	4035.0	59.0
Citgoflex	RTFOT	1	22	0.40	0.79	877800	59.8	58	2.29	0.79	4665.0	59.2
Citgoflex	RTFOT	1	22	0.40	1.00	1026000	59.7	58	2.29	1.00	5417.0	59.4
Citgoflex	RTFOT	1	22	0.40	1.26	1195000	59.1	58	2.29	1.26	6305.0	59.2
Citgoflex	RTFOT	1	22	0.40	1.50	1346000	59.2	58	2.29	1.50	7070.0	60.1
Citgoflex	RTFOT	1	22	0.40	1.89	1560000	58.3	58	2.28	1.89	8256.0	59.7
Citgoflex	RTFOT	1	22	0.40	2.38	1810000	57.9	58	2.28	2.38	9633.0	59.9
Citgoflex	RTFOT	1	22	0.40	2.99	2102000	57.3	58	2.28	2.99	11240.0	60.1
Citgoflex	RTFOT	1	22	0.40	3.77	2436000	56.9	58	2.28	3.77	13060.0	60.3
Citgoflex	RTFOT	1	22	0.40	4.74	2816000	56.3	58	2.28	4.74	15230.0	60.5
Citgoflex	RTFOT	1	22	0.40	5.00	2914000	56.2	58	2.28	5.00	15900.0	60.6
Citgoflex	RTFOT	1	22	0.40	6.30	3346000	55.6	58	2.28	6.30	18550.0	60.8
Citgoflex	RTFOT	1	22	0.39	7.92	3856000	55.0	58	2.27	7.92	21690.0	61.1
Citgoflex	RTFOT	1	22	0.39	9.98	4428000	54.5	58	2.27	9.98	25320.0	61.4
Citgoflex	RTFOT	1	22	0.39	12.56	5078000	53.8	58	2.26	12.56	29640.0	61.7
Citgoflex	RTFOT	1	22	0.39	15.00	5661000	53.1	58	2.26	15.00	33430.0	62.0
Citgoflex	RTFOT	1	22	0.39	18.88	6482000	52.6	58	2.26	18.88	39120.0	62.3
Citgoflex	RTFOT	1	22	0.39	23.77	7426000	51.9	58	2.26	23.77	45800.0	62.7
Citgoflex	RTFOT	1	22	0.39	29.93	8455000	51.2	58	2.25	29.93	53780.0	63.0
Citgoflex	RTFOT	1	22	0.39	37.68	9617000	50.5	58	2.24	37.68	63130.0	63.3
Citgoflex	RTFOT	1	22	0.39	47.43	10930000	49.8	58	2.23	47.43	74320.0	63.8
Citgoflex	RTFOT	2	22	0.45	0.50	570700	60.7	58	2.49	0.50	3232.0	59.2
Citgoflex	RTFOT	2	22	0.45	0.63	664900	60.7	58	2.49	0.63	3757.0	59.1
Citgoflex	RTFOT	2	22	0.45	0.79	777800	60.3	58	2.49	0.79	4371.0	59.1
Citgoflex	RTFOT	2	22	0.45	1.00	907100	59.9	58	2.49	1.00	5091.0	59.3
Citgoflex	RTFOT	2	22	0.45	1.26	1056000	59.5	58	2.49	1.26	5930.0	59.4
Citgoflex	RTFOT	2	22	0.45	1.50	1181000	59.7	58	2.48	1.50	6667.0	59.3
Citgoflex	RTFOT	2	22	0.45	1.89	1377000	58.8	58	2.48	1.89	7763.0	59.6
Citgoflex	RTFOT	2	22	0.45	2.38	1599000	58.4	58	2.48	2.38	9033.0	59.9
Citgoflex	RTFOT	2	22	0.45	2.99	1857000	57.9	58	2.48	2.99	10550.0	60.0
Citgoflex	RTFOT	2	22	0.45	3.77	2151000	57.4	58	2.48	3.77	12270.0	60.2
Citgoflex	RTFOT	2	22	0.45	4.74	2490000	57.0	58	2.48	4.74	14310.0	60.5
Citgoflex	RTFOT	2	22	0.45	5.00	2585000	56.6	58	2.48	5.00	14820.0	60.5
Citgoflex	RTFOT	2	22	0.45	6.30	2989000	56.2	58	2.47	6.30	17300.0	60.8
Citgoflex	RTFOT	2	22	0.45	7.92	3443000	55.6	58	2.47	7.92	20200.0	61.1
Citgoflex	RTFOT	2	22	0.44	9.98	3959000	54.9	58	2.47	9.98	23580.0	61.4
Citgoflex	RTFOT	2	22	0.44	12.56	4551000	54.4	58	2.46	12.56	27580.0	61.7
Citgoflex	RTFOT	2	22	0.44	15.00	5065000	53.8	58	2.46	15.00	31120.0	61.9
Citgoflex	RTFOT	2	22	0.44	18.88	5810000	53.2	58	2.46	18.88	36440.0	62.3
Citgoflex	RTFOT	2	22	0.44	23.77	6651000	52.5	58	2.44	23.77	42800.0	62.8
Citgoflex	RTFOT	2	22	0.44	29.93	7593000	51.8	58	2.44	29.93	50090.0	63.0
Citgoflex	RTFOT	2	22	0.44	37.68	8662000	51.1	58	2.44	37.68	58780.0	63.4
Citgoflex	RTFOT	2	22	0.44	47.43	9860000	50.4	58	2.43	47.43	69110.0	63.7
Citgoflex	RTFOT	1	34	3.04	0.50	83910	61.1	70	7.46	0.50	1083.0	61.1
Citgoflex	RTFOT	1	34	3.04	0.63	98470	61.4	70	7.46	0.63	1263.0	60.3
Citgoflex	RTFOT	1	34	3.04	0.79	114400	61.3	70	7.46	0.79	1478.0	60.5
Citgoflex	RTFOT	1	34	3.04	1.00	133700	61.5	70	7.46	1.00	1726.0	60.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	RTFOT	1	34	3.04	1.26	156300	61.6	70	7.45	1.26	2004.0	60.4
Citgoflex	RTFOT	1	34	3.04	1.50	173900	62.3	70	7.45	1.50	2242.0	61.0
Citgoflex	RTFOT	1	34	3.04	1.89	204700	61.9	70	7.45	1.89	2622.0	60.4
Citgoflex	RTFOT	1	34	3.04	2.38	239800	61.9	70	7.45	2.38	3064.0	60.4
Citgoflex	RTFOT	1	34	3.04	2.99	281600	62.0	70	7.45	2.99	3567.0	60.5
Citgoflex	RTFOT	1	34	3.04	3.77	330600	62.0	70	7.45	3.77	4161.0	60.6
Citgoflex	RTFOT	1	34	3.04	4.74	387900	62.0	70	7.45	4.74	4854.0	60.6
Citgoflex	RTFOT	1	34	3.04	5.00	408300	61.9	70	7.44	5.00	5040.0	60.7
Citgoflex	RTFOT	1	34	3.04	6.30	478100	61.9	70	7.44	6.30	5877.0	60.8
Citgoflex	RTFOT	1	34	3.04	7.92	560200	61.8	70	7.44	7.92	6863.0	60.9
Citgoflex	RTFOT	1	34	3.04	9.98	655200	61.7	70	7.44	9.98	8007.0	61.0
Citgoflex	RTFOT	1	34	3.04	12.56	766600	61.6	70	7.43	12.56	9359.0	61.2
Citgoflex	RTFOT	1	34	3.03	15.00	870000	61.3	70	7.43	15.00	10570.0	61.4
Citgoflex	RTFOT	1	34	3.03	18.88	1012000	61.2	70	7.42	18.88	12350.0	61.6
Citgoflex	RTFOT	1	34	3.03	23.77	1177000	61.0	70	7.41	23.77	14440.0	61.8
Citgoflex	RTFOT	1	34	3.03	29.93	1370000	60.7	70	7.41	29.93	16890.0	62.1
Citgoflex	RTFOT	1	34	3.03	37.68	1592000	60.4	70	7.40	37.68	19770.0	62.4
Citgoflex	RTFOT	1	34	3.02	47.43	1847000	60.1	70	7.38	47.43	23160.0	62.7
Citgoflex	RTFOT	2	34	3.40	0.50	75940	60.9	70	7.90	0.50	1010.0	61.0
Citgoflex	RTFOT	2	34	3.40	0.63	88630	61.3	70	7.90	0.63	1168.0	61.0
Citgoflex	RTFOT	2	34	3.40	0.79	102900	61.2	70	7.90	0.79	1373.0	60.8
Citgoflex	RTFOT	2	34	3.40	1.00	120100	61.6	70	7.90	1.00	1605.0	60.8
Citgoflex	RTFOT	2	34	3.40	1.26	140700	61.7	70	7.90	1.26	1873.0	60.6
Citgoflex	RTFOT	2	34	3.40	1.50	160200	62.2	70	7.90	1.50	2097.0	61.3
Citgoflex	RTFOT	2	34	3.40	1.89	187600	61.8	70	7.89	1.89	2465.0	60.8
Citgoflex	RTFOT	2	34	3.40	2.38	220300	62.0	70	7.89	2.38	2882.0	60.7
Citgoflex	RTFOT	2	34	3.40	2.99	258500	62.1	70	7.89	2.99	3348.0	60.8
Citgoflex	RTFOT	2	34	3.40	3.77	303000	62.0	70	7.89	3.77	3911.0	60.8
Citgoflex	RTFOT	2	34	3.40	4.74	355200	62.1	70	7.89	4.74	4567.0	60.8
Citgoflex	RTFOT	2	34	3.40	5.00	370600	62.1	70	7.89	5.00	4733.0	60.8
Citgoflex	RTFOT	2	34	3.40	6.30	434200	62.1	70	7.89	6.30	5522.0	61.0
Citgoflex	RTFOT	2	34	3.40	7.92	508100	62.0	70	7.88	7.92	6448.0	61.1
Citgoflex	RTFOT	2	34	3.40	9.98	594800	61.9	70	7.88	9.98	7524.0	61.2
Citgoflex	RTFOT	2	34	3.40	12.56	695200	61.8	70	7.87	12.56	8794.0	61.4
Citgoflex	RTFOT	2	34	3.40	15.00	785600	61.6	70	7.87	15.00	9910.0	61.5
Citgoflex	RTFOT	2	34	3.40	18.88	913400	61.4	70	7.87	18.88	11580.0	61.7
Citgoflex	RTFOT	2	34	3.39	23.77	1062000	61.3	70	7.86	23.77	13520.0	61.9
Citgoflex	RTFOT	2	34	3.39	29.93	1236000	61.0	70	7.85	29.93	15820.0	62.2
Citgoflex	RTFOT	2	34	3.39	37.68	1436000	60.8	70	7.84	37.68	18520.0	62.5
Citgoflex	RTFOT	2	34	3.38	47.43	1667000	60.5	70	7.82	47.43	21680.0	62.8

Table 56. Citgoflex SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	SAFT	1	10	0.06	0.50	4491000	55.4	46	0.88	0.50	9117.0	60.4
Citgoflex	SAFT	1	10	0.06	0.63	5172000	55.0	46	0.88	0.63	10530.0	60.7
Citgoflex	SAFT	1	10	0.06	0.79	5892000	54.1	46	0.88	0.79	12310.0	60.9
Citgoflex	SAFT	1	10	0.06	1.00	6756000	53.8	46	0.88	1.00	14310.0	61.2
Citgoflex	SAFT	1	10	0.06	1.26	7761000	52.6	46	0.88	1.26	16710.0	61.2
Citgoflex	SAFT	1	10	0.06	1.50	8692000	51.8	46	0.88	1.50	18810.0	61.9
Citgoflex	SAFT	1	10	0.06	1.89	9907000	51.1	46	0.88	1.89	22050.0	61.7
Citgoflex	SAFT	1	10	0.06	2.38	11230000	50.3	46	0.88	2.38	25810.0	62.0
Citgoflex	SAFT	1	10	0.06	2.99	12800000	49.8	46	0.88	2.99	30160.0	62.2
Citgoflex	SAFT	1	10	0.06	3.77	14450000	48.7	46	0.87	3.77	35350.0	62.7
Citgoflex	SAFT	1	10	0.06	4.74	16270000	48.4	46	0.87	4.74	41490.0	62.8
Citgoflex	SAFT	1	10	0.06	5.00	16560000	47.8	46	0.87	5.00	43300.0	63.0
Citgoflex	SAFT	1	10	0.05	6.30	18610000	47.1	46	0.87	6.30	50500.0	63.4
Citgoflex	SAFT	1	10	0.05	7.92	20930000	46.3	46	0.87	7.92	59200.0	63.7
Citgoflex	SAFT	1	10	0.05	9.98	23490000	45.7	46	0.86	9.98	69790.0	64.1
Citgoflex	SAFT	1	10	0.05	12.56	26400000	44.5	46	0.86	12.56	82180.0	64.3
Citgoflex	SAFT	1	10	0.05	15.00	28900000	44.0	46	0.86	15.00	93270.0	64.5
Citgoflex	SAFT	1	10	0.05	18.88	32300000	43.0	46	0.85	18.88	109800.0	64.7
Citgoflex	SAFT	1	10	0.05	23.77	35930000	42.1	46	0.85	23.77	129700.0	65.0
Citgoflex	SAFT	1	10	0.05	29.93	40040000	41.4	46	0.84	29.93	153400.0	65.4
Citgoflex	SAFT	1	10	0.05	37.68	44520000	40.7	46	0.83	37.68	181700.0	65.7
Citgoflex	SAFT	1	10	0.05	47.43	49050000	39.6	46	0.83	47.43	214800.0	65.7
Citgoflex	SAFT	2	10	0.06	0.50	3822000	56.7	46	0.88	0.50	8559.0	60.1
Citgoflex	SAFT	2	10	0.06	0.63	4450000	55.5	46	0.88	0.63	9904.0	60.3
Citgoflex	SAFT	2	10	0.06	0.79	5107000	54.8	46	0.88	0.79	11520.0	60.3
Citgoflex	SAFT	2	10	0.06	1.00	5848000	54.3	46	0.88	1.00	13550.0	60.6
Citgoflex	SAFT	2	10	0.06	1.26	6712000	53.4	46	0.88	1.26	15790.0	60.8
Citgoflex	SAFT	2	10	0.06	1.50	7501000	52.6	46	0.88	1.50	17760.0	61.0
Citgoflex	SAFT	2	10	0.06	1.89	8549000	51.8	46	0.88	1.89	20710.0	61.4
Citgoflex	SAFT	2	10	0.06	2.38	9680000	51.1	46	0.88	2.38	24220.0	61.7
Citgoflex	SAFT	2	10	0.06	2.99	11000000	50.1	46	0.88	2.99	28320.0	62.0
Citgoflex	SAFT	2	10	0.06	3.77	12520000	49.4	46	0.87	3.77	33150.0	62.4
Citgoflex	SAFT	2	10	0.06	4.74	14210000	48.9	46	0.87	4.74	38750.0	62.6
Citgoflex	SAFT	2	10	0.06	5.00	14460000	48.4	46	0.87	5.00	40290.0	62.6
Citgoflex	SAFT	2	10	0.06	6.30	16390000	47.8	46	0.87	6.30	47270.0	63.0
Citgoflex	SAFT	2	10	0.06	7.92	18400000	47.1	46	0.87	7.92	55340.0	63.4
Citgoflex	SAFT	2	10	0.06	9.98	20560000	46.0	46	0.87	9.98	64950.0	63.9
Citgoflex	SAFT	2	10	0.06	12.56	23170000	45.3	46	0.86	12.56	76620.0	64.0
Citgoflex	SAFT	2	10	0.06	15.00	25440000	44.3	46	0.86	15.00	86950.0	64.3
Citgoflex	SAFT	2	10	0.06	18.88	28410000	43.6	46	0.86	18.88	102300.0	64.7
Citgoflex	SAFT	2	10	0.06	23.77	31720000	42.5	46	0.85	23.77	121000.0	64.8
Citgoflex	SAFT	2	10	0.06	29.93	35320000	41.8	46	0.84	29.93	143300.0	65.1
Citgoflex	SAFT	2	10	0.06	37.68	39080000	40.7	46	0.84	37.68	168500.0	65.7
Citgoflex	SAFT	2	10	0.06	47.43	43630000	39.6	46	0.83	47.43	199500.0	65.8
Citgoflex	SAFT	1	22	0.55	0.50	458400	62.7	58	3.39	0.50	2418.0	60.3

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	SAFT	1	22	0.55	0.63	545300	62.0	58	3.39	0.63	2796.0	60.5
Citgoflex	SAFT	1	22	0.55	0.79	633600	62.0	58	3.39	0.79	3262.0	60.6
Citgoflex	SAFT	1	22	0.55	1.00	744200	61.6	58	3.39	1.00	3820.0	60.8
Citgoflex	SAFT	1	22	0.55	1.26	872400	61.4	58	3.39	1.26	4454.0	60.8
Citgoflex	SAFT	1	22	0.55	1.50	988800	61.6	58	3.39	1.50	4988.0	61.4
Citgoflex	SAFT	1	22	0.55	1.89	1160000	60.8	58	3.38	1.89	5860.0	61.0
Citgoflex	SAFT	1	22	0.55	2.38	1356000	60.5	58	3.38	2.38	6838.0	61.2
Citgoflex	SAFT	1	22	0.55	2.99	1584000	60.1	58	3.38	2.99	7990.0	61.3
Citgoflex	SAFT	1	22	0.55	3.77	1846000	59.7	58	3.38	3.77	9359.0	61.5
Citgoflex	SAFT	1	22	0.55	4.74	2147000	59.2	58	3.38	4.74	10920.0	61.6
Citgoflex	SAFT	1	22	0.55	5.00	2217000	59.1	58	3.38	5.00	11320.0	61.7
Citgoflex	SAFT	1	22	0.55	6.30	2580000	58.6	58	3.38	6.30	13220.0	61.9
Citgoflex	SAFT	1	22	0.55	7.92	2992000	58.0	58	3.38	7.92	15480.0	62.1
Citgoflex	SAFT	1	22	0.55	9.98	3468000	57.4	58	3.37	9.98	18150.0	62.4
Citgoflex	SAFT	1	22	0.55	12.56	4015000	56.9	58	3.37	12.56	21220.0	62.6
Citgoflex	SAFT	1	22	0.55	15.00	4493000	56.3	58	3.37	15.00	24010.0	62.9
Citgoflex	SAFT	1	22	0.55	18.88	5177000	55.7	58	3.37	18.88	28200.0	63.2
Citgoflex	SAFT	1	22	0.54	23.77	5965000	55.0	58	3.36	23.77	33120.0	63.6
Citgoflex	SAFT	1	22	0.54	29.93	6855000	54.4	58	3.36	29.93	38930.0	63.9
Citgoflex	SAFT	1	22	0.54	37.68	7868000	53.7	58	3.35	37.68	45810.0	64.2
Citgoflex	SAFT	1	22	0.54	47.43	9019000	52.9	58	3.35	47.43	53990.0	64.7
Citgoflex	SAFT	2	22	0.64	0.50	405300	63.0	58	3.39	0.50	2338.0	60.4
Citgoflex	SAFT	2	22	0.64	0.63	476700	62.3	58	3.39	0.63	2729.0	59.8
Citgoflex	SAFT	2	22	0.64	0.79	560600	62.1	58	3.39	0.79	3186.0	60.2
Citgoflex	SAFT	2	22	0.64	1.00	654600	61.9	58	3.39	1.00	3732.0	60.3
Citgoflex	SAFT	2	22	0.64	1.26	764000	61.5	58	3.39	1.26	4342.0	60.4
Citgoflex	SAFT	2	22	0.64	1.50	853900	62.0	58	3.39	1.50	4867.0	61.0
Citgoflex	SAFT	2	22	0.64	1.89	1009000	60.9	58	3.39	1.89	5691.0	60.5
Citgoflex	SAFT	2	22	0.64	2.38	1182000	60.7	58	3.38	2.38	6633.0	60.6
Citgoflex	SAFT	2	22	0.64	2.99	1381000	60.2	58	3.38	2.99	7746.0	60.9
Citgoflex	SAFT	2	22	0.64	3.77	1615000	59.8	58	3.38	3.77	9053.0	61.2
Citgoflex	SAFT	2	22	0.64	4.74	1885000	59.3	58	3.38	4.74	10540.0	61.2
Citgoflex	SAFT	2	22	0.64	5.00	1964000	59.2	58	3.38	5.00	10940.0	61.3
Citgoflex	SAFT	2	22	0.64	6.30	2290000	58.7	58	3.38	6.30	12780.0	61.5
Citgoflex	SAFT	2	22	0.64	7.92	2663000	58.1	58	3.38	7.92	14950.0	61.8
Citgoflex	SAFT	2	22	0.64	9.98	3090000	57.6	58	3.37	9.98	17480.0	62.1
Citgoflex	SAFT	2	22	0.64	12.56	3580000	57.0	58	3.37	12.56	20470.0	62.3
Citgoflex	SAFT	2	22	0.64	15.00	4013000	56.5	58	3.37	15.00	23170.0	62.6
Citgoflex	SAFT	2	22	0.63	18.88	4636000	55.8	58	3.37	18.88	27160.0	62.9
Citgoflex	SAFT	2	22	0.63	23.77	5336000	55.2	58	3.36	23.77	31840.0	63.3
Citgoflex	SAFT	2	22	0.63	29.93	6141000	54.5	58	3.36	29.93	37400.0	63.7
Citgoflex	SAFT	2	22	0.63	37.68	7049000	53.8	58	3.35	37.68	43970.0	64.0
Citgoflex	SAFT	2	22	0.63	47.43	8060000	53.1	58	3.34	47.43	51800.0	64.4
Citgoflex	SAFT	1	34	4.50	0.50	58720	62.3	70	10.99	0.50	737.0	63.8
Citgoflex	SAFT	1	34	4.50	0.63	69530	61.9	70	10.99	0.63	849.9	62.9
Citgoflex	SAFT	1	34	4.50	0.79	81410	62.1	70	10.99	0.79	1008.0	63.1
Citgoflex	SAFT	1	34	4.50	1.00	95750	62.4	70	10.99	1.00	1180.0	62.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	SAFT	1	34	4.50	1.26	112400	62.7	70	10.99	1.26	1384.0	62.5
Citgoflex	SAFT	1	34	4.50	1.50	126200	63.2	70	10.99	1.50	1562.0	62.9
Citgoflex	SAFT	1	34	4.50	1.89	147300	63.0	70	10.99	1.89	1832.0	62.4
Citgoflex	SAFT	1	34	4.50	2.38	172200	63.2	70	10.99	2.38	2147.0	62.5
Citgoflex	SAFT	1	34	4.50	2.99	202400	63.2	70	10.99	2.99	2517.0	62.5
Citgoflex	SAFT	1	34	4.50	3.77	237800	63.4	70	10.98	3.77	2950.0	62.4
Citgoflex	SAFT	1	34	4.50	4.74	279700	63.4	70	10.98	4.74	3459.0	62.5
Citgoflex	SAFT	1	34	4.50	5.00	292400	63.4	70	10.98	5.00	3590.0	62.5
Citgoflex	SAFT	1	34	4.50	6.30	343600	63.5	70	10.98	6.30	4207.0	62.5
Citgoflex	SAFT	1	34	4.50	7.92	404100	63.6	70	10.98	7.92	4932.0	62.6
Citgoflex	SAFT	1	34	4.50	9.98	475300	63.6	70	10.97	9.98	5777.0	62.7
Citgoflex	SAFT	1	34	4.50	12.56	558800	63.5	70	10.97	12.56	6775.0	62.7
Citgoflex	SAFT	1	34	4.50	15.00	642500	63.4	70	10.97	15.00	7661.0	62.8
Citgoflex	SAFT	1	34	4.50	18.88	750000	63.4	70	10.96	18.88	8984.0	63.0
Citgoflex	SAFT	1	34	4.49	23.77	877600	63.3	70	10.95	23.77	10530.0	63.2
Citgoflex	SAFT	1	34	4.49	29.93	1027000	63.1	70	10.94	29.93	12360.0	63.4
Citgoflex	SAFT	1	34	4.49	37.68	1199000	63.0	70	10.92	37.68	14510.0	63.6
Citgoflex	SAFT	1	34	4.48	47.43	1398000	62.8	70	10.91	47.43	17040.0	63.8
Citgoflex	SAFT	2	34	4.90	0.50	53080	62.4	70	10.90	0.50	733.9	62.6
Citgoflex	SAFT	2	34	4.90	0.63	62220	61.7	70	10.90	0.63	860.2	62.0
Citgoflex	SAFT	2	34	4.90	0.79	72830	61.9	70	10.90	0.79	1008.0	61.9
Citgoflex	SAFT	2	34	4.90	1.00	85400	62.3	70	10.90	1.00	1173.0	61.9
Citgoflex	SAFT	2	34	4.90	1.26	100500	62.5	70	10.90	1.26	1378.0	61.8
Citgoflex	SAFT	2	34	4.90	1.50	112300	63.3	70	10.90	1.50	1557.0	62.2
Citgoflex	SAFT	2	34	4.90	1.89	132000	62.8	70	10.89	1.89	1818.0	61.7
Citgoflex	SAFT	2	34	4.90	2.38	155500	63.1	70	10.90	2.38	2126.0	61.8
Citgoflex	SAFT	2	34	4.90	2.99	183000	63.2	70	10.89	2.99	2489.0	61.8
Citgoflex	SAFT	2	34	4.90	3.77	215300	63.5	70	10.89	3.77	2910.0	61.9
Citgoflex	SAFT	2	34	4.90	4.74	252700	63.5	70	10.89	4.74	3405.0	61.9
Citgoflex	SAFT	2	34	4.90	5.00	263500	63.5	70	10.89	5.00	3535.0	61.9
Citgoflex	SAFT	2	34	4.90	6.30	309200	63.5	70	10.89	6.30	4131.0	61.9
Citgoflex	SAFT	2	34	4.90	7.92	363200	63.6	70	10.89	7.92	4832.0	62.0
Citgoflex	SAFT	2	34	4.90	9.98	426400	63.6	70	10.88	9.98	5653.0	62.1
Citgoflex	SAFT	2	34	4.90	12.56	500900	63.6	70	10.88	12.56	6619.0	62.3
Citgoflex	SAFT	2	34	4.90	15.00	571900	63.4	70	10.87	15.00	7472.0	62.4
Citgoflex	SAFT	2	34	4.90	18.88	666500	63.4	70	10.87	18.88	8744.0	62.5
Citgoflex	SAFT	2	34	4.89	23.77	779600	63.3	70	10.86	23.77	10240.0	62.7
Citgoflex	SAFT	2	34	4.89	29.93	911100	63.2	70	10.85	29.93	12010.0	63.0
Citgoflex	SAFT	2	34	4.89	37.68	1064000	63.1	70	10.84	37.68	14080.0	63.2
Citgoflex	SAFT	2	34	4.88	47.43	1239000	62.9	70	10.82	47.43	16520.0	63.5

Table 57. Citgoflex MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	MGRF	1	15	1.00	0.10	2377801	56.1	46	10.00	0.10	6680.0	58.3
Citgoflex	MGRF	1	15	1.00	0.13	2673887	55.6	46	10.00	0.13	7735.0	58.3
Citgoflex	MGRF	1	15	1.00	0.16	3000000	55.2	46	10.00	0.16	8980.0	58.2
Citgoflex	MGRF	1	15	1.00	0.20	3353434	54.7	46	10.00	0.20	10400.0	58.3
Citgoflex	MGRF	1	15	1.00	0.25	3727997	54.2	46	10.00	0.25	12100.0	58.3
Citgoflex	MGRF	1	15	1.00	0.32	4146461	53.7	46	10.00	0.32	14000.0	58.4
Citgoflex	MGRF	1	15	1.00	0.40	4610000	53.2	46	10.00	0.40	16250.0	58.6
Citgoflex	MGRF	1	15	1.00	0.50	5103722	52.7	46	10.00	0.50	18900.0	58.8
Citgoflex	MGRF	1	15	1.00	0.63	5647183	52.1	46	10.00	0.63	21950.0	59.0
Citgoflex	MGRF	1	15	1.00	0.79	6242280	51.6	46	10.00	0.79	25450.0	59.2
Citgoflex	MGRF	1	15	1.00	1.00	6900000	51.1	46	10.00	1.00	29650.0	59.4
Citgoflex	MGRF	1	15	1.00	1.26	7602480	50.6	46	10.00	1.26	34450.0	59.7
Citgoflex	MGRF	1	15	1.00	1.58	8358900	50.1	46	10.00	1.58	40100.0	59.9
Citgoflex	MGRF	1	15	0.99	2.00	9220069	49.5	46	10.00	2.00	46650.0	60.2
Citgoflex	MGRF	1	15	0.99	2.51	10120000	49.0	46	10.00	2.51	54400.0	60.5
Citgoflex	MGRF	1	15	0.99	3.16	11104039	48.4	46	10.00	3.16	63500.0	60.8
Citgoflex	MGRF	1	15	0.99	3.98	12179692	47.9	46	10.00	3.98	73900.0	61.0
Citgoflex	MGRF	1	15	0.99	5.01	13332023	47.4	46	10.00	5.01	86500.0	61.3
Citgoflex	MGRF	1	15	0.99	6.31	14550000	46.8	46	10.00	6.31	101000.0	61.6
Citgoflex	MGRF	1	15	0.99	7.94	15875935	46.2	46	10.00	7.94	118000.0	61.9
Citgoflex	MGRF	1	15	0.98	10.00	17332020	45.7	46	10.00	10.00	138000.0	62.1
Citgoflex	MGRF	1	15	0.98	12.60	18919835	45.1	46	10.00	12.60	161500.0	62.4
Citgoflex	MGRF	1	15	0.98	15.80	20600000	44.6	46	10.00	15.80	188500.0	62.6
Citgoflex	MGRF	1	15	0.98	20.00	22412556	44.0	46	10.00	20.00	220500.0	62.8
Citgoflex	MGRF	1	15	0.98	25.10	24241885	43.4	46	10.00	25.10	257500.0	63.1
Citgoflex	MGRF	1	15	0.97	31.60	26225439	42.9	46	10.00	31.60	300500.0	63.2
Citgoflex	MGRF	1	15	0.97	39.80	28400000	42.4	46	10.00	39.80	350500.0	63.4
Citgoflex	MGRF	1	15	0.97	50.10	30693898	41.7	46	10.00	50.10	408500.0	63.6
Citgoflex	MGRF	1	15	0.96	63.10	33108709	41.2	46	10.00	63.10	475000.0	63.7
Citgoflex	MGRF	1	15	0.96	79.40	35646649	40.7	46	10.00	79.40	551500.0	63.8
Citgoflex	MGRF	1	15	0.96	100.00	38350000	40.1	46	10.00	100.00	638500.0	63.9
Citgoflex	MGRF	2	15	5.00	0.10	753000	60.0	46	10.00	0.10	6215.0	57.8
Citgoflex	MGRF	2	15	5.00	0.13	981500	59.6	46	10.00	0.13	7270.0	57.9
Citgoflex	MGRF	2	15	5.00	0.16	1190000	59.0	46	9.99	0.16	8480.0	57.8
Citgoflex	MGRF	2	15	5.00	0.20	1410000	58.7	46	9.99	0.20	9730.0	58.0
Citgoflex	MGRF	2	15	5.00	0.25	1645000	58.2	46	9.99	0.25	11390.0	58.0
Citgoflex	MGRF	2	15	5.00	0.32	1905000	57.8	46	9.99	0.32	13200.0	58.1
Citgoflex	MGRF	2	15	5.00	0.40	2200000	57.4	46	9.99	0.40	15350.0	58.3
Citgoflex	MGRF	2	15	5.00	0.50	2530000	57.0	46	9.99	0.50	17750.0	58.5
Citgoflex	MGRF	2	15	4.99	0.63	2900000	56.7	46	9.99	0.63	20600.0	58.7
Citgoflex	MGRF	2	15	4.99	0.79	3315000	56.3	46	9.99	0.79	23550.0	59.0
Citgoflex	MGRF	2	15	4.99	1.00	3775000	55.9	46	9.98	1.00	26100.0	59.2
Citgoflex	MGRF	2	15	4.99	1.26	4290000	55.5	46	9.98	1.26	29500.0	59.4
Citgoflex	MGRF	2	15	4.99	1.58	4865000	55.1	46	9.98	1.58	33700.0	59.6
Citgoflex	MGRF	2	15	4.99	2.00	5505000	54.8	46	9.98	2.00	38700.0	59.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	MGRF	2	15	4.99	2.51	6210000	54.3	46	9.98	2.51	44750.0	60.2
Citgoflex	MGRF	2	15	4.99	3.16	6995000	53.9	46	9.97	3.16	51900.0	60.5
Citgoflex	MGRF	2	15	4.99	3.98	7845000	53.6	46	9.98	3.98	60150.0	60.8
Citgoflex	MGRF	2	15	4.98	5.01	8800000	53.2	46	9.97	5.01	70050.0	61.1
Citgoflex	MGRF	2	15	4.98	6.31	9840000	52.8	46	9.95	6.31	81700.0	61.4
Citgoflex	MGRF	2	15	4.98	7.94	10950000	52.4	46	9.95	7.94	95250.0	61.7
Citgoflex	MGRF	2	15	4.98	10.00	12150000	52.1	46	9.94	10.00	111500.0	61.9
Citgoflex	MGRF	2	15	4.97	12.60	13450000	51.7	46	9.91	12.60	129500.0	62.2
Citgoflex	MGRF	2	15	4.97	15.80	14850000	51.3	46	9.91	15.80	151500.0	62.5
Citgoflex	MGRF	2	15	4.97	20.00	16200000	51.0	46	9.89	20.00	176500.0	62.7
Citgoflex	MGRF	2	15	4.97	25.10	17600000	50.7	46	9.88	25.10	206500.0	62.9
Citgoflex	MGRF	2	15	4.98	31.60	18950000	50.5	46	9.85	31.60	241000.0	63.2
Citgoflex	MGRF	2	15	4.98	39.80	20300000	50.2	46	9.83	39.80	281500.0	63.4
Citgoflex	MGRF	2	15	4.98	50.10	21500000	50.0	46	9.80	50.10	328000.0	63.5
Citgoflex	MGRF	2	15	4.98	63.10	22650000	49.8	46	9.77	63.10	381500.0	63.7
Citgoflex	MGRF	2	15	4.99	79.40	23600000	49.6	46	9.74	79.40	443500.0	63.8
Citgoflex	MGRF	2	15	5.00	100.00	24550000	49.2	46	9.70	100.00	514000.0	63.9
Citgoflex	MGRF	1	25	1.00	0.10	455407	60.0	58	10.00	0.10	1765.0	59.1
Citgoflex	MGRF	1	25	1.00	0.13	512291	59.9	58	10.00	0.13	2045.0	58.9
Citgoflex	MGRF	1	25	1.00	0.16	576000	59.8	58	10.00	0.16	2380.0	58.6
Citgoflex	MGRF	1	25	1.00	0.20	648484	59.6	58	10.00	0.20	2760.0	58.6
Citgoflex	MGRF	1	25	1.00	0.25	726362	59.5	58	10.00	0.25	3205.0	58.4
Citgoflex	MGRF	1	25	1.00	0.32	814638	59.4	58	10.00	0.32	3720.0	58.4
Citgoflex	MGRF	1	25	1.00	0.40	914000	59.2	58	10.00	0.40	4315.0	58.4
Citgoflex	MGRF	1	25	1.00	0.50	1025022	59.0	58	10.00	0.50	5005.0	58.4
Citgoflex	MGRF	1	25	1.00	0.63	1149163	58.7	58	10.00	0.63	5805.0	58.5
Citgoflex	MGRF	1	25	1.00	0.79	1286744	58.5	58	10.00	0.79	6735.0	58.6
Citgoflex	MGRF	1	25	1.00	1.00	1440000	58.2	58	10.00	1.00	7810.0	58.7
Citgoflex	MGRF	1	25	1.00	1.26	1609653	57.9	58	10.00	1.26	9070.0	58.8
Citgoflex	MGRF	1	25	1.00	1.58	1794262	57.7	58	10.00	1.58	10500.0	59.0
Citgoflex	MGRF	1	25	1.00	2.00	2011030	57.3	58	10.00	2.00	12200.0	59.2
Citgoflex	MGRF	1	25	1.00	2.51	2250000	57.0	58	10.00	2.51	14200.0	59.3
Citgoflex	MGRF	1	25	1.00	3.16	2508253	56.6	58	10.00	3.16	16500.0	59.6
Citgoflex	MGRF	1	25	1.00	3.98	2795921	56.2	58	10.00	3.98	19200.0	59.8
Citgoflex	MGRF	1	25	1.00	5.01	3112617	55.9	58	10.00	5.01	22400.0	60.1
Citgoflex	MGRF	1	25	1.00	6.31	3460000	55.5	58	10.00	6.31	26100.0	60.3
Citgoflex	MGRF	1	25	1.00	7.94	3838269	55.1	58	10.00	7.94	30450.0	60.6
Citgoflex	MGRF	1	25	0.99	10.00	4256138	54.7	58	10.00	10.00	35450.0	60.9
Citgoflex	MGRF	1	25	0.99	12.60	4720739	54.2	58	10.00	12.60	41400.0	61.2
Citgoflex	MGRF	1	25	0.99	15.80	5230000	53.7	58	10.00	15.80	48400.0	61.5
Citgoflex	MGRF	1	25	0.99	20.00	5794786	53.2	58	10.00	20.00	56350.0	61.8
Citgoflex	MGRF	1	25	0.99	25.10	6391015	52.7	58	10.00	25.10	65700.0	62.1
Citgoflex	MGRF	1	25	0.99	31.60	7069745	52.2	58	10.00	31.60	77650.0	62.5
Citgoflex	MGRF	1	25	0.99	39.80	7855000	51.8	58	10.00	39.80	90950.0	62.8
Citgoflex	MGRF	1	25	0.98	50.10	8662448	51.2	58	10.00	50.10	107000.0	63.1
Citgoflex	MGRF	1	25	0.98	63.10	9528712	50.5	58	10.00	63.10	125000.0	63.4
Citgoflex	MGRF	1	25	0.98	79.40	10475905	49.8	58	10.00	79.40	146000.0	63.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	MGRF	1	25	0.98	100.00	11550000	49.0	58	10.00	100.00	172000.0	64.0
Citgoflex	MGRF	2	25	5.00	0.10	123500	60.8	58	10.00	0.10	1345.0	58.7
Citgoflex	MGRF	2	25	5.00	0.13	152000	60.9	58	10.00	0.13	1565.0	58.6
Citgoflex	MGRF	2	25	5.00	0.16	182000	60.8	58	10.00	0.16	1825.0	58.4
Citgoflex	MGRF	2	25	5.00	0.20	215000	60.9	58	10.00	0.20	2125.0	58.4
Citgoflex	MGRF	2	25	5.00	0.25	253000	60.8	58	10.00	0.25	2465.0	58.2
Citgoflex	MGRF	2	25	5.00	0.32	297500	60.7	58	10.00	0.32	2860.0	58.1
Citgoflex	MGRF	2	25	5.00	0.40	347500	60.7	58	10.00	0.40	3320.0	58.1
Citgoflex	MGRF	2	25	5.00	0.50	406500	60.6	58	10.00	0.50	3855.0	58.2
Citgoflex	MGRF	2	25	5.00	0.63	474000	60.5	58	10.00	0.63	4475.0	58.2
Citgoflex	MGRF	2	25	5.00	0.79	552500	60.4	58	10.00	0.79	5190.0	58.3
Citgoflex	MGRF	2	25	5.00	1.00	643000	60.3	58	10.00	1.00	6020.0	58.4
Citgoflex	MGRF	2	25	5.00	1.26	748000	60.1	58	10.00	1.26	6985.0	58.5
Citgoflex	MGRF	2	25	5.00	1.58	868000	59.9	58	9.99	1.58	8105.0	58.7
Citgoflex	MGRF	2	25	5.00	2.00	1004000	59.7	58	9.99	2.00	9405.0	58.8
Citgoflex	MGRF	2	25	5.00	2.51	1165000	59.5	58	9.99	2.51	10950.0	59.0
Citgoflex	MGRF	2	25	5.00	3.16	1345000	59.2	58	9.99	3.16	12700.0	59.2
Citgoflex	MGRF	2	25	5.00	3.98	1550000	59.0	58	9.99	3.98	14750.0	59.4
Citgoflex	MGRF	2	25	5.00	5.01	1790000	58.7	58	9.99	5.01	17150.0	59.6
Citgoflex	MGRF	2	25	5.00	6.31	2060000	58.4	58	9.99	6.31	20000.0	59.9
Citgoflex	MGRF	2	25	5.00	7.94	2360000	58.1	58	9.99	7.94	23300.0	60.2
Citgoflex	MGRF	2	25	5.00	10.00	2705000	57.8	58	9.99	10.00	27100.0	60.5
Citgoflex	MGRF	2	25	5.00	12.60	3080000	57.5	58	10.00	12.60	31600.0	60.8
Citgoflex	MGRF	2	25	5.00	15.80	3510000	57.2	58	10.00	15.80	36900.0	61.1
Citgoflex	MGRF	2	25	5.00	20.00	3975000	56.8	58	10.00	20.00	42950.0	61.4
Citgoflex	MGRF	2	25	5.00	25.10	4495000	56.5	58	9.98	25.10	50100.0	61.7
Citgoflex	MGRF	2	25	4.99	31.60	5070000	56.1	58	9.94	31.60	59050.0	62.0
Citgoflex	MGRF	2	25	4.98	39.80	5700000	55.6	58	9.94	39.80	69250.0	62.4
Citgoflex	MGRF	2	25	4.98	50.10	6375000	55.2	58	9.93	50.10	81200.0	62.7
Citgoflex	MGRF	2	25	5.00	63.10	7105000	54.6	58	9.92	63.10	95150.0	63.0
Citgoflex	MGRF	2	25	5.03	79.40	7875000	54.0	58	9.91	79.40	111500.0	63.4
Citgoflex	MGRF	2	25	5.01	100.00	8255000	54.9	58	9.91	100.00	130500.0	63.7
Citgoflex	MGRF	1	35	1.00	0.10	51450	81.0	70	10.00	0.10	342.0	64.5
Citgoflex	MGRF	1	35	1.00	0.13	63010	80.6	70	10.00	0.13	405.0	64.0
Citgoflex	MGRF	1	35	1.00	0.16	73800	80.3	70	10.00	0.16	477.5	63.4
Citgoflex	MGRF	1	35	1.00	0.20	90430	79.9	70	10.00	0.20	562.0	63.0
Citgoflex	MGRF	1	35	1.00	0.25	110300	79.4	70	10.00	0.25	660.0	62.6
Citgoflex	MGRF	1	35	1.00	0.32	134800	79.0	70	10.00	0.32	775.0	62.2
Citgoflex	MGRF	1	35	1.00	0.40	164500	78.6	70	10.00	0.40	908.5	61.9
Citgoflex	MGRF	1	35	1.00	0.50	200200	78.1	70	10.00	0.50	1065.0	61.7
Citgoflex	MGRF	1	35	1.00	0.63	24800	59.0	70	10.00	0.63	1245.0	61.5
Citgoflex	MGRF	1	35	1.00	0.79	29150	59.2	70	10.00	0.79	1455.0	61.3
Citgoflex	MGRF	1	35	1.00	1.00	34150	59.2	70	10.00	1.00	1700.0	61.1
Citgoflex	MGRF	1	35	1.00	1.26	39800	59.4	70	10.00	1.26	1980.0	61.0
Citgoflex	MGRF	1	35	1.00	1.58	46500	59.5	70	10.00	1.58	2315.0	60.9
Citgoflex	MGRF	1	35	1.00	2.00	54200	59.6	70	10.00	2.00	2700.0	60.8
Citgoflex	MGRF	1	35	1.00	2.51	63200	59.8	70	10.00	2.51	3150.0	60.7

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Citgoflex	MGRF	1	35	1.00	3.16	73750	60.0	70	10.00	3.16	3675.0	60.6
Citgoflex	MGRF	1	35	1.00	3.98	86150	60.2	70	10.00	3.98	4280.0	60.6
Citgoflex	MGRF	1	35	1.00	5.01	100350	60.4	70	10.00	5.01	5000.0	60.6
Citgoflex	MGRF	1	35	1.00	6.31	117000	60.6	70	10.00	6.31	5845.0	60.6
Citgoflex	MGRF	1	35	1.00	7.94	137500	60.7	70	10.00	7.94	6810.0	60.7
Citgoflex	MGRF	1	35	1.00	10.00	160500	60.9	70	10.00	10.00	7940.0	60.8
Citgoflex	MGRF	1	35	1.00	12.60	187500	61.0	70	10.00	12.60	9260.0	60.9
Citgoflex	MGRF	1	35	1.00	15.80	219500	61.1	70	10.00	15.80	10800.0	61.0
Citgoflex	MGRF	1	35	1.00	20.00	257000	61.2	70	10.00	20.00	12550.0	61.1
Citgoflex	MGRF	1	35	1.00	25.10	300000	61.2	70	10.00	25.10	14700.0	61.2
Citgoflex	MGRF	1	35	1.00	31.60	352000	61.3	70	10.00	31.60	17150.0	61.3
Citgoflex	MGRF	1	35	0.99	39.80	413000	61.2	70	10.00	39.80	19950.0	61.4
Citgoflex	MGRF	1	35	0.99	50.10	483500	61.2	70	10.00	50.10	23300.0	61.4
Citgoflex	MGRF	1	35	0.99	63.10	565500	61.1	70	10.00	63.10	27300.0	61.2
Citgoflex	MGRF	1	35	0.99	79.40	661500	60.9	70	10.00	79.40	32200.0	61.1
Citgoflex	MGRF	1	35	0.99	100.00	773000	60.7	70	10.00	100.00	38000.0	61.5
Citgoflex	MGRF	2	35	3.00	0.10	25100	59.3	70	9.83	0.10	371.0	62.9
Citgoflex	MGRF	2	35	3.00	0.13	29550	59.5	70	9.92	0.13	437.0	62.4
Citgoflex	MGRF	2	35	3.00	0.16	34600	59.5	70	10.00	0.16	513.5	62.0
Citgoflex	MGRF	2	35	3.00	0.20	40450	59.7	70	10.00	0.20	602.0	61.7
Citgoflex	MGRF	2	35	3.00	0.25	47250	59.8	70	10.00	0.25	704.5	61.4
Citgoflex	MGRF	2	35	3.00	0.32	55250	59.9	70	10.00	0.32	824.0	61.1
Citgoflex	MGRF	2	35	3.00	0.40	64500	60.1	70	10.00	0.40	962.5	60.9
Citgoflex	MGRF	2	35	3.00	0.50	75350	60.3	70	10.00	0.50	1125.0	60.7
Citgoflex	MGRF	2	35	3.00	0.63	88000	60.5	70	10.00	0.63	1315.0	60.6
Citgoflex	MGRF	2	35	3.00	0.79	102550	60.6	70	10.00	0.79	1530.0	60.4
Citgoflex	MGRF	2	35	3.00	1.00	120000	60.8	70	10.00	1.00	1785.0	60.3
Citgoflex	MGRF	2	35	3.00	1.26	140500	60.9	70	10.00	1.26	2080.0	60.2
Citgoflex	MGRF	2	35	3.00	1.58	164000	61.1	70	10.00	1.58	2425.0	60.2
Citgoflex	MGRF	2	35	3.00	2.00	192000	61.2	70	10.00	2.00	2825.0	60.1
Citgoflex	MGRF	2	35	3.00	2.51	224000	61.3	70	10.00	2.51	3290.0	60.1
Citgoflex	MGRF	2	35	3.00	3.16	262500	61.3	70	10.00	3.16	3840.0	60.1
Citgoflex	MGRF	2	35	3.00	3.98	306500	61.3	70	10.00	3.98	4470.0	60.1
Citgoflex	MGRF	2	35	3.00	5.01	359000	61.3	70	10.00	5.01	5205.0	60.2
Citgoflex	MGRF	2	35	3.00	6.31	420500	61.3	70	10.00	6.31	6065.0	60.2
Citgoflex	MGRF	2	35	3.00	7.94	491000	61.2	70	10.00	7.94	7065.0	60.3
Citgoflex	MGRF	2	35	3.00	10.00	573000	61.1	70	10.00	10.00	8235.0	60.5
Citgoflex	MGRF	2	35	3.01	12.60	668500	60.9	70	10.00	12.60	9605.0	60.6
Citgoflex	MGRF	2	35	3.01	15.80	779000	60.7	70	9.97	15.80	11200.0	60.8
Citgoflex	MGRF	2	35	3.01	20.00	906500	60.4	70	10.00	20.00	13050.0	61.0
Citgoflex	MGRF	2	35	3.01	25.10	1055000	60.2	70	9.98	25.10	15250.0	61.2
Citgoflex	MGRF	2	35	3.01	31.60	1230000	60.0	70	10.00	31.60	17850.0	61.5
Citgoflex	MGRF	2	35	3.01	39.80	1425000	59.7	70	10.00	39.80	20850.0	61.8
Citgoflex	MGRF	2	35	3.01	50.10	1650000	59.3	70	10.00	50.10	24350.0	62.1
Citgoflex	MGRF	2	35	3.01	63.10	1905000	59.0	70	10.00	63.10	28500.0	62.5
Citgoflex	MGRF	2	35	3.01	79.40	2190000	58.5	70	10.00	79.40	33300.0	62.9
Citgoflex	MGRF	2	35	3.01	100.00	2520000	58.0	70	10.00	100.00	39000.0	63.4

Table 58. Elvaloy Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	TANK	1	10	0.30	0.50	716500	61.6	46	8.01	0.50	866.8	76.1
Elvaloy	TANK	1	10	0.30	0.63	837000	61.4	46	8.01	0.63	1041.0	75.4
Elvaloy	TANK	1	10	0.30	0.79	982100	60.8	46	8.01	0.79	1264.0	74.9
Elvaloy	TANK	1	10	0.30	1.00	1143000	60.4	46	8.01	1.00	1529.0	74.9
Elvaloy	TANK	1	10	0.30	1.26	1342000	59.6	46	8.01	1.26	1849.0	74.5
Elvaloy	TANK	1	10	0.30	1.50	1523000	59.0	46	8.01	1.50	2133.0	74.8
Elvaloy	TANK	1	10	0.30	1.89	1766000	58.3	46	8.00	1.89	2588.0	74.0
Elvaloy	TANK	1	10	0.30	2.38	2053000	57.8	46	8.01	2.38	3125.0	73.9
Elvaloy	TANK	1	10	0.30	2.99	2384000	57.1	46	8.01	2.99	3764.0	73.8
Elvaloy	TANK	1	10	0.30	3.77	2748000	56.5	46	8.00	3.77	4547.0	73.7
Elvaloy	TANK	1	10	0.30	4.74	3166000	55.8	46	8.00	4.74	5479.0	73.6
Elvaloy	TANK	1	10	0.30	5.00	3278000	55.6	46	8.00	5.00	5730.0	73.6
Elvaloy	TANK	1	10	0.30	6.30	3779000	54.9	46	8.00	6.30	6905.0	73.5
Elvaloy	TANK	1	10	0.30	7.92	4333000	54.1	46	8.00	7.92	8323.0	73.4
Elvaloy	TANK	1	10	0.30	9.98	4966000	53.4	46	8.00	9.98	10030.0	73.4
Elvaloy	TANK	1	10	0.30	12.56	5679000	52.6	46	8.00	12.56	12090.0	73.4
Elvaloy	TANK	1	10	0.30	15.00	6322000	52.0	46	8.00	15.00	13980.0	73.3
Elvaloy	TANK	1	10	0.30	18.88	7194000	51.2	46	8.00	18.88	16830.0	73.3
Elvaloy	TANK	1	10	0.30	23.77	8198000	50.4	46	7.99	23.77	20290.0	73.3
Elvaloy	TANK	1	10	0.30	29.93	9322000	49.5	46	7.99	29.93	24430.0	73.3
Elvaloy	TANK	1	10	0.30	37.68	10550000	48.9	46	7.98	37.68	29420.0	73.3
Elvaloy	TANK	1	10	0.30	47.43	11930000	48.0	46	7.97	47.43	35420.0	73.3
Elvaloy	TANK	2	10	0.30	0.50	736700	62.3	46	8.51	0.50	828.0	76.0
Elvaloy	TANK	2	10	0.30	0.63	864400	61.7	46	8.51	0.63	999.7	75.7
Elvaloy	TANK	2	10	0.30	0.79	1010000	61.5	46	8.51	0.79	1213.0	75.3
Elvaloy	TANK	2	10	0.30	1.00	1183000	60.8	46	8.51	1.00	1462.0	74.6
Elvaloy	TANK	2	10	0.30	1.26	1380000	59.9	46	8.51	1.26	1771.0	74.6
Elvaloy	TANK	2	10	0.30	1.50	1574000	59.4	46	8.51	1.50	2051.0	74.7
Elvaloy	TANK	2	10	0.30	1.89	1831000	58.9	46	8.51	1.89	2473.0	74.2
Elvaloy	TANK	2	10	0.30	2.38	2117000	58.5	46	8.51	2.38	2997.0	74.0
Elvaloy	TANK	2	10	0.30	2.99	2461000	57.7	46	8.51	2.99	3610.0	73.9
Elvaloy	TANK	2	10	0.30	3.77	2852000	57.0	46	8.51	3.77	4355.0	73.8
Elvaloy	TANK	2	10	0.30	4.74	3290000	56.2	46	8.51	4.74	5250.0	73.7
Elvaloy	TANK	2	10	0.30	5.00	3422000	56.0	46	8.51	5.00	5488.0	73.7
Elvaloy	TANK	2	10	0.30	6.30	3932000	55.2	46	8.51	6.30	6610.0	73.6
Elvaloy	TANK	2	10	0.30	7.92	4528000	54.6	46	8.51	7.92	7970.0	73.5
Elvaloy	TANK	2	10	0.30	9.98	5200000	53.8	46	8.50	9.98	9607.0	73.5
Elvaloy	TANK	2	10	0.30	12.56	5959000	53.1	46	8.51	12.56	11560.0	73.5
Elvaloy	TANK	2	10	0.30	15.00	6612000	52.4	46	8.50	15.00	13380.0	73.5
Elvaloy	TANK	2	10	0.30	18.88	7543000	51.7	46	8.50	18.88	16100.0	73.4
Elvaloy	TANK	2	10	0.30	23.77	8608000	51.0	46	8.49	23.77	19410.0	73.4
Elvaloy	TANK	2	10	0.30	29.93	9791000	50.2	46	8.48	29.93	23390.0	73.4
Elvaloy	TANK	2	10	0.30	37.68	11120000	49.3	46	8.47	37.68	28190.0	73.4
Elvaloy	TANK	2	10	0.31	47.43	12550000	48.5	46	8.45	47.43	33950.0	73.4
Elvaloy	TANK	1	22	3.00	0.50	74620	66.9	58	34.02	0.50	197.1	80.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	TANK	1	22	3.00	0.63	88620	67.2	58	34.02	0.63	241.3	79.5
Elvaloy	TANK	1	22	3.00	0.79	105900	66.9	58	34.01	0.79	298.3	79.4
Elvaloy	TANK	1	22	3.00	1.00	125300	66.7	58	34.01	1.00	364.6	78.9
Elvaloy	TANK	1	22	3.00	1.26	148500	66.5	58	34.01	1.26	444.3	78.1
Elvaloy	TANK	1	22	3.00	1.50	169400	66.6	58	34.01	1.50	517.1	77.9
Elvaloy	TANK	1	22	3.00	1.89	200700	66.0	58	34.00	1.89	632.0	77.4
Elvaloy	TANK	1	22	3.00	2.38	237700	65.8	58	34.01	2.38	767.9	76.9
Elvaloy	TANK	1	22	3.00	2.99	280900	65.5	58	34.01	2.99	931.2	76.4
Elvaloy	TANK	1	22	3.00	3.77	331700	65.2	58	34.01	3.77	1130.0	76.1
Elvaloy	TANK	1	22	3.00	4.74	390500	64.9	58	34.02	4.74	1369.0	75.8
Elvaloy	TANK	1	22	3.00	5.00	408800	64.7	58	34.01	5.00	1431.0	75.8
Elvaloy	TANK	1	22	3.00	6.30	480300	64.3	58	34.01	6.30	1730.0	75.5
Elvaloy	TANK	1	22	3.00	7.92	564300	64.1	58	34.01	7.92	2093.0	75.3
Elvaloy	TANK	1	22	3.00	9.98	661900	63.7	58	34.01	9.98	2528.0	75.1
Elvaloy	TANK	1	22	3.00	12.56	775900	63.3	58	34.00	12.56	3051.0	74.9
Elvaloy	TANK	1	22	3.00	15.00	882900	62.9	58	34.00	15.00	3532.0	74.9
Elvaloy	TANK	1	22	3.00	18.88	1026000	62.5	58	34.00	18.88	4256.0	74.8
Elvaloy	TANK	1	22	2.99	23.77	1193000	62.2	58	33.98	23.77	5132.0	74.7
Elvaloy	TANK	1	22	2.99	29.93	1389000	61.8	58	33.97	29.93	6187.0	74.7
Elvaloy	TANK	1	22	2.99	37.68	1614000	61.3	58	33.94	37.68	7452.0	74.7
Elvaloy	TANK	1	22	2.98	47.43	1871000	60.9	58	33.90	47.43	8971.0	74.7
Elvaloy	TANK	2	22	3.00	0.50	73490	67.2	58	36.02	0.50	188.6	80.9
Elvaloy	TANK	2	22	3.00	0.63	86930	67.2	58	36.02	0.63	231.6	80.3
Elvaloy	TANK	2	22	3.00	0.79	103600	67.0	58	36.01	0.79	283.3	79.5
Elvaloy	TANK	2	22	3.00	1.00	122600	67.0	58	36.01	1.00	347.4	78.9
Elvaloy	TANK	2	22	3.00	1.26	145700	66.7	58	36.01	1.26	423.4	78.3
Elvaloy	TANK	2	22	3.00	1.50	168000	66.4	58	36.01	1.50	493.9	78.2
Elvaloy	TANK	2	22	3.00	1.89	198600	66.2	58	36.00	1.89	601.0	77.5
Elvaloy	TANK	2	22	3.00	2.38	235300	66.0	58	36.02	2.38	730.6	77.0
Elvaloy	TANK	2	22	3.00	2.99	278400	65.8	58	36.01	2.99	887.6	76.6
Elvaloy	TANK	2	22	3.00	3.77	328300	65.5	58	36.01	3.77	1076.0	76.3
Elvaloy	TANK	2	22	3.00	4.74	387700	65.3	58	36.01	4.74	1304.0	75.9
Elvaloy	TANK	2	22	3.00	5.00	403800	65.1	58	36.01	5.00	1363.0	75.8
Elvaloy	TANK	2	22	3.00	6.30	475000	64.8	58	36.01	6.30	1650.0	75.6
Elvaloy	TANK	2	22	3.00	7.92	559100	64.5	58	36.01	7.92	1995.0	75.4
Elvaloy	TANK	2	22	3.00	9.98	657000	64.1	58	36.00	9.98	2410.0	75.2
Elvaloy	TANK	2	22	3.00	12.56	771400	63.8	58	36.00	12.56	2908.0	75.0
Elvaloy	TANK	2	22	3.00	15.00	885100	63.4	58	36.00	15.00	3368.0	74.9
Elvaloy	TANK	2	22	3.00	18.88	1034000	63.0	58	35.99	18.88	4060.0	74.9
Elvaloy	TANK	2	22	2.99	23.77	1204000	62.7	58	35.98	23.77	4895.0	74.8
Elvaloy	TANK	2	22	2.99	29.93	1399000	62.3	58	35.96	29.93	5902.0	74.8
Elvaloy	TANK	2	22	2.99	37.68	1623000	61.9	58	35.93	37.68	7109.0	74.8
Elvaloy	TANK	2	22	2.99	47.43	1880000	61.5	58	35.89	47.43	8556.0	74.8
Elvaloy	TANK	1	34	2.50	0.50	8532	69.8	70	14.00	0.50	53.3	82.8
Elvaloy	TANK	1	34	2.50	0.63	10200	69.6	70	14.00	0.63	66.0	82.0
Elvaloy	TANK	1	34	2.50	0.79	12200	69.9	70	14.00	0.79	80.4	83.2
Elvaloy	TANK	1	34	2.50	1.00	14510	69.6	70	14.00	1.00	99.8	83.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	TANK	1	34	2.50	1.26	17450	69.4	70	14.00	1.26	121.1	82.9
Elvaloy	TANK	1	34	2.50	1.50	19930	70.1	70	14.00	1.50	145.4	82.4
Elvaloy	TANK	1	34	2.50	1.89	23990	69.5	70	14.00	1.89	181.6	81.5
Elvaloy	TANK	1	34	2.50	2.38	28660	69.3	70	14.00	2.38	219.3	81.5
Elvaloy	TANK	1	34	2.50	2.99	34130	69.3	70	14.00	2.99	271.7	81.1
Elvaloy	TANK	1	34	2.50	3.77	40800	69.3	70	13.99	3.77	332.2	79.8
Elvaloy	TANK	1	34	2.50	4.74	48740	69.1	70	14.01	4.74	405.0	79.3
Elvaloy	TANK	1	34	2.50	5.00	50870	69.0	70	14.01	5.00	423.8	79.0
Elvaloy	TANK	1	34	2.50	6.30	60540	69.0	70	14.00	6.30	518.2	78.6
Elvaloy	TANK	1	34	2.50	7.92	72230	68.9	70	14.00	7.92	630.4	78.1
Elvaloy	TANK	1	34	2.50	9.98	86100	68.8	70	14.00	9.98	769.2	77.6
Elvaloy	TANK	1	34	2.50	12.56	102400	68.7	70	14.00	12.56	935.8	77.2
Elvaloy	TANK	1	34	2.50	15.00	117200	68.6	70	14.01	15.00	1088.0	76.9
Elvaloy	TANK	1	34	2.50	18.88	139500	68.4	70	14.01	18.88	1322.0	76.6
Elvaloy	TANK	1	34	2.50	23.77	166100	68.2	70	14.00	23.77	1602.0	76.3
Elvaloy	TANK	1	34	2.50	29.93	197700	68.0	70	14.00	29.93	1945.0	76.1
Elvaloy	TANK	1	34	2.50	37.68	235000	67.9	70	14.00	37.68	2355.0	75.9
Elvaloy	TANK	1	34	2.50	47.43	279400	67.7	70	13.99	47.43	2852.0	75.7
Elvaloy	TANK	2	34	2.60	0.50	8181	70.5	70	14.00	0.50	52.1	85.6
Elvaloy	TANK	2	34	2.60	0.63	9794	69.8	70	14.00	0.63	65.2	87.0
Elvaloy	TANK	2	34	2.60	0.79	11690	70.2	70	14.00	0.79	75.9	83.1
Elvaloy	TANK	2	34	2.60	1.00	14010	69.8	70	14.00	1.00	95.9	85.3
Elvaloy	TANK	2	34	2.60	1.26	16730	70.1	70	14.00	1.26	118.8	83.0
Elvaloy	TANK	2	34	2.60	1.50	19250	70.2	70	14.00	1.50	138.0	82.8
Elvaloy	TANK	2	34	2.60	1.89	23100	69.6	70	14.00	1.89	172.4	81.5
Elvaloy	TANK	2	34	2.60	2.38	27580	69.6	70	14.00	2.38	210.0	81.0
Elvaloy	TANK	2	34	2.60	2.99	33010	69.5	70	14.00	2.99	258.5	80.6
Elvaloy	TANK	2	34	2.60	3.77	39360	69.6	70	14.00	3.77	317.7	79.7
Elvaloy	TANK	2	34	2.60	4.74	47110	69.4	70	14.00	4.74	388.9	79.0
Elvaloy	TANK	2	34	2.60	5.00	48980	69.4	70	14.00	5.00	406.7	79.0
Elvaloy	TANK	2	34	2.60	6.30	58490	69.4	70	14.00	6.30	497.5	78.9
Elvaloy	TANK	2	34	2.60	7.92	69770	69.1	70	14.00	7.92	605.7	78.1
Elvaloy	TANK	2	34	2.60	9.98	83330	69.1	70	14.00	9.98	738.5	77.6
Elvaloy	TANK	2	34	2.60	12.56	99380	69.1	70	14.00	12.56	897.2	77.3
Elvaloy	TANK	2	34	2.60	15.00	113500	68.9	70	14.00	15.00	1044.0	77.0
Elvaloy	TANK	2	34	2.60	18.88	135200	68.7	70	14.00	18.88	1266.0	76.7
Elvaloy	TANK	2	34	2.60	23.77	160100	68.5	70	14.00	23.77	1536.0	76.3
Elvaloy	TANK	2	34	2.60	29.93	191100	68.5	70	14.00	29.93	1863.0	76.0
Elvaloy	TANK	2	34	2.60	37.68	227200	68.4	70	13.99	37.68	2258.0	75.9
Elvaloy	TANK	2	34	2.60	47.43	270300	68.2	70	13.99	47.43	2733.0	75.7

Table 59. Elvaloy RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	RTFOT	1	10	0.13	0.50	1963000	53.6	46	2.25	0.50	3508.0	68.4
Elvaloy	RTFOT	1	10	0.13	0.63	2250000	52.7	46	2.24	0.63	4215.0	67.9
Elvaloy	RTFOT	1	10	0.13	0.79	2562000	52.2	46	2.24	0.79	5002.0	67.7
Elvaloy	RTFOT	1	10	0.13	1.00	2949000	51.6	46	2.24	1.00	5932.0	67.4
Elvaloy	RTFOT	1	10	0.13	1.26	3340000	51.0	46	2.24	1.26	7054.0	67.2
Elvaloy	RTFOT	1	10	0.13	1.50	3706000	50.4	46	2.24	1.50	8008.0	67.7
Elvaloy	RTFOT	1	10	0.13	1.89	4208000	50.0	46	2.24	1.89	9546.0	66.8
Elvaloy	RTFOT	1	10	0.13	2.38	4790000	49.4	46	2.24	2.38	11320.0	66.9
Elvaloy	RTFOT	1	10	0.13	2.99	5437000	48.8	46	2.24	2.99	13440.0	66.6
Elvaloy	RTFOT	1	10	0.13	3.77	6127000	48.2	46	2.23	3.77	15910.0	66.7
Elvaloy	RTFOT	1	10	0.13	4.74	6958000	47.5	46	2.23	4.74	18820.0	66.6
Elvaloy	RTFOT	1	10	0.13	5.00	7145000	47.6	46	2.23	5.00	19600.0	66.5
Elvaloy	RTFOT	1	10	0.13	6.30	8072000	46.9	46	2.23	6.30	23200.0	66.5
Elvaloy	RTFOT	1	10	0.13	7.92	9080000	46.5	46	2.22	7.92	27520.0	66.5
Elvaloy	RTFOT	1	10	0.13	9.98	10190000	45.9	46	2.22	9.98	32480.0	66.3
Elvaloy	RTFOT	1	10	0.13	12.56	11450000	45.5	46	2.22	12.56	38530.0	66.2
Elvaloy	RTFOT	1	10	0.13	15.00	12540000	44.7	46	2.21	15.00	43960.0	66.2
Elvaloy	RTFOT	1	10	0.13	18.88	14030000	44.3	46	2.20	18.88	51980.0	66.1
Elvaloy	RTFOT	1	10	0.13	23.77	15600000	43.8	46	2.20	23.77	61430.0	66.1
Elvaloy	RTFOT	1	10	0.13	29.93	17580000	42.9	46	2.19	29.93	72620.0	66.1
Elvaloy	RTFOT	1	10	0.13	37.68	19500000	42.3	46	2.17	37.68	86060.0	66.0
Elvaloy	RTFOT	1	10	0.13	47.43	21610000	41.8	46	2.16	47.43	101900.0	65.9
Elvaloy	RTFOT	2	10	0.18	0.50	1500000	54.1	46	3.00	0.50	2588.0	68.9
Elvaloy	RTFOT	2	10	0.18	0.63	1715000	53.7	46	2.99	0.63	3103.0	68.8
Elvaloy	RTFOT	2	10	0.18	0.79	1952000	53.2	46	2.99	0.79	3695.0	68.5
Elvaloy	RTFOT	2	10	0.18	1.00	2236000	52.5	46	2.99	1.00	4374.0	68.2
Elvaloy	RTFOT	2	10	0.18	1.26	2549000	52.0	46	2.99	1.26	5222.0	68.4
Elvaloy	RTFOT	2	10	0.18	1.50	2868000	51.4	46	2.99	1.50	5970.0	68.4
Elvaloy	RTFOT	2	10	0.18	1.89	3258000	51.0	46	2.99	1.89	7097.0	67.9
Elvaloy	RTFOT	2	10	0.18	2.38	3703000	50.4	46	2.99	2.38	8447.0	67.9
Elvaloy	RTFOT	2	10	0.18	2.99	4211000	49.5	46	2.99	2.99	10030.0	67.7
Elvaloy	RTFOT	2	10	0.18	3.77	4775000	49.3	46	2.99	3.77	11910.0	67.6
Elvaloy	RTFOT	2	10	0.18	4.74	5415000	48.8	46	2.98	4.74	14150.0	67.5
Elvaloy	RTFOT	2	10	0.18	5.00	5578000	48.5	46	2.98	5.00	14740.0	67.5
Elvaloy	RTFOT	2	10	0.18	6.30	6299000	47.9	46	2.98	6.30	17500.0	67.5
Elvaloy	RTFOT	2	10	0.18	7.92	7105000	47.4	46	2.98	7.92	20770.0	67.4
Elvaloy	RTFOT	2	10	0.18	9.98	7997000	46.7	46	2.97	9.98	24650.0	67.4
Elvaloy	RTFOT	2	10	0.17	12.56	9022000	46.2	46	2.97	12.56	29270.0	67.3
Elvaloy	RTFOT	2	10	0.17	15.00	9882000	45.8	46	2.96	15.00	33540.0	67.3
Elvaloy	RTFOT	2	10	0.17	18.88	11070000	45.3	46	2.95	18.88	39720.0	67.2
Elvaloy	RTFOT	2	10	0.17	23.77	12410000	44.4	46	2.94	23.77	47140.0	67.2
Elvaloy	RTFOT	2	10	0.17	29.93	13880000	43.8	46	2.94	29.93	55840.0	67.1
Elvaloy	RTFOT	2	10	0.17	37.68	15470000	43.2	46	2.92	37.68	66240.0	67.1
Elvaloy	RTFOT	2	10	0.17	47.43	17300000	42.6	46	2.91	47.43	78570.0	67.0
Elvaloy	RTFOT	1	22	1.11	0.50	229200	58.8	58	10.00	0.50	826.7	71.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	RTFOT	1	22	1.11	0.63	267100	58.9	58	10.00	0.63	984.9	71.2
Elvaloy	RTFOT	1	22	1.11	0.79	310900	58.4	58	10.00	0.79	1183.0	70.8
Elvaloy	RTFOT	1	22	1.11	1.00	360900	58.4	58	10.00	1.00	1420.0	70.2
Elvaloy	RTFOT	1	22	1.11	1.26	418800	58.1	58	10.00	1.26	1697.0	70.1
Elvaloy	RTFOT	1	22	1.11	1.50	467200	58.5	58	10.00	1.50	1948.0	69.9
Elvaloy	RTFOT	1	22	1.11	1.89	544100	57.6	58	9.99	1.89	2321.0	69.5
Elvaloy	RTFOT	1	22	1.11	2.38	630400	57.3	58	10.00	2.38	2772.0	69.3
Elvaloy	RTFOT	1	22	1.11	2.99	730000	57.2	58	9.99	2.99	3303.0	69.0
Elvaloy	RTFOT	1	22	1.11	3.77	843300	56.9	58	9.99	3.77	3930.0	68.7
Elvaloy	RTFOT	1	22	1.11	4.74	974800	56.6	58	9.99	4.74	4673.0	68.6
Elvaloy	RTFOT	1	22	1.11	5.00	1009000	56.4	58	9.99	5.00	4870.0	68.5
Elvaloy	RTFOT	1	22	1.11	6.30	1163000	56.1	58	9.99	6.30	5784.0	68.4
Elvaloy	RTFOT	1	22	1.11	7.92	1342000	55.8	58	9.98	7.92	6872.0	68.3
Elvaloy	RTFOT	1	22	1.11	9.98	1547000	55.5	58	9.98	9.98	8164.0	68.2
Elvaloy	RTFOT	1	22	1.11	12.56	1780000	55.1	58	9.97	12.56	9705.0	68.2
Elvaloy	RTFOT	1	22	1.11	15.00	1992000	54.7	58	9.96	15.00	11090.0	68.1
Elvaloy	RTFOT	1	22	1.11	18.88	2286000	54.4	58	9.96	18.88	13140.0	68.1
Elvaloy	RTFOT	1	22	1.10	23.77	2619000	53.9	58	9.95	23.77	15600.0	68.1
Elvaloy	RTFOT	1	22	1.10	29.93	2999000	53.5	58	9.94	29.93	18510.0	68.0
Elvaloy	RTFOT	1	22	1.10	37.68	3431000	53.1	58	9.92	37.68	21960.0	68.1
Elvaloy	RTFOT	1	22	1.10	47.43	3920000	52.7	58	9.89	47.43	26060.0	68.1
Elvaloy	RTFOT	2	22	1.40	0.50	179900	60.5	58	13.00	0.50	635.0	72.8
Elvaloy	RTFOT	2	22	1.40	0.63	209500	60.1	58	13.00	0.63	761.8	72.1
Elvaloy	RTFOT	2	22	1.40	0.79	245500	59.8	58	13.00	0.79	915.7	72.0
Elvaloy	RTFOT	2	22	1.40	1.00	286100	59.8	58	12.99	1.00	1096.0	71.4
Elvaloy	RTFOT	2	22	1.40	1.26	333400	59.4	58	12.99	1.26	1316.0	71.2
Elvaloy	RTFOT	2	22	1.40	1.50	373900	59.8	58	12.99	1.50	1505.0	71.3
Elvaloy	RTFOT	2	22	1.40	1.89	437800	58.9	58	12.99	1.89	1804.0	70.5
Elvaloy	RTFOT	2	22	1.40	2.38	509000	58.6	58	12.99	2.38	2157.0	70.3
Elvaloy	RTFOT	2	22	1.40	2.99	591100	58.3	58	12.99	2.99	2573.0	70.1
Elvaloy	RTFOT	2	22	1.40	3.77	686100	58.0	58	12.98	3.77	3075.0	69.9
Elvaloy	RTFOT	2	22	1.40	4.74	795000	57.7	58	12.98	4.74	3666.0	69.7
Elvaloy	RTFOT	2	22	1.40	5.00	824100	57.5	58	12.98	5.00	3820.0	69.7
Elvaloy	RTFOT	2	22	1.40	6.30	951700	57.1	58	12.98	6.30	4556.0	69.6
Elvaloy	RTFOT	2	22	1.40	7.92	1101000	56.8	58	12.97	7.92	5431.0	69.4
Elvaloy	RTFOT	2	22	1.40	9.98	1270000	56.4	58	12.97	9.98	6473.0	69.3
Elvaloy	RTFOT	2	22	1.40	12.56	1464000	56.1	58	12.97	12.56	7707.0	69.3
Elvaloy	RTFOT	2	22	1.40	15.00	1636000	55.7	58	12.96	15.00	8841.0	69.2
Elvaloy	RTFOT	2	22	1.40	18.88	1879000	55.3	58	12.95	18.88	10510.0	69.2
Elvaloy	RTFOT	2	22	1.39	23.77	2157000	54.9	58	12.94	23.77	12510.0	69.2
Elvaloy	RTFOT	2	22	1.39	29.93	2472000	54.5	58	12.92	29.93	14890.0	69.2
Elvaloy	RTFOT	2	22	1.39	37.68	2832000	54.0	58	12.90	37.68	17710.0	69.2
Elvaloy	RTFOT	2	22	1.39	47.43	3243000	53.6	58	12.88	47.43	21050.0	69.3
Elvaloy	RTFOT	1	34	9.36	0.50	27050	62.5	70	4.05	0.50	193.6	78.6
Elvaloy	RTFOT	1	34	9.36	0.63	31500	62.6	70	4.05	0.63	242.4	77.0
Elvaloy	RTFOT	1	34	9.36	0.79	37160	62.7	70	4.05	0.79	295.5	76.4
Elvaloy	RTFOT	1	34	9.36	1.00	43270	62.7	70	4.05	1.00	353.5	75.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	RTFOT	1	34	9.36	1.26	50780	62.8	70	4.05	1.26	430.6	74.6
Elvaloy	RTFOT	1	34	8.18	1.50	58190	62.5	70	4.05	1.50	498.3	74.8
Elvaloy	RTFOT	1	34	8.18	1.89	67910	62.5	70	4.05	1.89	598.9	74.0
Elvaloy	RTFOT	1	34	8.19	2.38	79150	62.6	70	4.05	2.38	718.5	72.9
Elvaloy	RTFOT	1	34	8.19	2.99	93000	62.6	70	4.05	2.99	868.5	73.0
Elvaloy	RTFOT	1	34	8.19	3.77	108600	62.6	70	4.05	3.77	1046.0	72.3
Elvaloy	RTFOT	1	34	8.19	4.74	126800	62.6	70	4.05	4.74	1255.0	72.0
Elvaloy	RTFOT	1	34	7.07	5.00	133800	62.3	70	4.05	5.00	1310.0	71.9
Elvaloy	RTFOT	1	34	7.07	6.30	155300	62.3	70	4.05	6.30	1569.0	71.3
Elvaloy	RTFOT	1	34	7.07	7.92	181200	62.4	70	4.05	7.92	1879.0	71.2
Elvaloy	RTFOT	1	34	7.07	9.98	210700	62.3	70	4.05	9.98	2242.0	70.8
Elvaloy	RTFOT	1	34	7.07	12.56	245200	62.4	70	4.05	12.56	2685.0	70.6
Elvaloy	RTFOT	1	34	5.35	15.00	282300	62.0	70	4.05	15.00	3080.0	70.3
Elvaloy	RTFOT	1	34	5.35	18.88	326200	61.9	70	4.05	18.88	3692.0	70.3
Elvaloy	RTFOT	1	34	5.35	23.77	378800	61.9	70	4.05	23.77	4404.0	70.2
Elvaloy	RTFOT	1	34	5.35	29.93	440100	61.9	70	4.05	29.93	5258.0	70.0
Elvaloy	RTFOT	1	34	5.34	37.68	510400	61.8	70	4.05	37.68	6281.0	70.0
Elvaloy	RTFOT	1	34	5.34	47.43	591700	61.7	70	4.05	47.43	7496.0	70.0
Elvaloy	RTFOT	2	34	11.01	0.50	22750	64.3	70	5.31	0.50	161.1	77.3
Elvaloy	RTFOT	2	34	11.01	0.63	26720	63.7	70	5.31	0.63	199.7	75.5
Elvaloy	RTFOT	2	34	11.01	0.79	31340	63.8	70	5.31	0.79	242.7	76.4
Elvaloy	RTFOT	2	34	11.01	1.00	37140	63.7	70	5.31	1.00	298.8	76.6
Elvaloy	RTFOT	2	34	11.00	1.26	43430	63.6	70	5.31	1.26	353.7	75.7
Elvaloy	RTFOT	2	34	9.53	1.50	49750	63.5	70	5.30	1.50	411.1	75.7
Elvaloy	RTFOT	2	34	9.52	1.89	58200	63.5	70	5.30	1.89	503.0	74.8
Elvaloy	RTFOT	2	34	9.53	2.38	67780	63.4	70	5.31	2.38	602.7	74.2
Elvaloy	RTFOT	2	34	9.53	2.99	79610	63.3	70	5.30	2.99	728.3	73.9
Elvaloy	RTFOT	2	34	9.53	3.77	92970	63.3	70	5.31	3.77	876.3	73.4
Elvaloy	RTFOT	2	34	9.53	4.74	108600	63.2	70	5.31	4.74	1054.0	72.9
Elvaloy	RTFOT	2	34	8.13	5.00	114200	63.0	70	5.30	5.00	1100.0	72.8
Elvaloy	RTFOT	2	34	8.13	6.30	132600	63.1	70	5.31	6.30	1324.0	72.3
Elvaloy	RTFOT	2	34	8.13	7.92	154600	63.1	70	5.31	7.92	1585.0	72.1
Elvaloy	RTFOT	2	34	8.13	9.98	179700	63.1	70	5.31	9.98	1903.0	71.8
Elvaloy	RTFOT	2	34	8.12	12.56	209200	63.0	70	5.31	12.56	2280.0	71.6
Elvaloy	RTFOT	2	34	6.00	15.00	242300	62.6	70	5.31	15.00	2627.0	71.4
Elvaloy	RTFOT	2	34	6.00	18.88	280400	62.5	70	5.31	18.88	3143.0	71.2
Elvaloy	RTFOT	2	34	6.00	23.77	325700	62.5	70	5.30	23.77	3761.0	71.1
Elvaloy	RTFOT	2	34	6.00	29.93	378500	62.4	70	5.31	29.93	4503.0	71.0
Elvaloy	RTFOT	2	34	5.99	37.68	439300	62.4	70	5.30	37.68	5388.0	70.9
Elvaloy	RTFOT	2	34	5.99	47.43	509400	62.3	70	5.30	47.43	6447.0	70.9

Table 60. Elvaloy SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	SAFT	1	10	0.27	0.50	976800	60.8	46	7.81	0.50	1036.0	75.2
Elvaloy	SAFT	1	10	0.27	0.63	1120000	60.5	46	7.81	0.63	1256.0	74.4
Elvaloy	SAFT	1	10	0.27	0.79	1318000	59.9	46	7.81	0.79	1520.0	74.1
Elvaloy	SAFT	1	10	0.27	1.00	1533000	59.4	46	7.81	1.00	1835.0	74.0
Elvaloy	SAFT	1	10	0.27	1.26	1777000	58.8	46	7.81	1.26	2214.0	73.6
Elvaloy	SAFT	1	10	0.27	1.50	1992000	59.0	46	7.81	1.50	2556.0	74.0
Elvaloy	SAFT	1	10	0.27	1.89	2319000	57.6	46	7.80	1.89	3090.0	73.3
Elvaloy	SAFT	1	10	0.27	2.38	2685000	56.9	46	7.80	2.38	3719.0	73.1
Elvaloy	SAFT	1	10	0.27	2.99	3106000	56.3	46	7.80	2.99	4476.0	73.0
Elvaloy	SAFT	1	10	0.27	3.77	3587000	55.7	46	7.80	3.77	5391.0	72.9
Elvaloy	SAFT	1	10	0.27	4.74	4140000	55.1	46	7.80	4.74	6488.0	72.8
Elvaloy	SAFT	1	10	0.26	5.00	4335000	54.8	46	7.80	5.00	6781.0	72.8
Elvaloy	SAFT	1	10	0.26	6.30	4977000	54.2	46	7.80	6.30	8149.0	72.8
Elvaloy	SAFT	1	10	0.26	7.92	5696000	53.3	46	7.79	7.92	9799.0	72.7
Elvaloy	SAFT	1	10	0.26	9.98	6533000	52.7	46	7.79	9.98	11790.0	72.6
Elvaloy	SAFT	1	10	0.26	12.56	7472000	52.0	46	7.78	12.56	14170.0	72.6
Elvaloy	SAFT	1	10	0.26	15.00	8257000	51.4	46	7.78	15.00	16340.0	72.6
Elvaloy	SAFT	1	10	0.26	18.88	9383000	50.7	46	7.77	18.88	19640.0	72.6
Elvaloy	SAFT	1	10	0.26	23.77	10650000	49.9	46	7.76	23.77	23600.0	72.6
Elvaloy	SAFT	1	10	0.26	29.93	12090000	49.2	46	7.75	29.93	28360.0	72.5
Elvaloy	SAFT	1	10	0.26	37.68	13680000	48.4	46	7.72	37.68	34080.0	72.5
Elvaloy	SAFT	1	10	0.26	47.43	15460000	47.6	46	7.70	47.43	40950.0	72.5
Elvaloy	SAFT	2	10	0.26	0.50	1012000	60.1	46	7.31	0.50	1125.0	74.7
Elvaloy	SAFT	2	10	0.26	0.63	1181000	59.8	46	7.31	0.63	1358.0	74.0
Elvaloy	SAFT	2	10	0.26	0.79	1370000	59.5	46	7.31	0.79	1631.0	73.6
Elvaloy	SAFT	2	10	0.26	1.00	1585000	58.9	46	7.30	1.00	1977.0	73.5
Elvaloy	SAFT	2	10	0.26	1.26	1841000	58.2	46	7.30	1.26	2382.0	73.2
Elvaloy	SAFT	2	10	0.26	1.50	2084000	58.4	46	7.30	1.50	2748.0	73.5
Elvaloy	SAFT	2	10	0.26	1.89	2424000	57.2	46	7.30	1.89	3305.0	72.9
Elvaloy	SAFT	2	10	0.26	2.38	2814000	56.6	46	7.30	2.38	3981.0	72.8
Elvaloy	SAFT	2	10	0.26	2.99	3254000	56.1	46	7.30	2.99	4792.0	72.7
Elvaloy	SAFT	2	10	0.26	3.77	3756000	55.2	46	7.30	3.77	5766.0	72.5
Elvaloy	SAFT	2	10	0.26	4.74	4336000	54.6	46	7.30	4.74	6932.0	72.5
Elvaloy	SAFT	2	10	0.26	5.00	4446000	54.4	46	7.30	5.00	7235.0	72.5
Elvaloy	SAFT	2	10	0.26	6.30	5104000	53.7	46	7.29	6.30	8692.0	72.4
Elvaloy	SAFT	2	10	0.25	7.92	5842000	53.1	46	7.29	7.92	10450.0	72.4
Elvaloy	SAFT	2	10	0.25	9.98	6669000	52.4	46	7.28	9.98	12560.0	72.3
Elvaloy	SAFT	2	10	0.25	12.56	7606000	51.7	46	7.28	12.56	15090.0	72.3
Elvaloy	SAFT	2	10	0.25	15.00	8396000	51.2	46	7.28	15.00	17390.0	72.2
Elvaloy	SAFT	2	10	0.25	18.88	9588000	50.3	46	7.26	18.88	20890.0	72.2
Elvaloy	SAFT	2	10	0.25	23.77	10900000	49.5	46	7.25	23.77	25090.0	72.2
Elvaloy	SAFT	2	10	0.25	29.93	12340000	48.8	46	7.24	29.93	30140.0	72.2
Elvaloy	SAFT	2	10	0.25	37.68	13890000	48.0	46	7.22	37.68	36180.0	72.2
Elvaloy	SAFT	2	10	0.25	47.43	15670000	47.2	46	7.19	47.43	43450.0	72.2
Elvaloy	SAFT	1	22	2.70	0.50	95070	65.8	58	3.30	0.50	246.3	79.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	SAFT	1	22	2.70	0.63	112400	65.7	58	3.30	0.63	290.8	79.3
Elvaloy	SAFT	1	22	2.70	0.79	133200	65.5	58	3.30	0.79	364.2	78.7
Elvaloy	SAFT	1	22	2.70	1.00	156800	65.4	58	3.30	1.00	437.4	77.4
Elvaloy	SAFT	1	22	2.70	1.26	185500	65.3	58	3.30	1.26	522.1	76.4
Elvaloy	SAFT	1	22	2.70	1.50	210000	65.8	58	3.30	1.50	621.7	77.5
Elvaloy	SAFT	1	22	2.70	1.89	249400	64.9	58	3.30	1.89	744.3	75.6
Elvaloy	SAFT	1	22	2.70	2.38	295200	64.7	58	3.30	2.38	906.2	75.7
Elvaloy	SAFT	1	22	2.70	2.99	348400	64.6	58	3.30	2.99	1102.0	75.4
Elvaloy	SAFT	1	22	2.70	3.77	410500	64.3	58	3.30	3.77	1338.0	75.1
Elvaloy	SAFT	1	22	2.70	4.74	481500	64.0	58	3.30	4.74	1614.0	74.8
Elvaloy	SAFT	1	22	2.70	5.00	503400	63.9	58	3.30	5.00	1691.0	74.8
Elvaloy	SAFT	1	22	2.70	6.30	591300	63.6	58	3.30	6.30	2038.0	74.6
Elvaloy	SAFT	1	22	2.70	7.92	694500	63.3	58	3.30	7.92	2464.0	74.4
Elvaloy	SAFT	1	22	2.70	9.98	813700	63.0	58	3.30	9.98	2967.0	74.2
Elvaloy	SAFT	1	22	2.70	12.56	953300	62.7	58	3.30	12.56	3581.0	74.1
Elvaloy	SAFT	1	22	2.69	15.00	1080000	62.4	58	3.31	15.00	4140.0	73.9
Elvaloy	SAFT	1	22	2.69	18.88	1260000	62.0	58	3.30	18.88	4993.0	74.0
Elvaloy	SAFT	1	22	2.69	23.77	1468000	61.6	58	3.31	23.77	6017.0	73.9
Elvaloy	SAFT	1	22	2.69	29.93	1708000	61.2	58	3.31	29.93	7264.0	73.8
Elvaloy	SAFT	1	22	2.69	37.68	1983000	60.8	58	3.31	37.68	8756.0	73.8
Elvaloy	SAFT	1	22	2.68	47.43	2301000	60.4	58	3.31	47.43	10550.0	73.8
Elvaloy	SAFT	2	22	2.70	0.50	95620	65.6	58	3.10	0.50	253.6	77.9
Elvaloy	SAFT	2	22	2.70	0.63	113100	65.5	58	3.10	0.63	315.1	78.2
Elvaloy	SAFT	2	22	2.70	0.79	134100	65.5	58	3.10	0.79	385.4	77.6
Elvaloy	SAFT	2	22	2.70	1.00	157700	65.4	58	3.10	1.00	463.4	77.2
Elvaloy	SAFT	2	22	2.70	1.26	186000	65.4	58	3.10	1.26	568.6	76.9
Elvaloy	SAFT	2	22	2.70	1.50	211800	65.6	58	3.10	1.50	653.3	76.6
Elvaloy	SAFT	2	22	2.70	1.89	251700	64.8	58	3.10	1.89	794.0	75.7
Elvaloy	SAFT	2	22	2.70	2.38	295900	64.7	58	3.11	2.38	961.6	75.5
Elvaloy	SAFT	2	22	2.70	2.99	347000	64.5	58	3.10	2.99	1163.0	75.3
Elvaloy	SAFT	2	22	2.70	3.77	408600	64.2	58	3.11	3.77	1407.0	74.8
Elvaloy	SAFT	2	22	2.70	4.74	480200	63.9	58	3.11	4.74	1699.0	74.5
Elvaloy	SAFT	2	22	2.70	5.00	499700	63.8	58	3.11	5.00	1777.0	74.4
Elvaloy	SAFT	2	22	2.70	6.30	585200	63.6	58	3.11	6.30	2142.0	74.3
Elvaloy	SAFT	2	22	2.70	7.92	687700	63.3	58	3.11	7.92	2584.0	74.0
Elvaloy	SAFT	2	22	2.70	9.98	806200	63.0	58	3.10	9.98	3116.0	73.9
Elvaloy	SAFT	2	22	2.70	12.56	944400	62.6	58	3.10	12.56	3756.0	73.7
Elvaloy	SAFT	2	22	2.69	15.00	1078000	62.2	58	3.11	15.00	4347.0	73.6
Elvaloy	SAFT	2	22	2.69	18.88	1252000	61.9	58	3.11	18.88	5231.0	73.6
Elvaloy	SAFT	2	22	2.69	23.77	1458000	61.6	58	3.11	23.77	6312.0	73.5
Elvaloy	SAFT	2	22	2.69	29.93	1697000	61.1	58	3.11	29.93	7609.0	73.5
Elvaloy	SAFT	2	22	2.69	37.68	1971000	60.7	58	3.11	37.68	9170.0	73.5
Elvaloy	SAFT	2	22	2.68	47.43	2286000	60.3	58	3.11	47.43	11050.0	73.5
Elvaloy	SAFT	1	34	25.48	0.50	9556	69.4	70	12.80	0.50	63.3	83.3
Elvaloy	SAFT	1	34	25.48	0.63	11330	69.5	70	12.80	0.63	80.1	83.6
Elvaloy	SAFT	1	34	25.47	0.79	13440	69.5	70	12.80	0.79	93.9	82.8
Elvaloy	SAFT	1	34	25.47	1.00	16000	69.5	70	12.80	1.00	118.8	82.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	SAFT	1	34	25.47	1.26	19060	69.5	70	12.80	1.26	147.4	81.5
Elvaloy	SAFT	1	34	25.47	1.50	22790	69.7	70	12.80	1.50	170.9	80.0
Elvaloy	SAFT	1	34	25.47	1.89	26920	69.5	70	12.79	1.89	211.3	80.0
Elvaloy	SAFT	1	34	25.47	2.38	31800	69.8	70	12.80	2.38	260.8	79.6
Elvaloy	SAFT	1	34	25.47	2.99	37720	69.7	70	12.80	2.99	318.3	78.9
Elvaloy	SAFT	1	34	25.47	3.77	44690	69.7	70	12.80	3.77	388.7	78.5
Elvaloy	SAFT	1	34	25.47	4.74	52770	69.8	70	12.80	4.74	474.5	78.0
Elvaloy	SAFT	1	34	25.47	5.00	55760	69.5	70	12.80	5.00	496.5	77.9
Elvaloy	SAFT	1	34	25.47	6.30	64940	69.8	70	12.80	6.30	604.2	77.4
Elvaloy	SAFT	1	34	25.47	7.92	76280	69.8	70	12.80	7.92	733.7	76.9
Elvaloy	SAFT	1	34	25.47	9.98	89150	69.9	70	12.80	9.98	890.7	76.5
Elvaloy	SAFT	1	34	25.47	12.56	104100	70.0	70	12.80	12.56	1080.0	76.2
Elvaloy	SAFT	1	34	25.46	15.00	123600	69.6	70	12.80	15.00	1254.0	75.9
Elvaloy	SAFT	1	34	25.46	18.88	139000	70.0	70	12.80	18.88	1519.0	75.6
Elvaloy	SAFT	1	34	25.46	23.77	159200	70.2	70	12.80	23.77	1838.0	75.4
Elvaloy	SAFT	1	34	25.45	29.93	182400	70.3	70	12.79	29.93	2224.0	75.2
Elvaloy	SAFT	1	34	25.43	37.68	208000	70.4	70	12.79	37.68	2687.0	75.0
Elvaloy	SAFT	1	34	25.41	47.43	235500	70.5	70	12.78	47.43	3247.0	74.9
Elvaloy	SAFT	2	34	25.69	0.50	9620	68.8	70	12.31	0.50	66.1	85.7
Elvaloy	SAFT	2	34	25.69	0.63	11500	69.5	70	12.31	0.63	81.8	83.7
Elvaloy	SAFT	2	34	25.69	0.79	13770	69.5	70	12.31	0.79	100.7	83.6
Elvaloy	SAFT	2	34	25.69	1.00	16400	69.6	70	12.31	1.00	124.4	82.2
Elvaloy	SAFT	2	34	25.69	1.26	19490	69.5	70	12.31	1.26	154.5	81.3
Elvaloy	SAFT	2	34	25.69	1.50	22620	69.6	70	12.31	1.50	182.2	80.8
Elvaloy	SAFT	2	34	25.68	1.89	26600	69.5	70	12.31	1.89	224.7	80.3
Elvaloy	SAFT	2	34	25.69	2.38	31540	69.6	70	12.31	2.38	274.7	79.4
Elvaloy	SAFT	2	34	25.69	2.99	37340	69.6	70	12.31	2.99	336.1	78.8
Elvaloy	SAFT	2	34	25.69	3.77	44200	69.7	70	12.31	3.77	410.6	78.3
Elvaloy	SAFT	2	34	25.69	4.74	52190	69.7	70	12.31	4.74	499.4	77.6
Elvaloy	SAFT	2	34	25.69	5.00	55420	69.5	70	12.31	5.00	521.6	77.6
Elvaloy	SAFT	2	34	25.69	6.30	64650	69.7	70	12.31	6.30	634.7	77.2
Elvaloy	SAFT	2	34	25.69	7.92	76120	69.8	70	12.31	7.92	770.6	76.7
Elvaloy	SAFT	2	34	25.69	9.98	89200	69.9	70	12.31	9.98	934.1	76.3
Elvaloy	SAFT	2	34	25.68	12.56	104600	70.0	70	12.31	12.56	1134.0	76.0
Elvaloy	SAFT	2	34	25.68	15.00	123900	69.6	70	12.31	15.00	1313.0	75.7
Elvaloy	SAFT	2	34	25.68	18.88	140200	70.0	70	12.31	18.88	1590.0	75.4
Elvaloy	SAFT	2	34	25.67	23.77	161900	70.2	70	12.31	23.77	1924.0	75.1
Elvaloy	SAFT	2	34	25.66	29.93	187700	70.3	70	12.30	29.93	2327.0	75.0
Elvaloy	SAFT	2	34	25.65	37.68	217100	70.4	70	12.30	37.68	2811.0	74.8
Elvaloy	SAFT	2	34	25.63	47.43	249800	70.5	70	12.29	47.43	3394.0	74.7

Table 61. Elvaloy MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	MGRF	1	10	1.00	0.10	370000	59.9	46	10.00	0.10	910.5	71.8
Elvaloy	MGRF	1	10	1.00	0.13	513000	59.0	46	10.00	0.13	1105.0	71.3
Elvaloy	MGRF	1	10	1.00	0.16	639500	58.2	46	10.00	0.16	1325.0	70.8
Elvaloy	MGRF	1	10	1.00	0.20	768500	57.7	46	10.00	0.20	1590.0	70.4
Elvaloy	MGRF	1	10	1.00	0.25	905500	57.0	46	10.00	0.25	1905.0	70.0
Elvaloy	MGRF	1	10	1.00	0.32	1060000	56.4	46	10.00	0.32	2280.0	69.7
Elvaloy	MGRF	1	10	1.00	0.40	1233500	56.0	46	10.00	0.40	2725.0	69.4
Elvaloy	MGRF	1	10	1.00	0.50	1426500	55.4	46	10.00	0.50	3250.0	69.1
Elvaloy	MGRF	1	10	1.00	0.63	1650500	54.9	46	10.00	0.63	3875.0	68.9
Elvaloy	MGRF	1	10	1.00	0.79	1910000	54.4	46	10.00	0.79	4615.0	68.7
Elvaloy	MGRF	1	10	1.00	1.00	2190000	53.9	46	10.00	1.00	5490.0	68.5
Elvaloy	MGRF	1	10	1.00	1.26	2505000	53.3	46	10.00	1.26	6535.0	68.3
Elvaloy	MGRF	1	10	1.00	1.58	2865000	52.8	46	10.00	1.58	7770.0	68.1
Elvaloy	MGRF	1	10	1.00	2.00	3275000	52.3	46	10.00	2.00	9235.0	68.0
Elvaloy	MGRF	1	10	1.00	2.51	3730000	51.7	46	10.00	2.51	11000.0	67.9
Elvaloy	MGRF	1	10	1.00	3.16	4250000	51.2	46	10.00	3.16	13000.0	67.8
Elvaloy	MGRF	1	10	1.00	3.98	4820000	50.6	46	10.00	3.98	15500.0	67.7
Elvaloy	MGRF	1	10	1.00	5.01	5475000	50.0	46	10.00	5.01	18350.0	67.6
Elvaloy	MGRF	1	10	1.00	6.31	6195000	49.5	46	10.00	6.31	21750.0	67.5
Elvaloy	MGRF	1	10	1.00	7.94	6995000	48.9	46	10.00	7.94	25800.0	67.5
Elvaloy	MGRF	1	10	1.00	10.00	7885000	48.3	46	10.00	10.00	30550.0	67.4
Elvaloy	MGRF	1	10	1.00	12.60	8865000	47.8	46	10.00	12.60	36250.0	67.4
Elvaloy	MGRF	1	10	1.00	15.80	9980000	47.2	46	10.00	15.80	42850.0	67.3
Elvaloy	MGRF	1	10	0.99	20.00	11195000	46.6	46	10.00	20.00	50700.0	67.3
Elvaloy	MGRF	1	10	0.99	25.10	12550000	46.0	46	10.00	25.10	59850.0	67.3
Elvaloy	MGRF	1	10	0.99	31.60	14035000	45.4	46	10.00	31.60	70650.0	67.3
Elvaloy	MGRF	1	10	0.99	39.80	15650000	44.8	46	10.00	39.80	83350.0	67.3
Elvaloy	MGRF	1	10	0.99	50.10	17450000	44.2	46	10.00	50.10	98100.0	67.3
Elvaloy	MGRF	1	10	0.99	63.10	19450000	43.6	46	10.00	63.10	115500.0	67.3
Elvaloy	MGRF	1	10	0.99	79.40	21550000	42.9	46	10.00	79.40	135500.0	67.3
Elvaloy	MGRF	1	10	0.98	100.00	23850000	42.1	46	10.00	100.00	159000.0	67.4
Elvaloy	MGRF	2	10	5.00	0.10	408000	60.5	46	10.00	0.10	998.0	72.2
Elvaloy	MGRF	2	10	5.00	0.13	653500	59.3	46	10.00	0.13	1070.0	71.4
Elvaloy	MGRF	2	10	5.00	0.16	842500	58.5	46	10.00	0.16	1250.0	70.8
Elvaloy	MGRF	2	10	5.00	0.20	1015000	58.1	46	10.00	0.20	1485.0	70.4
Elvaloy	MGRF	2	10	5.00	0.25	1190000	57.5	46	10.00	0.25	1775.0	70.0
Elvaloy	MGRF	2	10	5.00	0.32	1385000	57.1	46	10.00	0.32	2120.0	69.6
Elvaloy	MGRF	2	10	5.00	0.40	1595000	56.8	46	10.00	0.40	2530.0	69.3
Elvaloy	MGRF	2	10	5.00	0.50	1825000	56.5	46	10.00	0.50	3020.0	69.0
Elvaloy	MGRF	2	10	5.00	0.63	2085000	56.2	46	10.00	0.63	3600.0	68.8
Elvaloy	MGRF	2	10	5.00	0.79	2375000	55.9	46	10.00	0.79	4280.0	68.6
Elvaloy	MGRF	2	10	5.00	1.00	2700000	55.6	46	10.00	1.00	5090.0	68.4
Elvaloy	MGRF	2	10	4.99	1.26	3050000	55.3	46	10.00	1.26	6060.0	68.2
Elvaloy	MGRF	2	10	4.99	1.58	3450000	55.0	46	10.00	1.58	7195.0	68.1
Elvaloy	MGRF	2	10	4.99	2.00	3885000	54.7	46	10.00	2.00	8550.0	67.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	MGRF	2	10	4.99	2.51	4375000	54.4	46	10.00	2.51	10150.0	67.8
Elvaloy	MGRF	2	10	4.99	3.16	4910000	54.1	46	10.00	3.16	12050.0	67.7
Elvaloy	MGRF	2	10	4.99	3.98	5500000	53.8	46	10.00	3.98	14300.0	67.6
Elvaloy	MGRF	2	10	4.99	5.01	6155000	53.6	46	10.00	5.01	17000.0	67.5
Elvaloy	MGRF	2	10	4.99	6.31	6875000	53.3	46	9.99	6.31	20200.0	67.5
Elvaloy	MGRF	2	10	4.99	7.94	7655000	53.0	46	9.99	7.94	23900.0	67.4
Elvaloy	MGRF	2	10	4.99	10.00	8505000	52.7	46	10.00	10.00	28300.0	67.4
Elvaloy	MGRF	2	10	4.99	12.60	9420000	52.5	46	10.00	12.60	33550.0	67.3
Elvaloy	MGRF	2	10	4.98	15.80	10400000	52.2	46	9.99	15.80	39700.0	67.3
Elvaloy	MGRF	2	10	4.97	20.00	11500000	51.9	46	9.99	20.00	46900.0	67.2
Elvaloy	MGRF	2	10	4.98	25.10	12500000	51.7	46	9.98	25.10	55000.0	67.2
Elvaloy	MGRF	2	10	4.98	31.60	13550000	51.5	46	9.95	31.60	65500.0	67.2
Elvaloy	MGRF	2	10	4.98	39.80	14650000	51.4	46	9.95	39.80	77350.0	67.2
Elvaloy	MGRF	2	10	4.99	50.10	15650000	51.2	46	9.94	50.10	91100.0	67.1
Elvaloy	MGRF	2	10	4.99	63.10	16700000	51.0	46	9.93	63.10	107500.0	67.1
Elvaloy	MGRF	2	10	4.99	79.40	17700000	50.7	46	9.92	79.40	126000.0	67.1
Elvaloy	MGRF	2	10	5.02	100.00	18600000	50.4	46	9.91	100.00	148000.0	67.1
Elvaloy	MGRF	1	25	1.00	0.10	29950	65.2	58	10.00	0.10	177.0	78.1
Elvaloy	MGRF	1	25	1.00	0.13	37800	64.9	58	10.00	0.13	217.0	77.3
Elvaloy	MGRF	1	25	1.00	0.16	46000	64.4	58	10.00	0.16	265.0	76.5
Elvaloy	MGRF	1	25	1.00	0.20	55200	64.2	58	10.00	0.20	322.0	75.7
Elvaloy	MGRF	1	25	1.00	0.25	65700	63.9	58	10.00	0.25	390.5	75.0
Elvaloy	MGRF	1	25	1.00	0.32	78000	63.6	58	10.00	0.32	473.5	74.4
Elvaloy	MGRF	1	25	1.00	0.40	92250	63.3	58	10.00	0.40	572.0	73.8
Elvaloy	MGRF	1	25	1.00	0.50	109000	63.1	58	10.00	0.50	689.5	73.2
Elvaloy	MGRF	1	25	1.00	0.63	128500	62.8	58	10.00	0.63	830.0	72.7
Elvaloy	MGRF	1	25	1.00	0.79	150500	62.6	58	10.00	0.79	997.0	72.2
Elvaloy	MGRF	1	25	1.00	1.00	177500	62.3	58	10.00	1.00	1195.0	71.7
Elvaloy	MGRF	1	25	1.00	1.26	208000	62.0	58	10.00	1.26	1435.0	71.3
Elvaloy	MGRF	1	25	1.00	1.58	244000	61.7	58	10.00	1.58	1715.0	71.0
Elvaloy	MGRF	1	25	1.00	2.00	286000	61.4	58	10.00	2.00	2055.0	70.6
Elvaloy	MGRF	1	25	1.00	2.51	334500	61.1	58	10.00	2.51	2460.0	70.4
Elvaloy	MGRF	1	25	1.00	3.16	391500	60.7	58	10.00	3.16	2940.0	70.1
Elvaloy	MGRF	1	25	1.00	3.98	456000	60.4	58	10.00	3.98	3510.0	69.9
Elvaloy	MGRF	1	25	1.00	5.01	533000	60.0	58	10.00	5.01	4190.0	69.7
Elvaloy	MGRF	1	25	1.00	6.31	623000	59.7	58	10.00	6.31	4995.0	69.6
Elvaloy	MGRF	1	25	1.00	7.94	725000	59.3	58	10.00	7.94	5960.0	69.4
Elvaloy	MGRF	1	25	1.00	10.00	843000	58.9	58	10.00	10.00	7105.0	69.3
Elvaloy	MGRF	1	25	1.00	12.60	978500	58.5	58	10.00	12.60	8470.0	69.3
Elvaloy	MGRF	1	25	1.00	15.80	1135000	58.0	58	10.00	15.80	10100.0	69.2
Elvaloy	MGRF	1	25	1.00	20.00	1315000	57.5	58	10.00	20.00	12050.0	69.2
Elvaloy	MGRF	1	25	1.00	25.10	1520000	57.0	58	10.00	25.10	14350.0	69.1
Elvaloy	MGRF	1	25	1.00	31.60	1755000	56.3	58	10.00	31.60	17050.0	69.1
Elvaloy	MGRF	1	25	1.01	39.80	2030000	55.6	58	10.00	39.80	20250.0	69.2
Elvaloy	MGRF	1	25	1.00	50.10	2360000	55.5	58	10.00	50.10	24100.0	69.2
Elvaloy	MGRF	1	25	1.00	63.10	2715000	55.0	58	10.00	63.10	28600.0	69.3
Elvaloy	MGRF	1	25	1.00	79.40	3125000	54.4	58	10.00	79.40	34000.0	69.4

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	MGRF	1	25	1.00	100.00	3595000	53.8	58	10.00	100.00	40350.0	69.6
Elvaloy	MGRF	2	25	5.00	0.10	27650	65.8	58	10.00	0.10	210.5	77.2
Elvaloy	MGRF	2	25	5.00	0.13	35700	65.5	58	10.00	0.13	258.5	76.5
Elvaloy	MGRF	2	25	5.00	0.16	43800	65.1	58	10.00	0.16	317.5	75.6
Elvaloy	MGRF	2	25	5.00	0.20	52700	64.9	58	10.00	0.20	384.5	75.0
Elvaloy	MGRF	2	25	5.00	0.25	62750	64.5	58	10.00	0.25	467.5	74.2
Elvaloy	MGRF	2	25	5.00	0.32	74400	64.2	58	10.00	0.32	567.5	73.5
Elvaloy	MGRF	2	25	5.00	0.40	87900	64.0	58	10.00	0.40	684.0	72.9
Elvaloy	MGRF	2	25	5.00	0.50	103500	63.8	58	10.00	0.50	824.5	72.4
Elvaloy	MGRF	2	25	5.00	0.63	121500	63.6	58	10.00	0.63	985.0	72.0
Elvaloy	MGRF	2	25	5.00	0.79	143500	63.3	58	10.00	0.79	1174.5	71.5
Elvaloy	MGRF	2	25	5.00	1.00	168000	63.1	58	10.00	1.00	1405.0	71.2
Elvaloy	MGRF	2	25	5.00	1.26	197000	62.9	58	10.00	1.26	1680.0	70.7
Elvaloy	MGRF	2	25	5.00	1.58	230000	62.7	58	10.00	1.58	1995.0	70.4
Elvaloy	MGRF	2	25	5.00	2.00	268500	62.5	58	10.00	2.00	2380.0	70.2
Elvaloy	MGRF	2	25	5.00	2.51	313000	62.2	58	10.00	2.51	2850.0	69.9
Elvaloy	MGRF	2	25	5.00	3.16	365000	62.0	58	10.00	3.16	3405.0	69.7
Elvaloy	MGRF	2	25	5.00	3.98	423500	61.8	58	10.00	3.98	4030.0	69.5
Elvaloy	MGRF	2	25	5.00	5.01	493000	61.5	58	10.00	5.01	4810.0	69.4
Elvaloy	MGRF	2	25	5.00	6.31	572500	61.3	58	10.00	6.31	5760.0	69.2
Elvaloy	MGRF	2	25	5.00	7.94	662000	61.1	58	10.00	7.94	6875.0	69.1
Elvaloy	MGRF	2	25	5.00	10.00	765500	60.9	58	10.00	10.00	8180.0	69.0
Elvaloy	MGRF	2	25	5.00	12.60	883500	60.6	58	10.00	12.60	9755.0	68.9
Elvaloy	MGRF	2	25	5.01	15.80	1015000	60.3	58	10.00	15.80	11580.0	68.9
Elvaloy	MGRF	2	25	5.01	20.00	1170000	60.0	58	10.00	20.00	13800.0	68.8
Elvaloy	MGRF	2	25	5.02	25.10	1340000	59.7	58	10.00	25.10	16250.0	68.7
Elvaloy	MGRF	2	25	5.02	31.60	1540000	59.5	58	9.99	31.60	19300.0	68.5
Elvaloy	MGRF	2	25	5.01	39.80	1750000	59.4	58	9.96	39.80	23100.0	68.5
Elvaloy	MGRF	2	25	5.01	50.10	1985000	59.3	58	9.96	50.10	27650.0	68.6
Elvaloy	MGRF	2	25	5.01	63.10	2235000	59.1	58	9.95	63.10	32850.0	68.5
Elvaloy	MGRF	2	25	5.01	79.40	2515000	58.9	58	9.95	79.40	39050.0	68.3
Elvaloy	MGRF	2	25	5.01	100.00	2805000	58.6	58	9.95	100.00	46250.0	67.7
Elvaloy	MGRF	1	35	10.00	0.10	5310	68.8	70	10.00	0.10	35.4	84.6
Elvaloy	MGRF	1	35	10.00	0.13	6455	68.4	70	10.00	0.13	44.0	83.9
Elvaloy	MGRF	1	35	10.00	0.16	7775	68.0	70	10.00	0.16	54.5	83.1
Elvaloy	MGRF	1	35	10.00	0.20	9310	67.8	70	10.00	0.20	67.4	82.4
Elvaloy	MGRF	1	35	10.00	0.25	11100	67.4	70	10.00	0.25	83.2	81.6
Elvaloy	MGRF	1	35	10.00	0.32	13300	67.1	70	10.00	0.32	102.5	80.8
Elvaloy	MGRF	1	35	10.00	0.40	15750	66.9	70	10.00	0.40	126.0	80.1
Elvaloy	MGRF	1	35	10.00	0.50	18750	66.7	70	10.00	0.50	154.0	79.3
Elvaloy	MGRF	1	35	10.00	0.63	22300	66.5	70	10.00	0.63	188.5	78.5
Elvaloy	MGRF	1	35	10.00	0.79	26450	66.3	70	10.00	0.79	230.5	77.8
Elvaloy	MGRF	1	35	10.00	1.00	31300	66.1	70	10.00	1.00	280.5	77.1
Elvaloy	MGRF	1	35	10.00	1.26	37050	65.8	70	10.00	1.26	340.5	76.4
Elvaloy	MGRF	1	35	10.00	1.58	43900	65.6	70	10.00	1.58	413.0	75.7
Elvaloy	MGRF	1	35	10.00	2.00	51850	65.4	70	10.00	2.00	500.5	75.1
Elvaloy	MGRF	1	35	10.00	2.51	61350	65.2	70	10.00	2.51	605.0	74.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Elvaloy	MGRF	1	35	10.00	3.16	72550	65.0	70	10.00	3.16	730.0	74.0
Elvaloy	MGRF	1	35	10.00	3.98	85600	64.8	70	10.00	3.98	880.0	73.6
Elvaloy	MGRF	1	35	10.00	5.01	101250	64.6	70	10.00	5.01	1060.0	73.1
Elvaloy	MGRF	1	35	10.00	6.31	119500	64.4	70	10.00	6.31	1275.0	72.7
Elvaloy	MGRF	1	35	10.00	7.94	141000	64.1	70	10.00	7.94	1530.0	72.4
Elvaloy	MGRF	1	35	10.00	10.00	166000	63.9	70	10.00	10.00	1835.0	72.1
Elvaloy	MGRF	1	35	10.00	12.60	195500	63.5	70	10.00	12.60	2205.0	71.9
Elvaloy	MGRF	1	35	10.00	15.80	230500	63.3	70	10.00	15.80	2645.0	71.7
Elvaloy	MGRF	1	35	10.00	20.00	271500	63.0	70	10.00	20.00	3165.0	71.6
Elvaloy	MGRF	1	35	10.00	25.10	320000	62.6	70	10.00	25.10	3785.0	71.5
Elvaloy	MGRF	1	35	10.00	31.60	376000	62.2	70	10.00	31.60	4530.0	71.5
Elvaloy	MGRF	1	35	10.00	39.80	442500	61.8	70	10.00	39.80	5410.0	71.6
Elvaloy	MGRF	1	35	10.00	50.10	520500	61.2	70	10.00	50.10	6465.0	71.7
Elvaloy	MGRF	1	35	10.00	63.10	612500	60.6	70	10.00	63.10	7720.0	72.0
Elvaloy	MGRF	1	35	10.00	79.40	723500	59.3	70	10.00	79.40	9210.0	72.4
Elvaloy	MGRF	1	35	10.00	100.00	848000	58.9	70	10.00	100.00	11000.0	73.0
Elvaloy	MGRF	2	35	5.00	0.10	4815	68.8	70	10.00	0.10	36.9	83.6
Elvaloy	MGRF	2	35	5.00	0.13	5925	68.5	70	10.00	0.13	46.2	82.7
Elvaloy	MGRF	2	35	5.00	0.16	7175	68.2	70	10.00	0.16	57.4	81.8
Elvaloy	MGRF	2	35	5.00	0.20	8610	68.0	70	10.00	0.20	70.8	81.1
Elvaloy	MGRF	2	35	5.00	0.25	10300	67.7	70	10.00	0.25	87.1	80.4
Elvaloy	MGRF	2	35	5.00	0.32	12250	67.4	70	10.00	0.32	106.8	79.6
Elvaloy	MGRF	2	35	5.00	0.40	14600	67.2	70	10.00	0.40	131.0	78.9
Elvaloy	MGRF	2	35	5.00	0.50	17350	67.1	70	10.00	0.50	160.0	78.2
Elvaloy	MGRF	2	35	5.00	0.63	20650	66.9	70	10.00	0.63	194.5	77.5
Elvaloy	MGRF	2	35	5.00	0.79	24450	66.7	70	10.00	0.79	237.0	76.8
Elvaloy	MGRF	2	35	5.00	1.00	29000	66.6	70	10.00	1.00	287.5	76.2
Elvaloy	MGRF	2	35	5.00	1.26	34350	66.4	70	10.00	1.26	348.0	75.5
Elvaloy	MGRF	2	35	5.00	1.58	40700	66.2	70	10.00	1.58	420.5	75.0
Elvaloy	MGRF	2	35	5.00	2.00	48100	66.1	70	10.00	2.00	507.5	74.4
Elvaloy	MGRF	2	35	5.00	2.51	56800	65.9	70	10.00	2.51	612.0	73.8
Elvaloy	MGRF	2	35	5.00	3.16	67200	65.7	70	10.00	3.16	737.5	73.3
Elvaloy	MGRF	2	35	5.00	3.98	79250	65.5	70	10.00	3.98	885.0	72.9
Elvaloy	MGRF	2	35	5.00	5.01	93650	65.3	70	10.00	5.01	1065.0	72.5
Elvaloy	MGRF	2	35	5.00	6.31	110500	65.2	70	10.00	6.31	1280.0	72.1
Elvaloy	MGRF	2	35	5.00	7.94	130000	65.0	70	10.00	7.94	1535.0	71.8
Elvaloy	MGRF	2	35	5.00	10.00	153500	64.7	70	10.00	10.00	1840.0	71.5
Elvaloy	MGRF	2	35	5.01	12.60	180000	64.4	70	10.00	12.60	2200.0	71.1
Elvaloy	MGRF	2	35	5.01	15.80	212000	64.3	70	10.00	15.80	2640.0	71.0
Elvaloy	MGRF	2	35	5.01	20.00	248500	64.1	70	10.00	20.00	3155.0	70.8
Elvaloy	MGRF	2	35	5.01	25.10	291000	63.9	70	10.00	25.10	3775.0	70.6
Elvaloy	MGRF	2	35	5.01	31.60	340500	63.7	70	10.00	31.60	4515.0	70.4
Elvaloy	MGRF	2	35	5.01	39.80	397500	63.4	70	10.00	39.80	5395.0	70.2
Elvaloy	MGRF	2	35	5.01	50.10	463500	63.0	70	10.00	50.10	6455.0	70.1
Elvaloy	MGRF	2	35	5.01	63.10	540000	62.5	70	10.00	63.10	7720.0	69.9
Elvaloy	MGRF	2	35	4.95	79.40	650000	59.4	70	10.00	79.40	9235.0	69.6
Elvaloy	MGRF	2	35	4.99	100.00	734500	61.2	70	9.97	100.00	11150.0	67.3

Table 62. Novophalt Tank DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	TANK	1	10	0.05	0.50	4887000	52.0	46	1.90	0.50	4428.0	82.9
Novophalt	TANK	1	10	0.05	0.63	5547000	51.4	46	1.89	0.63	5466.0	82.1
Novophalt	TANK	1	10	0.05	0.79	6305000	50.5	46	1.89	0.79	6714.0	81.7
Novophalt	TANK	1	10	0.05	1.00	7174000	50.1	46	1.89	1.00	8257.0	81.1
Novophalt	TANK	1	10	0.05	1.26	8123000	49.3	46	1.89	1.26	10160.0	80.6
Novophalt	TANK	1	10	0.05	1.50	8972000	48.6	46	1.30	1.50	11920.0	80.1
Novophalt	TANK	1	10	0.05	1.89	10120000	47.9	46	1.30	1.89	14610.0	79.7
Novophalt	TANK	1	10	0.05	2.38	11380000	47.4	46	1.30	2.38	17880.0	79.2
Novophalt	TANK	1	10	0.05	2.99	12870000	46.6	46	1.29	2.99	21900.0	78.6
Novophalt	TANK	1	10	0.05	3.77	14450000	45.9	46	1.29	3.77	26720.0	77.9
Novophalt	TANK	1	10	0.05	4.74	16260000	45.3	46	1.29	4.74	32540.0	77.6
Novophalt	TANK	1	10	0.05	5.00	16620000	45.1	46	0.85	5.00	34180.0	77.5
Novophalt	TANK	1	10	0.05	6.30	18510000	44.1	46	0.85	6.30	41450.0	77.0
Novophalt	TANK	1	10	0.05	7.92	20730000	43.5	46	0.85	7.92	50350.0	76.4
Novophalt	TANK	1	10	0.04	9.98	23200000	43.9	46	0.85	9.98	61190.0	75.8
Novophalt	TANK	1	10	0.04	12.56	25810000	42.3	46	0.84	12.56	74310.0	75.4
Novophalt	TANK	1	10	0.04	15.00	27780000	41.5	46	0.38	15.00	86930.0	75.4
Novophalt	TANK	1	10	0.04	18.88	30790000	41.0	46	0.38	18.88	104800.0	74.7
Novophalt	TANK	1	10	0.04	23.77	33960000	40.1	46	0.38	23.77	126700.0	74.0
Novophalt	TANK	1	10	0.04	29.93	37800000	39.4	46	0.38	29.93	152100.0	73.7
Novophalt	TANK	1	10	0.04	37.68	41520000	38.6	46	0.37	37.68	183600.0	72.8
Novophalt	TANK	1	10	0.04	47.43	45780000	37.5	46	0.37	47.43	221200.0	72.3
Novophalt	TANK	2	10	0.06	0.50	4186000	53.1	46	1.19	0.50	5811.0	82.2
Novophalt	TANK	2	10	0.06	0.63	4762000	52.2	46	1.19	0.63	7171.0	81.6
Novophalt	TANK	2	10	0.06	0.79	5432000	51.5	46	1.19	0.79	8860.0	81.2
Novophalt	TANK	2	10	0.06	1.00	6154000	50.8	46	1.19	1.00	10860.0	80.6
Novophalt	TANK	2	10	0.06	1.26	6999000	49.9	46	1.19	1.26	13280.0	79.9
Novophalt	TANK	2	10	0.06	1.50	7722000	49.4	46	1.19	1.50	15590.0	79.5
Novophalt	TANK	2	10	0.06	1.89	8744000	48.6	46	1.19	1.89	19010.0	78.9
Novophalt	TANK	2	10	0.06	2.38	9834000	47.9	46	1.19	2.38	23290.0	78.3
Novophalt	TANK	2	10	0.06	2.99	11100000	47.1	46	1.19	2.99	28390.0	77.7
Novophalt	TANK	2	10	0.06	3.77	12450000	46.3	46	1.18	3.77	34630.0	77.2
Novophalt	TANK	2	10	0.06	4.74	14060000	45.5	46	1.18	4.74	42030.0	76.4
Novophalt	TANK	2	10	0.06	5.00	14440000	45.4	46	1.19	5.00	43850.0	76.2
Novophalt	TANK	2	10	0.06	6.30	16110000	44.9	46	1.18	6.30	53200.0	75.6
Novophalt	TANK	2	10	0.05	7.92	18040000	44.0	46	1.18	7.92	64560.0	74.8
Novophalt	TANK	2	10	0.05	9.98	20050000	43.3	46	1.18	9.98	77970.0	74.3
Novophalt	TANK	2	10	0.05	12.56	22370000	42.5	46	1.17	12.56	93950.0	73.6
Novophalt	TANK	2	10	0.05	15.00	24340000	42.0	46	1.18	15.00	108300.0	73.1
Novophalt	TANK	2	10	0.05	18.88	27140000	41.1	46	1.17	18.88	130700.0	72.2
Novophalt	TANK	2	10	0.05	23.77	29730000	40.5	46	1.16	23.77	156800.0	71.8
Novophalt	TANK	2	10	0.05	29.93	33070000	39.7	46	1.16	29.93	188200.0	71.0
Novophalt	TANK	2	10	0.05	37.68	36530000	39.1	46	1.15	37.68	225300.0	70.3
Novophalt	TANK	2	10	0.05	47.43	40260000	38.1	46	1.15	47.43	269200.0	69.6
Novophalt	TANK	1	22	0.50	0.50	529200	62.8	58	12.00	0.50	646.6	86.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	TANK	1	22	0.50	0.63	618500	62.2	58	12.00	0.63	807.0	86.5
Novophalt	TANK	1	22	0.50	0.79	726500	61.6	58	12.00	0.79	1006.0	86.2
Novophalt	TANK	1	22	0.50	1.00	846200	60.6	58	12.00	1.00	1255.0	85.8
Novophalt	TANK	1	22	0.50	1.26	983400	60.0	58	12.00	1.26	1564.0	85.4
Novophalt	TANK	1	22	0.50	1.50	1105000	60.0	58	11.46	1.50	1855.0	85.2
Novophalt	TANK	1	22	0.50	1.89	1285000	58.8	58	11.46	1.89	2309.0	84.8
Novophalt	TANK	1	22	0.50	2.38	1492000	58.1	58	11.47	2.38	2861.0	84.3
Novophalt	TANK	1	22	0.50	2.99	1729000	57.5	58	11.46	2.99	3545.0	84.0
Novophalt	TANK	1	22	0.50	3.77	2000000	56.9	58	11.46	3.77	4392.0	83.5
Novophalt	TANK	1	22	0.50	4.74	2305000	56.2	58	11.46	4.74	5422.0	83.1
Novophalt	TANK	1	22	0.50	5.00	2384000	56.1	58	10.90	5.00	5688.0	83.0
Novophalt	TANK	1	22	0.50	6.30	2742000	55.5	58	10.90	6.30	7019.0	82.5
Novophalt	TANK	1	22	0.50	7.92	3151000	54.8	58	10.89	7.92	8655.0	82.1
Novophalt	TANK	1	22	0.50	9.98	3621000	54.2	58	10.89	9.98	10640.0	81.6
Novophalt	TANK	1	22	0.49	12.56	4150000	53.6	58	10.89	12.56	13070.0	81.2
Novophalt	TANK	1	22	0.49	15.00	4611000	53.1	58	9.89	15.00	15350.0	80.7
Novophalt	TANK	1	22	0.49	18.88	5270000	52.5	58	9.88	18.88	18800.0	80.3
Novophalt	TANK	1	22	0.49	23.77	6012000	51.9	58	9.87	23.77	23000.0	79.8
Novophalt	TANK	1	22	0.49	29.93	6850000	51.3	58	9.86	29.93	28090.0	79.3
Novophalt	TANK	1	22	0.49	37.68	7792000	50.7	58	9.83	37.68	34270.0	78.8
Novophalt	TANK	1	22	0.49	47.43	8865000	50.1	58	9.81	47.43	41710.0	78.3
Novophalt	TANK	2	22	0.60	0.50	440500	64.8	58	8.01	0.50	805.7	86.9
Novophalt	TANK	2	22	0.60	0.63	517700	64.1	58	8.01	0.63	1008.0	86.5
Novophalt	TANK	2	22	0.60	0.79	609300	63.3	58	8.01	0.79	1252.0	86.3
Novophalt	TANK	2	22	0.60	1.00	712900	62.6	58	8.01	1.00	1566.0	85.9
Novophalt	TANK	2	22	0.60	1.26	839400	61.8	58	8.01	1.26	1946.0	85.3
Novophalt	TANK	2	22	0.60	1.50	938700	61.7	58	8.01	1.50	2302.0	85.3
Novophalt	TANK	2	22	0.60	1.89	1102000	60.2	58	8.01	1.89	2855.0	84.6
Novophalt	TANK	2	22	0.60	2.38	1284000	59.6	58	8.01	2.38	3538.0	84.2
Novophalt	TANK	2	22	0.60	2.99	1491000	58.8	58	8.01	2.99	4388.0	83.7
Novophalt	TANK	2	22	0.60	3.77	1729000	58.1	58	8.01	3.77	5431.0	83.2
Novophalt	TANK	2	22	0.60	4.74	1996000	57.3	58	8.01	4.74	6706.0	82.7
Novophalt	TANK	2	22	0.60	5.00	2072000	57.1	58	8.01	5.00	7038.0	82.6
Novophalt	TANK	2	22	0.60	6.30	2391000	56.4	58	8.00	6.30	8678.0	82.1
Novophalt	TANK	2	22	0.59	7.92	2756000	55.7	58	8.00	7.92	10690.0	81.5
Novophalt	TANK	2	22	0.59	9.98	3171000	55.0	58	8.00	9.98	13130.0	81.0
Novophalt	TANK	2	22	0.59	12.56	3642000	54.3	58	8.00	12.56	16120.0	80.4
Novophalt	TANK	2	22	0.59	15.00	4053000	53.8	58	8.00	15.00	18890.0	80.0
Novophalt	TANK	2	22	0.59	18.88	4635000	53.1	58	7.99	18.88	23110.0	79.4
Novophalt	TANK	2	22	0.59	23.77	5293000	52.4	58	7.98	23.77	28240.0	78.9
Novophalt	TANK	2	22	0.59	29.93	6034000	51.8	58	7.97	29.93	34460.0	78.3
Novophalt	TANK	2	22	0.59	37.68	6865000	51.1	58	7.95	37.68	41950.0	77.7
Novophalt	TANK	2	22	0.59	47.43	7809000	50.4	58	7.92	47.43	51010.0	77.1
Novophalt	TANK	1	34	4.00	0.50	55270	73.8	70	6.01	0.50	134.5	88.7
Novophalt	TANK	1	34	4.00	0.63	66480	73.1	70	6.01	0.63	168.9	88.4
Novophalt	TANK	1	34	4.00	0.79	79750	72.1	70	6.01	0.79	213.9	87.7
Novophalt	TANK	1	34	4.00	1.00	95760	71.7	70	6.01	1.00	265.8	87.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	TANK	1	34	4.00	1.26	114900	70.9	70	6.01	1.26	333.8	87.8
Novophalt	TANK	1	34	4.00	1.50	132400	70.8	70	6.01	1.50	394.7	86.7
Novophalt	TANK	1	34	4.00	1.89	158200	69.6	70	6.01	1.89	497.8	87.1
Novophalt	TANK	1	34	4.00	2.38	188200	69.0	70	6.00	2.38	619.3	86.8
Novophalt	TANK	1	34	4.00	2.99	223800	68.4	70	6.01	2.99	771.9	86.6
Novophalt	TANK	1	34	4.00	3.77	265500	67.6	70	6.01	3.77	963.5	86.3
Novophalt	TANK	1	34	4.00	4.74	314200	66.9	70	6.01	4.74	1206.0	86.0
Novophalt	TANK	1	34	4.00	5.00	328000	66.7	70	6.01	5.00	1267.0	85.8
Novophalt	TANK	1	34	4.00	6.30	385800	66.0	70	6.01	6.30	1573.0	85.5
Novophalt	TANK	1	34	4.00	7.92	454300	65.4	70	6.01	7.92	1957.0	85.1
Novophalt	TANK	1	34	4.00	9.98	533100	64.7	70	6.01	9.98	2433.0	84.7
Novophalt	TANK	1	34	4.00	12.56	624900	64.1	70	6.01	12.56	3017.0	84.4
Novophalt	TANK	1	34	4.00	15.00	710900	63.5	70	6.02	15.00	3564.0	84.1
Novophalt	TANK	1	34	4.00	18.88	824500	63.0	70	6.02	18.88	4412.0	83.7
Novophalt	TANK	1	34	3.99	23.77	958800	62.5	70	6.02	23.77	5452.0	83.3
Novophalt	TANK	1	34	3.99	29.93	1114000	62.0	70	6.02	29.93	6729.0	82.8
Novophalt	TANK	1	34	3.99	37.68	1293000	61.4	70	6.02	37.68	8299.0	82.4
Novophalt	TANK	1	34	3.98	47.43	1497000	61.0	70	6.02	47.43	10220.0	82.0
Novophalt	TANK	2	34	5.00	0.50	44080	75.0	70	4.01	0.50	160.6	88.8
Novophalt	TANK	2	34	5.00	0.63	53370	74.2	70	4.01	0.63	203.6	88.1
Novophalt	TANK	2	34	5.00	0.79	64440	73.4	70	4.00	0.79	262.7	87.1
Novophalt	TANK	2	34	5.00	1.00	77930	73.0	70	4.00	1.00	322.1	87.2
Novophalt	TANK	2	34	5.00	1.26	93560	72.2	70	4.00	1.26	404.7	87.4
Novophalt	TANK	2	34	5.00	1.50	107800	72.1	70	4.00	1.50	474.5	87.0
Novophalt	TANK	2	34	5.00	1.89	129500	71.1	70	4.00	1.89	595.9	86.9
Novophalt	TANK	2	34	5.00	2.38	154600	70.5	70	4.01	2.38	743.4	86.9
Novophalt	TANK	2	34	5.00	2.99	184800	69.9	70	4.00	2.99	925.4	86.3
Novophalt	TANK	2	34	5.00	3.77	220400	69.2	70	4.01	3.77	1156.0	86.1
Novophalt	TANK	2	34	5.00	4.74	262000	68.6	70	4.01	4.74	1439.0	85.8
Novophalt	TANK	2	34	5.00	5.00	273300	68.3	70	4.01	5.00	1515.0	85.6
Novophalt	TANK	2	34	5.00	6.30	322600	67.7	70	4.01	6.30	1883.0	85.3
Novophalt	TANK	2	34	5.00	7.92	381700	67.1	70	4.01	7.92	2343.0	84.8
Novophalt	TANK	2	34	5.00	9.98	449800	66.4	70	4.01	9.98	2905.0	84.4
Novophalt	TANK	2	34	5.00	12.56	529400	65.8	70	4.02	12.56	3603.0	84.0
Novophalt	TANK	2	34	5.00	15.00	604400	65.1	70	4.02	15.00	4265.0	83.7
Novophalt	TANK	2	34	4.99	18.88	702500	64.6	70	4.02	18.88	5264.0	83.2
Novophalt	TANK	2	34	4.99	23.77	819300	64.0	70	4.03	23.77	6495.0	82.7
Novophalt	TANK	2	34	4.99	29.93	954400	63.4	70	4.03	29.93	8020.0	82.3
Novophalt	TANK	2	34	4.98	37.68	1109000	62.9	70	4.04	37.68	9874.0	81.8
Novophalt	TANK	2	34	4.98	47.43	1285000	62.3	70	4.05	47.43	12150.0	81.3

Table 63. Novophalt RTFOT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	RTFOT	1	10	0.03	0.50	8456000	45.9	46	0.69	0.50	11800.0	77.8
Novophalt	RTFOT	1	10	0.03	0.63	9503000	45.3	46	0.69	0.63	14370.0	77.1
Novophalt	RTFOT	1	10	0.03	0.79	10590000	44.5	46	0.69	0.79	17440.0	76.6
Novophalt	RTFOT	1	10	0.03	1.00	11810000	43.7	46	0.68	1.00	21070.0	75.7
Novophalt	RTFOT	1	10	0.03	1.26	13270000	43.4	46	0.68	1.26	25480.0	75.1
Novophalt	RTFOT	1	10	0.03	1.50	14270000	42.5	46	0.68	1.50	29380.0	74.9
Novophalt	RTFOT	1	10	0.03	1.89	15980000	41.8	46	0.68	1.89	35320.0	74.1
Novophalt	RTFOT	1	10	0.03	2.38	17650000	41.6	46	0.68	2.38	42580.0	73.6
Novophalt	RTFOT	1	10	0.03	2.99	19380000	40.7	46	0.68	2.99	51320.0	72.8
Novophalt	RTFOT	1	10	0.03	3.77	21500000	40.8	46	0.67	3.77	61720.0	72.2
Novophalt	RTFOT	1	10	0.03	4.74	23800000	39.3	46	0.67	4.74	74420.0	71.4
Novophalt	RTFOT	1	10	0.03	5.00	24340000	40.1	46	0.67	5.00	76930.0	71.6
Novophalt	RTFOT	1	10	0.03	6.30	26520000	39.2	46	0.67	6.30	92120.0	71.1
Novophalt	RTFOT	1	10	0.03	7.92	28580000	38.0	46	0.66	7.92	110400.0	70.5
Novophalt	RTFOT	1	10	0.03	9.98	32150000	37.8	46	0.66	9.98	131400.0	70.0
Novophalt	RTFOT	1	10	0.03	12.56	35450000	37.0	46	0.65	12.56	157100.0	69.3
Novophalt	RTFOT	1	10	0.03	15.00	37670000	36.0	46	0.64	15.00	179900.0	68.9
Novophalt	RTFOT	1	10	0.03	18.88	40150000	37.7	46	0.63	18.88	213400.0	68.4
Novophalt	RTFOT	1	10	0.02	23.77	45570000	34.7	46	0.62	23.77	254100.0	67.9
Novophalt	RTFOT	1	10	0.03	29.93	49040000	34.4	46	0.60	29.93	301800.0	67.3
Novophalt	RTFOT	1	10	0.02	37.68	53520000	34.4	46	0.59	37.68	356700.0	66.6
Novophalt	RTFOT	1	10	0.02	47.43	58010000	32.9	46	0.57	47.43	423000.0	65.9
Novophalt	RTFOT	2	10	0.03	0.50	7629000	45.5	46	0.59	0.50	13700.0	77.0
Novophalt	RTFOT	2	10	0.03	0.63	8634000	44.7	46	0.59	0.63	16630.0	76.5
Novophalt	RTFOT	2	10	0.03	0.79	9609000	44.4	46	0.59	0.79	20150.0	75.7
Novophalt	RTFOT	2	10	0.03	1.00	10710000	43.0	46	0.59	1.00	24360.0	75.1
Novophalt	RTFOT	2	10	0.03	1.26	12000000	42.5	46	0.59	1.26	29430.0	74.4
Novophalt	RTFOT	2	10	0.03	1.50	13050000	41.9	46	0.59	1.50	34060.0	73.8
Novophalt	RTFOT	2	10	0.03	1.89	14520000	41.3	46	0.59	1.89	40990.0	73.2
Novophalt	RTFOT	2	10	0.03	2.38	16130000	40.8	46	0.59	2.38	49430.0	72.5
Novophalt	RTFOT	2	10	0.03	2.99	17920000	40.6	46	0.59	2.99	59120.0	71.9
Novophalt	RTFOT	2	10	0.03	3.77	19950000	39.9	46	0.59	3.77	70420.0	71.1
Novophalt	RTFOT	2	10	0.03	4.74	21890000	38.7	46	0.58	4.74	84900.0	70.6
Novophalt	RTFOT	2	10	0.03	5.00	22190000	39.0	46	0.58	5.00	88490.0	70.3
Novophalt	RTFOT	2	10	0.03	6.30	24730000	38.3	46	0.58	6.30	105500.0	69.7
Novophalt	RTFOT	2	10	0.03	7.92	27100000	37.4	46	0.57	7.92	125900.0	69.1
Novophalt	RTFOT	2	10	0.03	9.98	29820000	37.0	46	0.56	9.98	150600.0	68.4
Novophalt	RTFOT	2	10	0.03	12.56	32850000	36.5	46	0.55	12.56	179400.0	67.4
Novophalt	RTFOT	2	10	0.03	15.00	35120000	35.5	46	0.55	15.00	204900.0	67.5
Novophalt	RTFOT	2	10	0.03	18.88	38710000	35.4	46	0.54	18.88	241200.0	66.8
Novophalt	RTFOT	2	10	0.03	23.77	42050000	34.0	46	0.52	23.77	286600.0	66.2
Novophalt	RTFOT	2	10	0.03	29.93	45550000	33.7	46	0.51	29.93	337900.0	65.6
Novophalt	RTFOT	2	10	0.03	37.68	49540000	33.1	46	0.49	37.68	399500.0	64.9
Novophalt	RTFOT	2	10	0.03	47.43	54870000	32.8	46	0.47	47.43	471500.0	64.3
Novophalt	RTFOT	1	22	0.23	0.50	1119000	55.3	58	4.60	0.50	1710.0	83.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	RTFOT	1	22	0.23	0.63	1284000	54.9	58	4.60	0.63	2119.0	82.8
Novophalt	RTFOT	1	22	0.23	0.79	1475000	54.2	58	4.60	0.79	2616.0	82.7
Novophalt	RTFOT	1	22	0.23	1.00	1677000	53.7	58	4.60	1.00	3229.0	82.1
Novophalt	RTFOT	1	22	0.23	1.26	1914000	52.7	58	4.60	1.26	3975.0	81.6
Novophalt	RTFOT	1	22	0.23	1.50	2157000	52.4	58	4.60	1.50	4670.0	81.4
Novophalt	RTFOT	1	22	0.23	1.89	2457000	52.1	58	4.60	1.89	5735.0	80.5
Novophalt	RTFOT	1	22	0.23	2.38	2802000	51.4	58	4.60	2.38	7048.0	79.9
Novophalt	RTFOT	1	22	0.23	2.99	3191000	51.0	58	4.60	2.99	8639.0	79.3
Novophalt	RTFOT	1	22	0.23	3.77	3639000	50.5	58	4.59	3.77	10560.0	78.8
Novophalt	RTFOT	1	22	0.23	4.74	4128000	49.9	58	4.59	4.74	12890.0	78.2
Novophalt	RTFOT	1	22	0.23	5.00	4245000	49.8	58	4.59	5.00	13500.0	78.0
Novophalt	RTFOT	1	22	0.23	6.30	4822000	49.1	58	4.59	6.30	16420.0	77.4
Novophalt	RTFOT	1	22	0.23	7.92	5460000	48.6	58	4.58	7.92	19970.0	76.8
Novophalt	RTFOT	1	22	0.23	9.98	6163000	48.0	58	4.58	9.98	24200.0	76.2
Novophalt	RTFOT	1	22	0.23	12.56	6948000	47.3	58	4.57	12.56	29330.0	75.6
Novophalt	RTFOT	1	22	0.22	15.00	7628000	46.9	58	4.57	15.00	33980.0	75.2
Novophalt	RTFOT	1	22	0.22	18.88	8576000	46.2	58	4.56	18.88	40990.0	74.6
Novophalt	RTFOT	1	22	0.22	23.77	9626000	45.6	58	4.54	23.77	49410.0	74.0
Novophalt	RTFOT	1	22	0.22	29.93	10790000	45.2	58	4.52	29.93	59520.0	73.5
Novophalt	RTFOT	1	22	0.22	37.68	12130000	44.5	58	4.51	37.68	71480.0	72.9
Novophalt	RTFOT	1	22	0.22	47.43	13540000	43.9	58	4.47	47.43	85860.0	72.3
Novophalt	RTFOT	2	22	0.24	0.50	1086000	54.8	58	4.10	0.50	1983.0	83.5
Novophalt	RTFOT	2	22	0.24	0.63	1245000	54.1	58	4.10	0.63	2448.0	82.8
Novophalt	RTFOT	2	22	0.24	0.79	1425000	53.3	58	4.10	0.79	3021.0	82.3
Novophalt	RTFOT	2	22	0.24	1.00	1628000	53.1	58	4.10	1.00	3723.0	81.7
Novophalt	RTFOT	2	22	0.24	1.26	1865000	52.3	58	4.09	1.26	4582.0	81.1
Novophalt	RTFOT	2	22	0.24	1.50	2076000	52.0	58	4.09	1.50	5378.0	80.6
Novophalt	RTFOT	2	22	0.24	1.89	2364000	51.5	58	4.09	1.89	6590.0	80.0
Novophalt	RTFOT	2	22	0.24	2.38	2690000	50.8	58	4.09	2.38	8076.0	79.4
Novophalt	RTFOT	2	22	0.24	2.99	3064000	50.5	58	4.09	2.99	9867.0	78.7
Novophalt	RTFOT	2	22	0.24	3.77	3484000	50.0	58	4.09	3.77	12050.0	78.1
Novophalt	RTFOT	2	22	0.24	4.74	3949000	49.2	58	4.09	4.74	14680.0	77.4
Novophalt	RTFOT	2	22	0.24	5.00	4081000	49.3	58	4.09	5.00	15360.0	77.3
Novophalt	RTFOT	2	22	0.24	6.30	4614000	48.7	58	4.08	6.30	18650.0	76.6
Novophalt	RTFOT	2	22	0.24	7.92	5233000	48.3	58	4.08	7.92	22600.0	76.0
Novophalt	RTFOT	2	22	0.23	9.98	5923000	47.7	58	4.07	9.98	27350.0	75.3
Novophalt	RTFOT	2	22	0.23	12.56	6664000	47.0	58	4.07	12.56	33070.0	74.7
Novophalt	RTFOT	2	22	0.23	15.00	7337000	46.5	58	4.06	15.00	38260.0	74.1
Novophalt	RTFOT	2	22	0.23	18.88	8238000	46.0	58	4.05	18.88	46030.0	73.5
Novophalt	RTFOT	2	22	0.23	23.77	9248000	45.5	58	4.03	23.77	55350.0	73.0
Novophalt	RTFOT	2	22	0.23	29.93	10360000	44.9	58	4.02	29.93	66460.0	72.3
Novophalt	RTFOT	2	22	0.23	37.68	11560000	44.3	58	3.99	37.68	79640.0	71.7
Novophalt	RTFOT	2	22	0.23	47.43	12960000	43.7	58	3.96	47.43	95340.0	71.1
Novophalt	RTFOT	1	34	1.70	0.50	149900	62.7	70	2.49	0.50	315.3	86.9
Novophalt	RTFOT	1	34	1.70	0.63	175200	62.4	70	2.49	0.63	399.4	86.7
Novophalt	RTFOT	1	34	1.70	0.79	204200	61.9	70	2.49	0.79	483.9	85.8
Novophalt	RTFOT	1	34	1.70	1.00	239200	61.6	70	2.49	1.00	604.2	85.8

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	RTFOT	1	34	1.70	1.26	278600	60.8	70	2.49	1.26	751.3	85.5
Novophalt	RTFOT	1	34	1.70	1.50	313900	61.0	70	2.49	1.50	897.9	85.4
Novophalt	RTFOT	1	34	1.70	1.89	364400	59.9	70	2.49	1.89	1110.0	84.4
Novophalt	RTFOT	1	34	1.70	2.38	423700	59.7	70	2.49	2.38	1388.0	84.2
Novophalt	RTFOT	1	34	1.70	2.99	492100	59.3	70	2.49	2.99	1721.0	84.1
Novophalt	RTFOT	1	34	1.70	3.77	569800	58.8	70	2.50	3.77	2129.0	83.4
Novophalt	RTFOT	1	34	1.70	4.74	659800	58.4	70	2.49	4.74	2633.0	82.8
Novophalt	RTFOT	1	34	1.70	5.00	681300	58.3	70	2.49	5.00	2770.0	82.9
Novophalt	RTFOT	1	34	1.70	6.30	787300	57.9	70	2.50	6.30	3404.0	82.3
Novophalt	RTFOT	1	34	1.70	7.92	910100	57.5	70	2.50	7.92	4203.0	81.8
Novophalt	RTFOT	1	34	1.70	9.98	1051000	57.1	70	2.50	9.98	5170.0	81.3
Novophalt	RTFOT	1	34	1.70	12.56	1211000	56.7	70	2.49	12.56	6363.0	80.7
Novophalt	RTFOT	1	34	1.70	15.00	1356000	56.3	70	2.50	15.00	7425.0	80.2
Novophalt	RTFOT	1	34	1.70	18.88	1557000	55.9	70	2.50	18.88	9101.0	79.7
Novophalt	RTFOT	1	34	1.69	23.77	1791000	55.5	70	2.50	23.77	11140.0	79.2
Novophalt	RTFOT	1	34	1.69	29.93	2052000	55.0	70	2.50	29.93	13610.0	78.6
Novophalt	RTFOT	1	34	1.69	37.68	2352000	54.6	70	2.50	37.68	16570.0	78.1
Novophalt	RTFOT	1	34	1.69	47.43	2693000	54.2	70	2.50	47.43	20190.0	77.5
Novophalt	RTFOT	2	34	1.65	0.50	152600	62.4	70	2.20	0.50	354.6	87.2
Novophalt	RTFOT	2	34	1.65	0.63	177200	61.8	70	2.20	0.63	456.3	84.9
Novophalt	RTFOT	2	34	1.65	0.79	205800	61.5	70	2.20	0.79	570.6	83.8
Novophalt	RTFOT	2	34	1.65	1.00	240000	61.0	70	2.20	1.00	701.0	84.9
Novophalt	RTFOT	2	34	1.65	1.26	279500	60.5	70	2.20	1.26	875.5	84.5
Novophalt	RTFOT	2	34	1.65	1.50	317100	60.5	70	2.20	1.50	1030.0	85.1
Novophalt	RTFOT	2	34	1.65	1.89	366900	59.5	70	2.20	1.89	1278.0	84.5
Novophalt	RTFOT	2	34	1.65	2.38	427200	59.1	70	2.20	2.38	1589.0	83.7
Novophalt	RTFOT	2	34	1.65	2.99	493700	58.8	70	2.20	2.99	1964.0	83.4
Novophalt	RTFOT	2	34	1.65	3.77	574200	58.3	70	2.20	3.77	2425.0	83.0
Novophalt	RTFOT	2	34	1.65	4.74	664900	57.8	70	2.20	4.74	2995.0	82.4
Novophalt	RTFOT	2	34	1.65	5.00	690800	57.7	70	2.21	5.00	3146.0	82.3
Novophalt	RTFOT	2	34	1.65	6.30	795500	57.3	70	2.20	6.30	3868.0	81.8
Novophalt	RTFOT	2	34	1.65	7.92	918200	56.9	70	2.20	7.92	4762.0	81.2
Novophalt	RTFOT	2	34	1.65	9.98	1058000	56.5	70	2.21	9.98	5843.0	80.7
Novophalt	RTFOT	2	34	1.65	12.56	1218000	56.1	70	2.21	12.56	7179.0	80.1
Novophalt	RTFOT	2	34	1.65	15.00	1360000	55.7	70	2.21	15.00	8390.0	79.7
Novophalt	RTFOT	2	34	1.64	18.88	1558000	55.3	70	2.21	18.88	10270.0	79.1
Novophalt	RTFOT	2	34	1.64	23.77	1785000	54.9	70	2.21	23.77	12500.0	78.5
Novophalt	RTFOT	2	34	1.64	29.93	2043000	54.5	70	2.21	29.93	15290.0	77.9
Novophalt	RTFOT	2	34	1.64	37.68	2337000	54.1	70	2.21	37.68	18620.0	77.3
Novophalt	RTFOT	2	34	1.64	47.43	2669000	53.7	70	2.21	47.43	22600.0	76.7

Table 64. Novophalt SAFT DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	SAFT	1	10	0.05	0.50	5137000	51.5	46	1.10	0.50	7273.0	80.1
Novophalt	SAFT	1	10	0.05	0.63	5872000	50.5	46	1.10	0.63	8925.0	79.2
Novophalt	SAFT	1	10	0.05	0.79	6667000	50.0	46	1.10	0.79	10870.0	78.8
Novophalt	SAFT	1	10	0.05	1.00	7555000	49.4	46	1.10	1.00	13320.0	78.1
Novophalt	SAFT	1	10	0.05	1.26	8544000	48.4	46	1.10	1.26	16200.0	77.6
Novophalt	SAFT	1	10	0.05	1.50	9265000	48.0	46	1.10	1.50	18860.0	77.4
Novophalt	SAFT	1	10	0.05	1.89	10420000	47.3	46	1.10	1.89	22940.0	76.5
Novophalt	SAFT	1	10	0.05	2.38	11720000	46.7	46	1.09	2.38	27880.0	75.8
Novophalt	SAFT	1	10	0.05	2.99	13150000	46.2	46	1.10	2.99	33710.0	75.3
Novophalt	SAFT	1	10	0.05	3.77	14940000	45.6	46	1.09	3.77	40870.0	74.8
Novophalt	SAFT	1	10	0.05	4.74	16480000	44.8	46	1.09	4.74	49440.0	74.2
Novophalt	SAFT	1	10	0.05	5.00	16970000	44.3	46	1.09	5.00	51500.0	73.8
Novophalt	SAFT	1	10	0.05	6.30	18670000	43.7	46	1.09	6.30	61990.0	73.5
Novophalt	SAFT	1	10	0.05	7.92	21270000	43.2	46	1.08	7.92	74870.0	72.9
Novophalt	SAFT	1	10	0.05	9.98	23740000	42.5	46	1.08	9.98	89860.0	72.3
Novophalt	SAFT	1	10	0.05	12.56	26440000	42.0	46	1.07	12.56	107900.0	71.8
Novophalt	SAFT	1	10	0.05	15.00	28680000	41.1	46	1.06	15.00	124000.0	71.4
Novophalt	SAFT	1	10	0.05	18.88	31970000	40.7	46	1.05	18.88	148500.0	70.6
Novophalt	SAFT	1	10	0.05	23.77	35090000	39.5	46	1.04	23.77	177800.0	70.2
Novophalt	SAFT	1	10	0.05	29.93	38900000	38.8	46	1.03	29.93	212600.0	69.5
Novophalt	SAFT	1	10	0.04	37.68	43520000	37.8	46	1.01	37.68	253800.0	69.0
Novophalt	SAFT	1	10	0.05	47.43	47130000	37.7	46	0.99	47.43	302800.0	68.3
Novophalt	SAFT	2	10	0.05	0.50	5508000	50.2	46	1.30	0.50	6286.0	80.9
Novophalt	SAFT	2	10	0.05	0.63	6261000	49.8	46	1.30	0.63	7697.0	79.9
Novophalt	SAFT	2	10	0.05	0.79	7034000	48.9	46	1.30	0.79	9421.0	79.8
Novophalt	SAFT	2	10	0.05	1.00	7929000	48.3	46	1.30	1.00	11510.0	79.2
Novophalt	SAFT	2	10	0.05	1.26	8937000	47.5	46	1.30	1.26	14080.0	78.5
Novophalt	SAFT	2	10	0.05	1.50	9937000	46.7	46	0.98	1.50	16440.0	78.2
Novophalt	SAFT	2	10	0.05	1.89	11130000	46.0	46	0.98	1.89	20020.0	77.6
Novophalt	SAFT	2	10	0.05	2.38	12520000	45.4	46	0.97	2.38	24390.0	77.2
Novophalt	SAFT	2	10	0.05	2.99	14000000	44.6	46	0.97	2.99	29620.0	76.5
Novophalt	SAFT	2	10	0.05	3.77	15780000	43.8	46	0.97	3.77	36030.0	75.8
Novophalt	SAFT	2	10	0.05	4.74	17570000	43.5	46	0.97	4.74	43530.0	75.3
Novophalt	SAFT	2	10	0.05	5.00	18030000	43.1	46	0.71	5.00	45550.0	75.5
Novophalt	SAFT	2	10	0.05	6.30	19990000	42.0	46	0.71	6.30	55040.0	74.8
Novophalt	SAFT	2	10	0.04	7.92	22470000	41.7	46	0.71	7.92	66460.0	74.2
Novophalt	SAFT	2	10	0.04	9.98	24880000	41.2	46	0.70	9.98	80270.0	73.7
Novophalt	SAFT	2	10	0.04	12.56	27710000	40.4	46	0.70	12.56	96740.0	73.2
Novophalt	SAFT	2	10	0.04	15.00	29300000	39.7	46	0.39	15.00	112000.0	73.1
Novophalt	SAFT	2	10	0.04	18.88	32400000	39.1	46	0.38	18.88	134500.0	72.5
Novophalt	SAFT	2	10	0.04	23.77	35750000	38.4	46	0.38	23.77	161600.0	72.1
Novophalt	SAFT	2	10	0.04	29.93	39440000	37.8	46	0.37	29.93	194900.0	71.2
Novophalt	SAFT	2	10	0.04	37.68	43490000	37.2	46	0.37	37.68	231700.0	71.2
Novophalt	SAFT	2	10	0.04	47.43	47480000	36.0	46	0.36	47.43	278000.0	70.6
Novophalt	SAFT	1	22	0.44	0.50	579000	62.5	58	7.51	0.50	1043.0	85.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	SAFT	1	22	0.44	0.63	677200	61.8	58	7.51	0.63	1299.0	84.4
Novophalt	SAFT	1	22	0.44	0.79	792900	61.1	58	7.50	0.79	1605.0	84.0
Novophalt	SAFT	1	22	0.44	1.00	928000	60.6	58	7.50	1.00	1986.0	83.7
Novophalt	SAFT	1	22	0.44	1.26	1086000	59.7	58	7.50	1.26	2462.0	83.4
Novophalt	SAFT	1	22	0.44	1.50	1219000	59.7	58	7.50	1.50	2896.0	83.0
Novophalt	SAFT	1	22	0.44	1.89	1413000	58.4	58	7.50	1.89	3579.0	82.4
Novophalt	SAFT	1	22	0.44	2.38	1641000	57.9	58	7.50	2.38	4419.0	81.9
Novophalt	SAFT	1	22	0.44	2.99	1894000	57.0	58	7.50	2.99	5434.0	81.4
Novophalt	SAFT	1	22	0.44	3.77	2186000	56.5	58	7.50	3.77	6685.0	80.9
Novophalt	SAFT	1	22	0.44	4.74	2521000	55.7	58	7.50	4.74	8211.0	80.4
Novophalt	SAFT	1	22	0.44	5.00	2611000	55.5	58	7.50	5.00	8600.0	80.3
Novophalt	SAFT	1	22	0.44	6.30	3000000	54.9	58	7.49	6.30	10530.0	79.7
Novophalt	SAFT	1	22	0.44	7.92	3443000	54.2	58	7.49	7.92	12880.0	79.2
Novophalt	SAFT	1	22	0.44	9.98	3946000	53.5	58	7.49	9.98	15710.0	78.7
Novophalt	SAFT	1	22	0.44	12.56	4517000	52.9	58	7.48	12.56	19160.0	78.2
Novophalt	SAFT	1	22	0.44	15.00	5037000	52.4	58	7.48	15.00	22330.0	77.7
Novophalt	SAFT	1	22	0.43	18.88	5738000	51.6	58	7.47	18.88	27100.0	77.2
Novophalt	SAFT	1	22	0.43	23.77	6518000	51.1	58	7.46	23.77	32890.0	76.7
Novophalt	SAFT	1	22	0.43	29.93	7387000	50.4	58	7.44	29.93	39850.0	76.2
Novophalt	SAFT	1	22	0.43	37.68	8370000	49.8	58	7.42	37.68	48200.0	75.6
Novophalt	SAFT	1	22	0.43	47.43	9480000	49.2	58	7.38	47.43	58250.0	75.1
Novophalt	SAFT	2	22	0.40	0.50	629800	61.5	58	8.52	0.50	913.5	85.8
Novophalt	SAFT	2	22	0.40	0.63	735900	60.8	58	8.52	0.63	1140.0	85.3
Novophalt	SAFT	2	22	0.40	0.79	856100	59.9	58	8.52	0.79	1409.0	84.9
Novophalt	SAFT	2	22	0.40	1.00	995800	59.4	58	8.51	1.00	1758.0	84.5
Novophalt	SAFT	2	22	0.40	1.26	1159000	58.9	58	8.51	1.26	2175.0	84.0
Novophalt	SAFT	2	22	0.40	1.50	1315000	58.6	58	8.51	1.50	2558.0	83.6
Novophalt	SAFT	2	22	0.40	1.89	1513000	57.5	58	8.51	1.89	3164.0	83.2
Novophalt	SAFT	2	22	0.40	2.38	1746000	56.9	58	8.51	2.38	3909.0	82.7
Novophalt	SAFT	2	22	0.40	2.99	2010000	56.3	58	8.51	2.99	4820.0	82.2
Novophalt	SAFT	2	22	0.40	3.77	2316000	55.6	58	8.51	3.77	5941.0	81.8
Novophalt	SAFT	2	22	0.40	4.74	2662000	54.9	58	8.51	4.74	7307.0	81.2
Novophalt	SAFT	2	22	0.40	5.00	2753000	54.8	58	8.51	5.00	7662.0	81.1
Novophalt	SAFT	2	22	0.40	6.30	3171000	54.0	58	8.50	6.30	9400.0	80.6
Novophalt	SAFT	2	22	0.40	7.92	3639000	53.3	58	8.50	7.92	11530.0	80.1
Novophalt	SAFT	2	22	0.39	9.98	4174000	52.7	58	8.50	9.98	14090.0	79.6
Novophalt	SAFT	2	22	0.39	12.56	4771000	51.9	58	8.49	12.56	17210.0	79.1
Novophalt	SAFT	2	22	0.39	15.00	5294000	51.4	58	8.49	15.00	20110.0	78.7
Novophalt	SAFT	2	22	0.39	18.88	6021000	50.8	58	8.47	18.88	24480.0	78.2
Novophalt	SAFT	2	22	0.39	23.77	6822000	50.2	58	8.46	23.77	29750.0	77.7
Novophalt	SAFT	2	22	0.39	29.93	7754000	49.4	58	8.44	29.93	36130.0	77.2
Novophalt	SAFT	2	22	0.39	37.68	8764000	48.7	58	8.42	37.68	43780.0	76.7
Novophalt	SAFT	2	22	0.39	47.43	9902000	48.1	58	8.38	47.43	53020.0	76.2
Novophalt	SAFT	1	34	4.00	0.50	63610	72.3	70	3.90	0.50	211.7	87.7
Novophalt	SAFT	1	34	4.00	0.63	76440	71.7	70	3.90	0.63	263.7	85.3
Novophalt	SAFT	1	34	4.00	0.79	91880	71.1	70	3.90	0.79	321.2	85.9
Novophalt	SAFT	1	34	4.00	1.00	110000	70.5	70	3.90	1.00	394.6	86.0

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	SAFT	1	34	4.00	1.26	131700	70.0	70	3.90	1.26	488.3	86.3
Novophalt	SAFT	1	34	4.00	1.50	150600	69.7	70	3.90	1.50	583.8	85.7
Novophalt	SAFT	1	34	4.00	1.89	179100	68.7	70	3.90	1.89	723.2	85.1
Novophalt	SAFT	1	34	4.00	2.38	212700	68.0	70	3.90	2.38	903.9	85.2
Novophalt	SAFT	1	34	4.00	2.99	252800	67.6	70	3.90	2.99	1122.0	84.5
Novophalt	SAFT	1	34	4.00	3.77	299400	66.9	70	3.90	3.77	1393.0	84.1
Novophalt	SAFT	1	34	4.00	4.74	353300	66.4	70	3.90	4.74	1731.0	83.9
Novophalt	SAFT	1	34	4.00	5.00	369000	66.2	70	3.90	5.00	1818.0	83.8
Novophalt	SAFT	1	34	4.00	6.30	433700	65.6	70	3.90	6.30	2246.0	83.4
Novophalt	SAFT	1	34	4.00	7.92	510200	65.0	70	3.90	7.92	2774.0	82.9
Novophalt	SAFT	1	34	4.00	9.98	598200	64.4	70	3.90	9.98	3427.0	82.5
Novophalt	SAFT	1	34	4.00	12.56	701000	63.8	70	3.90	12.56	4229.0	82.1
Novophalt	SAFT	1	34	4.00	15.00	798000	63.2	70	3.91	15.00	4981.0	81.7
Novophalt	SAFT	1	34	4.00	18.88	924200	62.7	70	3.91	18.88	6114.0	81.3
Novophalt	SAFT	1	34	3.99	23.77	1074000	62.2	70	3.91	23.77	7538.0	80.8
Novophalt	SAFT	1	34	3.99	29.93	1247000	61.6	70	3.91	29.93	9212.0	80.3
Novophalt	SAFT	1	34	3.99	37.68	1444000	61.1	70	3.92	37.68	11290.0	79.9
Novophalt	SAFT	1	34	3.98	47.43	1668000	60.6	70	3.92	47.43	13820.0	79.4
Novophalt	SAFT	2	34	3.60	0.50	70600	70.9	70	4.10	0.50	195.4	86.7
Novophalt	SAFT	2	34	3.60	0.63	84550	70.3	70	4.10	0.63	238.0	87.7
Novophalt	SAFT	2	34	3.60	0.79	100700	69.6	70	4.10	0.79	302.6	85.2
Novophalt	SAFT	2	34	3.60	1.00	119900	69.1	70	4.10	1.00	369.6	85.5
Novophalt	SAFT	2	34	3.60	1.26	142700	68.4	70	4.10	1.26	459.9	86.6
Novophalt	SAFT	2	34	3.60	1.50	163600	68.5	70	4.10	1.50	545.6	86.2
Novophalt	SAFT	2	34	3.60	1.89	193600	67.3	70	4.10	1.89	683.5	85.8
Novophalt	SAFT	2	34	3.60	2.38	229000	66.7	70	4.10	2.38	848.3	85.4
Novophalt	SAFT	2	34	3.60	2.99	270800	66.2	70	4.10	2.99	1058.0	85.3
Novophalt	SAFT	2	34	3.60	3.77	320700	65.7	70	4.10	3.77	1309.0	84.8
Novophalt	SAFT	2	34	3.60	4.74	378600	65.1	70	4.10	4.74	1627.0	84.4
Novophalt	SAFT	2	34	3.60	5.00	389600	64.9	70	4.10	5.00	1706.0	84.3
Novophalt	SAFT	2	34	3.60	6.30	457800	64.4	70	4.10	6.30	2111.0	83.9
Novophalt	SAFT	2	34	3.60	7.92	536700	63.9	70	4.10	7.92	2616.0	83.5
Novophalt	SAFT	2	34	3.60	9.98	628300	63.3	70	4.10	9.98	3231.0	83.0
Novophalt	SAFT	2	34	3.60	12.56	735100	62.8	70	4.10	12.56	3992.0	82.7
Novophalt	SAFT	2	34	3.60	15.00	844000	62.2	70	4.10	15.00	4698.0	82.3
Novophalt	SAFT	2	34	3.60	18.88	979300	61.7	70	4.10	18.88	5783.0	81.8
Novophalt	SAFT	2	34	3.59	23.77	1138000	61.2	70	4.10	23.77	7109.0	81.4
Novophalt	SAFT	2	34	3.59	29.93	1320000	60.7	70	4.10	29.93	8739.0	81.0
Novophalt	SAFT	2	34	3.59	37.68	1527000	60.2	70	4.10	37.68	10720.0	80.5
Novophalt	SAFT	2	34	3.58	47.43	1763000	59.7	70	4.09	47.43	13140.0	80.0

Table 65. Novophalt MGRF DSR Data.

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	MGRF	1	15	1.00	0.10	968056	56.0	46	10.00	0.10	6128.9	77.9
Novophalt	MGRF	1	15	1.00	0.13	1114422	55.3	46	10.00	0.13	7443.8	77.2
Novophalt	MGRF	1	15	1.00	0.16	1280000	54.7	46	10.00	0.16	9040.0	76.6
Novophalt	MGRF	1	15	1.00	0.20	1474571	53.9	46	10.00	0.20	10940.4	75.7
Novophalt	MGRF	1	15	1.00	0.25	1683376	53.2	46	10.00	0.25	13169.4	74.9
Novophalt	MGRF	1	15	1.00	0.32	1922939	52.5	46	10.00	0.32	15871.2	74.1
Novophalt	MGRF	1	15	1.00	0.40	2200000	51.9	46	10.00	0.40	19050.0	73.4
Novophalt	MGRF	1	15	1.00	0.50	2504333	51.3	46	10.00	0.50	22828.8	72.5
Novophalt	MGRF	1	15	1.00	0.63	2847162	50.6	46	10.00	0.63	27284.7	71.7
Novophalt	MGRF	1	15	1.00	0.79	3230045	50.1	46	10.00	0.79	32510.7	71.0
Novophalt	MGRF	1	15	1.00	1.00	3660000	49.5	46	10.00	1.00	38700.0	70.2
Novophalt	MGRF	1	15	1.00	1.26	4142111	48.8	46	10.00	1.26	45891.2	69.4
Novophalt	MGRF	1	15	1.00	1.58	4665473	48.2	46	10.00	1.58	54110.5	68.6
Novophalt	MGRF	1	15	1.00	2.00	5270959	47.6	46	10.00	2.00	64086.7	67.8
Novophalt	MGRF	1	15	1.00	2.51	5920000	47.0	46	10.00	2.51	75250.0	67.1
Novophalt	MGRF	1	15	1.00	3.16	6660381	46.4	46	10.00	3.16	88303.9	66.3
Novophalt	MGRF	1	15	1.00	3.98	7475397	45.8	46	10.00	3.98	103286.5	65.7
Novophalt	MGRF	1	15	1.00	5.01	8375933	45.3	46	10.00	5.01	120392.1	65.1
Novophalt	MGRF	1	15	1.00	6.31	9385000	44.8	46	10.00	6.31	140000.0	64.5
Novophalt	MGRF	1	15	1.00	7.94	10460156	44.2	46	10.00	7.94	162585.7	64.0
Novophalt	MGRF	1	15	1.00	10.00	11658539	43.6	46	10.00	10.00	188365.5	63.5
Novophalt	MGRF	1	15	1.00	12.60	12994109	43.1	46	10.00	12.60	217975.8	63.1
Novophalt	MGRF	1	15	1.00	15.80	14450000	42.5	46	10.00	15.80	251500.0	62.8
Novophalt	MGRF	1	15	0.99	20.00	16105148	41.9	46	10.00	20.00	290765.8	62.4
Novophalt	MGRF	1	15	0.99	25.10	17833352	41.4	46	10.00	25.10	333800.0	62.2
Novophalt	MGRF	1	15	0.99	31.60	19733386	40.9	46	10.00	31.60	383621.3	61.9
Novophalt	MGRF	1	15	0.99	39.80	21800000	40.3	46	10.00	39.80	441000.0	61.7
Novophalt	MGRF	1	15	0.99	50.10	24048927	39.7	46	10.00	50.10	505455.6	61.5
Novophalt	MGRF	1	15	0.99	63.10	26471856	39.2	46	10.00	63.10	578204.7	61.2
Novophalt	MGRF	1	15	0.98	79.40	29073587	38.7	46	10.00	79.40	657271.0	61.1
Novophalt	MGRF	1	15	0.98	100.00	31900000	38.1	46	10.00	100.00	740500.0	61.0
Novophalt	MGRF	2	15	0.58	0.10	1470000	54.5	46	10.00	0.10	5420.0	79.0
Novophalt	MGRF	2	15	4.94	0.13	1615000	54.3	46	10.00	0.13	6545.0	78.5
Novophalt	MGRF	2	15	4.99	0.16	1825000	53.7	46	10.00	0.16	7925.0	77.8
Novophalt	MGRF	2	15	5.02	0.20	2060000	53.1	46	10.00	0.20	9580.0	77.2
Novophalt	MGRF	2	15	5.03	0.25	2320000	52.4	46	10.00	0.25	11600.0	76.4
Novophalt	MGRF	2	15	5.01	0.32	2605000	51.8	46	10.00	0.32	14000.0	75.6
Novophalt	MGRF	2	15	5.02	0.40	2920000	51.1	46	9.99	0.40	16850.0	74.8
Novophalt	MGRF	2	15	5.03	0.50	3265000	50.4	46	9.99	0.50	20300.0	74.1
Novophalt	MGRF	2	15	5.02	0.63	3645000	49.8	46	9.99	0.63	24350.0	73.3
Novophalt	MGRF	2	15	5.02	0.79	4060000	49.0	46	9.99	0.79	29150.0	72.6
Novophalt	MGRF	2	15	5.03	1.00	4490000	48.3	46	9.99	1.00	34800.0	71.8
Novophalt	MGRF	2	15	5.03	1.26	4960000	47.5	46	9.98	1.26	41550.0	71.0
Novophalt	MGRF	2	15	5.01	1.58	5475000	46.8	46	9.98	1.58	49350.0	70.3
Novophalt	MGRF	2	15	5.02	2.00	6045000	46.0	46	9.98	2.00	58500.0	69.6

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	MGRF	2	15	5.02	2.51	6640000	45.2	46	9.98	2.51	69250.0	68.9
Novophalt	MGRF	2	15	5.02	3.16	7280000	44.3	46	9.97	3.16	81850.0	68.2
Novophalt	MGRF	2	15	5.00	3.98	7975000	43.4	46	9.97	3.98	96300.0	67.6
Novophalt	MGRF	2	15	5.01	5.01	8700000	42.5	46	9.95	5.01	113000.0	66.9
Novophalt	MGRF	2	15	5.01	6.31	9390000	41.7	46	9.93	6.31	132500.0	66.4
Novophalt	MGRF	2	15	5.01	7.94	10150000	40.9	46	9.92	7.94	155000.0	65.9
Novophalt	MGRF	2	15	5.01	10.00	10950000	40.0	46	9.90	10.00	181000.0	65.4
Novophalt	MGRF	2	15	5.01	12.60	11750000	39.1	46	9.90	12.60	211000.0	64.9
Novophalt	MGRF	2	15	5.02	15.80	12550000	38.3	46	9.88	15.80	245000.0	64.5
Novophalt	MGRF	2	15	5.02	20.00	13350000	37.4	46	9.85	20.00	284500.0	64.2
Novophalt	MGRF	2	15	5.02	25.10	14150000	36.6	46	9.82	25.10	329500.0	63.8
Novophalt	MGRF	2	15	5.02	31.60	14850000	35.9	46	9.78	31.60	381000.0	63.5
Novophalt	MGRF	2	15	5.03	39.80	15450000	35.4	46	9.74	39.80	440500.0	63.2
Novophalt	MGRF	2	15	5.03	50.10	15800000	35.0	46	9.69	50.10	507500.0	62.9
Novophalt	MGRF	2	15	5.06	63.10	16050000	34.9	46	9.64	63.10	583000.0	62.6
Novophalt	MGRF	2	15	5.06	79.40	16150000	35.2	46	9.59	79.40	667500.0	62.3
Novophalt	MGRF	2	15	5.09	100.00	15800000	36.0	46	9.51	100.00	628500.0	67.6
Novophalt	MGRF	1	25	1.00	0.10	310461	60.9	58	10.00	0.10	840.6	82.9
Novophalt	MGRF	1	25	1.00	0.13	362288	60.2	58	10.00	0.13	1034.5	82.5
Novophalt	MGRF	1	25	1.00	0.16	422500	59.6	58	10.00	0.16	1275.0	82.2
Novophalt	MGRF	1	25	1.00	0.20	492341	58.8	58	10.00	0.20	1567.5	81.6
Novophalt	MGRF	1	25	1.00	0.25	569723	58.1	58	10.00	0.25	1914.7	81.1
Novophalt	MGRF	1	25	1.00	0.32	659698	57.4	58	10.00	0.32	2345.1	80.6
Novophalt	MGRF	1	25	1.00	0.40	763000	56.8	58	10.00	0.40	2870.0	80.1
Novophalt	MGRF	1	25	1.00	0.50	880777	56.1	58	10.00	0.50	3503.7	79.4
Novophalt	MGRF	1	25	1.00	0.63	1015006	55.4	58	10.00	0.63	4272.7	78.9
Novophalt	MGRF	1	25	1.00	0.79	1165811	54.8	58	10.00	0.79	5199.5	78.3
Novophalt	MGRF	1	25	1.00	1.00	1335000	54.2	58	10.00	1.00	6325.0	77.7
Novophalt	MGRF	1	25	1.00	1.26	1533226	53.5	58	10.00	1.26	7677.3	76.9
Novophalt	MGRF	1	25	1.00	1.58	1747004	52.9	58	10.00	1.58	9262.6	76.2
Novophalt	MGRF	1	25	1.00	2.00	1997287	52.3	58	10.00	2.00	11246.7	75.5
Novophalt	MGRF	1	25	1.00	2.51	2275000	51.7	58	10.00	2.51	13550.0	74.8
Novophalt	MGRF	1	25	1.00	3.16	2591107	51.0	58	10.00	3.16	16316.4	74.0
Novophalt	MGRF	1	25	1.00	3.98	2945328	50.5	58	10.00	3.98	19612.5	73.3
Novophalt	MGRF	1	25	1.00	5.01	3341944	49.9	58	10.00	5.01	23515.5	72.5
Novophalt	MGRF	1	25	1.00	6.31	3790000	49.3	58	10.00	6.31	28150.0	71.7
Novophalt	MGRF	1	25	1.00	7.94	4280562	48.8	58	10.00	7.94	33517.4	71.0
Novophalt	MGRF	1	25	1.00	10.00	4827181	48.3	58	10.00	10.00	39784.7	70.2
Novophalt	MGRF	1	25	1.00	12.60	5441739	47.7	58	10.00	12.60	47194.9	69.5
Novophalt	MGRF	1	25	1.00	15.80	6125000	47.2	58	10.00	15.80	55900.0	68.8
Novophalt	MGRF	1	25	1.00	20.00	6891230	46.7	58	10.00	20.00	65817.9	68.1
Novophalt	MGRF	1	25	1.00	25.10	7719594	46.1	58	10.00	25.10	77370.6	67.4
Novophalt	MGRF	1	25	1.00	31.60	8669898	45.6	58	10.00	31.60	91055.1	66.9
Novophalt	MGRF	1	25	0.99	39.80	9760000	45.1	58	10.00	39.80	106500.0	66.3
Novophalt	MGRF	1	25	0.99	50.10	10893226	44.6	58	10.00	50.10	124741.3	65.8
Novophalt	MGRF	1	25	0.99	63.10	12166648	44.0	58	10.00	63.10	145502.5	65.3
Novophalt	MGRF	1	25	0.99	79.40	13557657	43.4	58	10.00	79.40	169350.3	64.9

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	MGRF	1	25	0.99	100.00	15050000	42.4	58	10.00	100.00	197500.0	64.4
Novophalt	MGRF	2	25	2.24	0.10	267500	62.9	58	10.00	0.10	1001.5	82.4
Novophalt	MGRF	2	25	4.92	0.13	311000	62.0	58	10.00	0.13	1200.0	82.4
Novophalt	MGRF	2	25	5.04	0.16	361000	61.3	58	10.00	0.16	1450.0	82.0
Novophalt	MGRF	2	25	5.05	0.20	419000	60.7	58	10.00	0.20	1770.0	81.6
Novophalt	MGRF	2	25	5.08	0.25	485000	60.0	58	10.00	0.25	2150.0	81.1
Novophalt	MGRF	2	25	5.07	0.32	560000	59.4	58	10.00	0.32	2620.0	80.5
Novophalt	MGRF	2	25	5.07	0.40	646000	58.8	58	10.00	0.40	3190.0	79.9
Novophalt	MGRF	2	25	5.08	0.50	743000	58.2	58	10.00	0.50	3885.0	79.3
Novophalt	MGRF	2	25	5.04	0.63	852500	57.7	58	10.00	0.63	4725.0	78.7
Novophalt	MGRF	2	25	5.04	0.79	977000	57.0	58	10.00	0.79	5740.0	78.0
Novophalt	MGRF	2	25	5.04	1.00	1115000	56.4	58	10.00	1.00	6955.0	77.3
Novophalt	MGRF	2	25	5.04	1.26	1270000	55.9	58	10.00	1.26	8420.0	76.5
Novophalt	MGRF	2	25	5.03	1.58	1440000	55.3	58	10.00	1.58	10175.0	75.8
Novophalt	MGRF	2	25	5.04	2.00	1640000	54.7	58	10.00	2.00	12250.0	75.0
Novophalt	MGRF	2	25	5.03	2.51	1855000	54.2	58	10.00	2.51	14700.0	74.2
Novophalt	MGRF	2	25	5.03	3.16	2105000	53.6	58	10.00	3.16	17650.0	73.4
Novophalt	MGRF	2	25	5.02	3.98	2370000	53.0	58	10.00	3.98	21100.0	72.6
Novophalt	MGRF	2	25	5.02	5.01	2670000	52.5	58	10.00	5.01	25250.0	71.8
Novophalt	MGRF	2	25	5.00	6.31	2975000	52.0	58	9.99	6.31	30100.0	71.0
Novophalt	MGRF	2	25	5.00	7.94	3320000	51.5	58	9.99	7.94	35700.0	70.2
Novophalt	MGRF	2	25	5.00	10.00	3700000	51.1	58	9.99	10.00	42300.0	69.5
Novophalt	MGRF	2	25	5.01	12.60	4100000	50.6	58	9.98	12.60	49900.0	68.8
Novophalt	MGRF	2	25	5.01	15.80	4550000	50.1	58	9.98	15.80	58800.0	68.1
Novophalt	MGRF	2	25	5.01	20.00	5020000	49.6	58	9.98	20.00	68850.0	67.5
Novophalt	MGRF	2	25	5.01	25.10	5525000	49.1	58	9.95	25.10	81150.0	66.9
Novophalt	MGRF	2	25	5.01	31.60	6050000	48.6	58	9.95	31.60	94900.0	66.4
Novophalt	MGRF	2	25	5.01	39.80	6605000	48.2	58	9.94	39.80	110500.0	65.9
Novophalt	MGRF	2	25	5.02	50.10	7175000	47.7	58	9.92	50.10	129500.0	65.5
Novophalt	MGRF	2	25	5.02	63.10	7725000	47.3	58	9.91	63.10	151000.0	65.1
Novophalt	MGRF	2	25	5.02	79.40	8265000	47.0	58	9.89	79.40	175500.0	64.7
Novophalt	MGRF	2	25	5.02	100.00	8750000	46.8	58	9.88	100.00	204000.0	64.4
Novophalt	MGRF	1	35	0.05	0.10	51450	81.0	70	10.00	0.10	118.2	86.1
Novophalt	MGRF	1	35	0.05	0.13	63010	80.6	70	10.00	0.13	146.5	86.1
Novophalt	MGRF	1	35	0.05	0.16	73800	80.3	70	10.00	0.16	182.0	86.1
Novophalt	MGRF	1	35	0.05	0.20	90430	79.9	70	10.00	0.20	226.3	85.8
Novophalt	MGRF	1	35	0.05	0.25	110300	79.4	70	10.00	0.25	279.2	85.6
Novophalt	MGRF	1	35	0.05	0.32	134800	79.0	70	10.00	0.32	345.5	85.4
Novophalt	MGRF	1	35	0.05	0.40	164500	78.6	70	10.00	0.40	428.5	85.2
Novophalt	MGRF	1	35	0.05	0.50	200200	78.1	70	10.00	0.50	530.0	84.9
Novophalt	MGRF	1	35	0.05	0.63	41867	68.3	70	10.00	0.63	655.4	84.6
Novophalt	MGRF	1	35	0.05	0.79	49846	67.7	70	10.00	0.79	809.4	84.3
Novophalt	MGRF	1	35	0.05	1.00	59650	67.4	70	10.00	1.00	1000.0	83.9
Novophalt	MGRF	1	35	0.05	1.26	70530	66.6	70	10.00	1.26	1232.0	83.5
Novophalt	MGRF	1	35	0.05	1.58	83279	65.9	70	10.00	1.58	1512.3	83.1
Novophalt	MGRF	1	35	0.05	2.00	98634	65.2	70	10.00	2.00	1871.5	82.6
Novophalt	MGRF	1	35	0.05	2.51	116500	64.7	70	10.00	2.51	2295.0	82.1

Binder	Condition	Rep	Temp C	Strain %	Freq hz	G* Pa	Phase °	Temp C	Strain %	Freq hz	G* Pa	Phase
Novophalt	MGRF	1	35	0.05	3.16	137273	64.0	70	10.00	3.16	2820.9	81.5
Novophalt	MGRF	1	35	0.05	3.98	161553	63.4	70	10.00	3.98	3457.7	81.0
Novophalt	MGRF	1	35	0.05	5.01	189694	62.8	70	10.00	5.01	4230.5	80.4
Novophalt	MGRF	1	35	0.05	6.31	222500	62.2	70	10.00	6.31	5180.0	79.8
Novophalt	MGRF	1	35	0.05	7.94	260904	61.5	70	10.00	7.94	6303.4	79.2
Novophalt	MGRF	1	35	0.05	10.00	304298	60.9	70	10.00	10.00	7655.5	78.6
Novophalt	MGRF	1	35	0.05	12.60	356481	60.2	70	10.00	12.60	9301.7	78.0
Novophalt	MGRF	1	35	0.05	15.80	414500	59.5	70	10.00	15.80	11290.0	77.3
Novophalt	MGRF	1	35	0.05	20.00	482605	58.8	70	10.00	20.00	13708.8	76.6
Novophalt	MGRF	1	35	0.05	25.10	560690	58.2	70	10.00	25.10	16362.7	75.8
Novophalt	MGRF	1	35	0.05	31.60	650347	57.5	70	10.00	31.60	19616.3	75.1
Novophalt	MGRF	1	35	0.05	39.80	754500	56.8	70	10.00	39.80	23850.0	74.5
Novophalt	MGRF	1	35	0.05	50.10	870479	56.1	70	10.00	50.10	28573.7	73.8
Novophalt	MGRF	1	35	0.05	63.10	1001266	55.4	70	10.00	63.10	34182.5	73.1
Novophalt	MGRF	1	35	0.05	79.40	1150602	54.7	70	10.00	79.40	40815.9	72.3
Novophalt	MGRF	1	35	0.05	100.00	1320000	54.1	70	10.00	100.00	48750.0	71.6
Novophalt	MGRF	2	35	4.80	0.10	42100	69.8	70	10.00	0.10	106.5	86.5
Novophalt	MGRF	2	35	4.96	0.13	50100	69.2	70	10.00	0.13	129.0	86.7
Novophalt	MGRF	2	35	5.05	0.16	59550	68.6	70	10.00	0.16	158.5	86.6
Novophalt	MGRF	2	35	5.03	0.20	70650	68.0	70	10.00	0.20	195.5	86.6
Novophalt	MGRF	2	35	5.04	0.25	83750	67.4	70	10.00	0.25	241.5	86.5
Novophalt	MGRF	2	35	5.03	0.32	99250	66.9	70	10.00	0.32	299.0	86.2
Novophalt	MGRF	2	35	5.04	0.40	117000	66.3	70	10.00	0.40	370.0	86.0
Novophalt	MGRF	2	35	5.04	0.50	138000	65.7	70	10.00	0.50	458.0	85.8
Novophalt	MGRF	2	35	5.03	0.63	162500	65.2	70	10.00	0.63	567.0	85.5
Novophalt	MGRF	2	35	5.03	0.79	191000	64.6	70	10.00	0.79	702.0	85.2
Novophalt	MGRF	2	35	5.04	1.00	224500	64.0	70	10.00	1.00	869.0	84.8
Novophalt	MGRF	2	35	5.04	1.26	262500	63.4	70	10.00	1.26	1075.0	84.4
Novophalt	MGRF	2	35	5.05	1.58	307000	62.9	70	10.00	1.58	1325.0	84.0
Novophalt	MGRF	2	35	5.03	2.00	358000	62.3	70	10.00	2.00	1635.0	83.5
Novophalt	MGRF	2	35	5.03	2.51	416500	61.7	70	10.00	2.51	2015.0	83.0
Novophalt	MGRF	2	35	5.03	3.16	484000	61.1	70	10.00	3.16	2485.0	82.5
Novophalt	MGRF	2	35	5.02	3.98	560500	60.5	70	10.00	3.98	3045.0	82.0
Novophalt	MGRF	2	35	5.04	5.01	648500	59.9	70	10.00	5.01	3750.0	81.5
Novophalt	MGRF	2	35	5.03	6.31	748000	59.4	70	10.00	6.31	4600.0	80.9
Novophalt	MGRF	2	35	5.04	7.94	861500	58.9	70	10.00	7.94	5630.0	80.3
Novophalt	MGRF	2	35	5.02	10.00	988000	58.3	70	10.00	10.00	6885.0	79.7
Novophalt	MGRF	2	35	5.01	12.60	1135000	57.8	70	10.00	12.60	8395.0	79.1
Novophalt	MGRF	2	35	4.98	15.80	1300000	57.3	70	10.00	15.80	10200.0	78.5
Novophalt	MGRF	2	35	5.01	20.00	1475000	56.8	70	10.00	20.00	12400.0	77.9
Novophalt	MGRF	2	35	5.00	25.10	1680000	56.4	70	10.00	25.10	14900.0	77.1
Novophalt	MGRF	2	35	5.01	31.60	1890000	56.1	70	9.96	31.60	18100.0	76.4
Novophalt	MGRF	2	35	5.02	39.80	2130000	55.7	70	9.98	39.80	22000.0	75.9
Novophalt	MGRF	2	35	5.01	50.10	2395000	55.5	70	9.97	50.10	26550.0	75.2
Novophalt	MGRF	2	35	5.01	63.10	2670000	55.3	70	9.97	63.10	31900.0	74.5
Novophalt	MGRF	2	35	5.01	79.40	2970000	55.2	70	9.97	79.40	38300.0	73.8
Novophalt	MGRF	2	35	5.00	100.00	3275000	55.4	70	9.96	100.00	45900.0	73.1

6.0 BBR DATA

Table 66. AAC-1 Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	TANK	4110101	11/01/04	-24	-24	1	1	8	1015	0.135	606	605	-0.16502	0.148
AAC-1	TANK	4110101	11/01/04	-24	-24	1	1	15	1018	0.151	544	546	0.367647	0.18
AAC-1	TANK	4110101	11/01/04	-24	-24	1	1	30	1021	0.173	476	476	0	0.216
AAC-1	TANK	4110101	11/01/04	-24	-24	1	1	60	1025	0.204	405	405	0	0.251
AAC-1	TANK	4110101	11/01/04	-24	-24	1	1	120	1026	0.246	336	336	0	0.286
AAC-1	TANK	4110101	11/01/04	-24	-24	1	1	240	1028	0.305	272	272	0	0.322
AAC-1	TANK	4110102	11/01/04	-24	-24	1	2	8	1040	0.116	723	722	-0.13831	0.195
AAC-1	TANK	4110102	11/01/04	-24	-24	1	2	15	1041	0.133	631	633	0.316957	0.224
AAC-1	TANK	4110102	11/01/04	-24	-24	1	2	30	1043	0.157	536	535	-0.18657	0.257
AAC-1	TANK	4110102	11/01/04	-24	-24	1	2	60	1045	0.19	443	443	0	0.289
AAC-1	TANK	4110102	11/01/04	-24	-24	1	2	120	1046	0.235	359	359	0	0.322
AAC-1	TANK	4110102	11/01/04	-24	-24	1	2	240	1048	0.298	284	284	0	0.354
AAC-1	TANK	4110103	11/01/04	-24	-24	2	1	8	1048	0.128	660	660	0	0.181
AAC-1	TANK	4110103	11/01/04	-24	-24	2	1	15	1050	0.145	584	584	0	0.21
AAC-1	TANK	4110103	11/01/04	-24	-24	2	1	30	1053	0.17	499	499	0	0.243
AAC-1	TANK	4110103	11/01/04	-24	-24	2	1	60	1054	0.204	417	417	0	0.275
AAC-1	TANK	4110103	11/01/04	-24	-24	2	1	120	1057	0.25	341	341	0	0.308
AAC-1	TANK	4110103	11/01/04	-24	-24	2	1	240	1060	0.314	272	272	0	0.34
AAC-1	TANK	4110104	11/01/04	-24	-24	2	2	8	1048	0.126	671	670	-0.14903	0.194
AAC-1	TANK	4110104	11/01/04	-24	-24	2	2	15	1048	0.144	587	588	0.170358	0.224
AAC-1	TANK	4110104	11/01/04	-24	-24	2	2	30	1050	0.17	498	498	0	0.256
AAC-1	TANK	4110104	11/01/04	-24	-24	2	2	60	1052	0.206	412	412	0	0.289
AAC-1	TANK	4110104	11/01/04	-24	-24	2	2	120	1052	0.254	334	333	-0.2994	0.321
AAC-1	TANK	4110104	11/01/04	-24	-24	2	2	240	1053	0.322	264	264	0	0.354
AAC-1	TANK	4102901	10/29/04	-18	-18.1	1	1	8	1080	0.253	344	344	0	0.273
AAC-1	TANK	4102901	10/29/04	-18	-18.1	1	1	15	1080	0.303	287	287	0	0.302
AAC-1	TANK	4102901	10/29/04	-18	-18.1	1	1	30	1080	0.378	230	231	0.434783	0.333
AAC-1	TANK	4102901	10/29/04	-18	-18.1	1	1	60	1081	0.481	181	181	0	0.365
AAC-1	TANK	4102901	10/29/04	-18	-18.1	1	1	120	1080	0.627	139	139	0	0.396
AAC-1	TANK	4102901	10/29/04	-18	-18.1	1	1	240	1080	0.833	105	105	0	0.428
AAC-1	TANK	4102902	10/29/04	-18	-18	1	2	8	1087	0.225	390	389	-0.25641	0.275

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	TANK	4102902	10/29/04	-18	-18	1	2	15	1087	0.271	323	324	0.309598	0.308
AAC-1	TANK	4102902	10/29/04	-18	-18	1	2	30	1088	0.34	258	258	0	0.344
AAC-1	TANK	4102902	10/29/04	-18	-18	1	2	60	1088	0.436	201	201	0	0.381
AAC-1	TANK	4102902	10/29/04	-18	-18	1	2	120	1088	0.575	153	152	-0.65359	0.417
AAC-1	TANK	4102902	10/29/04	-18	-18	1	2	240	1088	0.779	113	113	0	0.453
AAC-1	TANK	4102909	10/29/04	-18	-18	2	1	8	1109	0.225	397	397	0	0.271
AAC-1	TANK	4102909	10/29/04	-18	-18	2	1	15	1110	0.271	330	331	0.30303	0.305
AAC-1	TANK	4102909	10/29/04	-18	-18	2	1	30	1111	0.339	264	265	0.378788	0.342
AAC-1	TANK	4102909	10/29/04	-18	-18	2	1	60	1114	0.435	206	206	0	0.378
AAC-1	TANK	4102909	10/29/04	-18	-18	2	1	120	1117	0.574	157	157	0	0.415
AAC-1	TANK	4102909	10/29/04	-18	-18	2	1	240	1120	0.78	116	116	0	0.452
AAC-1	TANK	4102910	10/29/04	-18	-18	2	2	8	1090	0.28	314	314	0	0.223
AAC-1	TANK	4102910	10/29/04	-18	-18	2	2	15	1091	0.326	270	270	0	0.257
AAC-1	TANK	4102910	10/29/04	-18	-18	2	2	30	1094	0.396	223	223	0	0.294
AAC-1	TANK	4102910	10/29/04	-18	-18	2	2	60	1097	0.493	179	179	0	0.332
AAC-1	TANK	4102910	10/29/04	-18	-18	2	2	120	1100	0.63	141	141	0	0.369
AAC-1	TANK	4102910	10/29/04	-18	-18	2	2	240	1108	0.831	108	108	0	0.406
AAC-1	TANK	4102701	10/27/04	-12	-12	1	1	8	1071	0.542	159	159	0	0.363
AAC-1	TANK	4102701	10/27/04	-12	-12	1	1	15	1069	0.689	125	125	0	0.398
AAC-1	TANK	4102701	10/27/04	-12	-12	1	1	30	1066	0.917	94	94	0	0.437
AAC-1	TANK	4102701	10/27/04	-12	-12	1	1	60	1063	1.253	68	68	0	0.476
AAC-1	TANK	4102701	10/27/04	-12	-12	1	1	120	1058	1.758	49	48	-2.04082	0.514
AAC-1	TANK	4102701	10/27/04	-12	-12	1	1	240	1052	2.534	33	33	0	0.553
AAC-1	TANK	4102702	10/27/04	-12	-12	1	2	8	1102	0.458	194	194	0	0.37
AAC-1	TANK	4102702	10/27/04	-12	-12	1	2	15	1106	0.588	152	152	0	0.403
AAC-1	TANK	4102702	10/27/04	-12	-12	1	2	30	1109	0.789	113	113	0	0.439
AAC-1	TANK	4102702	10/27/04	-12	-12	1	2	60	1115	1.086	83	83	0	0.476
AAC-1	TANK	4102702	10/27/04	-12	-12	1	2	120	1121	1.538	59	59	0	0.512
AAC-1	TANK	4102702	10/27/04	-12	-12	1	2	240	1132	2.248	41	41	0	0.548
AAC-1	TANK	4102704	10/27/04	-12	-12.1	2	1	8	1091	0.595	148	148	0	0.388
AAC-1	TANK	4102704	10/27/04	-12	-12.1	2	1	15	1091	0.768	115	115	0	0.421
AAC-1	TANK	4102704	10/27/04	-12	-12.1	2	1	30	1098	1.05	84	84	0	0.458
AAC-1	TANK	4102704	10/27/04	-12	-12.1	2	1	60	1105	1.464	61	61	0	0.494

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	TANK	4102704	10/27/04	-12	-12.1	2	1	120	1108	2.097	43	43	0	0.531
AAC-1	TANK	4102704	10/27/04	-12	-12.1	2	1	240	1117	3.096	29	29	0	0.567
AAC-1	TANK	4102703	10/27/04	-12	-12	2	2	8	1106	0.617	145	144	-0.68966	0.379
AAC-1	TANK	4102703	10/27/04	-12	-12	2	2	15	1108	0.796	112	112	0	0.417
AAC-1	TANK	4102703	10/27/04	-12	-12	2	2	30	1111	1.081	83	83	0	0.459
AAC-1	TANK	4102703	10/27/04	-12	-12	2	2	60	1114	1.508	60	59	-1.66667	0.501
AAC-1	TANK	4102703	10/27/04	-12	-12	2	2	120	1115	2.168	41	41	0	0.543
AAC-1	TANK	4102703	10/27/04	-12	-12	2	2	240	1115	3.212	28	28	0	0.585

Table 67. AAC-1 RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	RTFOT	4110115	11/01/04	-24	-24	1	1	8	1042	0.106	793	792	-0.1261	0.173
AAC-1	RTFOT	4110115	11/01/04	-24	-24	1	1	15	1042	0.119	706	705	-0.14164	0.2
AAC-1	RTFOT	4110115	11/01/04	-24	-24	1	1	30	1041	0.139	604	608	0.662252	0.229
AAC-1	RTFOT	4110115	11/01/04	-24	-24	1	1	60	1041	0.163	515	513	-0.38835	0.258
AAC-1	RTFOT	4110115	11/01/04	-24	-24	1	1	120	1041	0.197	426	425	-0.23474	0.287
AAC-1	RTFOT	4110115	11/01/04	-24	-24	1	1	240	1042	0.244	344	345	0.290698	0.316
AAC-1	RTFOT	4110116	11/01/04	-24	-24	1	2	8	1022	0.125	659	658	-0.15175	0.151
AAC-1	RTFOT	4110116	11/01/04	-24	-24	1	2	15	1024	0.14	590	593	0.508475	0.178
AAC-1	RTFOT	4110116	11/01/04	-24	-24	1	2	30	1028	0.159	521	519	-0.38388	0.207
AAC-1	RTFOT	4110116	11/01/04	-24	-24	1	2	60	1030	0.187	444	445	0.225225	0.236
AAC-1	RTFOT	4110116	11/01/04	-24	-24	1	2	120	1032	0.222	375	374	-0.26667	0.266
AAC-1	RTFOT	4110116	11/01/04	-24	-24	1	2	240	1038	0.272	308	308	0	0.295
AAC-1	RTFOT	4110117	11/01/04	-24	-24	2	1	8	1047	0.154	548	547	-0.18248	0.125
AAC-1	RTFOT	4110117	11/01/04	-24	-24	2	1	15	1049	0.169	500	502	0.4	0.152
AAC-1	RTFOT	4110117	11/01/04	-24	-24	2	1	30	1052	0.19	446	447	0.224215	0.182
AAC-1	RTFOT	4110117	11/01/04	-24	-24	2	1	60	1056	0.218	391	390	-0.25575	0.211
AAC-1	RTFOT	4110117	11/01/04	-24	-24	2	1	120	1060	0.256	334	333	-0.2994	0.241
AAC-1	RTFOT	4110117	11/01/04	-24	-24	2	1	240	1066	0.308	279	279	0	0.27
AAC-1	RTFOT	4110118	11/01/04	-24	-24	2	2	8	1064	0.118	727	724	-0.41265	0.157

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	RTFOT	4110118	11/01/04	-24	-24	2	2	15	1065	0.133	646	651	0.773994	0.183
AAC-1	RTFOT	4110118	11/01/04	-24	-24	2	2	30	1067	0.151	570	568	-0.35088	0.212
AAC-1	RTFOT	4110118	11/01/04	-24	-24	2	2	60	1068	0.177	487	485	-0.41068	0.24
AAC-1	RTFOT	4110118	11/01/04	-24	-24	2	2	120	1068	0.212	406	407	0.246305	0.269
AAC-1	RTFOT	4110118	11/01/04	-24	-24	2	2	240	1069	0.258	334	334	0	0.298
AAC-1	RTFOT	4102913	10/29/04	-18	-18.1	1	1	8	1120	0.2	452	451	-0.22124	0.24
AAC-1	RTFOT	4102913	10/29/04	-18	-18.1	1	1	15	1121	0.235	385	385	0	0.27
AAC-1	RTFOT	4102913	10/29/04	-18	-18.1	1	1	30	1122	0.287	315	315	0	0.303
AAC-1	RTFOT	4102913	10/29/04	-18	-18.1	1	1	60	1123	0.358	253	253	0	0.336
AAC-1	RTFOT	4102913	10/29/04	-18	-18.1	1	1	120	1123	0.457	198	198	0	0.369
AAC-1	RTFOT	4102913	10/29/04	-18	-18.1	1	1	240	1124	0.598	152	152	0	0.402
AAC-1	RTFOT	4102914	10/29/04	-18	-18.1	1	2	8	1108	0.206	434	433	-0.23041	0.228
AAC-1	RTFOT	4102914	10/29/04	-18	-18.1	1	2	15	1111	0.241	372	372	0	0.258
AAC-1	RTFOT	4102914	10/29/04	-18	-18.1	1	2	30	1115	0.293	307	307	0	0.291
AAC-1	RTFOT	4102914	10/29/04	-18	-18.1	1	2	60	1118	0.363	248	248	0	0.325
AAC-1	RTFOT	4102914	10/29/04	-18	-18.1	1	2	120	1121	0.46	196	196	0	0.358
AAC-1	RTFOT	4102914	10/29/04	-18	-18.1	1	2	240	1123	0.6	151	151	0	0.391
AAC-1	RTFOT	4111801	11/17/04	-18	-18.1	2	1	8	1033	0.163	511	510	-0.19569	0.24
AAC-1	RTFOT	4111801	11/17/04	-18	-18.1	2	1	15	1035	0.192	435	435	0	0.266
AAC-1	RTFOT	4111801	11/17/04	-18	-18.1	2	1	30	1039	0.234	358	359	0.27933	0.294
AAC-1	RTFOT	4111801	11/17/04	-18	-18.1	2	1	60	1042	0.29	290	289	-0.34483	0.323
AAC-1	RTFOT	4111801	11/17/04	-18	-18.1	2	1	120	1045	0.367	230	229	-0.43478	0.352
AAC-1	RTFOT	4111801	11/17/04	-18	-18.1	2	1	240	1050	0.477	177	178	0.564972	0.38
AAC-1	RTFOT	4102916	10/29/04	-18	-18	2	2	8	1129	0.187	487	486	-0.20534	0.24
AAC-1	RTFOT	4102916	10/29/04	-18	-18	2	2	15	1129	0.22	414	414	0	0.268
AAC-1	RTFOT	4102916	10/29/04	-18	-18	2	2	30	1130	0.268	340	340	0	0.3
AAC-1	RTFOT	4102916	10/29/04	-18	-18	2	2	60	1132	0.333	274	274	0	0.331
AAC-1	RTFOT	4102916	10/29/04	-18	-18	2	2	120	1132	0.424	215	215	0	0.362
AAC-1	RTFOT	4102916	10/29/04	-18	-18	2	2	240	1131	0.551	166	166	0	0.393
AAC-1	RTFOT	4110201	11/02/04	-12	-12	1	1	8	945	0.412	185	185	0	0.306
AAC-1	RTFOT	4110201	11/02/04	-12	-12	1	1	15	947	0.506	151	151	0	0.336
AAC-1	RTFOT	4110201	11/02/04	-12	-12	1	1	30	950	0.647	118	118	0	0.369
AAC-1	RTFOT	4110201	11/02/04	-12	-12	1	1	60	953	0.849	91	91	0	0.402

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	RTFOT	4110201	11/02/04	-12	-12	1	1	120	958	1.139	68	68	0	0.436
AAC-1	RTFOT	4110201	11/02/04	-12	-12	1	1	240	964	1.571	49	50	2.040816	0.469
AAC-1	RTFOT	4110202	11/02/04	-12	-12	1	2	8	982	0.397	199	199	0	0.305
AAC-1	RTFOT	4110202	11/02/04	-12	-12	1	2	15	986	0.488	163	163	0	0.337
AAC-1	RTFOT	4110202	11/02/04	-12	-12	1	2	30	990	0.627	127	127	0	0.373
AAC-1	RTFOT	4110202	11/02/04	-12	-12	1	2	60	995	0.825	97	97	0	0.408
AAC-1	RTFOT	4110202	11/02/04	-12	-12	1	2	120	999	1.114	72	72	0	0.444
AAC-1	RTFOT	4110202	11/02/04	-12	-12	1	2	240	1005	1.543	53	53	0	0.479
AAC-1	RTFOT	4110203	11/02/04	-12	-12.1	2	1	8	989	0.421	189	189	0	0.311
AAC-1	RTFOT	4110203	11/02/04	-12	-12.1	2	1	15	992	0.519	154	154	0	0.341
AAC-1	RTFOT	4110203	11/02/04	-12	-12.1	2	1	30	998	0.669	120	120	0	0.374
AAC-1	RTFOT	4110203	11/02/04	-12	-12.1	2	1	60	1003	0.879	92	92	0	0.407
AAC-1	RTFOT	4110203	11/02/04	-12	-12.1	2	1	120	1008	1.187	68	68	0	0.44
AAC-1	RTFOT	4110203	11/02/04	-12	-12.1	2	1	240	1015	1.641	50	50	0	0.474
AAC-1	RTFOT	4110204	11/02/04	-12	-12.1	2	2	8	1003	0.395	205	205	0	0.325
AAC-1	RTFOT	4110204	11/02/04	-12	-12.1	2	2	15	1005	0.491	165	165	0	0.355
AAC-1	RTFOT	4110204	11/02/04	-12	-12.1	2	2	30	1008	0.636	128	128	0	0.387
AAC-1	RTFOT	4110204	11/02/04	-12	-12.1	2	2	60	1012	0.844	97	97	0	0.419
AAC-1	RTFOT	4110204	11/02/04	-12	-12.1	2	2	120	1016	1.146	71	71	0	0.452
AAC-1	RTFOT	4110204	11/02/04	-12	-12.1	2	2	240	1020	1.593	52	52	0	0.484

Table 68. AAC-1 SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	SAFT	6031001	03/10/06	-24	-24	1	1	8	1057	0.123	693	692	-0.1443	0.145
AAC-1	SAFT	6031001	03/10/06	-24	-24	1	1	15	1055	0.136	625	627	0.32	0.17
AAC-1	SAFT	6031001	03/10/06	-24	-24	1	1	30	1056	0.154	553	552	-0.18083	0.198
AAC-1	SAFT	6031001	03/10/06	-24	-24	1	1	60	1056	0.179	476	476	0	0.226
AAC-1	SAFT	6031001	03/10/06	-24	-24	1	1	120	1057	0.211	404	403	-0.24752	0.253
AAC-1	SAFT	6031001	03/10/06	-24	-24	1	1	240	1060	0.255	335	335	0	0.281
AAC-1	SAFT	6031002	03/10/06	-24	-24	1	2	8	1062	0.102	839	840	0.11919	0.179
AAC-1	SAFT	6031002	03/10/06	-24	-24	1	2	15	1062	0.115	745	744	-0.13423	0.204

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	SAFT	6031002	03/10/06	-24	-24	1	2	30	1063	0.134	640	640	0	0.231
AAC-1	SAFT	6031002	03/10/06	-24	-24	1	2	60	1064	0.159	540	540	0	0.259
AAC-1	SAFT	6031002	03/10/06	-24	-24	1	2	120	1066	0.192	448	447	-0.22321	0.286
AAC-1	SAFT	6031002	03/10/06	-24	-24	1	2	240	1071	0.238	363	363	0	0.314
AAC-1	SAFT	6031003	03/10/06	-24	-24	2	1	8	1058	0.103	828	829	0.120773	0.177
AAC-1	SAFT	6031003	03/10/06	-24	-24	2	1	15	1058	0.116	735	735	0	0.204
AAC-1	SAFT	6031003	03/10/06	-24	-24	2	1	30	1059	0.135	632	632	0	0.233
AAC-1	SAFT	6031003	03/10/06	-24	-24	2	1	60	1060	0.161	531	532	0.188324	0.263
AAC-1	SAFT	6031003	03/10/06	-24	-24	2	1	120	1062	0.195	439	439	0	0.292
AAC-1	SAFT	6031003	03/10/06	-24	-24	2	1	240	1065	0.242	355	355	0	0.321
AAC-1	SAFT	6031004	03/10/06	-24	-24	2	2	8	1064	0.107	802	802	0	0.171
AAC-1	SAFT	6031004	03/10/06	-24	-24	2	2	15	1064	0.12	715	714	-0.13986	0.198
AAC-1	SAFT	6031004	03/10/06	-24	-24	2	2	30	1065	0.139	618	616	-0.32362	0.229
AAC-1	SAFT	6031004	03/10/06	-24	-24	2	2	60	1067	0.166	518	520	0.3861	0.259
AAC-1	SAFT	6031004	03/10/06	-24	-24	2	2	120	1068	0.2	431	430	-0.23202	0.29
AAC-1	SAFT	6031004	03/10/06	-24	-24	2	2	240	1071	0.248	348	348	0	0.32
AAC-1	SAFT	6031501	03/15/06	-18	-18	1	1	8	1078	0.208	418	418	0	0.218
AAC-1	SAFT	6031501	03/15/06	-18	-18	1	1	15	1078	0.241	361	361	0	0.249
AAC-1	SAFT	6031501	03/15/06	-18	-18	1	1	30	1078	0.29	300	300	0	0.282
AAC-1	SAFT	6031501	03/15/06	-18	-18	1	1	60	1081	0.357	244	244	0	0.316
AAC-1	SAFT	6031501	03/15/06	-18	-18	1	1	120	1083	0.451	194	194	0	0.35
AAC-1	SAFT	6031501	03/15/06	-18	-18	1	1	240	1087	0.584	150	150	0	0.384
AAC-1	SAFT	6031502	03/15/06	-18	-18	1	2	8	1057	0.207	412	411	-0.24272	0.222
AAC-1	SAFT	6031502	03/15/06	-18	-18	1	2	15	1060	0.242	353	354	0.283286	0.252
AAC-1	SAFT	6031502	03/15/06	-18	-18	1	2	30	1062	0.291	294	294	0	0.285
AAC-1	SAFT	6031502	03/15/06	-18	-18	1	2	60	1064	0.359	239	239	0	0.317
AAC-1	SAFT	6031502	03/15/06	-18	-18	1	2	120	1067	0.454	189	189	0	0.35
AAC-1	SAFT	6031502	03/15/06	-18	-18	1	2	240	1073	0.589	147	147	0	0.383
AAC-1	SAFT	6031503	03/15/06	-18	-18	2	1	8	1069	0.212	407	406	-0.2457	0.208
AAC-1	SAFT	6031503	03/15/06	-18	-18	2	1	15	1072	0.245	353	353	0	0.239
AAC-1	SAFT	6031503	03/15/06	-18	-18	2	1	30	1076	0.293	296	296	0	0.273
AAC-1	SAFT	6031503	03/15/06	-18	-18	2	1	60	1079	0.36	242	242	0	0.307
AAC-1	SAFT	6031503	03/15/06	-18	-18	2	1	120	1083	0.452	193	193	0	0.342

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	SAFT	6031503	03/15/06	-18	-18	2	1	240	1087	0.582	151	151	0	0.376
AAC-1	SAFT	6031504	03/15/06	-18	-18	2	2	8	1097	0.187	473	473	0	0.246
AAC-1	SAFT	6031504	03/15/06	-18	-18	2	2	15	1096	0.22	402	402	0	0.272
AAC-1	SAFT	6031504	03/15/06	-18	-18	2	2	30	1096	0.268	330	330	0	0.3
AAC-1	SAFT	6031504	03/15/06	-18	-18	2	2	60	1097	0.333	266	265	-0.37594	0.328
AAC-1	SAFT	6031504	03/15/06	-18	-18	2	2	120	1100	0.425	209	209	0	0.357
AAC-1	SAFT	6031504	03/15/06	-18	-18	2	2	240	1104	0.55	162	162	0	0.385
AAC-1	SAFT	6032101	03/21/06	-12	-12	1	1	8	1012	0.38	215	215	0	0.308
AAC-1	SAFT	6032101	03/21/06	-12	-12	1	1	15	1013	0.467	175	175	0	0.337
AAC-1	SAFT	6032101	03/21/06	-12	-12	1	1	30	1014	0.597	137	137	0	0.37
AAC-1	SAFT	6032101	03/21/06	-12	-12	1	1	60	1016	0.781	105	105	0	0.402
AAC-1	SAFT	6032101	03/21/06	-12	-12	1	1	120	1018	1.044	79	78	-1.26582	0.435
AAC-1	SAFT	6032101	03/21/06	-12	-12	1	1	240	1019	1.433	57	57	0	0.467
AAC-1	SAFT	6032102	03/21/06	-12	-12	1	2	8	1013	0.383	213	213	0	0.317
AAC-1	SAFT	6032102	03/21/06	-12	-12	1	2	15	1012	0.472	173	173	0	0.344
AAC-1	SAFT	6032102	03/21/06	-12	-12	1	2	30	1012	0.604	135	135	0	0.374
AAC-1	SAFT	6032102	03/21/06	-12	-12	1	2	60	1011	0.791	103	103	0	0.405
AAC-1	SAFT	6032102	03/21/06	-12	-12	1	2	120	1015	1.063	77	77	0	0.435
AAC-1	SAFT	6032102	03/21/06	-12	-12	1	2	240	1022	1.462	56	56	0	0.465
AAC-1	SAFT	6032103	03/21/06	-12	-12	2	1	8	1021	0.383	215	215	0	0.31
AAC-1	SAFT	6032103	03/21/06	-12	-12	2	1	15	1020	0.47	175	175	0	0.337
AAC-1	SAFT	6032103	03/21/06	-12	-12	2	1	30	1019	0.598	137	137	0	0.367
AAC-1	SAFT	6032103	03/21/06	-12	-12	2	1	60	1018	0.779	105	105	0	0.397
AAC-1	SAFT	6032103	03/21/06	-12	-12	2	1	120	1018	1.038	79	79	0	0.427
AAC-1	SAFT	6032103	03/21/06	-12	-12	2	1	240	1021	1.413	58	58	0	0.457
AAC-1	SAFT	6032104	03/21/06	-12	-12	2	2	8	1016	0.397	206	207	0.485437	0.359
AAC-1	SAFT	6032104	03/21/06	-12	-12	2	2	15	1016	0.5	164	164	0	0.382
AAC-1	SAFT	6032104	03/21/06	-12	-12	2	2	30	1018	0.659	125	124	-0.8	0.407
AAC-1	SAFT	6032104	03/21/06	-12	-12	2	2	60	1022	0.885	93	93	0	0.433
AAC-1	SAFT	6032104	03/21/06	-12	-12	2	2	120	1021	1.209	68	68	0	0.459
AAC-1	SAFT	6032104	03/21/06	-12	-12	2	2	240	1020	1.667	49	49	0	0.484

Table 69. AAC-1 MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	MGRF	9073005	40024	-24	-24	1	1	8	960	0.096	806	806	0	0.162
AAC-1	MGRF	9073005	40024	-24	-24	1	1	15	960	0.107	723	722	-0.13831	0.189
AAC-1	MGRF	9073005	40024	-24	-24	1	1	30	961	0.124	625	627	0.32	0.219
AAC-1	MGRF	9073005	40024	-24	-24	1	1	60	960	0.145	534	533	-0.18727	0.249
AAC-1	MGRF	9073005	40024	-24	-24	1	1	120	958	0.174	444	444	0	0.28
AAC-1	MGRF	9073005	40024	-24	-24	1	1	240	955	0.213	362	362	0	0.31
AAC-1	MGRF	9073006	40024	-24	-24	1	2	8	943	0.099	768	767	-0.13021	0.161
AAC-1	MGRF	9073006	40024	-24	-24	1	2	15	945	0.111	686	688	0.291545	0.187
AAC-1	MGRF	9073006	40024	-24	-24	1	2	30	948	0.128	597	598	0.167504	0.215
AAC-1	MGRF	9073006	40024	-24	-24	1	2	60	951	0.15	511	510	-0.19569	0.244
AAC-1	MGRF	9073006	40024	-24	-24	1	2	120	953	0.18	427	427	0	0.272
AAC-1	MGRF	9073006	40024	-24	-24	1	2	240	958	0.221	350	350	0	0.301
AAC-1	MGRF	9072407	40018	-24	-24.1	2	1	8	967	0.1	780	779	-0.12821	0.159
AAC-1	MGRF	9072407	40018	-24	-24.1	2	1	15	970	0.112	698	699	0.143266	0.186
AAC-1	MGRF	9072407	40018	-24	-24.1	2	1	30	972	0.129	608	608	0	0.215
AAC-1	MGRF	9072407	40018	-24	-24.1	2	1	60	974	0.151	520	519	-0.19231	0.243
AAC-1	MGRF	9072407	40018	-24	-24.1	2	1	120	975	0.181	434	434	0	0.272
AAC-1	MGRF	9072407	40018	-24	-24.1	2	1	240	975	0.221	356	356	0	0.301
AAC-1	MGRF	9072408	40018	-24	-24	2	2	8	975	0.124	634	633	-0.15773	0.134
AAC-1	MGRF	9072408	40018	-24	-24	2	2	15	978	0.137	576	577	0.173611	0.162
AAC-1	MGRF	9072408	40018	-24	-24	2	2	30	980	0.155	510	510	0	0.192
AAC-1	MGRF	9072408	40018	-24	-24	2	2	60	982	0.179	442	442	0	0.222
AAC-1	MGRF	9072408	40018	-24	-24	2	2	120	984	0.211	376	375	-0.26596	0.252
AAC-1	MGRF	9072408	40018	-24	-24	2	2	240	988	0.256	311	312	0.321543	0.282
AAC-1	MGRF	9073109	40025	-18	-18	1	1	8	962	0.163	476	475	-0.21008	0.238
AAC-1	MGRF	9073109	40025	-18	-18	1	1	15	964	0.192	405	406	0.246914	0.265
AAC-1	MGRF	9073109	40025	-18	-18	1	1	30	965	0.233	334	334	0	0.296
AAC-1	MGRF	9073109	40025	-18	-18	1	1	60	966	0.289	270	269	-0.37037	0.327
AAC-1	MGRF	9073109	40025	-18	-18	1	1	120	967	0.367	212	212	0	0.357
AAC-1	MGRF	9073109	40025	-18	-18	1	1	240	970	0.477	164	164	0	0.388
AAC-1	MGRF	9073110	40025	-18	-18	1	2	8	981	0.166	476	476	0	0.246

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	MGRF	9073110	40025	-18	-18	1	2	15	982	0.196	404	404	0	0.273
AAC-1	MGRF	9073110	40025	-18	-18	1	2	30	982	0.239	331	331	0	0.303
AAC-1	MGRF	9073110	40025	-18	-18	1	2	60	982	0.298	266	266	0	0.333
AAC-1	MGRF	9073110	40025	-18	-18	1	2	120	984	0.38	209	209	0	0.363
AAC-1	MGRF	9073110	40025	-18	-18	1	2	240	991	0.498	160	161	0.625	0.393
AAC-1	MGRF	9080401	40029	-18	-18	2	1	8	975	0.202	389	389	0	0.196
AAC-1	MGRF	9080401	40029	-18	-18	2	1	15	975	0.231	340	340	0	0.227
AAC-1	MGRF	9080401	40029	-18	-18	2	1	30	975	0.274	287	288	0.348432	0.261
AAC-1	MGRF	9080401	40029	-18	-18	2	1	60	975	0.331	238	237	-0.42017	0.295
AAC-1	MGRF	9080401	40029	-18	-18	2	1	120	975	0.411	191	191	0	0.329
AAC-1	MGRF	9080401	40029	-18	-18	2	1	240	976	0.524	150	150	0	0.363
AAC-1	MGRF	9080402	40029	-18	-18	2	2	8	997	0.166	484	483	-0.20661	0.248
AAC-1	MGRF	9080402	40029	-18	-18	2	2	15	998	0.197	408	410	0.490196	0.275
AAC-1	MGRF	9080402	40029	-18	-18	2	2	30	1000	0.241	335	335	0	0.305
AAC-1	MGRF	9080402	40029	-18	-18	2	2	60	1002	0.3	269	268	-0.37175	0.335
AAC-1	MGRF	9080402	40029	-18	-18	2	2	120	1004	0.384	211	211	0	0.365
AAC-1	MGRF	9080402	40029	-18	-18	2	2	240	1011	0.504	162	162	0	0.394
AAC-1	MGRF	9071601	40025	-12	-12	1	1	8	981	0.324	244	244	0	0.302
AAC-1	MGRF	9071601	40025	-12	-12	1	1	15	983	0.396	200	200	0	0.331
AAC-1	MGRF	9071601	40025	-12	-12	1	1	30	984	0.505	157	157	0	0.363
AAC-1	MGRF	9071601	40025	-12	-12	1	1	60	985	0.657	121	121	0	0.394
AAC-1	MGRF	9071601	40025	-12	-12	1	1	120	987	0.872	91	91	0	0.426
AAC-1	MGRF	9071601	40025	-12	-12	1	1	240	988	1.19	67	67	0	0.458
AAC-1	MGRF	9071602	40010	-12	-12	1	2	8	998	0.34	237	236	-0.42194	0.302
AAC-1	MGRF	9071602	40010	-12	-12	1	2	15	998	0.416	193	194	0.518135	0.33
AAC-1	MGRF	9071602	40010	-12	-12	1	2	30	998	0.528	152	153	0.657895	0.36
AAC-1	MGRF	9071602	40010	-12	-12	1	2	60	997	0.683	118	118	0	0.391
AAC-1	MGRF	9071602	40010	-12	-12	1	2	120	997	0.905	89	89	0	0.422
AAC-1	MGRF	9071602	40010	-12	-12	1	2	240	1000	1.232	65	66	1.538462	0.452
AAC-1	MGRF	9082001	40045	-12	-12	2	1	8	985	0.34	234	234	0	0.331
AAC-1	MGRF	9082001	40045	-12	-12	2	1	15	984	0.422	188	188	0	0.358
AAC-1	MGRF	9082001	40045	-12	-12	2	1	30	984	0.546	145	145	0	0.389
AAC-1	MGRF	9082001	40045	-12	-12	2	1	60	982	0.723	110	110	0	0.42

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAC-1	MGRF	9082001	40045	-12	-12	2	1	120	981	0.974	81	81	0	0.45
AAC-1	MGRF	9082001	40045	-12	-12	2	1	240	982	1.348	59	59	0	0.481
AAC-1	MGRF	9082002	40045	-12	-12	2	2	8	968	0.403	194	193	-0.51546	0.302
AAC-1	MGRF	9082002	40045	-12	-12	2	2	15	968	0.495	158	158	0	0.333
AAC-1	MGRF	9082002	40045	-12	-12	2	2	30	968	0.629	124	124	0	0.368
AAC-1	MGRF	9082002	40045	-12	-12	2	2	60	970	0.821	95	95	0	0.403
AAC-1	MGRF	9082002	40045	-12	-12	2	2	120	971	1.101	71	71	0	0.437
AAC-1	MGRF	9082002	40045	-12	-12	2	2	240	977	1.521	52	52	0	0.472

Table 70. AAD-2 Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	TANK	5010507	01/05/04	-30	-30	1	1	8	975	0.147	535	534	-0.18692	0.233
AAD-2	TANK	5010507	01/05/04	-30	-30	1	1	15	979	0.173	456	457	0.219298	0.264
AAD-2	TANK	5010507	01/05/04	-30	-30	1	1	30	982	0.211	375	376	0.266667	0.297
AAD-2	TANK	5010507	01/05/04	-30	-30	1	1	60	985	0.262	303	303	0	0.33
AAD-2	TANK	5010507	01/05/04	-30	-30	1	1	120	988	0.334	239	238	-0.41841	0.364
AAD-2	TANK	5010507	01/05/04	-30	-30	1	1	240	989	0.437	182	183	0.549451	0.397
AAD-2	TANK	5010508	01/05/04	-30	-30	1	2	8	989	0.116	687	687	0	0.219
AAD-2	TANK	5010508	01/05/04	-30	-30	1	2	15	991	0.135	592	593	0.168919	0.25
AAD-2	TANK	5010508	01/05/04	-30	-30	1	2	30	994	0.163	492	492	0	0.285
AAD-2	TANK	5010508	01/05/04	-30	-30	1	2	60	997	0.201	400	399	-0.25	0.319
AAD-2	TANK	5010508	01/05/04	-30	-30	1	2	120	998	0.254	317	316	-0.31546	0.354
AAD-2	TANK	5010508	01/05/04	-30	-30	1	2	240	997	0.329	244	245	0.409836	0.388
AAD-2	TANK	5011701	01/17/05	-30	-30	2	1	8	1043	0.116	725	723	-0.27586	0.227
AAD-2	TANK	5011701	01/17/05	-30	-30	2	1	15	1043	0.136	618	621	0.485437	0.259
AAD-2	TANK	5011701	01/17/05	-30	-30	2	1	30	1044	0.164	513	513	0	0.295
AAD-2	TANK	5011701	01/17/05	-30	-30	2	1	60	1046	0.204	413	413	0	0.331
AAD-2	TANK	5011701	01/17/05	-30	-30	2	1	120	1048	0.261	324	324	0	0.366
AAD-2	TANK	5011701	01/17/05	-30	-30	2	1	240	1050	0.341	248	248	0	0.402
AAD-2	TANK	5011702	01/17/05	-30	-30.1	2	2	8	1047	0.144	586	586	0	0.192
AAD-2	TANK	5011702	01/17/05	-30	-30.1	2	2	15	1049	0.165	513	514	0.194932	0.226

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	TANK	5011702	01/17/05	-30	-30.1	2	2	30	1051	0.195	435	434	-0.22989	0.262
AAD-2	TANK	5011702	01/17/05	-30	-30.1	2	2	60	1053	0.238	357	357	0	0.299
AAD-2	TANK	5011702	01/17/05	-30	-30.1	2	2	120	1056	0.297	287	287	0	0.336
AAD-2	TANK	5011702	01/17/05	-30	-30.1	2	2	240	1062	0.382	224	224	0	0.372
AAD-2	TANK	4110105	11/01/04	-24	-24	1	1	8	1063	0.251	341	341	0	0.332
AAD-2	TANK	4110105	11/01/04	-24	-24	1	1	15	1064	0.313	274	274	0	0.363
AAD-2	TANK	4110105	11/01/04	-24	-24	1	1	30	1065	0.408	210	211	0.47619	0.398
AAD-2	TANK	4110105	11/01/04	-24	-24	1	1	60	1065	0.543	158	158	0	0.433
AAD-2	TANK	4110105	11/01/04	-24	-24	1	1	120	1064	0.742	116	116	0	0.468
AAD-2	TANK	4110105	11/01/04	-24	-24	1	1	240	1062	1.037	83	83	0	0.502
AAD-2	TANK	4110106	11/01/04	-24	-24	1	2	8	1048	0.254	333	332	-0.3003	0.332
AAD-2	TANK	4110106	11/01/04	-24	-24	1	2	15	1050	0.318	266	267	0.37594	0.362
AAD-2	TANK	4110106	11/01/04	-24	-24	1	2	30	1053	0.414	205	205	0	0.395
AAD-2	TANK	4110106	11/01/04	-24	-24	1	2	60	1058	0.552	155	154	-0.64516	0.429
AAD-2	TANK	4110106	11/01/04	-24	-24	1	2	120	1061	0.753	114	113	-0.87719	0.462
AAD-2	TANK	4110106	11/01/04	-24	-24	1	2	240	1062	1.054	81	81	0	0.495
AAD-2	TANK	4110107	11/01/04	-24	-24	2	1	8	1041	0.251	334	334	0	0.329
AAD-2	TANK	4110107	11/01/04	-24	-24	2	1	15	1043	0.312	270	269	-0.37037	0.36
AAD-2	TANK	4110107	11/01/04	-24	-24	2	1	30	1044	0.406	207	207	0	0.394
AAD-2	TANK	4110107	11/01/04	-24	-24	2	1	60	1045	0.54	156	156	0	0.429
AAD-2	TANK	4110107	11/01/04	-24	-24	2	1	120	1044	0.736	114	114	0	0.463
AAD-2	TANK	4110107	11/01/04	-24	-24	2	1	240	1042	1.024	82	82	0	0.498
AAD-2	TANK	4110108	11/01/04	-24	-24	2	2	8	1071	0.292	296	296	0	0.319
AAD-2	TANK	4110108	11/01/04	-24	-24	2	2	15	1075	0.362	239	239	0	0.351
AAD-2	TANK	4110108	11/01/04	-24	-24	2	2	30	1079	0.47	185	185	0	0.386
AAD-2	TANK	4110108	11/01/04	-24	-24	2	2	60	1084	0.623	140	140	0	0.421
AAD-2	TANK	4110108	11/01/04	-24	-24	2	2	120	1089	0.847	104	103	-0.96154	0.456
AAD-2	TANK	4110108	11/01/04	-24	-24	2	2	240	1095	1.186	74	75	1.351351	0.491
AAD-2	TANK	4102903	10/29/04	-18	-18	1	1	8	1110	0.653	137	137	0	0.432
AAD-2	TANK	4102903	10/29/04	-18	-18	1	1	15	1113	0.865	104	104	0	0.459
AAD-2	TANK	4102903	10/29/04	-18	-18	1	1	30	1118	1.206	75	75	0	0.489
AAD-2	TANK	4102903	10/29/04	-18	-18	1	1	60	1123	1.721	53	53	0	0.519
AAD-2	TANK	4102903	10/29/04	-18	-18	1	1	120	1131	2.514	36	36	0	0.548

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	TANK	4102903	10/29/04	-18	-18	1	1	240	1140	3.729	25	25	0	0.578
AAD-2	TANK	4102904	10/29/04	-18	-18	1	2	8	1098	0.709	125	125	0	0.439
AAD-2	TANK	4102904	10/29/04	-18	-18	1	2	15	1098	0.942	94	94	0	0.468
AAD-2	TANK	4102904	10/29/04	-18	-18	1	2	30	1098	1.315	67	67	0	0.499
AAD-2	TANK	4102904	10/29/04	-18	-18	1	2	60	1098	1.883	47	47	0	0.53
AAD-2	TANK	4102904	10/29/04	-18	-18	1	2	120	1100	2.758	32	32	0	0.561
AAD-2	TANK	4102904	10/29/04	-18	-18	1	2	240	1103	4.112	22	22	0	0.593
AAD-2	TANK	4102911	10/29/04	-18	-18.1	2	1	8	1114	0.653	138	138	0	0.415
AAD-2	TANK	4102911	10/29/04	-18	-18.1	2	1	15	1115	0.855	105	105	0	0.446
AAD-2	TANK	4102911	10/29/04	-18	-18.1	2	1	30	1117	1.181	76	76	0	0.48
AAD-2	TANK	4102911	10/29/04	-18	-18.1	2	1	60	1120	1.673	54	54	0	0.514
AAD-2	TANK	4102911	10/29/04	-18	-18.1	2	1	120	1123	2.429	37	37	0	0.549
AAD-2	TANK	4102911	10/29/04	-18	-18.1	2	1	240	1130	3.607	25	25	0	0.583
AAD-2	TANK	4102912	10/29/04	-18	-18.1	2	2	8	1104	0.702	127	127	0	0.431
AAD-2	TANK	4102912	10/29/04	-18	-18.1	2	2	15	1104	0.929	96	96	0	0.463
AAD-2	TANK	4102912	10/29/04	-18	-18.1	2	2	30	1103	1.294	69	69	0	0.498
AAD-2	TANK	4102912	10/29/04	-18	-18.1	2	2	60	1101	1.848	48	48	0	0.533
AAD-2	TANK	4102912	10/29/04	-18	-18.1	2	2	120	1096	2.698	33	33	0	0.568
AAD-2	TANK	4102912	10/29/04	-18	-18.1	2	2	240	1093	4.031	22	22	0	0.604

Table 71. AAD-2 RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	RTFOT	5010501	01/05/04	-30	-30	1	1	8	936	0.11	686	684	-0.29155	0.175
AAD-2	RTFOT	5010501	01/05/04	-30	-30	1	1	15	936	0.125	604	607	0.496689	0.203
AAD-2	RTFOT	5010501	01/05/04	-30	-30	1	1	30	939	0.145	522	522	0	0.233
AAD-2	RTFOT	5010501	01/05/04	-30	-30	1	1	60	940	0.172	441	439	-0.45351	0.264
AAD-2	RTFOT	5010501	01/05/04	-30	-30	1	1	120	940	0.209	363	362	-0.27548	0.295
AAD-2	RTFOT	5010501	01/05/04	-30	-30	1	1	240	940	0.26	292	292	0	0.326
AAD-2	RTFOT	5010502	01/05/04	-30	-30	1	2	8	940	0.119	637	637	0	0.16
AAD-2	RTFOT	5010502	01/05/04	-30	-30	1	2	15	942	0.133	571	571	0	0.187

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	RTFOT	5010502	01/05/04	-30	-30	1	2	30	945	0.154	495	496	0.20202	0.217
AAD-2	RTFOT	5010502	01/05/04	-30	-30	1	2	60	949	0.181	423	422	-0.23641	0.247
AAD-2	RTFOT	5010502	01/05/04	-30	-30	1	2	120	953	0.218	352	352	0	0.277
AAD-2	RTFOT	5010502	01/05/04	-30	-30	1	2	240	958	0.269	287	287	0	0.307
AAD-2	RTFOT	5010503	01/05/04	-30	-30	2	1	8	968	0.087	897	895	-0.22297	0.195
AAD-2	RTFOT	5010503	01/05/04	-30	-30	2	1	15	970	0.1	782	785	0.383632	0.222
AAD-2	RTFOT	5010503	01/05/04	-30	-30	2	1	30	973	0.118	665	666	0.150376	0.252
AAD-2	RTFOT	5010503	01/05/04	-30	-30	2	1	60	976	0.142	554	553	-0.18051	0.282
AAD-2	RTFOT	5010503	01/05/04	-30	-30	2	1	120	980	0.175	452	450	-0.44248	0.312
AAD-2	RTFOT	5010503	01/05/04	-30	-30	2	1	240	986	0.222	358	359	0.27933	0.342
AAD-2	RTFOT	5010504	01/05/04	-30	-29.9	2	2	8	976	0.094	837	837	0	0.204
AAD-2	RTFOT	5010504	01/05/04	-30	-29.9	2	2	15	978	0.108	730	730	0	0.231
AAD-2	RTFOT	5010504	01/05/04	-30	-29.9	2	2	30	981	0.129	613	615	0.326264	0.261
AAD-2	RTFOT	5010504	01/05/04	-30	-29.9	2	2	60	985	0.156	509	508	-0.19646	0.291
AAD-2	RTFOT	5010504	01/05/04	-30	-29.9	2	2	120	987	0.193	412	411	-0.24272	0.32
AAD-2	RTFOT	5010504	01/05/04	-30	-29.9	2	2	240	989	0.245	325	326	0.307692	0.35
AAD-2	RTFOT	4110109	11/01/04	-24	-24	1	1	8	1020	0.223	369	369	0	0.268
AAD-2	RTFOT	4110109	11/01/04	-24	-24	1	1	15	1022	0.267	309	309	0	0.296
AAD-2	RTFOT	4110109	11/01/04	-24	-24	1	1	30	1026	0.333	248	249	0.403226	0.327
AAD-2	RTFOT	4110109	11/01/04	-24	-24	1	1	60	1030	0.423	196	196	0	0.358
AAD-2	RTFOT	4110109	11/01/04	-24	-24	1	1	120	1035	0.55	152	151	-0.65789	0.389
AAD-2	RTFOT	4110109	11/01/04	-24	-24	1	1	240	1038	0.732	114	114	0	0.42
AAD-2	RTFOT	4110110	11/01/04	-24	-24	1	2	8	1030	0.195	426	426	0	0.292
AAD-2	RTFOT	4110110	11/01/04	-24	-24	1	2	15	1032	0.237	351	351	0	0.32
AAD-2	RTFOT	4110110	11/01/04	-24	-24	1	2	30	1034	0.299	279	279	0	0.35
AAD-2	RTFOT	4110110	11/01/04	-24	-24	1	2	60	1035	0.386	216	216	0	0.38
AAD-2	RTFOT	4110110	11/01/04	-24	-24	1	2	120	1036	0.508	164	164	0	0.41
AAD-2	RTFOT	4110110	11/01/04	-24	-24	1	2	240	1041	0.685	123	123	0	0.44
AAD-2	RTFOT	4110111	11/01/04	-24	-24	2	1	8	1040	0.223	376	376	0	0.286
AAD-2	RTFOT	4110111	11/01/04	-24	-24	2	1	15	1041	0.27	311	311	0	0.314
AAD-2	RTFOT	4110111	11/01/04	-24	-24	2	1	30	1044	0.34	248	248	0	0.345
AAD-2	RTFOT	4110111	11/01/04	-24	-24	2	1	60	1046	0.437	193	193	0	0.376
AAD-2	RTFOT	4110111	11/01/04	-24	-24	2	1	120	1048	0.575	147	147	0	0.407

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	RTFOT	4110111	11/01/04	-24	-24	2	1	240	1052	0.773	110	110	0	0.437
AAD-2	RTFOT	4110112	11/01/04	-24	-24	2	2	8	1035	0.228	366	366	0	0.267
AAD-2	RTFOT	4110112	11/01/04	-24	-24	2	2	15	1038	0.273	307	306	-0.32573	0.297
AAD-2	RTFOT	4110112	11/01/04	-24	-24	2	2	30	1042	0.341	246	247	0.406504	0.331
AAD-2	RTFOT	4110112	11/01/04	-24	-24	2	2	60	1045	0.435	194	194	0	0.364
AAD-2	RTFOT	4110112	11/01/04	-24	-24	2	2	120	1048	0.567	149	149	0	0.397
AAD-2	RTFOT	4110112	11/01/04	-24	-24	2	2	240	1050	0.758	112	112	0	0.43
AAD-2	RTFOT	4102905	10/29/04	-18	-18	1	1	8	1080	0.511	170	170	0	0.372
AAD-2	RTFOT	4102905	10/29/04	-18	-18	1	1	15	1081	0.652	134	134	0	0.399
AAD-2	RTFOT	4102905	10/29/04	-18	-18	1	1	30	1084	0.871	100	100	0	0.429
AAD-2	RTFOT	4102905	10/29/04	-18	-18	1	1	60	1086	1.186	74	74	0	0.459
AAD-2	RTFOT	4102905	10/29/04	-18	-18	1	1	120	1087	1.649	53	53	0	0.488
AAD-2	RTFOT	4102905	10/29/04	-18	-18	1	1	240	1089	2.342	37	37	0	0.518
AAD-2	RTFOT	4102906	10/29/04	-18	-18	1	2	8	1097	0.497	178	178	0	0.359
AAD-2	RTFOT	4102906	10/29/04	-18	-18	1	2	15	1099	0.632	140	141	0.714286	0.387
AAD-2	RTFOT	4102906	10/29/04	-18	-18	1	2	30	1103	0.837	106	106	0	0.418
AAD-2	RTFOT	4102906	10/29/04	-18	-18	1	2	60	1108	1.133	79	79	0	0.448
AAD-2	RTFOT	4102906	10/29/04	-18	-18	1	2	120	1113	1.568	57	57	0	0.479
AAD-2	RTFOT	4102906	10/29/04	-18	-18	1	2	240	1115	2.22	40	41	2.5	0.51
AAD-2	RTFOT	4110208	11/02/04	-18	-18	2	1	8	995	0.434	185	185	0	0.367
AAD-2	RTFOT	4110208	11/02/04	-18	-18	2	1	15	998	0.554	145	145	0	0.396
AAD-2	RTFOT	4110208	11/02/04	-18	-18	2	1	30	1001	0.74	109	109	0	0.428
AAD-2	RTFOT	4110208	11/02/04	-18	-18	2	1	60	1004	1.007	80	80	0	0.46
AAD-2	RTFOT	4110208	11/02/04	-18	-18	2	1	120	1008	1.407	58	58	0	0.492
AAD-2	RTFOT	4110208	11/02/04	-18	-18	2	1	240	1010	2.009	41	41	0	0.525
AAD-2	RTFOT	4110209	11/02/04	-18	-18	2	2	8	982	0.476	166	166	0	0.354
AAD-2	RTFOT	4110209	11/02/04	-18	-18	2	2	15	986	0.603	132	132	0	0.383
AAD-2	RTFOT	4110209	11/02/04	-18	-18	2	2	30	991	0.799	100	100	0	0.415
AAD-2	RTFOT	4110209	11/02/04	-18	-18	2	2	60	996	1.081	74	74	0	0.447
AAD-2	RTFOT	4110209	11/02/04	-18	-18	2	2	120	1001	1.5	54	54	0	0.479
AAD-2	RTFOT	4110209	11/02/04	-18	-18	2	2	240	1010	2.132	38	38	0	0.511

Table 72. AAD-2 SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	SAFT	6030901	03/09/06	-30	-29.9	1	1	8	999	0.126	639	639	0	0.189
AAD-2	SAFT	6030901	03/09/06	-30	-29.9	1	1	15	998	0.143	563	563	0	0.217
AAD-2	SAFT	6030901	03/09/06	-30	-29.9	1	1	30	997	0.168	479	479	0	0.248
AAD-2	SAFT	6030901	03/09/06	-30	-29.9	1	1	60	995	0.201	399	399	0	0.278
AAD-2	SAFT	6030901	03/09/06	-30	-29.9	1	1	120	995	0.246	326	326	0	0.309
AAD-2	SAFT	6030901	03/09/06	-30	-29.9	1	1	240	1000	0.31	260	260	0	0.339
AAD-2	SAFT	6030902	03/09/06	-30	-30	1	2	8	1019	0.114	721	721	0	0.219
AAD-2	SAFT	6030902	03/09/06	-30	-30	1	2	15	1020	0.132	623	623	0	0.243
AAD-2	SAFT	6030902	03/09/06	-30	-30	1	2	30	1020	0.157	524	522	-0.38168	0.269
AAD-2	SAFT	6030902	03/09/06	-30	-30	1	2	60	1021	0.192	429	430	0.2331	0.295
AAD-2	SAFT	6030902	03/09/06	-30	-30	1	2	120	1023	0.238	347	347	0	0.32
AAD-2	SAFT	6030902	03/09/06	-30	-30	1	2	240	1026	0.3	276	275	-0.36232	0.346
AAD-2	SAFT	6030903	03/09/06	-30	-30	2	1	8	1044	0.105	802	800	-0.24938	0.2
AAD-2	SAFT	6030903	03/09/06	-30	-30	2	1	15	1045	0.121	696	699	0.431034	0.231
AAD-2	SAFT	6030903	03/09/06	-30	-30	2	1	30	1047	0.143	590	589	-0.16949	0.265
AAD-2	SAFT	6030903	03/09/06	-30	-30	2	1	60	1049	0.175	483	484	0.207039	0.3
AAD-2	SAFT	6030903	03/09/06	-30	-30	2	1	120	1052	0.218	389	389	0	0.334
AAD-2	SAFT	6030903	03/09/06	-30	-30	2	1	240	1057	0.28	304	305	0.328947	0.368
AAD-2	SAFT	6030904	03/09/06	-30	-30	2	2	8	1043	0.103	816	818	0.245098	0.201
AAD-2	SAFT	6030904	03/09/06	-30	-30	2	2	15	1042	0.117	718	715	-0.41783	0.23
AAD-2	SAFT	6030904	03/09/06	-30	-30	2	2	30	1043	0.14	601	603	0.332779	0.262
AAD-2	SAFT	6030904	03/09/06	-30	-30	2	2	60	1044	0.169	498	497	-0.2008	0.294
AAD-2	SAFT	6030904	03/09/06	-30	-30	2	2	120	1042	0.21	400	401	0.25	0.325
AAD-2	SAFT	6030904	03/09/06	-30	-30	2	2	240	1042	0.265	317	317	0	0.357
AAD-2	SAFT	6030801	03/08/06	-24	-24	1	1	8	1023	0.217	380	380	0	0.298
AAD-2	SAFT	6030801	03/08/06	-24	-24	1	1	15	1023	0.264	312	312	0	0.327
AAD-2	SAFT	6030801	03/08/06	-24	-24	1	1	30	1023	0.335	246	246	0	0.358
AAD-2	SAFT	6030801	03/08/06	-24	-24	1	1	60	1023	0.434	190	190	0	0.39
AAD-2	SAFT	6030801	03/08/06	-24	-24	1	1	120	1021	0.574	143	143	0	0.421
AAD-2	SAFT	6030801	03/08/06	-24	-24	1	1	240	1020	0.776	106	106	0	0.453
AAD-2	SAFT	6030802	01/18/05	-24	-24.1	1	2	8	1036	0.217	385	385	0	0.297

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	SAFT	6030802	01/18/05	-24	-24.1	1	2	15	1037	0.263	318	317	-0.31447	0.325
AAD-2	SAFT	6030802	01/18/05	-24	-24.1	1	2	30	1037	0.335	250	250	0	0.356
AAD-2	SAFT	6030802	01/18/05	-24	-24.1	1	2	60	1039	0.432	194	194	0	0.386
AAD-2	SAFT	6030802	01/18/05	-24	-24.1	1	2	120	1039	0.572	146	147	0.684932	0.417
AAD-2	SAFT	6030802	01/18/05	-24	-24.1	1	2	240	1040	0.772	109	109	0	0.448
AAD-2	SAFT	6030803	01/18/05	-24	-24	2	1	8	1034	0.249	335	335	0	0.277
AAD-2	SAFT	6030803	01/18/05	-24	-24	2	1	15	1036	0.299	279	279	0	0.306
AAD-2	SAFT	6030803	01/18/05	-24	-24	2	1	30	1039	0.376	223	223	0	0.338
AAD-2	SAFT	6030803	01/18/05	-24	-24	2	1	60	1042	0.481	175	174	-0.57143	0.37
AAD-2	SAFT	6030803	01/18/05	-24	-24	2	1	120	1045	0.632	133	133	0	0.402
AAD-2	SAFT	6030803	01/18/05	-24	-24	2	1	240	1051	0.848	100	100	0	0.435
AAD-2	SAFT	6030804	01/18/05	-24	-24.1	2	2	8	1041	0.236	356	355	-0.2809	0.286
AAD-2	SAFT	6030804	01/18/05	-24	-24.1	2	2	15	1042	0.286	294	294	0	0.314
AAD-2	SAFT	6030804	01/18/05	-24	-24.1	2	2	30	1043	0.36	234	234	0	0.346
AAD-2	SAFT	6030804	01/18/05	-24	-24.1	2	2	60	1047	0.462	183	182	-0.54645	0.377
AAD-2	SAFT	6030804	01/18/05	-24	-24.1	2	2	120	1048	0.609	139	139	0	0.408
AAD-2	SAFT	6030804	01/18/05	-24	-24.1	2	2	240	1049	0.818	103	103	0	0.44
AAD-2	SAFT	6031601	03/16/06	-18	-18	1	1	8	1100	0.607	146	146	0	0.382
AAD-2	SAFT	6031601	03/16/06	-18	-18	1	1	15	1099	0.776	114	114	0	0.404
AAD-2	SAFT	6031601	03/16/06	-18	-18	1	1	30	1098	1.036	85	86	1.176471	0.428
AAD-2	SAFT	6031601	03/16/06	-18	-18	1	1	60	1096	1.402	63	63	0	0.453
AAD-2	SAFT	6031601	03/16/06	-18	-18	1	1	120	1095	1.932	46	46	0	0.477
AAD-2	SAFT	6031601	03/16/06	-18	-18	1	1	240	1091	2.705	33	33	0	0.501
AAD-2	SAFT	6031602	03/16/06	-18	-18	1	2	8	1062	0.589	145	145	0	0.357
AAD-2	SAFT	6031602	03/16/06	-18	-18	1	2	15	1063	0.747	115	115	0	0.383
AAD-2	SAFT	6031602	03/16/06	-18	-18	1	2	30	1067	0.986	87	87	0	0.412
AAD-2	SAFT	6031602	03/16/06	-18	-18	1	2	60	1072	1.33	65	65	0	0.442
AAD-2	SAFT	6031602	03/16/06	-18	-18	1	2	120	1081	1.837	47	47	0	0.471
AAD-2	SAFT	6031602	03/16/06	-18	-18	1	2	240	1091	2.605	34	34	0	0.5
AAD-2	SAFT	6031603	03/16/06	-18	-18	2	1	8	1092	0.541	163	163	0	0.377
AAD-2	SAFT	6031603	03/16/06	-18	-18	2	1	15	1092	0.691	127	127	0	0.402
AAD-2	SAFT	6031603	03/16/06	-18	-18	2	1	30	1092	0.923	95	95	0	0.43
AAD-2	SAFT	6031603	03/16/06	-18	-18	2	1	60	1094	1.256	70	70	0	0.458

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	SAFT	6031603	03/16/06	-18	-18	2	1	120	1098	1.748	51	51	0	0.486
AAD-2	SAFT	6031603	03/16/06	-18	-18	2	1	240	1104	2.488	36	36	0	0.514
AAD-2	SAFT	6031604	03/16/06	-18	-18	2	2	8	1092	0.589	149	149	0	0.387
AAD-2	SAFT	6031604	03/16/06	-18	-18	2	2	15	1090	0.757	116	116	0	0.412
AAD-2	SAFT	6031604	03/16/06	-18	-18	2	2	30	1089	1.014	87	87	0	0.44
AAD-2	SAFT	6031604	03/16/06	-18	-18	2	2	60	1095	1.398	63	63	0	0.467
AAD-2	SAFT	6031604	03/16/06	-18	-18	2	2	120	1101	1.959	45	45	0	0.495
AAD-2	SAFT	6031604	03/16/06	-18	-18	2	2	240	1104	2.798	32	32	0	0.522

Table 73. AAD-2 MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	MGRF	9090101	40057	-30	-30	1	1	8	964	0.116	670	669	-0.14925	0.186
AAD-2	MGRF	9090101	40057	-30	-30	1	1	15	965	0.132	589	590	0.169779	0.213
AAD-2	MGRF	9090101	40057	-30	-30	1	1	30	967	0.155	503	504	0.198807	0.243
AAD-2	MGRF	9090101	40057	-30	-30	1	1	60	969	0.185	422	422	0	0.273
AAD-2	MGRF	9090101	40057	-30	-30	1	1	120	969	0.226	346	345	-0.28902	0.302
AAD-2	MGRF	9090101	40057	-30	-30	1	1	240	972	0.283	277	277	0	0.332
AAD-2	MGRF	9090103	40057	-30	-30	2	1	8	977	0.104	757	757	0	0.195
AAD-2	MGRF	9090103	40057	-30	-30	2	1	15	980	0.119	664	664	0	0.225
AAD-2	MGRF	9090103	40057	-30	-30	2	1	30	982	0.141	562	562	0	0.257
AAD-2	MGRF	9090103	40057	-30	-30	2	1	60	985	0.171	464	465	0.215517	0.289
AAD-2	MGRF	9090103	40057	-30	-30	2	1	120	986	0.211	377	376	-0.26525	0.322
AAD-2	MGRF	9090103	40057	-30	-30	2	1	240	992	0.269	297	298	0.3367	0.354
AAD-2	MGRF	9090102	40057	-30	-30	1	2	8	977	0.104	757	757	0	0.195
AAD-2	MGRF	9090102	40057	-30	-30	1	2	15	980	0.119	664	664	0	0.225
AAD-2	MGRF	9090102	40057	-30	-30	1	2	30	982	0.141	562	562	0	0.257
AAD-2	MGRF	9090102	40057	-30	-30	1	2	60	985	0.171	464	465	0.215517	0.289
AAD-2	MGRF	9090102	40057	-30	-30	1	2	120	986	0.211	377	376	-0.26525	0.322
AAD-2	MGRF	9090102	40057	-30	-30	1	2	240	992	0.269	297	298	0.3367	0.354
AAD-2	MGRF	9090104	40057	-30	-30	2	2	8	989	0.102	782	783	0.127877	0.207

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	MGRF	9090104	40057	-30	-30	2	2	15	991	0.117	683	681	-0.29283	0.235
AAD-2	MGRF	9090104	40057	-30	-30	2	2	30	992	0.14	571	572	0.175131	0.266
AAD-2	MGRF	9090104	40057	-30	-30	2	2	60	994	0.17	471	471	0	0.297
AAD-2	MGRF	9090104	40057	-30	-30	2	2	120	995	0.212	378	379	0.26455	0.328
AAD-2	MGRF	9090104	40057	-30	-30	2	2	240	997	0.269	299	299	0	0.36
AAD-2	MGRF	9082010	40045	-24	-24.1	1	1	8	976	0.193	408	408	0	0.298
AAD-2	MGRF	9082010	40045	-24	-24.1	1	1	15	978	0.235	336	335	-0.29762	0.326
AAD-2	MGRF	9082010	40045	-24	-24.1	1	1	30	980	0.298	265	265	0	0.356
AAD-2	MGRF	9082010	40045	-24	-24.1	1	1	60	982	0.387	205	205	0	0.386
AAD-2	MGRF	9082010	40045	-24	-24.1	1	1	120	985	0.513	155	155	0	0.417
AAD-2	MGRF	9082010	40045	-24	-24.1	1	1	240	988	0.693	115	115	0	0.447
AAD-2	MGRF	9082012	40045	-24	-24	2	1	8	985	0.183	434	433	-0.23041	0.301
AAD-2	MGRF	9082012	40045	-24	-24	2	1	15	986	0.224	355	356	0.28169	0.327
AAD-2	MGRF	9082012	40045	-24	-24	2	1	30	988	0.284	281	281	0	0.356
AAD-2	MGRF	9082012	40045	-24	-24	2	1	60	989	0.367	217	217	0	0.386
AAD-2	MGRF	9082012	40045	-24	-24	2	1	120	991	0.485	165	164	-0.60606	0.415
AAD-2	MGRF	9082012	40045	-24	-24	2	1	240	994	0.657	122	122	0	0.444
AAD-2	MGRF	9082011	40045	-24	-24.1	1	2	8	969	0.213	367	366	-0.27248	0.281
AAD-2	MGRF	9082011	40045	-24	-24.1	1	2	15	971	0.258	303	304	0.330033	0.31
AAD-2	MGRF	9082011	40045	-24	-24.1	1	2	30	975	0.324	243	243	0	0.342
AAD-2	MGRF	9082011	40045	-24	-24.1	1	2	60	978	0.416	190	189	-0.52632	0.374
AAD-2	MGRF	9082011	40045	-24	-24.1	1	2	120	981	0.547	145	144	-0.68966	0.406
AAD-2	MGRF	9082011	40045	-24	-24.1	1	2	240	987	0.739	108	108	0	0.439
AAD-2	MGRF	9082013	40045	-24	-24	2	2	8	983	0.21	377	377	0	0.296
AAD-2	MGRF	9082013	40045	-24	-24	2	2	15	985	0.256	310	310	0	0.323
AAD-2	MGRF	9082013	40045	-24	-24	2	2	30	988	0.325	245	246	0.408163	0.353
AAD-2	MGRF	9082013	40045	-24	-24	2	2	60	992	0.42	190	190	0	0.384
AAD-2	MGRF	9082013	40045	-24	-24	2	2	120	994	0.555	144	144	0	0.414
AAD-2	MGRF	9082013	40045	-24	-24	2	2	240	996	0.75	107	107	0	0.444
AAD-2	MGRF	9082801	40053	-18	-18	1	1	8	979	0.468	169	168	-0.59172	0.368
AAD-2	MGRF	9082801	40053	-18	-18	1	1	15	982	0.6	132	132	0	0.4
AAD-2	MGRF	9082801	40053	-18	-18	1	1	30	984	0.803	99	99	0	0.436
AAD-2	MGRF	9082801	40053	-18	-18	1	1	60	988	1.097	73	72	-1.36986	0.471

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAD-2	MGRF	9082801	40053	-18	-18	1	1	120	985	1.545	51	51	0	0.507
AAD-2	MGRF	9082801	40053	-18	-18	1	1	240	981	2.21	36	36	0	0.543
AAD-2	MGRF	9082803	40053	-18	-18	2	1	8	976	0.446	176	176	0	0.386
AAD-2	MGRF	9082803	40053	-18	-18	2	1	15	981	0.577	137	137	0	0.411
AAD-2	MGRF	9082803	40053	-18	-18	2	1	30	985	0.777	102	102	0	0.438
AAD-2	MGRF	9082803	40053	-18	-18	2	1	60	991	1.068	75	75	0	0.466
AAD-2	MGRF	9082803	40053	-18	-18	2	1	120	996	1.498	54	54	0	0.494
AAD-2	MGRF	9082803	40053	-18	-18	2	1	240	1003	2.146	38	38	0	0.521
AAD-2	MGRF	9082802	40053	-18	-18	1	2	8	976	0.492	160	160	0	0.371
AAD-2	MGRF	9082802	40053	-18	-18	1	2	15	979	0.63	125	125	0	0.401
AAD-2	MGRF	9082802	40053	-18	-18	1	2	30	983	0.844	94	94	0	0.433
AAD-2	MGRF	9082802	40053	-18	-18	1	2	60	986	1.154	69	69	0	0.466
AAD-2	MGRF	9082802	40053	-18	-18	1	2	120	985	1.614	49	49	0	0.499
AAD-2	MGRF	9082802	40053	-18	-18	1	2	240	986	2.307	34	34	0	0.531
AAD-2	MGRF	9082804	40053	-18	-18	2	2	8	981	0.477	166	166	0	0.388
AAD-2	MGRF	9082804	40053	-18	-18	2	2	15	982	0.613	129	129	0	0.414
AAD-2	MGRF	9082804	40053	-18	-18	2	2	30	983	0.825	96	96	0	0.442
AAD-2	MGRF	9082804	40053	-18	-18	2	2	60	982	1.133	70	70	0	0.47
AAD-2	MGRF	9082804	40053	-18	-18	2	2	120	984	1.592	50	50	0	0.499
AAD-2	MGRF	9082804	40053	-18	-18	2	2	240	990	2.275	35	35	0	0.527

Table 74. AAF-1 Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	TANK	5010301	01/03/05	-24	-24	1	1	8	1102	0.102	871	868	-0.34443	0.117
AAF-1	TANK	5010301	01/03/05	-24	-24	1	1	15	1103	0.112	794	800	0.755668	0.142
AAF-1	TANK	5010301	01/03/05	-24	-24	1	1	30	1105	0.124	719	718	-0.13908	0.17
AAF-1	TANK	5010301	01/03/05	-24	-24	1	1	60	1107	0.141	633	632	-0.15798	0.197
AAF-1	TANK	5010301	01/03/05	-24	-24	1	1	120	1107	0.163	548	546	-0.36496	0.224
AAF-1	TANK	5010301	01/03/05	-24	-24	1	1	240	1106	0.193	462	463	0.21645	0.252
AAF-1	TANK	5010302	01/03/05	-24	-24	1	2	8	1103	0.098	907	906	-0.11025	0.119

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	TANK	5010302	01/03/05	-24	-24	1	2	15	1104	0.107	832	834	0.240385	0.145
AAF-1	TANK	5010302	01/03/05	-24	-24	1	2	30	1106	0.12	743	746	0.403769	0.174
AAF-1	TANK	5010302	01/03/05	-24	-24	1	2	60	1109	0.136	657	655	-0.30441	0.204
AAF-1	TANK	5010302	01/03/05	-24	-24	1	2	120	1111	0.159	563	563	0	0.233
AAF-1	TANK	5010302	01/03/05	-24	-24	1	2	240	1115	0.19	473	474	0.211416	0.262
AAF-1	TANK	5010303	01/03/05	-24	-24	2	1	8	1098	0.094	942	941	-0.10616	0.128
AAF-1	TANK	5010303	01/03/05	-24	-24	2	1	15	1100	0.103	861	862	0.116144	0.152
AAF-1	TANK	5010303	01/03/05	-24	-24	2	1	30	1103	0.116	767	769	0.260756	0.178
AAF-1	TANK	5010303	01/03/05	-24	-24	2	1	60	1105	0.132	675	673	-0.2963	0.204
AAF-1	TANK	5010303	01/03/05	-24	-24	2	1	120	1107	0.154	580	579	-0.17241	0.231
AAF-1	TANK	5010303	01/03/05	-24	-24	2	1	240	1109	0.183	489	489	0	0.257
AAF-1	TANK	5010304	01/03/05	-24	-24	2	2	8	1112	0.092	975	974	-0.10256	0.131
AAF-1	TANK	5010304	01/03/05	-24	-24	2	2	15	1114	0.101	889	890	0.112486	0.155
AAF-1	TANK	5010304	01/03/05	-24	-24	2	2	30	1117	0.114	790	792	0.253165	0.181
AAF-1	TANK	5010304	01/03/05	-24	-24	2	2	60	1118	0.13	693	692	-0.1443	0.208
AAF-1	TANK	5010304	01/03/05	-24	-24	2	2	120	1121	0.152	595	594	-0.16807	0.234
AAF-1	TANK	5010304	01/03/05	-24	-24	2	2	240	1122	0.181	500	500	0	0.26
AAF-1	TANK	4111802	11/18/04	-18	-18	1	1	8	997	0.152	529	528	-0.18904	0.175
AAF-1	TANK	4111802	11/18/04	-18	-18	1	1	15	999	0.172	468	469	0.213675	0.206
AAF-1	TANK	4111802	11/18/04	-18	-18	1	1	30	1003	0.202	400	402	0.5	0.24
AAF-1	TANK	4111802	11/18/04	-18	-18	1	1	60	1007	0.241	337	336	-0.29674	0.274
AAF-1	TANK	4111802	11/18/04	-18	-18	1	1	120	1010	0.296	275	275	0	0.308
AAF-1	TANK	4111802	11/18/04	-18	-18	1	1	240	1016	0.374	219	219	0	0.342
AAF-1	TANK	4111803	11/18/04	-18	-18	1	2	8	1024	0.152	543	544	0.184162	0.17
AAF-1	TANK	4111803	11/18/04	-18	-18	1	2	15	1027	0.171	484	483	-0.20661	0.204
AAF-1	TANK	4111803	11/18/04	-18	-18	1	2	30	1030	0.201	413	414	0.242131	0.242
AAF-1	TANK	4111803	11/18/04	-18	-18	1	2	60	1033	0.241	346	346	0	0.279
AAF-1	TANK	4111803	11/18/04	-18	-18	1	2	120	1036	0.297	281	281	0	0.317
AAF-1	TANK	4111803	11/18/04	-18	-18	1	2	240	1041	0.377	223	223	0	0.354
AAF-1	TANK	4111804	11/18/04	-18	-18	2	1	8	1040	0.145	578	578	0	0.187
AAF-1	TANK	4111804	11/18/04	-18	-18	2	1	15	1043	0.165	510	509	-0.19608	0.219
AAF-1	TANK	4111804	11/18/04	-18	-18	2	1	30	1045	0.195	432	432	0	0.254
AAF-1	TANK	4111804	11/18/04	-18	-18	2	1	60	1049	0.236	358	358	0	0.288

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	TANK	4111804	11/18/04	-18	-18	2	1	120	1050	0.292	290	290	0	0.323
AAF-1	TANK	4111804	11/18/04	-18	-18	2	1	240	1053	0.371	229	229	0	0.358
AAF-1	TANK	4111805	11/18/04	-18	-18	2	2	8	1032	0.254	328	327	-0.30488	0.111
AAF-1	TANK	4111805	11/18/04	-18	-18	2	2	15	1033	0.277	301	302	0.332226	0.142
AAF-1	TANK	4111805	11/18/04	-18	-18	2	2	30	1036	0.309	270	270	0	0.176
AAF-1	TANK	4111805	11/18/04	-18	-18	2	2	60	1037	0.353	237	237	0	0.209
AAF-1	TANK	4111805	11/18/04	-18	-18	2	2	120	1039	0.413	203	202	-0.49261	0.243
AAF-1	TANK	4111805	11/18/04	-18	-18	2	2	240	1041	0.498	169	169	0	0.277
AAF-1	TANK	4111701	11/17/04	-12	-12	1	1	8	1001	0.272	297	297	0	0.238
AAF-1	TANK	4111701	11/17/04	-12	-12	1	1	15	1002	0.32	252	253	0.396825	0.272
AAF-1	TANK	4111701	11/17/04	-12	-12	1	1	30	1003	0.392	206	206	0	0.31
AAF-1	TANK	4111701	11/17/04	-12	-12	1	1	60	1007	0.494	164	164	0	0.348
AAF-1	TANK	4111701	11/17/04	-12	-12	1	1	120	1009	0.638	128	127	-0.78125	0.386
AAF-1	TANK	4111701	11/17/04	-12	-12	1	1	240	1013	0.85	96	96	0	0.425
AAF-1	TANK	4111702	11/17/04	-12	-12	1	2	8	1009	0.224	363	363	0	0.294
AAF-1	TANK	4111702	11/17/04	-12	-12	1	2	15	1012	0.273	299	299	0	0.323
AAF-1	TANK	4111702	11/17/04	-12	-12	1	2	30	1015	0.346	237	237	0	0.354
AAF-1	TANK	4111702	11/17/04	-12	-12	1	2	60	1019	0.449	183	183	0	0.385
AAF-1	TANK	4111702	11/17/04	-12	-12	1	2	120	1023	0.594	139	139	0	0.417
AAF-1	TANK	4111702	11/17/04	-12	-12	1	2	240	1030	0.809	103	103	0	0.448
AAF-1	TANK	4111703	11/17/04	-12	-12	2	1	8	1019	0.25	329	328	-0.30395	0.26
AAF-1	TANK	4111703	11/17/04	-12	-12	2	1	15	1022	0.299	276	276	0	0.293
AAF-1	TANK	4111703	11/17/04	-12	-12	2	1	30	1026	0.371	223	223	0	0.329
AAF-1	TANK	4111703	11/17/04	-12	-12	2	1	60	1029	0.475	175	175	0	0.366
AAF-1	TANK	4111703	11/17/04	-12	-12	2	1	120	1033	0.621	134	134	0	0.402
AAF-1	TANK	4111703	11/17/04	-12	-12	2	1	240	1039	0.837	100	100	0	0.439
AAF-1	TANK	4111704	11/17/04	-12	-12.1	2	2	8	1010	0.249	327	327	0	0.282
AAF-1	TANK	4111704	11/17/04	-12	-12.1	2	2	15	1012	0.301	271	271	0	0.315
AAF-1	TANK	4111704	11/17/04	-12	-12.1	2	2	30	1013	0.38	215	215	0	0.351
AAF-1	TANK	4111704	11/17/04	-12	-12.1	2	2	60	1016	0.491	167	167	0	0.387
AAF-1	TANK	4111704	11/17/04	-12	-12.1	2	2	120	1019	0.652	126	126	0	0.423
AAF-1	TANK	4111704	11/17/04	-12	-12.1	2	2	240	1022	0.889	93	93	0	0.459

Table 75. AAF-1 RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	RTFOT	4111806	11/18/04	-18	-18	1	1	8	1039	0.145	578	577	-0.17301	0.153
AAF-1	RTFOT	4111806	11/18/04	-18	-18	1	1	15	1041	0.162	518	520	0.3861	0.179
AAF-1	RTFOT	4111806	11/18/04	-18	-18	1	1	30	1042	0.185	454	454	0	0.207
AAF-1	RTFOT	4111806	11/18/04	-18	-18	1	1	60	1042	0.215	391	390	-0.25575	0.236
AAF-1	RTFOT	4111806	11/18/04	-18	-18	1	1	120	1041	0.256	328	328	0	0.264
AAF-1	RTFOT	4111806	11/18/04	-18	-18	1	1	240	1042	0.311	270	270	0	0.292
AAF-1	RTFOT	4111807	11/18/04	-18	-18	1	2	8	1034	0.132	632	631	-0.15823	0.177
AAF-1	RTFOT	4111807	11/18/04	-18	-18	1	2	15	1038	0.15	558	559	0.179211	0.206
AAF-1	RTFOT	4111807	11/18/04	-18	-18	1	2	30	1043	0.175	481	480	-0.2079	0.238
AAF-1	RTFOT	4111807	11/18/04	-18	-18	1	2	60	1047	0.21	402	402	0	0.27
AAF-1	RTFOT	4111807	11/18/04	-18	-18	1	2	120	1049	0.256	330	330	0	0.302
AAF-1	RTFOT	4111807	11/18/04	-18	-18	1	2	240	1050	0.32	265	265	0	0.334
AAF-1	RTFOT	4111808	11/18/04	-18	-18	2	1	8	1034	0.147	567	566	-0.17637	0.151
AAF-1	RTFOT	4111808	11/18/04	-18	-18	2	1	15	1037	0.164	510	511	0.196078	0.179
AAF-1	RTFOT	4111808	11/18/04	-18	-18	2	1	30	1039	0.188	446	446	0	0.211
AAF-1	RTFOT	4111808	11/18/04	-18	-18	2	1	60	1041	0.22	382	381	-0.26178	0.242
AAF-1	RTFOT	4111808	11/18/04	-18	-18	2	1	120	1043	0.263	320	319	-0.3125	0.273
AAF-1	RTFOT	4111808	11/18/04	-18	-18	2	1	240	1042	0.322	261	261	0	0.304
AAF-1	RTFOT	4111809	11/18/04	-18	-18	2	2	8	1059	0.122	700	699	-0.14286	0.175
AAF-1	RTFOT	4111809	11/18/04	-18	-18	2	2	15	1061	0.138	620	621	0.16129	0.204
AAF-1	RTFOT	4111809	11/18/04	-18	-18	2	2	30	1063	0.161	532	533	0.18797	0.235
AAF-1	RTFOT	4111809	11/18/04	-18	-18	2	2	60	1065	0.191	450	448	-0.44444	0.266
AAF-1	RTFOT	4111809	11/18/04	-18	-18	2	2	120	1066	0.233	369	369	0	0.297
AAF-1	RTFOT	4111809	11/18/04	-18	-18	2	2	240	1065	0.289	297	297	0	0.328
AAF-1	RTFOT	4111705	11/17/04	-12	-12.1	1	1	8	1012	0.208	392	392	0	0.246
AAF-1	RTFOT	4111705	11/17/04	-12	-12.1	1	1	15	1013	0.246	332	332	0	0.277
AAF-1	RTFOT	4111705	11/17/04	-12	-12.1	1	1	30	1014	0.302	271	271	0	0.312
AAF-1	RTFOT	4111705	11/17/04	-12	-12.1	1	1	60	1015	0.379	216	216	0	0.346
AAF-1	RTFOT	4111705	11/17/04	-12	-12.1	1	1	120	1014	0.487	168	168	0	0.381
AAF-1	RTFOT	4111705	11/17/04	-12	-12.1	1	1	240	1014	0.643	127	127	0	0.415

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	RTFOT	4111706	11/17/04	-12	-12	1	2	8	1016	0.208	394	394	0	0.232
AAF-1	RTFOT	4111706	11/17/04	-12	-12	1	2	15	1019	0.243	338	337	-0.29586	0.265
AAF-1	RTFOT	4111706	11/17/04	-12	-12	1	2	30	1023	0.298	277	277	0	0.302
AAF-1	RTFOT	4111706	11/17/04	-12	-12	1	2	60	1026	0.373	222	222	0	0.338
AAF-1	RTFOT	4111706	11/17/04	-12	-12	1	2	120	1027	0.478	173	173	0	0.375
AAF-1	RTFOT	4111706	11/17/04	-12	-12	1	2	240	1030	0.629	132	132	0	0.411
AAF-1	RTFOT	4111707	11/17/04	-12	-12.1	2	1	8	1007	0.196	414	414	0	0.242
AAF-1	RTFOT	4111707	11/17/04	-12	-12.1	2	1	15	1010	0.232	351	352	0.2849	0.273
AAF-1	RTFOT	4111707	11/17/04	-12	-12.1	2	1	30	1013	0.284	288	288	0	0.306
AAF-1	RTFOT	4111707	11/17/04	-12	-12.1	2	1	60	1015	0.355	231	230	-0.4329	0.339
AAF-1	RTFOT	4111707	11/17/04	-12	-12.1	2	1	120	1017	0.455	180	180	0	0.372
AAF-1	RTFOT	4111707	11/17/04	-12	-12.1	2	1	240	1016	0.597	137	137	0	0.406
AAF-1	RTFOT	4111708	11/17/04	-12	-12.1	2	2	8	1023	0.22	375	375	0	0.251
AAF-1	RTFOT	4111708	11/17/04	-12	-12.1	2	2	15	1024	0.26	318	317	-0.31447	0.28
AAF-1	RTFOT	4111708	11/17/04	-12	-12.1	2	2	30	1026	0.32	259	259	0	0.312
AAF-1	RTFOT	4111708	11/17/04	-12	-12.1	2	2	60	1027	0.402	206	206	0	0.344
AAF-1	RTFOT	4111708	11/17/04	-12	-12.1	2	2	120	1028	0.517	160	160	0	0.377
AAF-1	RTFOT	4111708	11/17/04	-12	-12.1	2	2	240	1029	0.679	122	122	0	0.409
AAF-1	RTFOT	5010607	01/06/05	-6	-6.1	1	1	8	981	0.44	180	180	0	0.304
AAF-1	RTFOT	5010607	01/06/05	-6	-6.1	1	1	15	981	0.538	147	147	0	0.336
AAF-1	RTFOT	5010607	01/06/05	-6	-6.1	1	1	30	980	0.686	115	115	0	0.372
AAF-1	RTFOT	5010607	01/06/05	-6	-6.1	1	1	60	979	0.899	88	88	0	0.407
AAF-1	RTFOT	5010607	01/06/05	-6	-6.1	1	1	120	978	1.207	65	65	0	0.443
AAF-1	RTFOT	5010607	01/06/05	-6	-6.1	1	1	240	983	1.667	48	48	0	0.479
AAF-1	RTFOT	5010608	01/06/05	-6	-6.1	1	2	8	1014	0.411	199	199	0	0.329
AAF-1	RTFOT	5010608	01/06/05	-6	-6.1	1	2	15	1015	0.512	160	160	0	0.363
AAF-1	RTFOT	5010608	01/06/05	-6	-6.1	1	2	30	1015	0.666	123	123	0	0.4
AAF-1	RTFOT	5010608	01/06/05	-6	-6.1	1	2	60	1015	0.89	92	92	0	0.436
AAF-1	RTFOT	5010608	01/06/05	-6	-6.1	1	2	120	1013	1.218	67	67	0	0.473
AAF-1	RTFOT	5010608	01/06/05	-6	-6.1	1	2	240	1014	1.714	48	48	0	0.51
AAF-1	RTFOT	5010609	01/06/05	-6	-6.1	2	1	8	988	0.436	183	183	0	0.31
AAF-1	RTFOT	5010609	01/06/05	-6	-6.1	2	1	15	992	0.538	149	149	0	0.344
AAF-1	RTFOT	5010609	01/06/05	-6	-6.1	2	1	30	996	0.695	116	116	0	0.382

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	RTFOT	5010609	01/06/05	-6	-6.1	2	1	60	1000	0.92	88	88	0	0.419
AAF-1	RTFOT	5010609	01/06/05	-6	-6.1	2	1	120	1003	1.249	65	65	0	0.457
AAF-1	RTFOT	5010609	01/06/05	-6	-6.1	2	1	240	1007	1.747	46	47	2.173913	0.495
AAF-1	RTFOT	5010610	01/06/05	-6	-6.1	2	2	8	1011	0.432	189	188	-0.5291	0.328
AAF-1	RTFOT	5010610	01/06/05	-6	-6.1	2	2	15	1012	0.538	152	152	0	0.359
AAF-1	RTFOT	5010610	01/06/05	-6	-6.1	2	2	30	1015	0.701	117	117	0	0.394
AAF-1	RTFOT	5010610	01/06/05	-6	-6.1	2	2	60	1018	0.932	88	88	0	0.428
AAF-1	RTFOT	5010610	01/06/05	-6	-6.1	2	2	120	1021	1.272	65	65	0	0.462
AAF-1	RTFOT	5010610	01/06/05	-6	-6.1	2	2	240	1024	1.784	46	46	0	0.497

Table 76. AAF-1 SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	SAFT	6031401	03/14/06	-18	-18	1	1	8	1080	0.124	702	699	-0.42735	0.184
AAF-1	SAFT	6031401	03/14/06	-18	-18	1	1	15	1080	0.142	613	618	0.815661	0.212
AAF-1	SAFT	6031401	03/14/06	-18	-18	1	1	30	1081	0.165	528	528	0	0.242
AAF-1	SAFT	6031401	03/14/06	-18	-18	1	1	60	1081	0.197	442	441	-0.22624	0.273
AAF-1	SAFT	6031401	03/14/06	-18	-18	1	1	120	1082	0.241	362	361	-0.27624	0.304
AAF-1	SAFT	6031401	03/14/06	-18	-18	1	1	240	1083	0.302	289	290	0.346021	0.335
AAF-1	SAFT	6031402	03/14/06	-18	-18	1	2	8	1073	0.126	687	686	-0.14556	0.184
AAF-1	SAFT	6031402	03/14/06	-18	-18	1	2	15	1075	0.143	606	606	0	0.209
AAF-1	SAFT	6031402	03/14/06	-18	-18	1	2	30	1077	0.168	517	519	0.386847	0.237
AAF-1	SAFT	6031402	03/14/06	-18	-18	1	2	60	1080	0.199	438	436	-0.45662	0.264
AAF-1	SAFT	6031402	03/14/06	-18	-18	1	2	120	1083	0.242	361	360	-0.27701	0.292
AAF-1	SAFT	6031402	03/14/06	-18	-18	1	2	240	1089	0.302	291	291	0	0.319
AAF-1	SAFT	6031403	03/14/06	-18	-18	2	1	8	1076	0.185	469	468	-0.21322	0.131
AAF-1	SAFT	6031403	03/14/06	-18	-18	2	1	15	1075	0.204	425	427	0.470588	0.16
AAF-1	SAFT	6031403	03/14/06	-18	-18	2	1	30	1075	0.229	379	378	-0.26385	0.191
AAF-1	SAFT	6031403	03/14/06	-18	-18	2	1	60	1075	0.264	328	328	0	0.222
AAF-1	SAFT	6031403	03/14/06	-18	-18	2	1	120	1076	0.312	278	278	0	0.253
AAF-1	SAFT	6031403	03/14/06	-18	-18	2	1	240	1078	0.377	231	231	0	0.284

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	SAFT	6031404	03/14/06	-18	-18	2	2	8	1069	0.15	575	574	-0.17391	0.158
AAF-1	SAFT	6031404	03/14/06	-18	-18	2	2	15	1070	0.168	514	515	0.194553	0.187
AAF-1	SAFT	6031404	03/14/06	-18	-18	2	2	30	1071	0.193	447	447	0	0.22
AAF-1	SAFT	6031404	03/14/06	-18	-18	2	2	60	1074	0.228	380	379	-0.26316	0.253
AAF-1	SAFT	6031404	03/14/06	-18	-18	2	2	120	1074	0.275	315	315	0	0.285
AAF-1	SAFT	6031404	03/14/06	-18	-18	2	2	240	1077	0.34	255	255	0	0.318
AAF-1	SAFT	6032109	03/21/06	-12	-12	1	1	8	1000	0.302	267	266	-0.37453	0.181
AAF-1	SAFT	6032109	03/21/06	-12	-12	1	1	15	999	0.344	234	235	0.42735	0.217
AAF-1	SAFT	6032109	03/21/06	-12	-12	1	1	30	1000	0.404	200	200	0	0.257
AAF-1	SAFT	6032109	03/21/06	-12	-12	1	1	60	1000	0.489	165	165	0	0.297
AAF-1	SAFT	6032109	03/21/06	-12	-12	1	1	120	1001	0.61	132	132	0	0.337
AAF-1	SAFT	6032109	03/21/06	-12	-12	1	1	240	1001	0.783	103	103	0	0.377
AAF-1	SAFT	6032110	03/21/06	-12	-12	1	2	8	1020	0.215	383	381	-0.52219	0.258
AAF-1	SAFT	6032110	03/21/06	-12	-12	1	2	15	1020	0.257	320	321	0.3125	0.286
AAF-1	SAFT	6032110	03/21/06	-12	-12	1	2	30	1021	0.317	260	261	0.384615	0.318
AAF-1	SAFT	6032110	03/21/06	-12	-12	1	2	60	1023	0.397	208	207	-0.48077	0.349
AAF-1	SAFT	6032110	03/21/06	-12	-12	1	2	120	1023	0.512	161	161	0	0.38
AAF-1	SAFT	6032110	03/21/06	-12	-12	1	2	240	1026	0.679	122	122	0	0.411
AAF-1	SAFT	6032111	03/21/06	-12	-12	2	1	8	1004	0.261	310	310	0	0.214
AAF-1	SAFT	6032111	03/21/06	-12	-12	2	1	15	1006	0.303	268	268	0	0.247
AAF-1	SAFT	6032111	03/21/06	-12	-12	2	1	30	1008	0.365	223	223	0	0.284
AAF-1	SAFT	6032111	03/21/06	-12	-12	2	1	60	1012	0.451	181	181	0	0.321
AAF-1	SAFT	6032111	03/21/06	-12	-12	2	1	120	1014	0.572	143	143	0	0.358
AAF-1	SAFT	6032111	03/21/06	-12	-12	2	1	240	1019	0.748	110	110	0	0.396
AAF-1	SAFT	6032112	03/21/06	-12	-12	2	2	8	1019	0.252	326	326	0	0.229
AAF-1	SAFT	6032112	03/21/06	-12	-12	2	2	15	1021	0.295	279	279	0	0.262
AAF-1	SAFT	6032112	03/21/06	-12	-12	2	2	30	1023	0.359	230	230	0	0.298
AAF-1	SAFT	6032112	03/21/06	-12	-12	2	2	60	1026	0.447	185	185	0	0.333
AAF-1	SAFT	6032112	03/21/06	-12	-12	2	2	120	1030	0.573	145	145	0	0.369
AAF-1	SAFT	6032112	03/21/06	-12	-12	2	2	240	1034	0.753	111	111	0	0.405
AAF-1	SAFT	6032801	03/28/06	-6	-6	1	1	8	980	0.49	161	161	0	0.324
AAF-1	SAFT	6032801	03/28/06	-6	-6	1	1	15	979	0.605	130	130	0	0.355
AAF-1	SAFT	6032801	03/28/06	-6	-6	1	1	30	979	0.782	101	101	0	0.389

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	SAFT	6032801	03/28/06	-6	-6	1	1	60	978	1.036	76	76	0	0.423
AAF-1	SAFT	6032801	03/28/06	-6	-6	1	1	120	979	1.413	56	56	0	0.457
AAF-1	SAFT	6032801	03/28/06	-6	-6	1	1	240	987	1.966	40	40	0	0.49
AAF-1	SAFT	6032802	03/28/06	-6	-6	1	2	8	1012	0.407	200	200	0	0.33
AAF-1	SAFT	6032802	03/28/06	-6	-6	1	2	15	1013	0.507	161	161	0	0.361
AAF-1	SAFT	6032802	03/28/06	-6	-6	1	2	30	1015	0.662	124	124	0	0.396
AAF-1	SAFT	6032802	03/28/06	-6	-6	1	2	60	1019	0.879	93	93	0	0.43
AAF-1	SAFT	6032802	03/28/06	-6	-6	1	2	120	1024	1.211	68	68	0	0.465
AAF-1	SAFT	6032802	03/28/06	-6	-6	1	2	240	1034	1.706	49	49	0	0.499
AAF-1	SAFT	6032803	03/28/06	-6	-6	2	1	8	1022	0.573	144	144	0	0.254
AAF-1	SAFT	6032803	03/28/06	-6	-6	2	1	15	1022	0.684	120	121	0.833333	0.294
AAF-1	SAFT	6032803	03/28/06	-6	-6	2	1	30	1021	0.849	97	97	0	0.338
AAF-1	SAFT	6032803	03/28/06	-6	-6	2	1	60	1022	1.088	76	76	0	0.382
AAF-1	SAFT	6032803	03/28/06	-6	-6	2	1	120	1023	1.44	57	57	0	0.426
AAF-1	SAFT	6032803	03/28/06	-6	-6	2	1	240	1031	1.986	42	42	0	0.47
AAF-1	SAFT	6032804	03/28/06	-6	-6	2	2	8	1028	0.412	201	201	0	0.329
AAF-1	SAFT	6032804	03/28/06	-6	-6	2	2	15	1029	0.516	161	162	0.621118	0.361
AAF-1	SAFT	6032804	03/28/06	-6	-6	2	2	30	1031	0.67	124	124	0	0.396
AAF-1	SAFT	6032804	03/28/06	-6	-6	2	2	60	1035	0.891	94	93	-1.06383	0.431
AAF-1	SAFT	6032804	03/28/06	-6	-6	2	2	120	1039	1.224	68	68	0	0.466
AAF-1	SAFT	6032804	03/28/06	-6	-6	2	2	240	1047	1.729	49	49	0	0.501

Table 77. AAF-1 MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	MGRF	9081315	08/13/09	-18	-18	1	1	8	966	0.124	628	627	-0.15924	0.168
AAF-1	MGRF	9081315	08/13/09	-18	-18	1	1	15	968	0.14	557	559	0.359066	0.195
AAF-1	MGRF	9081315	08/13/09	-18	-18	1	1	30	970	0.162	483	483	0	0.226
AAF-1	MGRF	9081315	08/13/09	-18	-18	1	1	60	970	0.191	409	409	0	0.257
AAF-1	MGRF	9081315	08/13/09	-18	-18	1	1	120	971	0.231	339	338	-0.29499	0.287
AAF-1	MGRF	9081315	08/13/09	-18	-18	1	1	240	972	0.286	274	274	0	0.318

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	MGRF	9081316	08/13/09	-18	-18	1	2	8	975	0.172	457	456	-0.21882	0.129
AAF-1	MGRF	9081316	08/13/09	-18	-18	1	2	15	976	0.189	416	417	0.240385	0.155
AAF-1	MGRF	9081316	08/13/09	-18	-18	1	2	30	977	0.213	370	371	0.27027	0.183
AAF-1	MGRF	9081316	08/13/09	-18	-18	1	2	60	979	0.243	325	324	-0.30769	0.212
AAF-1	MGRF	9081316	08/13/09	-18	-18	1	2	120	980	0.285	277	277	0	0.24
AAF-1	MGRF	9081316	08/13/09	-18	-18	1	2	240	982	0.342	232	232	0	0.269
AAF-1	MGRF	9082805	08/28/09	-18	-18	2	1	8	998	0.118	682	682	0	0.189
AAF-1	MGRF	9082805	08/28/09	-18	-18	2	1	15	999	0.134	601	601	0	0.215
AAF-1	MGRF	9082805	08/28/09	-18	-18	2	1	30	1000	0.157	514	513	-0.19455	0.242
AAF-1	MGRF	9082805	08/28/09	-18	-18	2	1	60	1000	0.188	429	429	0	0.27
AAF-1	MGRF	9082805	08/28/09	-18	-18	2	1	120	1001	0.229	352	353	0.284091	0.298
AAF-1	MGRF	9082805	08/28/09	-18	-18	2	1	240	1004	0.285	284	284	0	0.326
AAF-1	MGRF	9082806	08/28/09	-18	-18	2	2	8	996	0.121	664	663	-0.1506	0.187
AAF-1	MGRF	9082806	08/28/09	-18	-18	2	2	15	999	0.138	584	585	0.171233	0.213
AAF-1	MGRF	9082806	08/28/09	-18	-18	2	2	30	1002	0.162	499	500	0.200401	0.241
AAF-1	MGRF	9082806	08/28/09	-18	-18	2	2	60	1003	0.193	419	419	0	0.269
AAF-1	MGRF	9082806	08/28/09	-18	-18	2	2	120	1004	0.235	344	344	0	0.298
AAF-1	MGRF	9082806	08/28/09	-18	-18	2	2	240	1005	0.293	277	277	0	0.326
AAF-1	MGRF	9081407	08/14/09	-12	-12	1	1	8	977	0.202	390	390	0	0.258
AAF-1	MGRF	9081407	08/14/09	-12	-12	1	1	15	979	0.241	328	328	0	0.289
AAF-1	MGRF	9081407	08/14/09	-12	-12	1	1	30	984	0.299	265	265	0	0.323
AAF-1	MGRF	9081407	08/14/09	-12	-12	1	1	60	987	0.379	210	210	0	0.357
AAF-1	MGRF	9081407	08/14/09	-12	-12	1	1	120	988	0.492	162	162	0	0.391
AAF-1	MGRF	9081407	08/14/09	-12	-12	1	1	240	990	0.655	122	122	0	0.425
AAF-1	MGRF	9081408	08/14/09	-12	-12	1	2	8	989	0.198	403	402	-0.24814	0.251
AAF-1	MGRF	9081408	08/14/09	-12	-12	1	2	15	990	0.235	340	340	0	0.282
AAF-1	MGRF	9081408	08/14/09	-12	-12	1	2	30	992	0.289	277	277	0	0.315
AAF-1	MGRF	9081408	08/14/09	-12	-12	1	2	60	992	0.364	220	220	0	0.349
AAF-1	MGRF	9081408	08/14/09	-12	-12	1	2	120	995	0.47	171	170	-0.5848	0.383
AAF-1	MGRF	9081408	08/14/09	-12	-12	1	2	240	1001	0.625	129	129	0	0.417
AAF-1	MGRF	9090301	09/03/09	-12	-12.1	2	1	8	973	0.21	374	374	0	0.235
AAF-1	MGRF	9090301	09/03/09	-12	-12.1	2	1	15	975	0.246	320	319	-0.3125	0.267
AAF-1	MGRF	9090301	09/03/09	-12	-12.1	2	1	30	977	0.301	262	262	0	0.303

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAF-1	MGRF	9090301	09/03/09	-12	-12.1	2	1	60	978	0.376	210	210	0	0.338
AAF-1	MGRF	9090301	09/03/09	-12	-12.1	2	1	120	980	0.482	164	164	0	0.374
AAF-1	MGRF	9090301	09/03/09	-12	-12.1	2	1	240	982	0.634	125	125	0	0.41
AAF-1	MGRF	9090302	09/03/09	-12	-12.1	2	2	8	991	0.201	398	397	-0.25126	0.253
AAF-1	MGRF	9090302	09/03/09	-12	-12.1	2	2	15	993	0.239	335	336	0.298507	0.282
AAF-1	MGRF	9090302	09/03/09	-12	-12.1	2	2	30	995	0.294	273	273	0	0.314
AAF-1	MGRF	9090302	09/03/09	-12	-12.1	2	2	60	997	0.37	217	217	0	0.347
AAF-1	MGRF	9090302	09/03/09	-12	-12.1	2	2	120	999	0.477	169	169	0	0.379
AAF-1	MGRF	9090302	09/03/09	-12	-12.1	2	2	240	1007	0.633	128	128	0	0.411
AAF-1	MGRF	9082601	08/26/01	-6	-6.1	1	1	8	964	0.464	168	167	-0.59524	0.325
AAF-1	MGRF	9082601	08/26/01	-6	-6.1	1	1	15	967	0.579	135	135	0	0.362
AAF-1	MGRF	9082601	08/26/01	-6	-6.1	1	1	30	969	0.755	103	104	0.970874	0.402
AAF-1	MGRF	9082601	08/26/01	-6	-6.1	1	1	60	970	1.011	77	77	0	0.442
AAF-1	MGRF	9082601	08/26/01	-6	-6.1	1	1	120	968	1.391	56	56	0	0.482
AAF-1	MGRF	9082601	08/26/01	-6	-6.1	1	1	240	967	1.97	40	40	0	0.523
AAF-1	MGRF	9082602	08/26/01	-6	-6	1	2	8	971	0.459	171	170	-0.5848	0.329
AAF-1	MGRF	9082602	08/26/01	-6	-6	1	2	15	972	0.572	137	137	0	0.363
AAF-1	MGRF	9082602	08/26/01	-6	-6	1	2	30	974	0.746	105	105	0	0.4
AAF-1	MGRF	9082602	08/26/01	-6	-6	1	2	60	974	0.996	79	79	0	0.436
AAF-1	MGRF	9082602	08/26/01	-6	-6	1	2	120	973	1.364	58	57	-1.72414	0.473
AAF-1	MGRF	9082602	08/26/01	-6	-6	1	2	240	977	1.927	41	41	0	0.51
AAF-1	MGRF	9082603	08/26/01	-6	-6	2	1	8	960	0.57	136	136	0	0.248
AAF-1	MGRF	9082603	08/26/01	-6	-6	2	1	15	963	0.676	115	115	0	0.286
AAF-1	MGRF	9082603	08/26/01	-6	-6	2	1	30	968	0.841	93	93	0	0.327
AAF-1	MGRF	9082603	08/26/01	-6	-6	2	1	60	974	1.076	73	73	0	0.368
AAF-1	MGRF	9082603	08/26/01	-6	-6	2	1	120	981	1.419	56	56	0	0.41
AAF-1	MGRF	9082603	08/26/01	-6	-6	2	1	240	993	1.937	41	41	0	0.451
AAF-1	MGRF	9082604	08/26/01	-6	-6	2	2	8	981	0.439	180	180	0	0.345
AAF-1	MGRF	9082604	08/26/01	-6	-6	2	2	15	981	0.553	143	143	0	0.379
AAF-1	MGRF	9082604	08/26/01	-6	-6	2	2	30	981	0.729	109	109	0	0.416
AAF-1	MGRF	9082604	08/26/01	-6	-6	2	2	60	982	0.982	81	80	-1.23457	0.453
AAF-1	MGRF	9082604	08/26/01	-6	-6	2	2	120	981	1.361	58	58	0	0.491
AAF-1	MGRF	9082604	08/26/01	-6	-6	2	2	240	979	1.94	41	41	0	0.528

Table 78. AAM-1 Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	TANK	5020201	02/02/05	-24	-24	1	1	8	1050	0.099	855	853	-0.23392	0.16
AAM-1	TANK	5020201	02/02/05	-24	-24	1	1	15	1050	0.111	763	766	0.393185	0.184
AAM-1	TANK	5020201	02/02/05	-24	-24	1	1	30	1052	0.127	668	668	0	0.209
AAM-1	TANK	5020201	02/02/05	-24	-24	1	1	60	1053	0.148	574	573	-0.17422	0.235
AAM-1	TANK	5020201	02/02/05	-24	-24	1	1	120	1055	0.176	483	482	-0.20704	0.261
AAM-1	TANK	5020201	02/02/05	-24	-24	1	1	240	1057	0.214	398	399	0.251256	0.287
AAM-1	TANK	5020202	02/02/05	-24	-24	1	2	8	1058	0.117	729	728	-0.13717	0.147
AAM-1	TANK	5020202	02/02/05	-24	-24	1	2	15	1059	0.13	657	658	0.152207	0.173
AAM-1	TANK	5020202	02/02/05	-24	-24	1	2	30	1061	0.148	578	578	0	0.202
AAM-1	TANK	5020202	02/02/05	-24	-24	1	2	60	1064	0.172	499	498	-0.2004	0.231
AAM-1	TANK	5020202	02/02/05	-24	-24	1	2	120	1066	0.205	419	420	0.238663	0.26
AAM-1	TANK	5020202	02/02/05	-24	-24	1	2	240	1071	0.249	347	347	0	0.289
AAM-1	TANK	5020203	02/02/05	-24	-24	2	1	8	1050	0.192	441	441	0	0.087
AAM-1	TANK	5020203	02/02/05	-24	-24	2	1	15	1051	0.205	413	414	0.242131	0.113
AAM-1	TANK	5020203	02/02/05	-24	-24	2	1	30	1052	0.224	379	379	0	0.14
AAM-1	TANK	5020203	02/02/05	-24	-24	2	1	60	1053	0.249	341	341	0	0.168
AAM-1	TANK	5020203	02/02/05	-24	-24	2	1	120	1055	0.283	301	300	-0.33223	0.196
AAM-1	TANK	5020203	02/02/05	-24	-24	2	1	240	1059	0.329	260	260	0	0.223
AAM-1	TANK	5020204	02/02/05	-24	-24	2	2	8	1082	0.104	839	837	-0.23838	0.156
AAM-1	TANK	5020204	02/02/05	-24	-24	2	2	15	1082	0.116	752	753	0.132979	0.181
AAM-1	TANK	5020204	02/02/05	-24	-24	2	2	30	1082	0.133	656	658	0.304878	0.209
AAM-1	TANK	5020204	02/02/05	-24	-24	2	2	60	1084	0.155	564	564	0	0.237
AAM-1	TANK	5020204	02/02/05	-24	-24	2	2	120	1086	0.184	476	474	-0.42017	0.265
AAM-1	TANK	5020204	02/02/05	-24	-24	2	2	240	1087	0.225	390	391	0.25641	0.292
AAM-1	TANK	5011705	01/17/05	-18	-18	1	1	8	1074	0.157	552	552	0	0.213
AAM-1	TANK	5011705	01/17/05	-18	-18	1	1	15	1076	0.181	479	479	0	0.24
AAM-1	TANK	5011705	01/17/05	-18	-18	1	1	30	1079	0.217	401	401	0	0.27
AAM-1	TANK	5011705	01/17/05	-18	-18	1	1	60	1083	0.265	330	329	-0.30303	0.299
AAM-1	TANK	5011705	01/17/05	-18	-18	1	1	120	1087	0.331	265	265	0	0.329
AAM-1	TANK	5011705	01/17/05	-18	-18	1	1	240	1096	0.423	209	209	0	0.358
AAM-1	TANK	5011706	01/17/05	-18	-18	1	2	8	1066	0.183	470	470	0	0.202

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	TANK	5011706	01/17/05	-18	-18	1	2	15	1068	0.21	410	410	0	0.23
AAM-1	TANK	5011706	01/17/05	-18	-18	1	2	30	1070	0.25	345	346	0.289855	0.261
AAM-1	TANK	5011706	01/17/05	-18	-18	1	2	60	1073	0.303	286	285	-0.34965	0.292
AAM-1	TANK	5011706	01/17/05	-18	-18	1	2	120	1076	0.376	231	231	0	0.323
AAM-1	TANK	5011706	01/17/05	-18	-18	1	2	240	1080	0.478	182	182	0	0.354
AAM-1	TANK	5011707	01/17/05	-18	-18	2	1	8	1049	0.194	436	436	0	0.199
AAM-1	TANK	5011707	01/17/05	-18	-18	2	1	15	1052	0.222	382	382	0	0.226
AAM-1	TANK	5011707	01/17/05	-18	-18	2	1	30	1054	0.263	323	323	0	0.256
AAM-1	TANK	5011707	01/17/05	-18	-18	2	1	60	1057	0.318	268	268	0	0.285
AAM-1	TANK	5011707	01/17/05	-18	-18	2	1	120	1059	0.393	217	218	0.460829	0.315
AAM-1	TANK	5011707	01/17/05	-18	-18	2	1	240	1063	0.495	173	173	0	0.345
AAM-1	TANK	5011708	01/17/05	-18	-18	2	2	8	1088	0.168	522	521	-0.19157	0.209
AAM-1	TANK	5011708	01/17/05	-18	-18	2	2	15	1088	0.194	452	453	0.221239	0.237
AAM-1	TANK	5011708	01/17/05	-18	-18	2	2	30	1090	0.231	380	380	0	0.269
AAM-1	TANK	5011708	01/17/05	-18	-18	2	2	60	1091	0.282	312	312	0	0.3
AAM-1	TANK	5011708	01/17/05	-18	-18	2	2	120	1092	0.35	252	251	-0.39683	0.332
AAM-1	TANK	5011708	01/17/05	-18	-18	2	2	240	1091	0.447	197	197	0	0.363
AAM-1	TANK	5010705	01/07/04	-12	-12	1	1	8	977	0.299	263	263	0	0.269
AAM-1	TANK	5010705	01/07/04	-12	-12	1	1	15	979	0.359	220	220	0	0.3
AAM-1	TANK	5010705	01/07/04	-12	-12	1	1	30	983	0.448	177	177	0	0.333
AAM-1	TANK	5010705	01/07/04	-12	-12	1	1	60	986	0.572	139	139	0	0.366
AAM-1	TANK	5010705	01/07/04	-12	-12	1	1	120	988	0.749	106	106	0	0.399
AAM-1	TANK	5010705	01/07/04	-12	-12	1	1	240	990	1	80	80	0	0.433
AAM-1	TANK	5010706	01/07/04	-12	-12	1	2	8	961	0.356	218	217	-0.45872	0.261
AAM-1	TANK	5010706	01/07/04	-12	-12	1	2	15	963	0.425	183	183	0	0.291
AAM-1	TANK	5010706	01/07/04	-12	-12	1	2	30	965	0.527	148	148	0	0.323
AAM-1	TANK	5010706	01/07/04	-12	-12	1	2	60	967	0.667	117	117	0	0.356
AAM-1	TANK	5010706	01/07/04	-12	-12	1	2	120	970	0.866	90	90	0	0.389
AAM-1	TANK	5010706	01/07/04	-12	-12	1	2	240	973	1.153	68	68	0	0.422
AAM-1	TANK	5010707	01/07/04	-12	-12	2	1	8	977	0.33	239	239	0	0.266
AAM-1	TANK	5010707	01/07/04	-12	-12	2	1	15	979	0.395	200	200	0	0.296
AAM-1	TANK	5010707	01/07/04	-12	-12	2	1	30	981	0.492	161	161	0	0.33
AAM-1	TANK	5010707	01/07/04	-12	-12	2	1	60	983	0.626	127	127	0	0.364

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	TANK	5010707	01/07/04	-12	-12	2	1	120	985	0.817	97	97	0	0.398
AAM-1	TANK	5010707	01/07/04	-12	-12	2	1	240	985	1.09	73	73	0	0.431
AAM-1	TANK	5010708	01/07/04	-12	-12	2	2	8	982	0.315	251	251	0	0.266
AAM-1	TANK	5010708	01/07/04	-12	-12	2	2	15	985	0.377	211	211	0	0.296
AAM-1	TANK	5010708	01/07/04	-12	-12	2	2	30	989	0.47	170	170	0	0.33
AAM-1	TANK	5010708	01/07/04	-12	-12	2	2	60	991	0.599	133	133	0	0.363
AAM-1	TANK	5010708	01/07/04	-12	-12	2	2	120	994	0.782	102	103	0.980392	0.396
AAM-1	TANK	5010708	01/07/04	-12	-12	2	2	240	996	1.042	77	77	0	0.429

Table 79. AAM-1 RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	RTFOT	5020205	02/02/05	-24	-24	1	1	8	1079	0.103	845	843	-0.23669	0.144
AAM-1	RTFOT	5020205	02/02/05	-24	-24	1	1	15	1079	0.114	763	765	0.262123	0.167
AAM-1	RTFOT	5020205	02/02/05	-24	-24	1	1	30	1080	0.129	675	675	0	0.193
AAM-1	RTFOT	5020205	02/02/05	-24	-24	1	1	60	1082	0.149	586	585	-0.17065	0.22
AAM-1	RTFOT	5020205	02/02/05	-24	-24	1	1	120	1082	0.175	499	498	-0.2004	0.246
AAM-1	RTFOT	5020205	02/02/05	-24	-24	1	1	240	1083	0.21	416	416	0	0.272
AAM-1	RTFOT	5020206	02/02/05	-24	-24	1	2	8	1054	0.164	518	518	0	0.107
AAM-1	RTFOT	5020206	02/02/05	-24	-24	1	2	15	1055	0.177	481	481	0	0.126
AAM-1	RTFOT	5020206	02/02/05	-24	-24	1	2	30	1056	0.195	437	437	0	0.148
AAM-1	RTFOT	5020206	02/02/05	-24	-24	1	2	60	1058	0.217	393	392	-0.25445	0.17
AAM-1	RTFOT	5020206	02/02/05	-24	-24	1	2	120	1058	0.247	345	346	0.289855	0.192
AAM-1	RTFOT	5020206	02/02/05	-24	-24	1	2	240	1058	0.284	300	300	0	0.213
AAM-1	RTFOT	5020207	02/02/05	-24	-24	2	1	8	1063	0.113	758	758	0	0.132
AAM-1	RTFOT	5020207	02/02/05	-24	-24	2	1	15	1063	0.124	691	692	0.144718	0.157
AAM-1	RTFOT	5020207	02/02/05	-24	-24	2	1	30	1065	0.14	613	615	0.326264	0.185
AAM-1	RTFOT	5020207	02/02/05	-24	-24	2	1	60	1067	0.16	538	536	-0.37175	0.212
AAM-1	RTFOT	5020207	02/02/05	-24	-24	2	1	120	1066	0.188	457	458	0.218818	0.24
AAM-1	RTFOT	5020207	02/02/05	-24	-24	2	1	240	1067	0.224	384	384	0	0.268
AAM-1	RTFOT	5020208	02/02/05	-24	-24	2	2	8	1087	0.105	835	834	-0.11976	0.144

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	RTFOT	5020208	02/02/05	-24	-24	2	2	15	1088	0.116	756	756	0	0.168
AAM-1	RTFOT	5020208	02/02/05	-24	-24	2	2	30	1089	0.132	665	667	0.300752	0.196
AAM-1	RTFOT	5020208	02/02/05	-24	-24	2	2	60	1090	0.152	578	577	-0.17301	0.223
AAM-1	RTFOT	5020208	02/02/05	-24	-24	2	2	120	1091	0.18	489	489	0	0.251
AAM-1	RTFOT	5020208	02/02/05	-24	-24	2	2	240	1091	0.216	407	407	0	0.278
AAM-1	RTFOT	5011709	01/17/05	-18	-18	1	1	8	1085	0.168	521	520	-0.19194	0.201
AAM-1	RTFOT	5011709	01/17/05	-18	-18	1	1	15	1085	0.193	453	455	0.441501	0.225
AAM-1	RTFOT	5011709	01/17/05	-18	-18	1	1	30	1087	0.227	386	386	0	0.251
AAM-1	RTFOT	5011709	01/17/05	-18	-18	1	1	60	1088	0.273	321	321	0	0.278
AAM-1	RTFOT	5011709	01/17/05	-18	-18	1	1	120	1089	0.335	262	262	0	0.304
AAM-1	RTFOT	5011709	01/17/05	-18	-18	1	1	240	1089	0.417	211	211	0	0.33
AAM-1	RTFOT	5011710	01/17/05	-18	-18	1	2	8	1085	0.164	533	533	0	0.203
AAM-1	RTFOT	5011710	01/17/05	-18	-18	1	2	15	1086	0.188	466	466	0	0.227
AAM-1	RTFOT	5011710	01/17/05	-18	-18	1	2	30	1088	0.223	393	395	0.508906	0.252
AAM-1	RTFOT	5011710	01/17/05	-18	-18	1	2	60	1089	0.267	329	328	-0.30395	0.278
AAM-1	RTFOT	5011710	01/17/05	-18	-18	1	2	120	1089	0.327	269	268	-0.37175	0.304
AAM-1	RTFOT	5011710	01/17/05	-18	-18	1	2	240	1088	0.408	215	215	0	0.33
AAM-1	RTFOT	5011711	01/17/05	-18	-18	2	1	8	1076	0.172	504	504	0	0.189
AAM-1	RTFOT	5011711	01/17/05	-18	-18	2	1	15	1077	0.196	443	444	0.225734	0.213
AAM-1	RTFOT	5011711	01/17/05	-18	-18	2	1	30	1080	0.23	379	379	0	0.241
AAM-1	RTFOT	5011711	01/17/05	-18	-18	2	1	60	1082	0.274	318	318	0	0.268
AAM-1	RTFOT	5011711	01/17/05	-18	-18	2	1	120	1083	0.333	262	262	0	0.295
AAM-1	RTFOT	5011711	01/17/05	-18	-18	2	1	240	1083	0.414	211	211	0	0.322
AAM-1	RTFOT	5011712	01/17/05	-18	-18	2	2	8	1085	0.178	491	490	-0.20367	0.201
AAM-1	RTFOT	5011712	01/17/05	-18	-18	2	2	15	1087	0.205	428	429	0.233645	0.225
AAM-1	RTFOT	5011712	01/17/05	-18	-18	2	2	30	1087	0.241	364	364	0	0.251
AAM-1	RTFOT	5011712	01/17/05	-18	-18	2	2	60	1089	0.289	304	303	-0.32895	0.277
AAM-1	RTFOT	5011712	01/17/05	-18	-18	2	2	120	1088	0.354	248	248	0	0.303
AAM-1	RTFOT	5011712	01/17/05	-18	-18	2	2	240	1088	0.441	199	199	0	0.329
AAM-1	RTFOT	5011205	01/12/05	-12	-12	1	1	8	1070	0.294	293	293	0	0.261
AAM-1	RTFOT	5011205	01/12/05	-12	-12	1	1	15	1070	0.35	246	247	0.406504	0.287
AAM-1	RTFOT	5011205	01/12/05	-12	-12	1	1	30	1071	0.431	200	200	0	0.315
AAM-1	RTFOT	5011205	01/12/05	-12	-12	1	1	60	1073	0.542	160	160	0	0.342

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	RTFOT	5011205	01/12/05	-12	-12	1	1	120	1074	0.694	125	125	0	0.37
AAM-1	RTFOT	5011205	01/12/05	-12	-12	1	1	240	1075	0.908	95	96	1.052632	0.398
AAM-1	RTFOT	5011206	01/12/05	-12	-12	1	2	8	1077	0.301	288	288	0	0.262
AAM-1	RTFOT	5011206	01/12/05	-12	-12	1	2	15	1076	0.358	242	243	0.413223	0.288
AAM-1	RTFOT	5011206	01/12/05	-12	-12	1	2	30	1076	0.441	197	197	0	0.316
AAM-1	RTFOT	5011206	01/12/05	-12	-12	1	2	60	1076	0.554	157	157	0	0.344
AAM-1	RTFOT	5011206	01/12/05	-12	-12	1	2	120	1073	0.708	122	122	0	0.372
AAM-1	RTFOT	5011206	01/12/05	-12	-12	1	2	240	1071	0.924	93	93	0	0.4
AAM-1	RTFOT	5011207	01/12/05	-12	-12	2	1	8	1071	0.291	297	296	-0.3367	0.264
AAM-1	RTFOT	5011207	01/12/05	-12	-12	2	1	15	1071	0.348	248	249	0.403226	0.289
AAM-1	RTFOT	5011207	01/12/05	-12	-12	2	1	30	1072	0.428	202	202	0	0.316
AAM-1	RTFOT	5011207	01/12/05	-12	-12	2	1	60	1071	0.537	161	161	0	0.343
AAM-1	RTFOT	5011207	01/12/05	-12	-12	2	1	120	1071	0.687	126	126	0	0.37
AAM-1	RTFOT	5011207	01/12/05	-12	-12	2	1	240	1070	0.897	96	96	0	0.396
AAM-1	RTFOT	5011208	01/12/05	-12	-12	2	2	8	1055	0.323	263	263	0	0.239
AAM-1	RTFOT	5011208	01/12/05	-12	-12	2	2	15	1057	0.38	224	225	0.446429	0.263
AAM-1	RTFOT	5011208	01/12/05	-12	-12	2	2	30	1059	0.461	185	185	0	0.29
AAM-1	RTFOT	5011208	01/12/05	-12	-12	2	2	60	1061	0.569	150	150	0	0.318
AAM-1	RTFOT	5011208	01/12/05	-12	-12	2	2	120	1063	0.717	120	119	-0.83333	0.345
AAM-1	RTFOT	5011208	01/12/05	-12	-12	2	2	240	1065	0.923	93	93	0	0.372

Table 80. AAM-1 SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	SAFT	6031309	03/13/06	-24	-24	1	1	8	1061	0.11	778	777	-0.12853	0.138
AAM-1	SAFT	6031309	03/13/06	-24	-24	1	1	15	1062	0.121	708	708	0	0.161
AAM-1	SAFT	6031309	03/13/06	-24	-24	1	1	30	1064	0.137	626	627	0.159744	0.187
AAM-1	SAFT	6031309	03/13/06	-24	-24	1	1	60	1065	0.157	547	546	-0.18282	0.212
AAM-1	SAFT	6031309	03/13/06	-24	-24	1	1	120	1068	0.184	468	468	0	0.237
AAM-1	SAFT	6031309	03/13/06	-24	-24	1	1	240	1072	0.22	393	393	0	0.263
AAM-1	SAFT	6031310	03/13/06	-24	-24	1	2	8	1083	0.103	848	847	-0.11792	0.147

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	SAFT	6031310	03/13/06	-24	-24	1	2	15	1083	0.114	766	767	0.130548	0.17
AAM-1	SAFT	6031310	03/13/06	-24	-24	1	2	30	1083	0.129	677	676	-0.14771	0.196
AAM-1	SAFT	6031310	03/13/06	-24	-24	1	2	60	1085	0.15	583	585	0.343053	0.221
AAM-1	SAFT	6031310	03/13/06	-24	-24	1	2	120	1087	0.176	498	497	-0.2008	0.247
AAM-1	SAFT	6031310	03/13/06	-24	-24	1	2	240	1091	0.212	415	415	0	0.272
AAM-1	SAFT	6031311	03/13/06	-24	-24	2	1	8	1061	0.11	778	777	-0.12853	0.138
AAM-1	SAFT	6031311	03/13/06	-24	-24	2	1	15	1062	0.121	708	708	0	0.161
AAM-1	SAFT	6031311	03/13/06	-24	-24	2	1	30	1064	0.137	626	627	0.159744	0.187
AAM-1	SAFT	6031311	03/13/06	-24	-24	2	1	60	1065	0.157	547	546	-0.18282	0.212
AAM-1	SAFT	6031311	03/13/06	-24	-24	2	1	120	1068	0.184	468	468	0	0.237
AAM-1	SAFT	6031311	03/13/06	-24	-24	2	1	240	1072	0.22	393	393	0	0.263
AAM-1	SAFT	6031312	03/13/06	-24	-24	2	2	8	1083	0.103	848	847	-0.11792	0.147
AAM-1	SAFT	6031312	03/13/06	-24	-24	2	2	15	1083	0.114	766	767	0.130548	0.17
AAM-1	SAFT	6031312	03/13/06	-24	-24	2	2	30	1083	0.129	677	676	-0.14771	0.196
AAM-1	SAFT	6031312	03/13/06	-24	-24	2	2	60	1085	0.15	583	585	0.343053	0.221
AAM-1	SAFT	6031312	03/13/06	-24	-24	2	2	120	1087	0.176	498	497	-0.2008	0.247
AAM-1	SAFT	6031312	03/13/06	-24	-24	2	2	240	1091	0.212	415	415	0	0.272
AAM-1	SAFT	6032001	03/20/06	-18	-18	1	1	8	1085	0.153	572	570	-0.34965	0.21
AAM-1	SAFT	6032001	03/20/06	-18	-18	1	1	15	1086	0.177	495	496	0.20202	0.233
AAM-1	SAFT	6032001	03/20/06	-18	-18	1	1	30	1087	0.21	417	419	0.479616	0.258
AAM-1	SAFT	6032001	03/20/06	-18	-18	1	1	60	1088	0.252	348	347	-0.28736	0.283
AAM-1	SAFT	6032001	03/20/06	-18	-18	1	1	120	1088	0.309	284	283	-0.35211	0.307
AAM-1	SAFT	6032001	03/20/06	-18	-18	1	1	240	1091	0.389	226	227	0.442478	0.332
AAM-1	SAFT	6032002	03/20/06	-18	-18	1	2	8	1086	0.165	531	530	-0.18832	0.215
AAM-1	SAFT	6032002	03/20/06	-18	-18	1	2	15	1086	0.191	458	460	0.436681	0.238
AAM-1	SAFT	6032002	03/20/06	-18	-18	1	2	30	1087	0.227	386	386	0	0.263
AAM-1	SAFT	6032002	03/20/06	-18	-18	1	2	60	1088	0.274	320	319	-0.3125	0.289
AAM-1	SAFT	6032002	03/20/06	-18	-18	1	2	120	1090	0.34	258	259	0.387597	0.314
AAM-1	SAFT	6032002	03/20/06	-18	-18	1	2	240	1096	0.428	206	206	0	0.339
AAM-1	SAFT	6032003	03/20/06	-18	-18	2	1	8	1096	0.155	570	569	-0.17544	0.209
AAM-1	SAFT	6032003	03/20/06	-18	-18	2	1	15	1096	0.179	494	495	0.202429	0.233
AAM-1	SAFT	6032003	03/20/06	-18	-18	2	1	30	1097	0.212	417	418	0.239808	0.26
AAM-1	SAFT	6032003	03/20/06	-18	-18	2	1	60	1099	0.256	346	346	0	0.286

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	SAFT	6032003	03/20/06	-18	-18	2	1	120	1102	0.316	281	281	0	0.313
AAM-1	SAFT	6032003	03/20/06	-18	-18	2	1	240	1107	0.399	224	224	0	0.339
AAM-1	SAFT	6032004	03/20/06	-18	-18	2	2	8	1088	0.178	493	493	0	0.2
AAM-1	SAFT	6032004	03/20/06	-18	-18	2	2	15	1087	0.203	432	431	-0.23148	0.223
AAM-1	SAFT	6032004	03/20/06	-18	-18	2	2	30	1088	0.24	366	366	0	0.249
AAM-1	SAFT	6032004	03/20/06	-18	-18	2	2	60	1089	0.288	305	305	0	0.275
AAM-1	SAFT	6032004	03/20/06	-18	-18	2	2	120	1090	0.35	251	250	-0.39841	0.301
AAM-1	SAFT	6032004	03/20/06	-18	-18	2	2	240	1093	0.439	201	201	0	0.327
AAM-1	SAFT	6032209	03/22/06	-12	-12	1	1	8	1004	0.306	265	265	0	0.254
AAM-1	SAFT	6032209	03/22/06	-12	-12	1	1	15	1003	0.362	223	223	0	0.283
AAM-1	SAFT	6032209	03/22/06	-12	-12	1	1	30	1004	0.445	182	182	0	0.315
AAM-1	SAFT	6032209	03/22/06	-12	-12	1	1	60	1002	0.559	145	144	-0.68966	0.347
AAM-1	SAFT	6032209	03/22/06	-12	-12	1	1	120	1001	0.72	112	112	0	0.378
AAM-1	SAFT	6032209	03/22/06	-12	-12	1	1	240	1003	0.945	86	85	-1.16279	0.41
AAM-1	SAFT	6032210	03/22/06	-12	-12	1	2	8	1007	0.286	284	283	-0.35211	0.265
AAM-1	SAFT	6032210	03/22/06	-12	-12	1	2	15	1008	0.343	237	238	0.421941	0.292
AAM-1	SAFT	6032210	03/22/06	-12	-12	1	2	30	1008	0.422	193	192	-0.51813	0.321
AAM-1	SAFT	6032210	03/22/06	-12	-12	1	2	60	1008	0.533	152	152	0	0.35
AAM-1	SAFT	6032210	03/22/06	-12	-12	1	2	120	1009	0.687	118	118	0	0.38
AAM-1	SAFT	6032210	03/22/06	-12	-12	1	2	240	1014	0.909	90	90	0	0.409
AAM-1	SAFT	6032211	03/22/06	-12	-12	2	1	8	1021	0.287	287	287	0	0.252
AAM-1	SAFT	6032211	03/22/06	-12	-12	2	1	15	1021	0.339	243	243	0	0.278
AAM-1	SAFT	6032211	03/22/06	-12	-12	2	1	30	1022	0.416	198	198	0	0.306
AAM-1	SAFT	6032211	03/22/06	-12	-12	2	1	60	1024	0.519	159	159	0	0.334
AAM-1	SAFT	6032211	03/22/06	-12	-12	2	1	120	1028	0.665	125	125	0	0.362
AAM-1	SAFT	6032211	03/22/06	-12	-12	2	1	240	1035	0.868	96	96	0	0.39
AAM-1	SAFT	6032212	03/22/06	-12	-12	2	2	8	1024	0.268	308	308	0	0.259
AAM-1	SAFT	6032212	03/22/06	-12	-12	2	2	15	1024	0.319	259	259	0	0.284
AAM-1	SAFT	6032212	03/22/06	-12	-12	2	2	30	1025	0.393	210	211	0.47619	0.313
AAM-1	SAFT	6032212	03/22/06	-12	-12	2	2	60	1028	0.492	168	168	0	0.341
AAM-1	SAFT	6032212	03/22/06	-12	-12	2	2	120	1031	0.631	132	131	-0.75758	0.369
AAM-1	SAFT	6032212	03/22/06	-12	-12	2	2	240	1035	0.829	101	101	0	0.397

Table 81. AAM-1 MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	MGRF	9082003	08/20/09	-24	-24.1	1	1	8	967	0.099	788	786	-0.25381	0.137
AAM-1	MGRF	9082003	08/20/09	-24	-24.1	1	1	15	971	0.11	712	715	0.421348	0.161
AAM-1	MGRF	9082003	08/20/09	-24	-24.1	1	1	30	976	0.124	635	634	-0.15748	0.188
AAM-1	MGRF	9082003	08/20/09	-24	-24.1	1	1	60	979	0.143	552	551	-0.18116	0.214
AAM-1	MGRF	9082003	08/20/09	-24	-24.1	1	1	120	982	0.168	471	471	0	0.24
AAM-1	MGRF	9082003	08/20/09	-24	-24.1	1	1	240	984	0.201	395	395	0	0.267
AAM-1	MGRF	9082004	08/20/09	-24	-24.1	1	2	8	987	0.095	838	835	-0.358	0.148
AAM-1	MGRF	9082004	08/20/09	-24	-24.1	1	2	15	989	0.106	752	756	0.531915	0.17
AAM-1	MGRF	9082004	08/20/09	-24	-24.1	1	2	30	990	0.12	665	666	0.150376	0.195
AAM-1	MGRF	9082004	08/20/09	-24	-24.1	1	2	60	992	0.138	580	577	-0.51724	0.219
AAM-1	MGRF	9082004	08/20/09	-24	-24.1	1	2	120	993	0.163	491	492	0.203666	0.243
AAM-1	MGRF	9082004	08/20/09	-24	-24.1	1	2	240	995	0.195	411	412	0.243309	0.268
AAM-1	MGRF	9081105	08/11/09	-24	-24	2	1	8	994	0.091	881	882	0.113507	0.144
AAM-1	MGRF	9081105	08/11/09	-24	-24	2	1	15	996	0.1	803	800	-0.3736	0.166
AAM-1	MGRF	9081105	08/11/09	-24	-24	2	1	30	996	0.114	704	707	0.426136	0.192
AAM-1	MGRF	9081105	08/11/09	-24	-24	2	1	60	997	0.131	614	613	-0.16287	0.217
AAM-1	MGRF	9081105	08/11/09	-24	-24	2	1	120	999	0.154	523	523	0	0.242
AAM-1	MGRF	9081105	08/11/09	-24	-24	2	1	240	1000	0.184	438	438	0	0.268
AAM-1	MGRF	9081106	08/11/09	-24	-24	2	2	8	991	0.091	878	879	0.113895	0.144
AAM-1	MGRF	9081106	08/11/09	-24	-24	2	2	15	992	0.1	800	797	-0.375	0.166
AAM-1	MGRF	9081106	08/11/09	-24	-24	2	2	30	993	0.114	702	705	0.42735	0.191
AAM-1	MGRF	9081106	08/11/09	-24	-24	2	2	60	994	0.131	612	612	0	0.215
AAM-1	MGRF	9081106	08/11/09	-24	-24	2	2	120	994	0.153	524	523	-0.19084	0.24
AAM-1	MGRF	9081106	08/11/09	-24	-24	2	2	240	995	0.183	438	439	0.228311	0.265
AAM-1	MGRF	9071607	07/16/09	-18	-18	1	1	8	1002	0.146	553	553	0	0.208
AAM-1	MGRF	9071607	07/16/09	-18	-18	1	1	15	1002	0.168	481	482	0.2079	0.23
AAM-1	MGRF	9071607	07/16/09	-18	-18	1	1	30	1003	0.199	406	407	0.246305	0.255
AAM-1	MGRF	9071607	07/16/09	-18	-18	1	1	60	1004	0.239	339	338	-0.29499	0.279
AAM-1	MGRF	9071607	07/16/09	-18	-18	1	1	120	1003	0.292	277	276	-0.36101	0.304
AAM-1	MGRF	9071607	07/16/09	-18	-18	1	1	240	1003	0.365	222	222	0	0.329
AAM-1	MGRF	9071608	07/16/09	-18	-18	1	2	8	983	0.17	466	466	0	0.186

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	MGRF	9071608	07/16/09	-18	-18	1	2	15	984	0.193	411	412	0.243309	0.21
AAM-1	MGRF	9071608	07/16/09	-18	-18	1	2	30	984	0.225	353	353	0	0.236
AAM-1	MGRF	9071608	07/16/09	-18	-18	1	2	60	985	0.268	296	296	0	0.263
AAM-1	MGRF	9071608	07/16/09	-18	-18	1	2	120	985	0.324	245	245	0	0.29
AAM-1	MGRF	9071608	07/16/09	-18	-18	1	2	240	986	0.401	198	198	0	0.317
AAM-1	MGRF	9072411	07/24/09	-18	-18	2	1	8	978	0.165	478	477	-0.20921	0.188
AAM-1	MGRF	9072411	07/24/09	-18	-18	2	1	15	980	0.188	420	421	0.238095	0.209
AAM-1	MGRF	9072411	07/24/09	-18	-18	2	1	30	982	0.219	362	362	0	0.232
AAM-1	MGRF	9072411	07/24/09	-18	-18	2	1	60	984	0.259	306	306	0	0.255
AAM-1	MGRF	9072411	07/24/09	-18	-18	2	1	120	986	0.313	254	254	0	0.278
AAM-1	MGRF	9072411	07/24/09	-18	-18	2	1	240	990	0.384	208	208	0	0.301
AAM-1	MGRF	9072412	07/24/09	-18	-18.1	2	2	8	982	0.167	474	474	0	0.189
AAM-1	MGRF	9072412	07/24/09	-18	-18.1	2	2	15	983	0.19	417	418	0.239808	0.212
AAM-1	MGRF	9072412	07/24/09	-18	-18.1	2	2	30	984	0.222	357	357	0	0.237
AAM-1	MGRF	9072412	07/24/09	-18	-18.1	2	2	60	985	0.264	301	301	0	0.262
AAM-1	MGRF	9072412	07/24/09	-18	-18.1	2	2	120	985	0.319	249	249	0	0.286
AAM-1	MGRF	9072412	07/24/09	-18	-18.1	2	2	240	985	0.393	202	202	0	0.311
AAM-1	MGRF	9073009	07/30/09	-12	-12	1	1	8	997	0.273	294	294	0	0.249
AAM-1	MGRF	9073009	07/30/09	-12	-12	1	1	15	999	0.323	249	250	0.401606	0.274
AAM-1	MGRF	9073009	07/30/09	-12	-12	1	1	30	999	0.394	204	204	0	0.302
AAM-1	MGRF	9073009	07/30/09	-12	-12	1	1	60	999	0.49	164	164	0	0.33
AAM-1	MGRF	9073009	07/30/09	-12	-12	1	1	120	997	0.621	129	129	0	0.357
AAM-1	MGRF	9073009	07/30/09	-12	-12	1	1	240	997	0.803	100	100	0	0.385
AAM-1	MGRF	9073010	07/30/09	-12	-12	1	2	8	995	0.233	344	344	0	0.253
AAM-1	MGRF	9073010	07/30/09	-12	-12	1	2	15	996	0.277	290	291	0.344828	0.277
AAM-1	MGRF	9073010	07/30/09	-12	-12	1	2	30	997	0.338	238	238	0	0.303
AAM-1	MGRF	9073010	07/30/09	-12	-12	1	2	60	998	0.421	191	191	0	0.329
AAM-1	MGRF	9073010	07/30/09	-12	-12	1	2	120	999	0.533	151	151	0	0.356
AAM-1	MGRF	9073010	07/30/09	-12	-12	1	2	240	997	0.69	117	117	0	0.382
AAM-1	MGRF	9073113	07/31/09	-12	-12	2	1	8	1001	0.275	293	293	0	0.261
AAM-1	MGRF	9073113	07/31/09	-12	-12	2	1	15	1001	0.327	247	247	0	0.284
AAM-1	MGRF	9073113	07/31/09	-12	-12	2	1	30	1002	0.402	201	201	0	0.311
AAM-1	MGRF	9073113	07/31/09	-12	-12	2	1	60	1003	0.503	161	161	0	0.337

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AAM-1	MGRF	9073113	07/31/09	-12	-12	2	1	120	1004	0.642	126	126	0	0.363
AAM-1	MGRF	9073113	07/31/09	-12	-12	2	1	240	1007	0.836	97	97	0	0.389
AAM-1	MGRF	9073114	07/31/09	-12	-12	2	2	8	989	0.311	256	256	0	0.239
AAM-1	MGRF	9073114	07/31/09	-12	-12	2	2	15	991	0.366	218	219	0.458716	0.265
AAM-1	MGRF	9073114	07/31/09	-12	-12	2	2	30	994	0.445	180	180	0	0.294
AAM-1	MGRF	9073114	07/31/09	-12	-12	2	2	60	996	0.552	145	145	0	0.323
AAM-1	MGRF	9073114	07/31/09	-12	-12	2	2	120	998	0.698	115	115	0	0.352
AAM-1	MGRF	9073114	07/31/09	-12	-12	2	2	240	999	0.903	89	89	0	0.381

Table 82. ABL-1 Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	TANK	5012801	01/28/05	-24	-24	1	1	8	1071	0.132	654	653	-0.15291	0.235
ABL-1	TANK	5012801	01/28/05	-24	-24	1	1	15	1070	0.155	557	558	0.179533	0.266
ABL-1	TANK	5012801	01/28/05	-24	-24	1	1	30	1071	0.188	459	459	0	0.301
ABL-1	TANK	5012801	01/28/05	-24	-24	1	1	60	1071	0.235	367	368	0.27248	0.335
ABL-1	TANK	5012801	01/28/05	-24	-24	1	1	120	1073	0.3	288	288	0	0.37
ABL-1	TANK	5012801	01/28/05	-24	-24	1	1	240	1073	0.393	220	220	0	0.404
ABL-1	TANK	5012802	01/28/05	-24	-24	1	2	8	1083	0.139	628	628	0	0.237
ABL-1	TANK	5012802	01/28/05	-24	-24	1	2	15	1082	0.163	535	536	0.186916	0.265
ABL-1	TANK	5012802	01/28/05	-24	-24	1	2	30	1083	0.198	441	441	0	0.296
ABL-1	TANK	5012802	01/28/05	-24	-24	1	2	60	1084	0.246	355	355	0	0.328
ABL-1	TANK	5012802	01/28/05	-24	-24	1	2	120	1086	0.312	281	280	-0.35587	0.359
ABL-1	TANK	5012802	01/28/05	-24	-24	1	2	240	1090	0.407	216	216	0	0.39
ABL-1	TANK	5012803	01/28/05	-24	-24	2	1	8	1090	0.149	590	589	-0.16949	0.234
ABL-1	TANK	5012803	01/28/05	-24	-24	2	1	15	1090	0.175	502	504	0.398406	0.263
ABL-1	TANK	5012803	01/28/05	-24	-24	2	1	30	1093	0.212	416	415	-0.24038	0.296
ABL-1	TANK	5012803	01/28/05	-24	-24	2	1	60	1096	0.264	335	334	-0.29851	0.329
ABL-1	TANK	5012803	01/28/05	-24	-24	2	1	120	1098	0.337	263	263	0	0.361
ABL-1	TANK	5012803	01/28/05	-24	-24	2	1	240	1103	0.439	203	203	0	0.394
ABL-1	TANK	5012804	01/28/05	-24	-24.1	2	2	8	1087	0.137	640	640	0	0.229
ABL-1	TANK	5012804	01/28/05	-24	-24.1	2	2	15	1090	0.16	549	549	0	0.259

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	TANK	5012804	01/28/05	-24	-24.1	2	2	30	1092	0.194	454	454	0	0.292
ABL-1	TANK	5012804	01/28/05	-24	-24.1	2	2	60	1096	0.241	367	366	-0.27248	0.326
ABL-1	TANK	5012804	01/28/05	-24	-24.1	2	2	120	1099	0.308	288	289	0.347222	0.36
ABL-1	TANK	5012804	01/28/05	-24	-24.1	2	2	240	1105	0.4	223	222	-0.44843	0.393
ABL-1	TANK	5011305	01/13/05	-18	-18	1	1	8	1070	0.335	258	257	-0.3876	0.278
ABL-1	TANK	5011305	01/13/05	-18	-18	1	1	15	1071	0.404	214	214	0	0.313
ABL-1	TANK	5011305	01/13/05	-18	-18	1	1	30	1073	0.51	170	170	0	0.352
ABL-1	TANK	5011305	01/13/05	-18	-18	1	1	60	1075	0.66	131	131	0	0.391
ABL-1	TANK	5011305	01/13/05	-18	-18	1	1	120	1077	0.88	99	99	0	0.43
ABL-1	TANK	5011305	01/13/05	-18	-18	1	1	240	1080	1.204	72	72	0	0.468
ABL-1	TANK	5011309	01/13/05	-18	-18	1	2	8	1058	0.325	262	263	0.381679	0.3
ABL-1	TANK	5011309	01/13/05	-18	-18	1	2	15	1063	0.398	215	215	0	0.333
ABL-1	TANK	5011309	01/13/05	-18	-18	1	2	30	1068	0.511	169	169	0	0.37
ABL-1	TANK	5011309	01/13/05	-18	-18	1	2	60	1071	0.67	129	129	0	0.406
ABL-1	TANK	5011309	01/13/05	-18	-18	1	2	120	1073	0.901	96	96	0	0.443
ABL-1	TANK	5011309	01/13/05	-18	-18	1	2	240	1075	1.243	70	70	0	0.48
ABL-1	TANK	5011307	01/13/05	-18	-18	2	1	8	1067	0.395	218	218	0	0.256
ABL-1	TANK	5011307	01/13/05	-18	-18	2	1	15	1069	0.472	183	183	0	0.295
ABL-1	TANK	5011307	01/13/05	-18	-18	2	1	30	1071	0.588	147	147	0	0.338
ABL-1	TANK	5011307	01/13/05	-18	-18	2	1	60	1073	0.755	115	114	-0.86957	0.381
ABL-1	TANK	5011307	01/13/05	-18	-18	2	1	120	1073	0.998	87	87	0	0.424
ABL-1	TANK	5011307	01/13/05	-18	-18	2	1	240	1073	1.362	64	64	0	0.468
ABL-1	TANK	5011308	01/13/05	-18	-18	2	2	8	1076	0.285	304	304	0	0.325
ABL-1	TANK	5011308	01/13/05	-18	-18	2	2	15	1076	0.353	246	246	0	0.357
ABL-1	TANK	5011308	01/13/05	-18	-18	2	2	30	1075	0.458	189	190	0.529101	0.392
ABL-1	TANK	5011308	01/13/05	-18	-18	2	2	60	1075	0.607	143	143	0	0.427
ABL-1	TANK	5011308	01/13/05	-18	-18	2	2	120	1073	0.825	105	105	0	0.462
ABL-1	TANK	5011308	01/13/05	-18	-18	2	2	240	1075	1.153	75	75	0	0.497
ABL-1	TANK	5010701	01/07/04	-12	-12.1	1	1	8	971	0.64	122	122	0	0.422
ABL-1	TANK	5010701	01/07/04	-12	-12.1	1	1	15	973	0.844	93	93	0	0.455
ABL-1	TANK	5010701	01/07/04	-12	-12.1	1	1	30	973	1.174	67	67	0	0.491
ABL-1	TANK	5010701	01/07/04	-12	-12.1	1	1	60	972	1.668	47	47	0	0.527
ABL-1	TANK	5010701	01/07/04	-12	-12.1	1	1	120	975	2.437	32	32	0	0.563

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	TANK	5010701	01/07/04	-12	-12.1	1	1	240	975	3.654	22	22	0	0.599
ABL-1	TANK	5010702	01/07/04	-12	-12	1	2	8	987	0.578	138	138	0	0.4
ABL-1	TANK	5010702	01/07/04	-12	-12	1	2	15	992	0.756	106	106	0	0.434
ABL-1	TANK	5010702	01/07/04	-12	-12	1	2	30	998	1.04	77	77	0	0.471
ABL-1	TANK	5010702	01/07/04	-12	-12	1	2	60	1005	1.469	55	55	0	0.508
ABL-1	TANK	5010702	01/07/04	-12	-12	1	2	120	1013	2.134	38	38	0	0.546
ABL-1	TANK	5010702	01/07/04	-12	-12	1	2	240	1025	3.195	26	26	0	0.583
ABL-1	TANK	5010706	01/07/04	-12	-12	1	2	8	961	0.356	218	217	-0.45872	0.261
ABL-1	TANK	5010706	01/07/04	-12	-12	1	2	15	963	0.425	183	183	0	0.291
ABL-1	TANK	5010706	01/07/04	-12	-12	1	2	30	965	0.527	148	148	0	0.323
ABL-1	TANK	5010706	01/07/04	-12	-12	1	2	60	967	0.667	117	117	0	0.356
ABL-1	TANK	5010706	01/07/04	-12	-12	1	2	120	970	0.866	90	90	0	0.389
ABL-1	TANK	5010706	01/07/04	-12	-12	1	2	240	973	1.153	68	68	0	0.422
ABL-1	TANK	5010703	01/07/04	-12	-12	2	1	8	999	0.638	126	126	0	0.415
ABL-1	TANK	5010703	01/07/04	-12	-12	2	1	15	1005	0.842	96	96	0	0.446
ABL-1	TANK	5010703	01/07/04	-12	-12	2	1	30	1013	1.17	70	70	0	0.479
ABL-1	TANK	5010703	01/07/04	-12	-12	2	1	60	1022	1.662	50	50	0	0.512
ABL-1	TANK	5010703	01/07/04	-12	-12	2	1	120	1031	2.419	34	34	0	0.546
ABL-1	TANK	5010703	01/07/04	-12	-12	2	1	240	1039	3.605	23	23	0	0.579

Table 83. ABL-1 RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	RTFOT	5011001	1/10/2005	-12	-12.1	1	1	8	1007	0.51	159	159	0	0.379
ABL-1	RTFOT	5011001	1/10/2005	-12	-12.1	1	1	15	1009	0.652	125	124	-0.8	0.408
ABL-1	RTFOT	5011001	1/10/2005	-12	-12.1	1	1	30	1007	0.876	93	93	0	0.439
ABL-1	RTFOT	5011001	1/10/2005	-12	-12.1	1	1	60	1006	1.198	68	68	0	0.47
ABL-1	RTFOT	5011001	1/10/2005	-12	-12.1	1	1	120	1004	1.674	48	48	0	0.502
ABL-1	RTFOT	5011001	1/10/2005	-12	-12.1	1	1	240	1002	2.392	34	34	0	0.533
ABL-1	RTFOT	5011002	1/10/2005	-12	-12	1	2	8	986	0.543	146	146	0	0.378
ABL-1	RTFOT	5011002	1/10/2005	-12	-12	1	2	15	986	0.694	115	115	0	0.404

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	RTFOT	5011002	1/10/2005	-12	-12	1	2	30	985	0.927	86	86	0	0.434
ABL-1	RTFOT	5011002	1/10/2005	-12	-12	1	2	60	985	1.265	63	63	0	0.463
ABL-1	RTFOT	5011002	1/10/2005	-12	-12	1	2	120	985	1.763	45	45	0	0.492
ABL-1	RTFOT	5011002	1/10/2005	-12	-12	1	2	240	987	2.508	32	32	0	0.522
ABL-1	RTFOT	5011003	1/10/2005	-12	-12	2	1	8	1016	0.53	155	155	0	0.375
ABL-1	RTFOT	5011003	1/10/2005	-12	-12	2	1	15	1016	0.678	121	121	0	0.404
ABL-1	RTFOT	5011003	1/10/2005	-12	-12	2	1	30	1017	0.906	91	90	-1.0989	0.436
ABL-1	RTFOT	5011003	1/10/2005	-12	-12	2	1	60	1016	1.24	66	66	0	0.468
ABL-1	RTFOT	5011003	1/10/2005	-12	-12	2	1	120	1014	1.73	47	47	0	0.499
ABL-1	RTFOT	5011003	1/10/2005	-12	-12	2	1	240	1014	2.471	33	33	0	0.531
ABL-1	RTFOT	5011004	1/10/2005	-12	-12	2	2	8	1004	0.525	154	154	0	0.381
ABL-1	RTFOT	5011004	1/10/2005	-12	-12	2	2	15	1003	0.672	120	120	0	0.407
ABL-1	RTFOT	5011004	1/10/2005	-12	-12	2	2	30	1004	0.902	90	90	0	0.435
ABL-1	RTFOT	5011004	1/10/2005	-12	-12	2	2	60	1007	1.233	66	66	0	0.464
ABL-1	RTFOT	5011004	1/10/2005	-12	-12	2	2	120	1011	1.722	47	47	0	0.492
ABL-1	RTFOT	5011004	1/10/2005	-12	-12	2	2	240	1013	2.458	33	33	0	0.521
ABL-1	RTFOT	5011801	1/18/2005	-18	-18	1	1	8	1045	0.283	298	298	0	0.283
ABL-1	RTFOT	5011801	1/18/2005	-18	-18	1	1	15	1045	0.34	248	247	-0.40323	0.311
ABL-1	RTFOT	5011801	1/18/2005	-18	-18	1	1	30	1046	0.428	197	197	0	0.342
ABL-1	RTFOT	5011801	1/18/2005	-18	-18	1	1	60	1048	0.549	154	154	0	0.374
ABL-1	RTFOT	5011801	1/18/2005	-18	-18	1	1	120	1049	0.721	117	117	0	0.405
ABL-1	RTFOT	5011801	1/18/2005	-18	-18	1	1	240	1052	0.966	88	88	0	0.437
ABL-1	RTFOT	5011802	1/18/2005	-18	-18.1	1	2	8	1053	0.276	308	307	-0.32468	0.287
ABL-1	RTFOT	5011802	1/18/2005	-18	-18.1	1	2	15	1054	0.334	254	255	0.393701	0.313
ABL-1	RTFOT	5011802	1/18/2005	-18	-18.1	1	2	30	1055	0.42	203	203	0	0.343
ABL-1	RTFOT	5011802	1/18/2005	-18	-18.1	1	2	60	1059	0.539	158	158	0	0.372
ABL-1	RTFOT	5011802	1/18/2005	-18	-18.1	1	2	120	1064	0.707	121	121	0	0.401
ABL-1	RTFOT	5011802	1/18/2005	-18	-18.1	1	2	240	1071	0.952	91	91	0	0.43
ABL-1	RTFOT	5011803	1/18/2005	-18	-18	2	1	8	1075	0.259	335	334	-0.29851	0.291
ABL-1	RTFOT	5011803	1/18/2005	-18	-18	2	1	15	1077	0.315	276	276	0	0.321
ABL-1	RTFOT	5011803	1/18/2005	-18	-18	2	1	30	1081	0.399	218	218	0	0.353
ABL-1	RTFOT	5011803	1/18/2005	-18	-18	2	1	60	1083	0.517	169	169	0	0.386
ABL-1	RTFOT	5011803	1/18/2005	-18	-18	2	1	120	1088	0.684	128	128	0	0.419

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	RTFOT	5011803	1/18/2005	-18	-18	2	1	240	1089	0.929	95	95	0	0.451
ABL-1	RTFOT	5011804	1/18/2005	-18	-18	2	2	8	1087	0.26	337	337	0	0.294
ABL-1	RTFOT	5011804	1/18/2005	-18	-18	2	2	15	1088	0.317	277	277	0	0.322
ABL-1	RTFOT	5011804	1/18/2005	-18	-18	2	2	30	1090	0.401	219	219	0	0.353
ABL-1	RTFOT	5011804	1/18/2005	-18	-18	2	2	60	1093	0.517	170	170	0	0.384
ABL-1	RTFOT	5011804	1/18/2005	-18	-18	2	2	120	1094	0.684	129	129	0	0.415
ABL-1	RTFOT	5011804	1/18/2005	-18	-18	2	2	240	1096	0.924	96	96	0	0.445
ABL-1	RTFOT	5012805	1/28/2005	-24	-24	1	1	8	1097	0.143	619	617	-0.3231	0.182
ABL-1	RTFOT	5012805	1/28/2005	-24	-24	1	1	15	1100	0.163	544	546	0.367647	0.208
ABL-1	RTFOT	5012805	1/28/2005	-24	-24	1	1	30	1102	0.19	468	468	0	0.236
ABL-1	RTFOT	5012805	1/28/2005	-24	-24	1	1	60	1106	0.226	395	394	-0.25316	0.264
ABL-1	RTFOT	5012805	1/28/2005	-24	-24	1	1	120	1109	0.275	325	325	0	0.292
ABL-1	RTFOT	5012805	1/28/2005	-24	-24	1	1	240	1113	0.342	262	263	0.381679	0.32
ABL-1	RTFOT	5012806	1/28/2005	-24	-24	1	2	8	1096	0.124	713	712	-0.14025	0.209
ABL-1	RTFOT	5012806	1/28/2005	-24	-24	1	2	15	1096	0.143	618	618	0	0.239
ABL-1	RTFOT	5012806	1/28/2005	-24	-24	1	2	30	1097	0.171	517	518	0.193424	0.271
ABL-1	RTFOT	5012806	1/28/2005	-24	-24	1	2	60	1098	0.208	426	425	-0.23474	0.303
ABL-1	RTFOT	5012806	1/28/2005	-24	-24	1	2	120	1099	0.26	341	341	0	0.335
ABL-1	RTFOT	5012806	1/28/2005	-24	-24	1	2	240	1098	0.332	267	267	0	0.368
ABL-1	RTFOT	5012807	1/28/2005	-24	-24	2	1	8	1094	0.131	673	673	0	0.216
ABL-1	RTFOT	5012807	1/28/2005	-24	-24	2	1	15	1096	0.152	581	582	0.172117	0.244
ABL-1	RTFOT	5012807	1/28/2005	-24	-24	2	1	30	1098	0.182	486	487	0.205761	0.274
ABL-1	RTFOT	5012807	1/28/2005	-24	-24	2	1	60	1100	0.223	398	398	0	0.305
ABL-1	RTFOT	5012807	1/28/2005	-24	-24	2	1	120	1102	0.278	320	319	-0.3125	0.336
ABL-1	RTFOT	5012807	1/28/2005	-24	-24	2	1	240	1102	0.356	250	250	0	0.366
ABL-1	RTFOT	5012808	1/28/2005	-24	-24	2	2	8	1102	0.125	711	710	-0.14065	0.205
ABL-1	RTFOT	5012808	1/28/2005	-24	-24	2	2	15	1103	0.144	618	619	0.161812	0.234
ABL-1	RTFOT	5012808	1/28/2005	-24	-24	2	2	30	1104	0.171	521	520	-0.19194	0.265
ABL-1	RTFOT	5012808	1/28/2005	-24	-24	2	2	60	1105	0.208	428	428	0	0.297
ABL-1	RTFOT	5012808	1/28/2005	-24	-24	2	2	120	1105	0.258	345	345	0	0.329
ABL-1	RTFOT	5012808	1/28/2005	-24	-24	2	2	240	1104	0.328	271	272	0.369004	0.360

Table 84. ABL-1 SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	SAFT	6032201	03/22/06	-12	-12	1	1	8	1029	0.61	136	136	0	0.371
ABL-1	SAFT	6032201	03/22/06	-12	-12	1	1	15	1032	0.783	106	107	0.943396	0.397
ABL-1	SAFT	6032201	03/22/06	-12	-12	1	1	30	1035	1.045	80	80	0	0.425
ABL-1	SAFT	6032201	03/22/06	-12	-12	1	1	60	1039	1.413	59	59	0	0.454
ABL-1	SAFT	6032201	03/22/06	-12	-12	1	1	120	1043	1.961	43	43	0	0.482
ABL-1	SAFT	6032201	03/22/06	-12	-12	1	1	240	1049	2.8	30	30	0	0.511
ABL-1	SAFT	6032202	03/22/06	-12	-12	1	2	8	1011	0.582	140	140	0	0.392
ABL-1	SAFT	6032202	03/22/06	-12	-12	1	2	15	1013	0.757	108	108	0	0.423
ABL-1	SAFT	6032202	03/22/06	-12	-12	1	2	30	1016	1.027	80	80	0	0.457
ABL-1	SAFT	6032202	03/22/06	-12	-12	1	2	60	1021	1.428	58	57	-1.72414	0.491
ABL-1	SAFT	6032202	03/22/06	-12	-12	1	2	120	1019	2.034	40	40	0	0.525
ABL-1	SAFT	6032202	03/22/06	-12	-12	1	2	240	1021	2.966	28	28	0	0.559
ABL-1	SAFT	6032203	03/22/06	-12	-12	2	1	8	1029	0.616	135	135	0	0.385
ABL-1	SAFT	6032203	03/22/06	-12	-12	2	1	15	1031	0.796	104	105	0.961538	0.417
ABL-1	SAFT	6032203	03/22/06	-12	-12	2	1	30	1034	1.078	77	77	0	0.452
ABL-1	SAFT	6032203	03/22/06	-12	-12	2	1	60	1038	1.493	56	56	0	0.487
ABL-1	SAFT	6032203	03/22/06	-12	-12	2	1	120	1036	2.125	39	39	0	0.522
ABL-1	SAFT	6032203	03/22/06	-12	-12	2	1	240	1036	3.082	27	27	0	0.558
ABL-1	SAFT	6032204	03/22/06	-12	-12	2	2	8	996	0.64	125	125	0	0.388
ABL-1	SAFT	6032204	03/22/06	-12	-12	2	2	15	996	0.824	97	98	1.030928	0.414
ABL-1	SAFT	6032204	03/22/06	-12	-12	2	2	30	998	1.109	73	72	-1.36986	0.442
ABL-1	SAFT	6032204	03/22/06	-12	-12	2	2	60	1003	1.532	53	53	0	0.471
ABL-1	SAFT	6032204	03/22/06	-12	-12	2	2	120	1011	2.16	38	38	0	0.5
ABL-1	SAFT	6032204	03/22/06	-12	-12	2	2	240	1022	3.118	26	26	0	0.528
ABL-1	SAFT	6031701	03/17/06	-18	-18	1	1	8	1058	0.309	276	276	0	0.28
ABL-1	SAFT	6031701	03/17/06	-18	-18	1	1	15	1060	0.373	229	229	0	0.31
ABL-1	SAFT	6031701	03/17/06	-18	-18	1	1	30	1063	0.469	183	183	0	0.344
ABL-1	SAFT	6031701	03/17/06	-18	-18	1	1	60	1065	0.604	142	142	0	0.377
ABL-1	SAFT	6031701	03/17/06	-18	-18	1	1	120	1068	0.794	108	108	0	0.411
ABL-1	SAFT	6031701	03/17/06	-18	-18	1	1	240	1070	1.072	80	81	1.25	0.444
ABL-1	SAFT	6031702	03/22/06	-18	-18	1	2	8	1066	0.287	299	299	0	0.296

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	SAFT	6031702	03/22/06	-18	-18	1	2	15	1067	0.35	246	246	0	0.326
ABL-1	SAFT	6031702	03/22/06	-18	-18	1	2	30	1068	0.443	194	194	0	0.359
ABL-1	SAFT	6031702	03/22/06	-18	-18	1	2	60	1069	0.576	150	150	0	0.391
ABL-1	SAFT	6031702	03/22/06	-18	-18	1	2	120	1071	0.765	113	113	0	0.424
ABL-1	SAFT	6031702	03/22/06	-18	-18	1	2	240	1075	1.042	83	83	0	0.456
ABL-1	SAFT	6031703	03/17/06	-18	-18	2	1	8	1101	0.262	339	338	-0.29499	0.307
ABL-1	SAFT	6031703	03/17/06	-18	-18	2	1	15	1102	0.322	276	277	0.362319	0.333
ABL-1	SAFT	6031703	03/17/06	-18	-18	2	1	30	1106	0.41	218	218	0	0.361
ABL-1	SAFT	6031703	03/17/06	-18	-18	2	1	60	1110	0.533	168	168	0	0.389
ABL-1	SAFT	6031703	03/17/06	-18	-18	2	1	120	1115	0.708	127	127	0	0.417
ABL-1	SAFT	6031703	03/17/06	-18	-18	2	1	240	1123	0.963	94	94	0	0.445
ABL-1	SAFT	6031704	03/17/06	-18	-18	2	2	8	1089	0.283	310	310	0	0.296
ABL-1	SAFT	6031704	03/17/06	-18	-18	2	2	15	1088	0.345	254	255	0.393701	0.327
ABL-1	SAFT	6031704	03/17/06	-18	-18	2	2	30	1089	0.437	201	201	0	0.362
ABL-1	SAFT	6031704	03/17/06	-18	-18	2	2	60	1088	0.568	154	154	0	0.396
ABL-1	SAFT	6031704	03/17/06	-18	-18	2	2	120	1088	0.757	116	116	0	0.43
ABL-1	SAFT	6031704	03/17/06	-18	-18	2	2	240	1088	1.032	85	85	0	0.465
ABL-1	SAFT	6031301	03/13/06	-24	-24	1	1	8	1065	0.131	656	654	-0.30488	0.225
ABL-1	SAFT	6031301	03/13/06	-24	-24	1	1	15	1066	0.153	562	563	0.177936	0.252
ABL-1	SAFT	6031301	03/13/06	-24	-24	1	1	30	1066	0.184	467	468	0.214133	0.282
ABL-1	SAFT	6031301	03/13/06	-24	-24	1	1	60	1068	0.225	383	381	-0.52219	0.312
ABL-1	SAFT	6031301	03/13/06	-24	-24	1	1	120	1069	0.284	303	304	0.330033	0.342
ABL-1	SAFT	6031301	03/13/06	-24	-24	1	1	240	1070	0.364	237	237	0	0.372
ABL-1	SAFT	6031302	03/13/06	-24	-24	1	2	8	1051	0.132	642	641	-0.15576	0.203
ABL-1	SAFT	6031302	03/13/06	-24	-24	1	2	15	1051	0.152	558	559	0.179211	0.234
ABL-1	SAFT	6031302	03/13/06	-24	-24	1	2	30	1052	0.181	469	470	0.21322	0.267
ABL-1	SAFT	6031302	03/13/06	-24	-24	1	2	60	1053	0.22	386	386	0	0.301
ABL-1	SAFT	6031302	03/13/06	-24	-24	1	2	120	1055	0.274	310	309	-0.32258	0.334
ABL-1	SAFT	6031302	03/13/06	-24	-24	1	2	240	1060	0.353	242	243	0.413223	0.368
ABL-1	SAFT	6031303	03/13/06	-24	-24	2	1	8	1062	0.136	630	629	-0.15873	0.202
ABL-1	SAFT	6031303	03/13/06	-24	-24	2	1	15	1062	0.156	549	549	0	0.233
ABL-1	SAFT	6031303	03/13/06	-24	-24	2	1	30	1063	0.186	461	462	0.21692	0.267
ABL-1	SAFT	6031303	03/13/06	-24	-24	2	1	60	1065	0.226	380	379	-0.26316	0.301

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	SAFT	6031303	03/13/06	-24	-24	2	1	120	1067	0.283	304	304	0	0.335
ABL-1	SAFT	6031303	03/13/06	-24	-24	2	1	240	1069	0.362	238	238	0	0.37
ABL-1	SAFT	6031304	03/13/06	-24	-24	2	2	8	1058	0.146	584	584	0	0.194
ABL-1	SAFT	6031304	03/13/06	-24	-24	2	2	15	1059	0.167	511	512	0.195695	0.225
ABL-1	SAFT	6031304	03/13/06	-24	-24	2	2	30	1061	0.198	432	433	0.231481	0.258
ABL-1	SAFT	6031304	03/13/06	-24	-24	2	2	60	1063	0.239	359	358	-0.27855	0.292
ABL-1	SAFT	6031304	03/13/06	-24	-24	2	2	120	1065	0.297	289	289	0	0.325
ABL-1	SAFT	6031304	03/13/06	-24	-24	2	2	240	1068	0.378	228	228	0	0.359

Table 85. ABL-1 MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	MGRF	90080403	08/04/09	-24	-24	1	1	8	964	0.122	637	637	0	0.199
ABL-1	MGRF	90080403	08/04/09	-24	-24	1	1	15	967	0.14	557	557	0	0.228
ABL-1	MGRF	90080403	08/04/09	-24	-24	1	1	30	968	0.166	470	470	0	0.26
ABL-1	MGRF	90080403	08/04/09	-24	-24	1	1	60	969	0.201	389	388	-0.25707	0.292
ABL-1	MGRF	90080403	08/04/09	-24	-24	1	1	120	969	0.249	314	314	0	0.324
ABL-1	MGRF	90080403	08/04/09	-24	-24	1	1	240	972	0.316	248	248	0	0.356
ABL-1	MGRF	90080404	08/04/09	-24	-24	1	2	8	942	0.12	633	633	0	0.192
ABL-1	MGRF	90080404	08/04/09	-24	-24	1	2	15	946	0.137	557	556	-0.17953	0.22
ABL-1	MGRF	90080404	08/04/09	-24	-24	1	2	30	947	0.162	471	473	0.424628	0.25
ABL-1	MGRF	90080404	08/04/09	-24	-24	1	2	60	949	0.194	394	393	-0.25381	0.28
ABL-1	MGRF	90080404	08/04/09	-24	-24	1	2	120	949	0.239	320	321	0.3125	0.31
ABL-1	MGRF	90080404	08/04/09	-24	-24	1	2	240	949	0.299	256	256	0	0.34
ABL-1	MGRF	9081103	08/11/09	-24	-24	2	1	8	976	0.143	550	550	0	0.18
ABL-1	MGRF	9081103	08/11/09	-24	-24	2	1	15	978	0.162	487	487	0	0.207
ABL-1	MGRF	9081103	08/11/09	-24	-24	2	1	30	980	0.189	418	418	0	0.238
ABL-1	MGRF	9081103	08/11/09	-24	-24	2	1	60	982	0.226	350	350	0	0.268
ABL-1	MGRF	9081103	08/11/09	-24	-24	2	1	120	984	0.276	287	288	0.348432	0.299
ABL-1	MGRF	9081103	08/11/09	-24	-24	2	1	240	988	0.344	232	231	-0.43103	0.33

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	MGRF	9081104	08/11/09	-24	-24	2	2	8	986	0.123	646	646	0	0.199
ABL-1	MGRF	9081104	08/11/09	-24	-24	2	2	15	988	0.141	565	565	0	0.228
ABL-1	MGRF	9081104	08/11/09	-24	-24	2	2	30	987	0.167	477	477	0	0.26
ABL-1	MGRF	9081104	08/11/09	-24	-24	2	2	60	989	0.202	395	394	-0.25316	0.292
ABL-1	MGRF	9081104	08/11/09	-24	-24	2	2	120	990	0.251	318	318	0	0.324
ABL-1	MGRF	9081104	08/11/09	-24	-24	2	2	240	992	0.318	252	251	-0.39683	0.356
ABL-1	MGRF	9071603	07/24/09	-18	-18	1	1	8	986	0.227	350	350	0	0.301
ABL-1	MGRF	9071603	07/24/09	-18	-18	1	1	15	986	0.277	287	287	0	0.33
ABL-1	MGRF	9071603	07/24/09	-18	-18	1	1	30	986	0.352	226	226	0	0.361
ABL-1	MGRF	9071603	07/24/09	-18	-18	1	1	60	986	0.457	174	174	0	0.393
ABL-1	MGRF	9071603	07/24/09	-18	-18	1	1	120	987	0.606	131	131	0	0.425
ABL-1	MGRF	9071603	07/24/09	-18	-18	1	1	240	990	0.827	97	97	0	0.456
ABL-1	MGRF	9071604	07/24/09	-18	-18	1	2	8	989	0.232	344	344	0	0.308
ABL-1	MGRF	9071604	07/24/09	-18	-18	1	2	15	989	0.284	281	281	0	0.334
ABL-1	MGRF	9071604	07/24/09	-18	-18	1	2	30	989	0.362	220	221	0.454545	0.362
ABL-1	MGRF	9071604	07/24/09	-18	-18	1	2	60	990	0.469	170	170	0	0.391
ABL-1	MGRF	9071604	07/24/09	-18	-18	1	2	120	993	0.624	128	128	0	0.419
ABL-1	MGRF	9071604	07/24/09	-18	-18	1	2	240	998	0.847	95	95	0	0.448
ABL-1	MGRF	9072409	07/24/09	-18	-18.1	2	1	8	995	0.224	358	358	0	0.304
ABL-1	MGRF	9072409	07/24/09	-18	-18.1	2	1	15	996	0.275	292	293	0.342466	0.331
ABL-1	MGRF	9072409	07/24/09	-18	-18.1	2	1	30	997	0.349	230	230	0	0.362
ABL-1	MGRF	9072409	07/24/09	-18	-18.1	2	1	60	998	0.453	178	177	-0.5618	0.392
ABL-1	MGRF	9072409	07/24/09	-18	-18.1	2	1	120	997	0.601	134	134	0	0.423
ABL-1	MGRF	9072409	07/24/09	-18	-18.1	2	1	240	998	0.816	99	99	0	0.453
ABL-1	MGRF	9072410	07/24/09	-18	-18.1	2	2	8	987	0.234	340	340	0	0.289
ABL-1	MGRF	9072410	07/24/09	-18	-18.1	2	2	15	988	0.284	281	281	0	0.318
ABL-1	MGRF	9072410	07/24/09	-18	-18.1	2	2	30	990	0.358	223	223	0	0.349
ABL-1	MGRF	9072410	07/24/09	-18	-18.1	2	2	60	992	0.462	173	173	0	0.381
ABL-1	MGRF	9072410	07/24/09	-18	-18.1	2	2	120	992	0.609	131	131	0	0.413
ABL-1	MGRF	9072410	07/24/09	-18	-18.1	2	2	240	995	0.822	98	98	0	0.445
ABL-1	MGRF	9073007	07/30/09	-12	-12	1	1	8	1000	0.527	153	153	0	0.376
ABL-1	MGRF	9073007	07/30/09	-12	-12	1	1	15	999	0.676	119	119	0	0.404
ABL-1	MGRF	9073007	07/30/09	-12	-12	1	1	30	999	0.904	89	89	0	0.434

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABL-1	MGRF	9073007	07/30/09	-12	-12	1	1	60	1002	1.229	66	65	-1.51515	0.465
ABL-1	MGRF	9073007	07/30/09	-12	-12	1	1	120	996	1.712	47	47	0	0.495
ABL-1	MGRF	9073007	07/30/09	-12	-12	1	1	240	993	2.434	33	33	0	0.526
ABL-1	MGRF	9073008	07/30/09	-12	-12	1	2	8	1006	0.488	166	166	0	0.375
ABL-1	MGRF	9073008	07/30/09	-12	-12	1	2	15	1005	0.622	130	130	0	0.401
ABL-1	MGRF	9073008	07/30/09	-12	-12	1	2	30	1004	0.828	98	98	0	0.429
ABL-1	MGRF	9073008	07/30/09	-12	-12	1	2	60	1005	1.128	72	72	0	0.458
ABL-1	MGRF	9073008	07/30/09	-12	-12	1	2	120	1010	1.572	52	52	0	0.487
ABL-1	MGRF	9073008	07/30/09	-12	-12	1	2	240	1014	2.233	37	37	0	0.515
ABL-1	MGRF	9073109	07/31/09	-12	-12	2	1	8	995	0.559	144	143	-0.69444	0.386
ABL-1	MGRF	9073109	07/31/09	-12	-12	2	1	15	996	0.721	111	112	0.900901	0.414
ABL-1	MGRF	9073109	07/31/09	-12	-12	2	1	30	998	0.971	83	83	0	0.445
ABL-1	MGRF	9073109	07/31/09	-12	-12	2	1	60	999	1.338	60	60	0	0.475
ABL-1	MGRF	9073109	07/31/09	-12	-12	2	1	120	1001	1.882	43	43	0	0.506
ABL-1	MGRF	9073109	07/31/09	-12	-12	2	1	240	1002	2.708	30	30	0	0.537
ABL-1	MGRF	9073110	07/31/09	-12	-11.9	2	2	8	1001	0.561	144	144	0	0.38
ABL-1	MGRF	9073110	07/31/09	-12	-11.9	2	2	15	1003	0.72	112	112	0	0.407
ABL-1	MGRF	9073110	07/31/09	-12	-11.9	2	2	30	1005	0.966	84	84	0	0.436
ABL-1	MGRF	9073110	07/31/09	-12	-11.9	2	2	60	1007	1.323	61	61	0	0.466
ABL-1	MGRF	9073110	07/31/09	-12	-11.9	2	2	120	1011	1.853	44	44	0	0.495
ABL-1	MGRF	9073110	07/31/09	-12	-11.9	2	2	240	1017	2.656	31	31	0	0.525

Table 86. ABM-2 Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	TANK	5020701	02/07/05	-18	-18	1	1	8	1056	0.084	1014	1013	-0.09862	0.092
ABM-2	TANK	5020701	02/07/05	-18	-18	1	1	15	1058	0.09	948	948	0	0.12
ABM-2	TANK	5020701	02/07/05	-18	-18	1	1	30	1059	0.099	862	863	0.116009	0.15
ABM-2	TANK	5020701	02/07/05	-18	-18	1	1	60	1060	0.111	770	770	0	0.18
ABM-2	TANK	5020701	02/07/05	-18	-18	1	1	120	1062	0.127	674	673	-0.14837	0.21
ABM-2	TANK	5020701	02/07/05	-18	-18	1	1	240	1063	0.149	575	576	0.173913	0.24

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	TANK	5020702	02/07/05	-18	-18	1	2	8	1083	0.062	1408	1407	-0.07102	0.107
ABM-2	TANK	5020702	02/07/05	-18	-18	1	2	15	1084	0.067	1305	1303	-0.15326	0.137
ABM-2	TANK	5020702	02/07/05	-18	-18	1	2	30	1085	0.075	1166	1172	0.51458	0.17
ABM-2	TANK	5020702	02/07/05	-18	-18	1	2	60	1087	0.085	1031	1029	-0.19399	0.204
ABM-2	TANK	5020702	02/07/05	-18	-18	1	2	120	1088	0.099	886	884	-0.22573	0.237
ABM-2	TANK	5020702	02/07/05	-18	-18	1	2	240	1092	0.119	740	741	0.135135	0.27
ABM-2	TANK	5020703	02/07/05	-18	-18	2	1	8	1073	0.084	1030	1028	-0.19417	0.064
ABM-2	TANK	5020703	02/07/05	-18	-18	2	1	15	1074	0.089	973	977	0.4111	0.098
ABM-2	TANK	5020703	02/07/05	-18	-18	2	1	30	1075	0.096	903	901	-0.22148	0.136
ABM-2	TANK	5020703	02/07/05	-18	-18	2	1	60	1076	0.107	811	809	-0.24661	0.174
ABM-2	TANK	5020703	02/07/05	-18	-18	2	1	120	1077	0.123	706	708	0.283286	0.211
ABM-2	TANK	5020703	02/07/05	-18	-18	2	1	240	1079	0.144	604	604	0	0.249
ABM-2	TANK	5020704	02/07/05	-18	-18	2	2	8	1090	0.065	1352	1348	-0.29586	0.113
ABM-2	TANK	5020704	02/07/05	-18	-18	2	2	15	1090	0.071	1238	1244	0.484653	0.143
ABM-2	TANK	5020704	02/07/05	-18	-18	2	2	30	1091	0.079	1114	1114	0	0.176
ABM-2	TANK	5020704	02/07/05	-18	-18	2	2	60	1092	0.09	978	974	-0.409	0.209
ABM-2	TANK	5020704	02/07/05	-18	-18	2	2	120	1094	0.106	832	833	0.120192	0.242
ABM-2	TANK	5020704	02/07/05	-18	-18	2	2	240	1097	0.127	696	697	0.143678	0.275
ABM-2	Tank	5011101	01/11/05	-12	-12	1	1	8	976	0.179	440	438	-0.45455	0.193
ABM-2	Tank	5011101	01/11/05	-12	-12	1	1	15	975	0.206	382	383	0.26178	0.235
ABM-2	Tank	5011101	01/11/05	-12	-12	1	1	30	973	0.245	320	321	0.3125	0.281
ABM-2	Tank	5011101	01/11/05	-12	-12	1	1	60	971	0.301	260	260	0	0.326
ABM-2	Tank	5011101	01/11/05	-12	-12	1	1	120	967	0.381	205	204	-0.4878	0.372
ABM-2	Tank	5011101	01/11/05	-12	-12	1	1	240	961	0.501	155	155	0	0.418
ABM-2	TANK	5011102	01/11/05	-12	-12	1	2	8	1009	0.107	760	759	-0.13158	0.22
ABM-2	TANK	5011102	01/11/05	-12	-12	1	2	15	1009	0.125	651	652	0.15361	0.266
ABM-2	TANK	5011102	01/11/05	-12	-12	1	2	30	1011	0.153	533	533	0	0.316
ABM-2	TANK	5011102	01/11/05	-12	-12	1	2	60	1012	0.194	421	421	0	0.366
ABM-2	TANK	5011102	01/11/05	-12	-12	1	2	120	1013	0.254	322	321	-0.31056	0.417
ABM-2	TANK	5011102	01/11/05	-12	-12	1	2	240	1018	0.348	236	236	0	0.467
ABM-2	TANK	5011103	01/11/05	-12	-12	2	1	8	992	0.124	645	643	-0.31008	0.2
ABM-2	TANK	5011103	01/11/05	-12	-12	2	1	15	993	0.144	556	559	0.539568	0.245
ABM-2	TANK	5011103	01/11/05	-12	-12	2	1	30	994	0.173	463	463	0	0.296

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	TANK	5011103	01/11/05	-12	-12	2	1	60	996	0.216	372	371	-0.26882	0.346
ABM-2	TANK	5011103	01/11/05	-12	-12	2	1	120	998	0.28	287	287	0	0.396
ABM-2	TANK	5011103	01/11/05	-12	-12	2	1	240	1002	0.378	214	214	0	0.447
ABM-2	TANK	5011104	01/11/05	-12	-12	2	2	8	1003	0.105	770	768	-0.25974	0.217
ABM-2	TANK	5011104	01/11/05	-12	-12	2	2	15	1004	0.123	658	661	0.455927	0.26
ABM-2	TANK	5011104	01/11/05	-12	-12	2	2	30	1006	0.149	544	544	0	0.306
ABM-2	TANK	5011104	01/11/05	-12	-12	2	2	60	1008	0.188	432	433	0.231481	0.352
ABM-2	TANK	5011104	01/11/05	-12	-12	2	2	120	1009	0.243	335	334	-0.29851	0.399
ABM-2	TANK	5011104	01/11/05	-12	-12	2	2	240	1011	0.328	249	249	0	0.445
ABM-2	TANK	5020901	02/09/05	-6	-6	1	1	8	1081	0.22	396	397	0.252525	0.38
ABM-2	TANK	5020901	02/09/05	-6	-6	1	1	15	1081	0.283	308	308	0	0.428
ABM-2	TANK	5020901	02/09/05	-6	-6	1	1	30	1083	0.388	225	225	0	0.481
ABM-2	TANK	5020901	02/09/05	-6	-6	1	1	60	1087	0.555	158	158	0	0.533
ABM-2	TANK	5020901	02/09/05	-6	-6	1	1	120	1094	0.826	107	107	0	0.586
ABM-2	TANK	5020901	02/09/05	-6	-6	1	1	240	1106	1.269	70	70	0	0.639
ABM-2	TANK	5020902	02/09/05	-6	-6	1	2	8	1104	0.244	365	365	0	0.367
ABM-2	TANK	5020902	02/09/05	-6	-6	1	2	15	1104	0.312	285	285	0	0.415
ABM-2	TANK	5020902	02/09/05	-6	-6	1	2	30	1106	0.424	210	210	0	0.469
ABM-2	TANK	5020902	02/09/05	-6	-6	1	2	60	1108	0.601	149	149	0	0.523
ABM-2	TANK	5020902	02/09/05	-6	-6	1	2	120	1112	0.881	102	102	0	0.577
ABM-2	TANK	5020902	02/09/05	-6	-6	1	2	240	1122	1.351	67	67	0	0.63
ABM-2	TANK	5020903	02/09/05	-6	-6	2	1	8	1107	0.262	341	339	-0.58651	0.365
ABM-2	TANK	5020903	02/09/05	-6	-6	2	1	15	1110	0.337	266	266	0	0.402
ABM-2	TANK	5020903	02/09/05	-6	-6	2	1	30	1114	0.46	195	199	2.051282	0.443
ABM-2	TANK	5020903	02/09/05	-6	-6	2	1	60	1118	0.62	145	144	-0.68966	0.484
ABM-2	TANK	5020903	02/09/05	-6	-6	2	1	120	1124	0.881	103	102	-0.97087	0.525
ABM-2	TANK	5020903	02/09/05	-6	-6	2	1	240	1133	1.324	69	70	1.449275	0.565
ABM-2	TANK	5020904	02/09/05	-6	-6	2	2	8	1098	0.252	351	351	0	0.371
ABM-2	TANK	5020904	02/09/05	-6	-6	2	2	15	1097	0.324	273	273	0	0.425
ABM-2	TANK	5020904	02/09/05	-6	-6	2	2	30	1098	0.445	199	199	0	0.485
ABM-2	TANK	5020904	02/09/05	-6	-6	2	2	60	1098	0.634	140	139	-0.71429	0.546
ABM-2	TANK	5020904	02/09/05	-6	-6	2	2	120	1098	0.945	94	94	0	0.606
ABM-2	TANK	5020904	02/09/05	-6	-6	2	2	240	1100	1.475	60	60	0	0.666

Table 87. ABM-2 RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	RTFOT	5020705	02/07/05	-18	-18	1	1	8	1095	0.061	1447	1443	-0.27643	0.103
ABM-2	RTFOT	5020705	02/07/05	-18	-18	1	1	15	1095	0.066	1338	1341	0.224215	0.13
ABM-2	RTFOT	5020705	02/07/05	-18	-18	1	1	30	1094	0.073	1208	1213	0.413907	0.16
ABM-2	RTFOT	5020705	02/07/05	-18	-18	1	1	60	1094	0.082	1076	1075	-0.09294	0.189
ABM-2	RTFOT	5020705	02/07/05	-18	-18	1	1	120	1095	0.094	939	933	-0.63898	0.219
ABM-2	RTFOT	5020705	02/07/05	-18	-18	1	1	240	1098	0.112	790	794	0.506329	0.248
ABM-2	RTFOT	5020706	02/07/05	-18	-18	1	2	8	1093	0.057	1546	1546	0	0.098
ABM-2	RTFOT	5020706	02/07/05	-18	-18	1	2	15	1093	0.061	1445	1440	-0.34602	0.129
ABM-2	RTFOT	5020706	02/07/05	-18	-18	1	2	30	1093	0.068	1296	1302	0.462963	0.163
ABM-2	RTFOT	5020706	02/07/05	-18	-18	1	2	60	1093	0.077	1145	1150	0.436681	0.197
ABM-2	RTFOT	5020706	02/07/05	-18	-18	1	2	120	1093	0.088	1001	991	-0.999	0.231
ABM-2	RTFOT	5020706	02/07/05	-18	-18	1	2	240	1093	0.106	831	835	0.481348	0.265
ABM-2	RTFOT	5020707	02/07/05	-18	-18	2	1	8	1095	0.07	1261	1261	0	0.078
ABM-2	RTFOT	5020707	02/07/05	-18	-18	2	1	15	1095	0.074	1193	1191	-0.16764	0.105
ABM-2	RTFOT	5020707	02/07/05	-18	-18	2	1	30	1096	0.081	1091	1096	0.458295	0.134
ABM-2	RTFOT	5020707	02/07/05	-18	-18	2	1	60	1095	0.089	992	989	-0.30242	0.164
ABM-2	RTFOT	5020707	02/07/05	-18	-18	2	1	120	1096	0.101	875	874	-0.11429	0.193
ABM-2	RTFOT	5020707	02/07/05	-18	-18	2	1	240	1097	0.117	756	757	0.132275	0.223
ABM-2	RTFOT	5020708	02/07/05	-18	-18	2	2	8	1101	0.064	1387	1384	-0.21629	0.099
ABM-2	RTFOT	5020708	02/07/05	-18	-18	2	2	15	1101	0.069	1287	1290	0.2331	0.125
ABM-2	RTFOT	5020708	02/07/05	-18	-18	2	2	30	1101	0.076	1168	1171	0.256849	0.153
ABM-2	RTFOT	5020708	02/07/05	-18	-18	2	2	60	1101	0.085	1044	1043	-0.09579	0.181
ABM-2	RTFOT	5020708	02/07/05	-18	-18	2	2	120	1102	0.097	916	912	-0.43668	0.209
ABM-2	RTFOT	5020708	02/07/05	-18	-18	2	2	240	1101	0.114	779	781	0.256739	0.237
ABM-2	RTFOT	5011105	01/11/05	-12	-12	1	1	8	1018	0.089	922	922	0	0.197
ABM-2	RTFOT	5011105	01/11/05	-12	-12	1	1	15	1019	0.102	806	804	-0.24814	0.237
ABM-2	RTFOT	5011105	01/11/05	-12	-12	1	1	30	1021	0.123	669	672	0.44843	0.281
ABM-2	RTFOT	5011105	01/11/05	-12	-12	1	1	60	1022	0.151	546	545	-0.18315	0.325
ABM-2	RTFOT	5011105	01/11/05	-12	-12	1	1	120	1023	0.192	430	428	-0.46512	0.369
ABM-2	RTFOT	5011105	01/11/05	-12	-12	1	1	240	1023	0.253	326	327	0.306748	0.413
ABM-2	RTFOT	5011106	01/11/05	-12	-12	1	2	8	1026	0.094	880	879	-0.11364	0.194

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	RTFOT	5011106	01/11/05	-12	-12	1	2	15	1026	0.108	766	768	0.261097	0.236
ABM-2	RTFOT	5011106	01/11/05	-12	-12	1	2	30	1027	0.129	642	642	0	0.281
ABM-2	RTFOT	5011106	01/11/05	-12	-12	1	2	60	1027	0.159	521	520	-0.19194	0.326
ABM-2	RTFOT	5011106	01/11/05	-12	-12	1	2	120	1028	0.203	408	408	0	0.372
ABM-2	RTFOT	5011106	01/11/05	-12	-12	1	2	240	1028	0.267	310	311	0.322581	0.417
ABM-2	RTFOT	5011107	01/11/05	-12	-12	2	1	8	1033	0.097	859	858	-0.11641	0.206
ABM-2	RTFOT	5011107	01/11/05	-12	-12	2	1	15	1034	0.112	744	746	0.268817	0.239
ABM-2	RTFOT	5011107	01/11/05	-12	-12	2	1	30	1036	0.134	623	624	0.160514	0.275
ABM-2	RTFOT	5011107	01/11/05	-12	-12	2	1	60	1039	0.164	511	509	-0.39139	0.311
ABM-2	RTFOT	5011107	01/11/05	-12	-12	2	1	120	1040	0.207	405	405	0	0.348
ABM-2	RTFOT	5011107	01/11/05	-12	-12	2	1	240	1041	0.267	314	314	0	0.384
ABM-2	RTFOT	5011108	01/11/05	-12	-12	2	2	8	1030	0.086	966	963	-0.31056	0.19
ABM-2	RTFOT	5011108	01/11/05	-12	-12	2	2	15	1031	0.099	840	843	0.357143	0.232
ABM-2	RTFOT	5011108	01/11/05	-12	-12	2	2	30	1033	0.118	706	707	0.141643	0.279
ABM-2	RTFOT	5011108	01/11/05	-12	-12	2	2	60	1034	0.145	575	573	-0.34783	0.325
ABM-2	RTFOT	5011108	01/11/05	-12	-12	2	2	120	1034	0.185	451	450	-0.22173	0.372
ABM-2	RTFOT	5011108	01/11/05	-12	-12	2	2	240	1034	0.244	342	342	0	0.419
ABM-2	RTFOT	5020905	02/09/05	-6	-6	1	1	8	1109	0.211	424	424	0	0.323
ABM-2	RTFOT	5020905	02/09/05	-6	-6	1	1	15	1109	0.263	340	340	0	0.374
ABM-2	RTFOT	5020905	02/09/05	-6	-6	1	1	30	1108	0.347	257	257	0	0.431
ABM-2	RTFOT	5020905	02/09/05	-6	-6	1	1	60	1108	0.477	187	187	0	0.488
ABM-2	RTFOT	5020905	02/09/05	-6	-6	1	1	120	1108	0.682	131	131	0	0.544
ABM-2	RTFOT	5020905	02/09/05	-6	-6	1	1	240	1110	1.017	88	88	0	0.601
ABM-2	RTFOT	5020906	02/09/05	-6	-6	1	2	8	1106	0.202	441	441	0	0.323
ABM-2	RTFOT	5020906	02/09/05	-6	-6	1	2	15	1106	0.252	354	354	0	0.373
ABM-2	RTFOT	5020906	02/09/05	-6	-6	1	2	30	1107	0.333	268	268	0	0.429
ABM-2	RTFOT	5020906	02/09/05	-6	-6	1	2	60	1107	0.456	196	196	0	0.484
ABM-2	RTFOT	5020906	02/09/05	-6	-6	1	2	120	1108	0.651	137	137	0	0.54
ABM-2	RTFOT	5020906	02/09/05	-6	-6	1	2	240	1109	0.967	92	93	1.086957	0.595
ABM-2	RTFOT	5020907	02/09/05	-6	-6	2	1	8	1082	0.531	164	164	0	0.123
ABM-2	RTFOT	5020907	02/09/05	-6	-6	2	1	15	1083	0.59	148	149	0.675676	0.186
ABM-2	RTFOT	5020907	02/09/05	-6	-6	2	1	30	1083	0.687	127	128	0.787402	0.254
ABM-2	RTFOT	5020907	02/09/05	-6	-6	2	1	60	1085	0.834	105	104	-0.95238	0.323

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	RTFOT	5020907	02/09/05	-6	-6	2	1	120	1084	1.068	82	82	0	0.391
ABM-2	RTFOT	5020907	02/09/05	-6	-6	2	1	240	1086	1.446	61	61	0	0.46
ABM-2	RTFOT	5020908	02/09/05	-6	-6	2	2	8	1116	0.209	431	430	-0.23202	0.329
ABM-2	RTFOT	5020908	02/09/05	-6	-6	2	2	15	1117	0.263	342	344	0.584795	0.379
ABM-2	RTFOT	5020908	02/09/05	-6	-6	2	2	30	1117	0.347	260	259	-0.38462	0.435
ABM-2	RTFOT	5020908	02/09/05	-6	-6	2	2	60	1119	0.479	188	188	0	0.49
ABM-2	RTFOT	5020908	02/09/05	-6	-6	2	2	120	1120	0.686	132	131	-0.75758	0.546
ABM-2	RTFOT	5020908	02/09/05	-6	-6	2	2	240	1116	1.02	88	88	0	0.601

Table 88. ABM-2 SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AMB-2	SAFT	6031409	03/14/06	-18	-18	1	1	8	1068	0.073	1180	1179	-0.08475	0.091
AMB-2	SAFT	6031409	03/14/06	-18	-18	1	1	15	1068	0.078	1104	1104	0	0.12
AMB-2	SAFT	6031409	03/14/06	-18	-18	1	1	30	1069	0.086	1002	1005	0.299401	0.151
AMB-2	SAFT	6031409	03/14/06	-18	-18	1	1	60	1070	0.096	899	895	-0.44494	0.183
AMB-2	SAFT	6031409	03/14/06	-18	-18	1	1	120	1070	0.111	777	780	0.3861	0.215
AMB-2	SAFT	6031409	03/14/06	-18	-18	1	1	240	1072	0.13	665	664	-0.15038	0.246
AMB-2	SAFT	6031410	03/14/06	-18	-18	1	2	8	1088	0.061	1438	1442	0.278164	0.096
AMB-2	SAFT	6031410	03/14/06	-18	-18	1	2	15	1088	0.065	1350	1345	-0.37037	0.127
AMB-2	SAFT	6031410	03/14/06	-18	-18	1	2	30	1089	0.072	1220	1217	-0.2459	0.161
AMB-2	SAFT	6031410	03/14/06	-18	-18	1	2	60	1090	0.082	1072	1076	0.373134	0.195
AMB-2	SAFT	6031410	03/14/06	-18	-18	1	2	120	1092	0.095	927	928	0.107875	0.23
AMB-2	SAFT	6031410	03/14/06	-18	-18	1	2	240	1098	0.113	783	782	-0.12771	0.264
AMB-2	SAFT	6031411	03/14/06	-18	-18	2	1	8	1097	0.062	1427	1425	-0.14015	0.098
AMB-2	SAFT	6031411	03/14/06	-18	-18	2	1	15	1097	0.067	1320	1328	0.606061	0.128
AMB-2	SAFT	6031411	03/14/06	-18	-18	2	1	30	1099	0.073	1214	1201	-1.07084	0.162
AMB-2	SAFT	6031411	03/14/06	-18	-18	2	1	60	1099	0.084	1055	1061	0.56872	0.195
AMB-2	SAFT	6031411	03/14/06	-18	-18	2	1	120	1101	0.097	915	917	0.218579	0.228
AMB-2	SAFT	6031411	03/14/06	-18	-18	2	1	240	1105	0.115	775	773	-0.25806	0.262
AMB-2	SAFT	6031412	03/14/06	-18	-18	2	2	8	1094	0.065	1357	1356	-0.07369	0.098

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AMB-2	SAFT	6031412	03/14/06	-18	-18	2	2	15	1095	0.07	1261	1264	0.237906	0.127
AMB-2	SAFT	6031412	03/14/06	-18	-18	2	2	30	1095	0.077	1147	1145	-0.17437	0.159
AMB-2	SAFT	6031412	03/14/06	-18	-18	2	2	60	1096	0.087	1016	1014	-0.19685	0.191
AMB-2	SAFT	6031412	03/14/06	-18	-18	2	2	120	1097	0.101	876	879	0.342466	0.223
AMB-2	SAFT	6031412	03/14/06	-18	-18	2	2	240	1100	0.119	745	744	-0.13423	0.255
AMB-2	SAFT	6032201	03/22/06	-12	-12	1	1	8	1000	0.095	849	849	0	0.185
AMB-2	SAFT	6032201	03/22/06	-12	-12	1	1	15	1000	0.108	747	746	-0.13387	0.228
AMB-2	SAFT	6032201	03/22/06	-12	-12	1	1	30	1000	0.129	625	626	0.16	0.275
AMB-2	SAFT	6032201	03/22/06	-12	-12	1	1	60	1001	0.158	511	509	-0.39139	0.322
AMB-2	SAFT	6032201	03/22/06	-12	-12	1	1	120	1002	0.202	400	401	0.25	0.369
AMB-2	SAFT	6032201	03/22/06	-12	-12	1	1	240	1004	0.265	305	305	0	0.416
AMB-2	SAFT	6032202	03/22/06	-12	-12	1	2	8	1009	0.096	847	846	-0.11806	0.203
AMB-2	SAFT	6032202	03/22/06	-12	-12	1	2	15	1010	0.111	734	736	0.27248	0.24
AMB-2	SAFT	6032202	03/22/06	-12	-12	1	2	30	1011	0.133	613	614	0.163132	0.28
AMB-2	SAFT	6032202	03/22/06	-12	-12	1	2	60	1012	0.163	501	499	-0.3992	0.32
AMB-2	SAFT	6032202	03/22/06	-12	-12	1	2	120	1014	0.207	395	394	-0.25316	0.36
AMB-2	SAFT	6032202	03/22/06	-12	-12	1	2	240	1020	0.272	302	303	0.331126	0.401
AMB-2	SAFT	6032204	03/22/06	-12	-12	2	1	8	1015	0.101	810	811	0.123457	0.195
AMB-2	SAFT	6032204	03/22/06	-12	-12	2	1	15	1015	0.115	712	709	-0.42135	0.231
AMB-2	SAFT	6032204	03/22/06	-12	-12	2	1	30	1016	0.138	594	596	0.3367	0.271
AMB-2	SAFT	6032204	03/22/06	-12	-12	2	1	60	1018	0.168	489	487	-0.409	0.311
AMB-2	SAFT	6032204	03/22/06	-12	-12	2	1	120	1020	0.213	386	387	0.259067	0.351
AMB-2	SAFT	6032204	03/22/06	-12	-12	2	1	240	1025	0.276	299	299	0	0.391
AMB-2	SAFT	6032205	03/22/06	-12	-12	2	2	8	1012	0.122	669	669	0	0.244
AMB-2	SAFT	6032205	03/22/06	-12	-12	2	2	15	1013	0.143	571	571	0	0.262
AMB-2	SAFT	6032205	03/22/06	-12	-12	2	2	30	1013	0.173	472	473	0.211864	0.282
AMB-2	SAFT	6032205	03/22/06	-12	-12	2	2	60	1014	0.212	386	386	0	0.302
AMB-2	SAFT	6032205	03/22/06	-12	-12	2	2	120	1014	0.262	312	311	-0.32051	0.322
AMB-2	SAFT	6032205	03/22/06	-12	-12	2	2	240	1017	0.332	247	247	0	0.341
AMB-2	SAFT	6032401	03/24/06	-6	-6	1	1	8	1010	0.225	362	361	-0.27624	0.337
AMB-2	SAFT	6032401	03/24/06	-6	-6	1	1	15	1009	0.284	286	288	0.699301	0.386
AMB-2	SAFT	6032401	03/24/06	-6	-6	1	1	30	1009	0.377	216	216	0	0.44
AMB-2	SAFT	6032401	03/24/06	-6	-6	1	1	60	1008	0.519	157	156	-0.63694	0.494

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
AMB-2	SAFT	6032401	03/24/06	-6	-6	1	1	120	1008	0.745	109	109	0	0.549
AMB-2	SAFT	6032401	03/24/06	-6	-6	1	1	240	1010	1.117	73	73	0	0.603
AMB-2	SAFT	6032402	03/24/06	-6	-6	1	2	8	1010	0.238	342	340	-0.5848	0.318
AMB-2	SAFT	6032402	03/24/06	-6	-6	1	2	15	1010	0.3	271	274	1.107011	0.363
AMB-2	SAFT	6032402	03/24/06	-6	-6	1	2	30	1010	0.391	208	210	0.961538	0.413
AMB-2	SAFT	6032402	03/24/06	-6	-6	1	2	60	1009	0.522	156	155	-0.64103	0.463
AMB-2	SAFT	6032402	03/24/06	-6	-6	1	2	120	1009	0.733	111	110	-0.9009	0.513
AMB-2	SAFT	6032402	03/24/06	-6	-6	1	2	240	1011	1.08	75	76	1.333333	0.563
AMB-2	SAFT	6032403	03/24/06	-6	-6	2	1	8	1019	0.185	444	444	0	0.335
AMB-2	SAFT	6032403	03/24/06	-6	-6	2	1	15	1020	0.233	353	354	0.283286	0.386
AMB-2	SAFT	6032403	03/24/06	-6	-6	2	1	30	1020	0.31	265	265	0	0.443
AMB-2	SAFT	6032403	03/24/06	-6	-6	2	1	60	1021	0.43	191	191	0	0.499
AMB-2	SAFT	6032403	03/24/06	-6	-6	2	1	120	1022	0.62	133	133	0	0.556
AMB-2	SAFT	6032403	03/24/06	-6	-6	2	1	240	1026	0.935	88	89	1.136364	0.613
AMB-2	SAFT	6032404	03/24/06	-6	-6	2	2	8	1020	0.196	420	419	-0.2381	0.326
AMB-2	SAFT	6032404	03/24/06	-6	-6	2	2	15	1020	0.245	336	336	0	0.378
AMB-2	SAFT	6032404	03/24/06	-6	-6	2	2	30	1021	0.325	253	254	0.395257	0.435
AMB-2	SAFT	6032404	03/24/06	-6	-6	2	2	60	1023	0.448	184	184	0	0.492
AMB-2	SAFT	6032404	03/24/06	-6	-6	2	2	120	1024	0.644	128	128	0	0.549
AMB-2	SAFT	6032404	03/24/06	-6	-6	2	2	240	1028	0.965	86	86	0	0.606

Table 89. ABM-2 MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	MGRF	9081307	08/13/09	-18	-18	1	1	8	1003	0.06	1348	1342	-0.4451	0.094
ABM-2	MGRF	9081307	08/13/09	-18	-18	1	1	15	1003	0.065	1244	1254	0.803859	0.123
ABM-2	MGRF	9081307	08/13/09	-18	-18	1	1	30	1004	0.071	1140	1138	-0.17544	0.156
ABM-2	MGRF	9081307	08/13/09	-18	-18	1	1	60	1003	0.08	1011	1010	-0.09891	0.188
ABM-2	MGRF	9081307	08/13/09	-18	-18	1	1	120	1004	0.092	880	877	-0.34091	0.22
ABM-2	MGRF	9081307	08/13/09	-18	-18	1	1	240	1004	0.109	743	744	0.13459	0.253
ABM-2	MGRF	9081308	08/13/09	-18	-18	1	2	8	980	0.066	1197	1196	-0.08354	0.076

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	MGRF	9081308	08/13/09	-18	-18	1	2	15	982	0.07	1131	1130	-0.08842	0.106
ABM-2	MGRF	9081308	08/13/09	-18	-18	1	2	30	984	0.077	1030	1038	0.776699	0.139
ABM-2	MGRF	9081308	08/13/09	-18	-18	1	2	60	986	0.085	935	931	-0.42781	0.172
ABM-2	MGRF	9081308	08/13/09	-18	-18	1	2	120	986	0.097	820	817	-0.36585	0.206
ABM-2	MGRF	9081308	08/13/09	-18	-18	1	2	240	988	0.114	699	700	0.143062	0.239
ABM-2	MGRF	9082807	08/28/01	-18	-18	2	1	8	1011	0.057	1430	1426	-0.27972	0.11
ABM-2	MGRF	9082807	08/28/01	-18	-18	2	1	15	1012	0.062	1316	1320	0.303951	0.135
ABM-2	MGRF	9082807	08/28/01	-18	-18	2	1	30	1013	0.069	1184	1191	0.591216	0.162
ABM-2	MGRF	9082807	08/28/01	-18	-18	2	1	60	1013	0.077	1061	1054	-0.65975	0.19
ABM-2	MGRF	9082807	08/28/01	-18	-18	2	1	120	1013	0.089	918	915	-0.3268	0.217
ABM-2	MGRF	9082807	08/28/01	-18	-18	2	1	240	1013	0.105	778	780	0.257069	0.245
ABM-2	MGRF	9082808	08/28/01	-18	-18	2	2	8	1009	0.056	1453	1456	0.206469	0.104
ABM-2	MGRF	9082808	08/28/01	-18	-18	2	2	15	1010	0.06	1357	1351	-0.44215	0.133
ABM-2	MGRF	9082808	08/28/01	-18	-18	2	2	30	1012	0.067	1218	1219	0.082102	0.164
ABM-2	MGRF	9082808	08/28/01	-18	-18	2	2	60	1013	0.076	1075	1076	0.093023	0.196
ABM-2	MGRF	9082808	08/28/01	-18	-18	2	2	120	1013	0.088	928	929	0.107759	0.228
ABM-2	MGRF	9082808	08/28/01	-18	-18	2	2	240	1013	0.104	785	785	0	0.259
ABM-2	MGRF	9081409	08/14/09	-12	-12	1	1	8	978	0.122	646	645	-0.1548	0.143
ABM-2	MGRF	9081409	08/14/09	-12	-12	1	1	15	979	0.136	580	582	0.344828	0.184
ABM-2	MGRF	9081409	08/14/09	-12	-12	1	1	30	981	0.157	504	504	0	0.23
ABM-2	MGRF	9081409	08/14/09	-12	-12	1	1	60	982	0.187	423	423	0	0.275
ABM-2	MGRF	9081409	08/14/09	-12	-12	1	1	120	986	0.23	346	344	-0.57803	0.32
ABM-2	MGRF	9081409	08/14/09	-12	-12	1	1	240	992	0.295	271	272	0.369004	0.365
ABM-2	MGRF	9081410	08/14/09	-12	-12	1	2	8	983	0.099	801	801	0	0.173
ABM-2	MGRF	9081410	08/14/09	-12	-12	1	2	15	985	0.112	709	709	0	0.212
ABM-2	MGRF	9081410	08/14/09	-12	-12	1	2	30	988	0.132	604	603	-0.16556	0.255
ABM-2	MGRF	9081410	08/14/09	-12	-12	1	2	60	990	0.16	499	498	-0.2004	0.298
ABM-2	MGRF	9081410	08/14/09	-12	-12	1	2	120	994	0.201	399	399	0	0.34
ABM-2	MGRF	9081410	08/14/09	-12	-12	1	2	240	999	0.259	311	311	0	0.383
ABM-2	MGRF	9090303	09/03/09	-12	-12	2	1	8	974	0.185	425	424	-0.23529	0.072
ABM-2	MGRF	9090303	09/03/09	-12	-12	2	1	15	976	0.197	399	400	0.250627	0.108
ABM-2	MGRF	9090303	09/03/09	-12	-12	2	1	30	978	0.216	365	366	0.273973	0.148
ABM-2	MGRF	9090303	09/03/09	-12	-12	2	1	60	982	0.242	327	326	-0.30581	0.188

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ABM-2	MGRF	9090303	09/03/09	-12	-12	2	1	120	986	0.281	283	282	-0.35336	0.228
ABM-2	MGRF	9090303	09/03/09	-12	-12	2	1	240	995	0.338	237	238	0.421941	0.268
ABM-2	MGRF	9090304	09/03/09	-12	-12.1	2	2	8	990	0.101	790	788	-0.25316	0.172
ABM-2	MGRF	9090304	09/03/09	-12	-12.1	2	2	15	993	0.115	696	699	0.431034	0.212
ABM-2	MGRF	9090304	09/03/09	-12	-12.1	2	2	30	995	0.135	594	594	0	0.256
ABM-2	MGRF	9090304	09/03/09	-12	-12.1	2	2	60	998	0.164	491	490	-0.20367	0.299
ABM-2	MGRF	9090304	09/03/09	-12	-12.1	2	2	120	1001	0.205	394	392	-0.50761	0.343
ABM-2	MGRF	9090304	09/03/09	-12	-12.1	2	2	240	1007	0.267	304	305	0.328947	0.387
ABM-2	MGRF	9082605	08/26/09	-6	-6	1	1	8	971	0.189	414	413	-0.24155	0.323
ABM-2	MGRF	9082605	08/26/09	-6	-6	1	1	15	973	0.237	331	332	0.302115	0.374
ABM-2	MGRF	9082605	08/26/09	-6	-6	1	1	30	975	0.313	251	251	0	0.43
ABM-2	MGRF	9082605	08/26/09	-6	-6	1	1	60	977	0.43	183	183	0	0.486
ABM-2	MGRF	9082605	08/26/09	-6	-6	1	1	120	977	0.614	128	128	0	0.542
ABM-2	MGRF	9082605	08/26/09	-6	-6	1	1	240	977	0.914	86	86	0	0.598
ABM-2	MGRF	9082606	08/26/09	-6	-6	1	2	8	988	0.192	415	414	-0.24096	0.323
ABM-2	MGRF	9082606	08/26/09	-6	-6	1	2	15	989	0.24	332	333	0.301205	0.375
ABM-2	MGRF	9082606	08/26/09	-6	-6	1	2	30	990	0.318	251	252	0.398406	0.432
ABM-2	MGRF	9082606	08/26/09	-6	-6	1	2	60	990	0.436	183	183	0	0.489
ABM-2	MGRF	9082606	08/26/09	-6	-6	1	2	120	990	0.624	128	128	0	0.546
ABM-2	MGRF	9082606	08/26/09	-6	-6	1	2	240	988	0.93	86	86	0	0.603
ABM-2	MGRF	9082607	08/26/09	-6	-6	2	1	8	991	0.184	434	433	-0.23041	0.321
ABM-2	MGRF	9082607	08/26/09	-6	-6	2	1	15	992	0.23	348	348	0	0.373
ABM-2	MGRF	9082607	08/26/09	-6	-6	2	1	30	992	0.304	263	264	0.380228	0.43
ABM-2	MGRF	9082607	08/26/09	-6	-6	2	1	60	993	0.416	192	192	0	0.487
ABM-2	MGRF	9082607	08/26/09	-6	-6	2	1	120	991	0.594	135	134	-0.74074	0.544
ABM-2	MGRF	9082607	08/26/09	-6	-6	2	1	240	989	0.885	90	90	0	0.601
ABM-2	MGRF	9082608	08/26/09	-6	-6	2	2	8	999	0.191	422	421	-0.23697	0.328
ABM-2	MGRF	9082608	08/26/09	-6	-6	2	2	15	999	0.24	336	337	0.297619	0.38
ABM-2	MGRF	9082608	08/26/09	-6	-6	2	2	30	998	0.317	254	254	0	0.436
ABM-2	MGRF	9082608	08/26/09	-6	-6	2	2	60	996	0.436	184	184	0	0.493
ABM-2	MGRF	9082608	08/26/09	-6	-6	2	2	120	994	0.624	128	128	0	0.55
ABM-2	MGRF	9082608	08/26/09	-6	-6	2	2	240	992	0.933	86	86	0	0.607

Table 90. Airblown Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	Tank	5053101	05/31/05	-24	-24	1	1	8	1027	0.125	662	662	0	0.154
Airblown	Tank	5053101	05/31/05	-24	-24	1	1	15	1028	0.139	596	597	0.167785	0.177
Airblown	Tank	5053101	05/31/05	-24	-24	1	1	30	1029	0.159	522	523	0.191571	0.202
Airblown	Tank	5053101	05/31/05	-24	-24	1	1	60	1029	0.184	451	451	0	0.228
Airblown	Tank	5053101	05/31/05	-24	-24	1	1	120	1029	0.217	382	381	-0.26178	0.253
Airblown	Tank	5053101	05/31/05	-24	-24	1	1	240	1029	0.262	317	317	0	0.279
Airblown	Tank	5053102	05/31/05	-24	-24	1	2	8	1029	0.119	697	698	0.143472	0.159
Airblown	Tank	5053102	05/31/05	-24	-24	1	2	15	1030	0.132	629	627	-0.31797	0.18
Airblown	Tank	5053102	05/31/05	-24	-24	1	2	30	1031	0.152	547	549	0.365631	0.204
Airblown	Tank	5053102	05/31/05	-24	-24	1	2	60	1033	0.176	473	473	0	0.228
Airblown	Tank	5053102	05/31/05	-24	-24	1	2	120	1034	0.208	401	400	-0.24938	0.251
Airblown	Tank	5053102	05/31/05	-24	-24	1	2	240	1038	0.251	333	334	0.3003	0.275
Airblown	Tank	5053103	05/31/05	-24	-24	2	1	8	1051	0.104	815	815	0	0.177
Airblown	Tank	5053103	05/31/05	-24	-24	2	1	15	1053	0.117	726	724	-0.27548	0.198
Airblown	Tank	5053103	05/31/05	-24	-24	2	1	30	1055	0.136	625	626	0.16	0.221
Airblown	Tank	5053103	05/31/05	-24	-24	2	1	60	1057	0.16	533	533	0	0.245
Airblown	Tank	5053103	05/31/05	-24	-24	2	1	120	1059	0.191	447	446	-0.22371	0.268
Airblown	Tank	5053103	05/31/05	-24	-24	2	1	240	1062	0.233	368	368	0	0.291
Airblown	Tank	5053104	05/31/05	-24	-24	2	2	8	1051	0.116	731	729	-0.2736	0.161
Airblown	Tank	5053104	05/31/05	-24	-24	2	2	15	1052	0.13	652	654	0.306748	0.184
Airblown	Tank	5053104	05/31/05	-24	-24	2	2	30	1054	0.149	570	571	0.175439	0.209
Airblown	Tank	5053104	05/31/05	-24	-24	2	2	60	1055	0.173	492	490	-0.4065	0.235
Airblown	Tank	5053104	05/31/05	-24	-24	2	2	120	1057	0.207	412	412	0	0.26
Airblown	Tank	5053104	05/31/05	-24	-24	2	2	240	1058	0.25	341	341	0	0.286
Airblown	Tank	5052603	05/26/05	-18	-18	1	1	8	1022	0.189	436	435	-0.22936	0.227
Airblown	Tank	5052603	05/26/05	-18	-18	1	1	15	1024	0.221	374	375	0.26738	0.249
Airblown	Tank	5052603	05/26/05	-18	-18	1	1	30	1027	0.265	312	313	0.320513	0.273
Airblown	Tank	5052603	05/26/05	-18	-18	1	1	60	1030	0.323	257	257	0	0.297
Airblown	Tank	5052603	05/26/05	-18	-18	1	1	120	1032	0.401	208	207	-0.48077	0.321
Airblown	Tank	5052603	05/26/05	-18	-18	1	1	240	1035	0.508	164	164	0	0.345
Airblown	Tank	5052604	05/26/05	-18	-18	1	2	8	1006	0.217	374	374	0	0.194

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	Tank	5052604	05/26/05	-18	-18	1	2	15	1007	0.247	329	329	0	0.218
Airblown	Tank	5052604	05/26/05	-18	-18	1	2	30	1010	0.291	280	280	0	0.244
Airblown	Tank	5052604	05/26/05	-18	-18	1	2	60	1011	0.348	234	234	0	0.271
Airblown	Tank	5052604	05/26/05	-18	-18	1	2	120	1014	0.425	192	192	0	0.297
Airblown	Tank	5052604	05/26/05	-18	-18	1	2	240	1016	0.528	155	155	0	0.324
Airblown	Tank	5052605	05/26/05	-18	-18	2	1	8	1016	0.237	346	345	-0.28902	0.183
Airblown	Tank	5052605	05/26/05	-18	-18	2	1	15	1016	0.269	305	305	0	0.208
Airblown	Tank	5052605	05/26/05	-18	-18	2	1	30	1017	0.313	262	262	0	0.235
Airblown	Tank	5052605	05/26/05	-18	-18	2	1	60	1018	0.372	221	220	-0.45249	0.263
Airblown	Tank	5052605	05/26/05	-18	-18	2	1	120	1018	0.451	182	182	0	0.29
Airblown	Tank	5052605	05/26/05	-18	-18	2	1	240	1020	0.558	147	147	0	0.317
Airblown	Tank	5052606	05/26/05	-18	-18	2	2	8	1014	0.199	411	410	-0.24331	0.218
Airblown	Tank	5052606	05/26/05	-18	-18	2	2	15	1015	0.231	354	355	0.282486	0.241
Airblown	Tank	5052606	05/26/05	-18	-18	2	2	30	1016	0.275	298	298	0	0.267
Airblown	Tank	5052606	05/26/05	-18	-18	2	2	60	1018	0.334	246	245	-0.4065	0.292
Airblown	Tank	5052606	05/26/05	-18	-18	2	2	120	1019	0.414	198	199	0.505051	0.318
Airblown	Tank	5052606	05/26/05	-18	-18	2	2	240	1020	0.521	158	158	0	0.344
Airblown	Tank	5052704	05/27/05	-12	-12	1	1	8	1010	0.381	214	214	0	0.29
Airblown	Tank	5052704	05/27/05	-12	-12	1	1	15	1011	0.461	177	177	0	0.312
Airblown	Tank	5052704	05/27/05	-12	-12	1	1	30	1013	0.579	141	141	0	0.336
Airblown	Tank	5052704	05/27/05	-12	-12	1	1	60	1016	0.738	111	111	0	0.361
Airblown	Tank	5052704	05/27/05	-12	-12	1	1	120	1018	0.958	86	86	0	0.385
Airblown	Tank	5052704	05/27/05	-12	-12	1	1	240	1023	1.269	65	65	0	0.409
Airblown	Tank	5052705	05/27/05	-12	-12	1	2	8	1013	0.369	221	221	0	0.283
Airblown	Tank	5052705	05/27/05	-12	-12	1	2	15	1015	0.445	184	184	0	0.306
Airblown	Tank	5052705	05/27/05	-12	-12	1	2	30	1018	0.557	147	148	0.680272	0.33
Airblown	Tank	5052705	05/27/05	-12	-12	1	2	60	1022	0.708	116	116	0	0.355
Airblown	Tank	5052705	05/27/05	-12	-12	1	2	120	1026	0.917	90	90	0	0.38
Airblown	Tank	5052705	05/27/05	-12	-12	1	2	240	1034	1.214	69	69	0	0.405
Airblown	Tank	5052706	05/27/05	-12	-12	2	1	8	1032	0.382	218	218	0	0.286
Airblown	Tank	5052706	05/27/05	-12	-12	2	1	15	1034	0.46	181	181	0	0.308
Airblown	Tank	5052706	05/27/05	-12	-12	2	1	30	1034	0.576	145	145	0	0.332
Airblown	Tank	5052706	05/27/05	-12	-12	2	1	60	1036	0.732	114	114	0	0.357

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	Tank	5052706	05/27/05	-12	-12	2	1	120	1039	0.948	88	88	0	0.381
Airblown	Tank	5052706	05/27/05	-12	-12	2	1	240	1044	1.251	67	67	0	0.406
Airblown	Tank	5052707	05/27/05	-12	-12	2	2	8	1029	0.395	210	210	0	0.28
Airblown	Tank	5052707	05/27/05	-12	-12	2	2	15	1030	0.476	174	175	0.574713	0.303
Airblown	Tank	5052707	05/27/05	-12	-12	2	2	30	1032	0.593	140	140	0	0.329
Airblown	Tank	5052707	05/27/05	-12	-12	2	2	60	1033	0.751	111	111	0	0.354
Airblown	Tank	5052707	05/27/05	-12	-12	2	2	120	1034	0.97	86	86	0	0.379
Airblown	Tank	5052707	05/27/05	-12	-12	2	2	240	1038	1.278	65	66	1.538462	0.404

Table 91. Airblown RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	RTFOT	6042105	04/21/06	-24	-24	1	1	8	1024	0.14	590	590	0	0.122
Airblown	RTFOT	6042105	04/21/06	-24	-24	1	1	15	1024	0.152	543	543	0	0.139
Airblown	RTFOT	6042105	04/21/06	-24	-24	1	1	30	1026	0.169	490	490	0	0.158
Airblown	RTFOT	6042105	04/21/06	-24	-24	1	1	60	1027	0.19	436	436	0	0.178
Airblown	RTFOT	6042105	04/21/06	-24	-24	1	1	120	1028	0.216	384	383	-0.26042	0.197
Airblown	RTFOT	6042105	04/21/06	-24	-24	1	1	240	1028	0.25	332	332	0	0.216
Airblown	RTFOT	6042106	04/21/06	-24	-24	1	2	8	1024	0.09	917	916	-0.10905	0.164
Airblown	RTFOT	6042106	04/21/06	-24	-24	1	2	15	1025	0.101	818	821	0.366748	0.182
Airblown	RTFOT	6042106	04/21/06	-24	-24	1	2	30	1027	0.115	720	719	-0.13889	0.202
Airblown	RTFOT	6042106	04/21/06	-24	-24	1	2	60	1030	0.134	620	620	0	0.222
Airblown	RTFOT	6042106	04/21/06	-24	-24	1	2	120	1031	0.157	529	528	-0.18904	0.243
Airblown	RTFOT	6042106	04/21/06	-24	-24	1	2	240	1032	0.188	443	443	0	0.263
Airblown	RTFOT	6042107	04/21/06	-24	-24	2	1	8	1037	0.093	899	900	0.111235	0.166
Airblown	RTFOT	6042107	04/21/06	-24	-24	2	1	15	1038	0.104	805	806	0.124224	0.183
Airblown	RTFOT	6042107	04/21/06	-24	-24	2	1	30	1038	0.118	709	705	-0.56417	0.202
Airblown	RTFOT	6042107	04/21/06	-24	-24	2	1	60	1039	0.138	607	609	0.329489	0.221
Airblown	RTFOT	6042107	04/21/06	-24	-24	2	1	120	1040	0.162	518	519	0.19305	0.24
Airblown	RTFOT	6042107	04/21/06	-24	-24	2	1	240	1042	0.192	438	437	-0.22831	0.259
Airblown	RTFOT	6042108	04/21/06	-24	-24	2	2	8	1038	0.102	821	821	0	0.157

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	RTFOT	6042108	04/21/06	-24	-24	2	2	15	1038	0.113	741	739	-0.26991	0.176
Airblown	RTFOT	6042108	04/21/06	-24	-24	2	2	30	1038	0.129	649	650	0.154083	0.197
Airblown	RTFOT	6042108	04/21/06	-24	-24	2	2	60	1040	0.149	563	563	0	0.218
Airblown	RTFOT	6042108	04/21/06	-24	-24	2	2	120	1042	0.175	480	480	0	0.239
Airblown	RTFOT	6042108	04/21/06	-24	-24	2	2	240	1042	0.208	404	404	0	0.26
Airblown	RTFOT	6041705	04/17/06	-18	-18	1	1	8	1011	0.191	427	427	0	0.182
Airblown	RTFOT	6041705	04/17/06	-18	-18	1	1	15	1012	0.216	378	378	0	0.205
Airblown	RTFOT	6041705	04/17/06	-18	-18	1	1	30	1016	0.252	325	325	0	0.229
Airblown	RTFOT	6041705	04/17/06	-18	-18	1	1	60	1019	0.299	275	275	0	0.253
Airblown	RTFOT	6041705	04/17/06	-18	-18	1	1	120	1021	0.359	229	229	0	0.278
Airblown	RTFOT	6041705	04/17/06	-18	-18	1	1	240	1023	0.441	187	187	0	0.302
Airblown	RTFOT	6041706	04/17/06	-18	-18	1	2	8	1022	0.191	431	431	0	0.187
Airblown	RTFOT	6041706	04/17/06	-18	-18	1	2	15	1024	0.217	380	381	0.263158	0.207
Airblown	RTFOT	6041706	04/17/06	-18	-18	1	2	30	1027	0.253	327	328	0.30581	0.228
Airblown	RTFOT	6041706	04/17/06	-18	-18	1	2	60	1030	0.299	278	278	0	0.25
Airblown	RTFOT	6041706	04/17/06	-18	-18	1	2	120	1032	0.359	232	232	0	0.272
Airblown	RTFOT	6041706	04/17/06	-18	-18	1	2	240	1035	0.439	190	190	0	0.294
Airblown	RTFOT	6041707	04/17/06	-18	-18	2	1	8	1036	0.178	469	469	0	0.2
Airblown	RTFOT	6041707	04/17/06	-18	-18	2	1	15	1038	0.204	410	411	0.243902	0.221
Airblown	RTFOT	6041707	04/17/06	-18	-18	2	1	30	1040	0.24	349	350	0.286533	0.244
Airblown	RTFOT	6041707	04/17/06	-18	-18	2	1	60	1041	0.286	293	293	0	0.267
Airblown	RTFOT	6041707	04/17/06	-18	-18	2	1	120	1043	0.348	242	242	0	0.29
Airblown	RTFOT	6041707	04/17/06	-18	-18	2	1	240	1043	0.429	196	196	0	0.313
Airblown	RTFOT	6041708	04/17/06	-18	-18	2	2	8	1030	0.19	437	438	0.228833	0.19
Airblown	RTFOT	6041708	04/17/06	-18	-18	2	2	15	1032	0.215	387	386	-0.2584	0.21
Airblown	RTFOT	6041708	04/17/06	-18	-18	2	2	30	1033	0.252	331	331	0	0.232
Airblown	RTFOT	6041708	04/17/06	-18	-18	2	2	60	1035	0.299	279	280	0.358423	0.254
Airblown	RTFOT	6041708	04/17/06	-18	-18	2	2	120	1036	0.358	233	233	0	0.276
Airblown	RTFOT	6041708	04/17/06	-18	-18	2	2	240	1038	0.439	191	191	0	0.298
Airblown	RTFOT	6041901	04/19/06	-12	-12	1	1	8	1023	0.402	205	205	0	0.213
Airblown	RTFOT	6041901	04/19/06	-12	-12	1	1	15	1024	0.465	178	178	0	0.234
Airblown	RTFOT	6041901	04/19/06	-12	-12	1	1	30	1026	0.552	150	150	0	0.259
Airblown	RTFOT	6041901	04/19/06	-12	-12	1	1	60	1028	0.665	125	124	-0.8	0.283

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	RTFOT	6041901	04/19/06	-12	-12	1	1	120	1030	0.819	101	101	0	0.307
Airblown	RTFOT	6041901	04/19/06	-12	-12	1	1	240	1033	1.026	81	81	0	0.331
Airblown	RTFOT	6041908	04/19/06	-12	-12	1	2	8	1050	0.309	274	274	0	0.239
Airblown	RTFOT	6041908	04/19/06	-12	-12	1	2	15	1050	0.361	235	234	-0.42553	0.256
Airblown	RTFOT	6041908	04/19/06	-12	-12	1	2	30	1050	0.435	195	195	0	0.274
Airblown	RTFOT	6041908	04/19/06	-12	-12	1	2	60	1051	0.528	160	160	0	0.293
Airblown	RTFOT	6041908	04/19/06	-12	-12	1	2	120	1052	0.652	130	130	0	0.311
Airblown	RTFOT	6041908	04/19/06	-12	-12	1	2	240	1054	0.817	104	104	0	0.33
Airblown	RTFOT	6041902	04/19/06	-12	-12	2	1	8	1047	0.339	249	249	0	0.246
Airblown	RTFOT	6041902	04/19/06	-12	-12	2	1	15	1049	0.399	212	212	0	0.267
Airblown	RTFOT	6041902	04/19/06	-12	-12	2	1	30	1052	0.487	174	175	0.574713	0.29
Airblown	RTFOT	6041902	04/19/06	-12	-12	2	1	60	1054	0.599	142	142	0	0.313
Airblown	RTFOT	6041902	04/19/06	-12	-12	2	1	120	1057	0.753	113	113	0	0.336
Airblown	RTFOT	6041902	04/19/06	-12	-12	2	1	240	1063	0.965	89	89	0	0.359
Airblown	RTFOT	6041903	04/19/06	-12	-12	2	2	8	1049	0.329	257	257	0	0.255
Airblown	RTFOT	6041903	04/19/06	-12	-12	2	2	15	1050	0.389	218	217	-0.45872	0.276
Airblown	RTFOT	6041903	04/19/06	-12	-12	2	2	30	1052	0.477	178	178	0	0.298
Airblown	RTFOT	6041903	04/19/06	-12	-12	2	2	60	1054	0.59	144	144	0	0.32
Airblown	RTFOT	6041903	04/19/06	-12	-12	2	2	120	1056	0.743	115	114	-0.86957	0.342
Airblown	RTFOT	6041903	04/19/06	-12	-12	2	2	240	1057	0.953	89	90	1.123596	0.365

Table 92. Airblown SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	SAFT	6042509	04/25/06	-24	-24	1	1	8	921	0.176	422	422	0	0.093
Airblown	SAFT	6042509	04/25/06	-24	-24	1	1	15	921	0.188	395	395	0	0.113
Airblown	SAFT	6042509	04/25/06	-24	-24	1	1	30	924	0.205	363	363	0	0.134
Airblown	SAFT	6042509	04/25/06	-24	-24	1	1	60	925	0.227	329	328	-0.30395	0.155
Airblown	SAFT	6042509	04/25/06	-24	-24	1	1	120	925	0.255	292	293	0.342466	0.176
Airblown	SAFT	6042509	04/25/06	-24	-24	1	1	240	929	0.291	257	257	0	0.197
Airblown	SAFT	6042510	04/25/06	-24	-24	1	2	8	928	0.177	423	422	-0.23641	0.093

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	SAFT	6042510	04/25/06	-24	-24	1	2	15	930	0.19	395	396	0.253165	0.112
Airblown	SAFT	6042510	04/25/06	-24	-24	1	2	30	932	0.207	363	363	0	0.133
Airblown	SAFT	6042510	04/25/06	-24	-24	1	2	60	934	0.229	329	329	0	0.155
Airblown	SAFT	6042510	04/25/06	-24	-24	1	2	120	938	0.257	294	293	-0.34014	0.176
Airblown	SAFT	6042510	04/25/06	-24	-24	1	2	240	944	0.296	257	258	0.389105	0.197
Airblown	SAFT	6042511	04/25/06	-24	-24	2	1	8	937	0.151	500	500	0	0.109
Airblown	SAFT	6042511	04/25/06	-24	-24	2	1	15	939	0.163	464	464	0	0.129
Airblown	SAFT	6042511	04/25/06	-24	-24	2	1	30	941	0.18	422	421	-0.23697	0.151
Airblown	SAFT	6042511	04/25/06	-24	-24	2	1	60	943	0.202	376	377	0.265957	0.173
Airblown	SAFT	6042511	04/25/06	-24	-24	2	1	120	946	0.23	332	331	-0.3012	0.196
Airblown	SAFT	6042511	04/25/06	-24	-24	2	1	240	951	0.267	287	287	0	0.218
Airblown	SAFT	6042512	04/25/06	-24	-24	2	2	8	933	0.122	617	617	0	0.13
Airblown	SAFT	6042512	04/25/06	-24	-24	2	2	15	934	0.133	566	565	-0.17668	0.153
Airblown	SAFT	6042512	04/25/06	-24	-24	2	2	30	936	0.15	503	503	0	0.179
Airblown	SAFT	6042512	04/25/06	-24	-24	2	2	60	938	0.172	440	440	0	0.206
Airblown	SAFT	6042512	04/25/06	-24	-24	2	2	120	940	0.2	379	379	0	0.232
Airblown	SAFT	6042512	04/25/06	-24	-24	2	2	240	943	0.238	319	319	0	0.258
Airblown	SAFT	6042417	04/24/06	-18	-18	1	1	8	1004	0.264	307	307	0	0.153
Airblown	SAFT	6042417	04/24/06	-18	-18	1	1	15	1004	0.293	276	277	0.362319	0.174
Airblown	SAFT	6042417	04/24/06	-18	-18	1	1	30	1005	0.332	244	243	-0.40984	0.197
Airblown	SAFT	6042417	04/24/06	-18	-18	1	1	60	1006	0.385	211	211	0	0.219
Airblown	SAFT	6042417	04/24/06	-18	-18	1	1	120	1008	0.454	179	180	0.558659	0.242
Airblown	SAFT	6042417	04/24/06	-18	-18	1	1	240	1016	0.543	151	151	0	0.265
Airblown	SAFT	6042418	04/24/06	-18	-18	1	2	8	1041	0.19	442	442	0	0.213
Airblown	SAFT	6042418	04/24/06	-18	-18	1	2	15	1042	0.219	384	384	0	0.235
Airblown	SAFT	6042418	04/24/06	-18	-18	1	2	30	1044	0.26	324	323	-0.30864	0.259
Airblown	SAFT	6042418	04/24/06	-18	-18	1	2	60	1045	0.315	267	268	0.374532	0.283
Airblown	SAFT	6042418	04/24/06	-18	-18	1	2	120	1048	0.387	218	218	0	0.308
Airblown	SAFT	6042418	04/24/06	-18	-18	1	2	240	1054	0.486	175	175	0	0.332
Airblown	SAFT	6042419	04/24/06	-18	-18	2	1	8	1037	0.185	452	452	0	0.21
Airblown	SAFT	6042419	04/24/06	-18	-18	2	1	15	1038	0.213	393	393	0	0.232
Airblown	SAFT	6042419	04/24/06	-18	-18	2	1	30	1041	0.253	332	332	0	0.255
Airblown	SAFT	6042419	04/24/06	-18	-18	2	1	60	1044	0.305	276	276	0	0.279

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	SAFT	6042419	04/24/06	-18	-18	2	1	120	1047	0.374	226	226	0	0.303
Airblown	SAFT	6042419	04/24/06	-18	-18	2	1	240	1052	0.468	181	181	0	0.326
Airblown	SAFT	6042420	04/24/06	-18	-18	2	2	8	1032	0.209	398	398	0	0.195
Airblown	SAFT	6042420	04/24/06	-18	-18	2	2	15	1035	0.239	349	350	0.286533	0.215
Airblown	SAFT	6042420	04/24/06	-18	-18	2	2	30	1039	0.281	298	299	0.33557	0.238
Airblown	SAFT	6042420	04/24/06	-18	-18	2	2	60	1043	0.334	252	251	-0.39683	0.261
Airblown	SAFT	6042420	04/24/06	-18	-18	2	2	120	1045	0.404	209	208	-0.47847	0.283
Airblown	SAFT	6042420	04/24/06	-18	-18	2	2	240	1051	0.5	169	170	0.591716	0.306
Airblown	SAFT	6042001	04/20/06	-12	-12	1	1	8	1058	0.369	231	231	0	0.266
Airblown	SAFT	6042001	04/20/06	-12	-12	1	1	15	1058	0.441	193	194	0.518135	0.289
Airblown	SAFT	6042001	04/20/06	-12	-12	1	1	30	1058	0.542	157	157	0	0.313
Airblown	SAFT	6042001	04/20/06	-12	-12	1	1	60	1058	0.678	126	126	0	0.338
Airblown	SAFT	6042001	04/20/06	-12	-12	1	1	120	1057	0.866	98	98	0	0.363
Airblown	SAFT	6042001	04/20/06	-12	-12	1	1	240	1057	1.123	76	76	0	0.388
Airblown	SAFT	6042002	04/20/06	-12	-12	1	2	8	1056	0.364	234	234	0	0.261
Airblown	SAFT	6042002	04/20/06	-12	-12	1	2	15	1056	0.432	197	197	0	0.283
Airblown	SAFT	6042002	04/20/06	-12	-12	1	2	30	1057	0.531	161	161	0	0.307
Airblown	SAFT	6042002	04/20/06	-12	-12	1	2	60	1059	0.663	129	129	0	0.331
Airblown	SAFT	6042002	04/20/06	-12	-12	1	2	120	1061	0.841	102	102	0	0.355
Airblown	SAFT	6042002	04/20/06	-12	-12	1	2	240	1064	1.09	79	79	0	0.379
Airblown	SAFT	6042003	04/20/06	-12	-12	2	1	8	1059	0.354	241	241	0	0.25
Airblown	SAFT	6042003	04/20/06	-12	-12	2	1	15	1061	0.419	204	205	0.490196	0.273
Airblown	SAFT	6042003	04/20/06	-12	-12	2	1	30	1062	0.51	168	168	0	0.298
Airblown	SAFT	6042003	04/20/06	-12	-12	2	1	60	1064	0.633	136	135	-0.73529	0.323
Airblown	SAFT	6042003	04/20/06	-12	-12	2	1	120	1066	0.802	107	107	0	0.348
Airblown	SAFT	6042003	04/20/06	-12	-12	2	1	240	1070	1.032	84	84	0	0.373
Airblown	SAFT	6042004	04/20/06	-12	-12	2	2	8	1085	0.348	251	251	0	0.266
Airblown	SAFT	6042004	04/20/06	-12	-12	2	2	15	1084	0.415	211	211	0	0.287
Airblown	SAFT	6042004	04/20/06	-12	-12	2	2	30	1084	0.51	171	172	0.584795	0.31
Airblown	SAFT	6042004	04/20/06	-12	-12	2	2	60	1084	0.636	137	137	0	0.333
Airblown	SAFT	6042004	04/20/06	-12	-12	2	2	120	1086	0.808	108	108	0	0.355
Airblown	SAFT	6042004	04/20/06	-12	-12	2	2	240	1088	1.047	84	84	0	0.378

Table 93. Airblown MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	MGRF	9082007	08/20/09	-24	-24	1	1	8	989	0.103	774	774	0	0.151
Airblown	MGRF	9082007	08/20/09	-24	-24	1	1	15	991	0.114	701	700	-0.14265	0.17
Airblown	MGRF	9082007	08/20/09	-24	-24	1	1	30	993	0.13	616	618	0.324675	0.191
Airblown	MGRF	9082007	08/20/09	-24	-24	1	1	60	993	0.149	537	537	0	0.212
Airblown	MGRF	9082007	08/20/09	-24	-24	1	1	120	992	0.173	462	461	-0.21645	0.233
Airblown	MGRF	9082007	08/20/09	-24	-24	1	1	240	993	0.206	389	389	0	0.253
Airblown	MGRF	9082008	08/20/09	-24	-24	1	2	8	979	0.103	766	767	0.130548	0.149
Airblown	MGRF	9082008	08/20/09	-24	-24	1	2	15	982	0.114	695	694	-0.14388	0.169
Airblown	MGRF	9082008	08/20/09	-24	-24	1	2	30	985	0.129	616	613	-0.48701	0.191
Airblown	MGRF	9082008	08/20/09	-24	-24	1	2	60	988	0.15	531	533	0.376648	0.212
Airblown	MGRF	9082008	08/20/09	-24	-24	1	2	120	990	0.175	456	457	0.219298	0.234
Airblown	MGRF	9082008	08/20/09	-24	-24	1	2	240	991	0.207	386	385	-0.25907	0.256
Airblown	MGRF	9081109	08/20/09	-24	-24	2	1	8	988	0.095	839	835	-0.47676	0.161
Airblown	MGRF	9081109	08/20/09	-24	-24	2	1	15	989	0.107	745	751	0.805369	0.179
Airblown	MGRF	9081109	08/20/09	-24	-24	2	1	30	990	0.121	660	658	-0.30303	0.199
Airblown	MGRF	9081109	08/20/09	-24	-24	2	1	60	990	0.14	570	570	0	0.219
Airblown	MGRF	9081109	08/20/09	-24	-24	2	1	120	991	0.164	487	486	-0.20534	0.239
Airblown	MGRF	9081109	08/20/09	-24	-24	2	1	240	993	0.196	408	409	0.245098	0.258
Airblown	MGRF	9081110	08/20/09	-24	-24	2	2	8	994	0.096	835	836	0.11976	0.155
Airblown	MGRF	9081110	08/20/09	-24	-24	2	2	15	994	0.106	756	754	-0.26455	0.176
Airblown	MGRF	9081110	08/20/09	-24	-24	2	2	30	996	0.121	664	662	-0.3012	0.198
Airblown	MGRF	9081110	08/20/09	-24	-24	2	2	60	997	0.141	570	573	0.526316	0.22
Airblown	MGRF	9081110	08/20/09	-24	-24	2	2	120	1000	0.165	489	488	-0.2045	0.243
Airblown	MGRF	9081110	08/20/09	-24	-24	2	2	240	1005	0.198	409	409	0	0.265
Airblown	MGRF	9072401	07/24/09	-18	-17.9	1	1	8	973	0.154	509	509	0	0.218
Airblown	MGRF	9072401	07/24/09	-18	-17.9	1	1	15	974	0.178	441	441	0	0.236
Airblown	MGRF	9072401	07/24/09	-18	-17.9	1	1	30	974	0.211	372	372	0	0.256
Airblown	MGRF	9072401	07/24/09	-18	-17.9	1	1	60	974	0.254	309	310	0.323625	0.276
Airblown	MGRF	9072401	07/24/09	-18	-17.9	1	1	120	975	0.309	254	254	0	0.297
Airblown	MGRF	9072401	07/24/09	-18	-17.9	1	1	240	976	0.384	205	205	0	0.317
Airblown	MGRF	9072402	07/24/09	-18	-18	1	2	8	968	0.165	473	473	0	0.202

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	MGRF	9072402	07/24/09	-18	-18	1	2	15	969	0.189	413	414	0.242131	0.223
Airblown	MGRF	9072402	07/24/09	-18	-18	1	2	30	971	0.223	351	352	0.2849	0.245
Airblown	MGRF	9072402	07/24/09	-18	-18	1	2	60	972	0.266	295	294	-0.33898	0.268
Airblown	MGRF	9072402	07/24/09	-18	-18	1	2	120	974	0.323	243	243	0	0.29
Airblown	MGRF	9072402	07/24/09	-18	-18	1	2	240	976	0.4	197	197	0	0.312
Airblown	MGRF	9081309	08/13/09	-18	-18	2	1	8	972	0.175	448	448	0	0.199
Airblown	MGRF	9081309	08/13/09	-18	-18	2	1	15	972	0.2	392	392	0	0.221
Airblown	MGRF	9081309	08/13/09	-18	-18	2	1	30	973	0.235	334	334	0	0.245
Airblown	MGRF	9081309	08/13/09	-18	-18	2	1	60	973	0.281	279	279	0	0.27
Airblown	MGRF	9081309	08/13/09	-18	-18	2	1	120	971	0.341	230	230	0	0.295
Airblown	MGRF	9081309	08/13/09	-18	-18	2	1	240	971	0.422	186	186	0	0.319
Airblown	MGRF	9081309	08/13/09	-18	-18	2	2	8	965	0.162	480	481	0.208333	0.213
Airblown	MGRF	9081309	08/13/09	-18	-18	2	2	15	966	0.186	419	418	-0.23866	0.233
Airblown	MGRF	9081309	08/13/09	-18	-18	2	2	30	968	0.221	353	353	0	0.254
Airblown	MGRF	9081309	08/13/09	-18	-18	2	2	60	968	0.266	293	294	0.341297	0.276
Airblown	MGRF	9081309	08/13/09	-18	-18	2	2	120	970	0.325	241	241	0	0.298
Airblown	MGRF	9081309	08/13/09	-18	-18	2	2	240	975	0.404	195	194	-0.51282	0.319
Airblown	MGRF	9073101	07/31/09	-12	-12	1	1	8	960	0.315	246	246	0	0.253
Airblown	MGRF	9073101	07/31/09	-12	-12	1	1	15	962	0.373	208	208	0	0.274
Airblown	MGRF	9073101	07/31/09	-12	-12	1	1	30	963	0.455	171	171	0	0.296
Airblown	MGRF	9073101	07/31/09	-12	-12	1	1	60	964	0.563	138	138	0	0.319
Airblown	MGRF	9073101	07/31/09	-12	-12	1	1	120	965	0.708	110	110	0	0.342
Airblown	MGRF	9073101	07/31/09	-12	-12	1	1	240	967	0.908	86	86	0	0.364
Airblown	MGRF	9073102	07/31/09	-12	-12	1	2	8	977	0.304	259	259	0	0.26
Airblown	MGRF	9073102	07/31/09	-12	-12	1	2	15	978	0.361	218	219	0.458716	0.28
Airblown	MGRF	9073102	07/31/09	-12	-12	1	2	30	978	0.441	179	179	0	0.302
Airblown	MGRF	9073102	07/31/09	-12	-12	1	2	60	978	0.548	144	144	0	0.323
Airblown	MGRF	9073102	07/31/09	-12	-12	1	2	120	979	0.691	114	114	0	0.345
Airblown	MGRF	9073102	07/31/09	-12	-12	1	2	240	985	0.891	89	89	0	0.367
Airblown	MGRF	9081401	08/14/09	-12	-12	2	1	8	958	0.322	240	240	0	0.247
Airblown	MGRF	9081401	08/14/09	-12	-12	2	1	15	961	0.381	203	204	0.492611	0.267
Airblown	MGRF	9081401	08/14/09	-12	-12	2	1	30	964	0.463	168	168	0	0.29
Airblown	MGRF	9081401	08/14/09	-12	-12	2	1	60	967	0.571	137	136	-0.72993	0.313

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Airblown	MGRF	9081401	08/14/09	-12	-12	2	1	120	969	0.717	109	109	0	0.336
Airblown	MGRF	9081401	08/14/09	-12	-12	2	1	240	974	0.918	86	86	0	0.358
Airblown	MGRF	9081402	08/14/09	-12	-12	2	2	8	977	0.314	251	251	0	0.259
Airblown	MGRF	9081402	08/14/09	-12	-12	2	2	15	978	0.373	211	212	0.473934	0.279
Airblown	MGRF	9081402	08/14/09	-12	-12	2	2	30	980	0.456	173	173	0	0.301
Airblown	MGRF	9081402	08/14/09	-12	-12	2	2	60	981	0.567	140	139	-0.71429	0.323
Airblown	MGRF	9081402	08/14/09	-12	-12	2	2	120	984	0.717	111	111	0	0.345
Airblown	MGRF	9081402	08/14/09	-12	-12	2	2	240	988	0.922	86	86	0	0.368

Table 94. ALF Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	Tank	6030601	03/06/06	-36	-36	1	1	8	1002	0.104	777	776	-0.1287	0.164
ALF	Tank	6030601	03/06/06	-36	-36	1	1	15	1003	0.117	691	693	0.289436	0.192
ALF	Tank	6030601	03/06/06	-36	-36	1	1	30	1005	0.135	600	600	0	0.224
ALF	Tank	6030601	03/06/06	-36	-36	1	1	60	1006	0.159	510	509	-0.19608	0.255
ALF	Tank	6030601	03/06/06	-36	-36	1	1	120	1008	0.193	421	422	0.23753	0.286
ALF	Tank	6030601	03/06/06	-36	-36	1	1	240	1010	0.238	342	342	0	0.317
ALF	Tank	6030602	03/06/06	-36	-36	1	2	8	996	0.106	758	759	0.131926	0.157
ALF	Tank	6030602	03/06/06	-36	-36	1	2	15	999	0.118	683	681	-0.29283	0.187
ALF	Tank	6030602	03/06/06	-36	-36	1	2	30	1003	0.136	595	592	-0.5042	0.219
ALF	Tank	6030602	03/06/06	-36	-36	1	2	60	1006	0.162	501	503	0.399202	0.251
ALF	Tank	6030602	03/06/06	-36	-36	1	2	120	1009	0.195	417	418	0.239808	0.284
ALF	Tank	6030602	03/06/06	-36	-36	1	2	240	1016	0.241	340	339	-0.29412	0.316
ALF	Tank	6030603	03/06/06	-36	-36	2	1	8	976	0.102	772	769	-0.3886	0.145
ALF	Tank	6030603	03/06/06	-36	-36	2	1	15	979	0.114	692	696	0.578035	0.174
ALF	Tank	6030603	03/06/06	-36	-36	2	1	30	982	0.13	609	610	0.164204	0.205
ALF	Tank	6030603	03/06/06	-36	-36	2	1	60	985	0.151	526	524	-0.38023	0.236
ALF	Tank	6030603	03/06/06	-36	-36	2	1	120	989	0.181	441	440	-0.22676	0.267
ALF	Tank	6030603	03/06/06	-36	-36	2	1	240	994	0.222	361	362	0.277008	0.298
ALF	Tank	6030604	03/06/06	-36	-36	2	2	8	987	0.114	698	698	0	0.142

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	Tank	6030604	03/06/06	-36	-36	2	2	15	988	0.126	632	633	0.158228	0.17
ALF	Tank	6030604	03/06/06	-36	-36	2	2	30	989	0.143	558	556	-0.35842	0.202
ALF	Tank	6030604	03/06/06	-36	-36	2	2	60	991	0.168	476	478	0.420168	0.233
ALF	Tank	6030604	03/06/06	-36	-36	2	2	120	994	0.198	405	403	-0.49383	0.264
ALF	Tank	6030604	03/06/06	-36	-36	2	2	240	998	0.243	331	332	0.302115	0.295
ALF	Tank	5052301	05/23/01	-30	-30	1	1	8	1007	0.182	446	447	0.224215	0.261
ALF	Tank	5052301	05/23/01	-30	-30	1	1	15	1009	0.216	377	376	-0.26525	0.29
ALF	Tank	5052301	05/23/01	-30	-30	1	1	30	1009	0.268	304	304	0	0.322
ALF	Tank	5052301	05/23/01	-30	-30	1	1	60	1010	0.339	240	240	0	0.354
ALF	Tank	5052301	05/23/01	-30	-30	1	1	120	1009	0.437	186	186	0	0.386
ALF	Tank	5052301	05/23/01	-30	-30	1	1	240	1006	0.576	141	141	0	0.418
ALF	Tank	5052302	05/23/01	-30	-30	1	2	8	1011	0.171	477	476	-0.20964	0.267
ALF	Tank	5052302	05/23/01	-30	-30	1	2	15	1014	0.205	399	399	0	0.293
ALF	Tank	5052302	05/23/01	-30	-30	1	2	30	1016	0.254	323	323	0	0.322
ALF	Tank	5052302	05/23/01	-30	-30	1	2	60	1018	0.321	256	256	0	0.351
ALF	Tank	5052302	05/23/01	-30	-30	1	2	120	1020	0.414	199	198	-0.50251	0.379
ALF	Tank	5052302	05/23/01	-30	-30	1	2	240	1022	0.546	151	151	0	0.408
ALF	Tank	5052303	05/23/01	-30	-30.1	2	1	8	994	0.194	413	413	0	0.226
ALF	Tank	5052303	05/23/01	-30	-30.1	2	1	15	996	0.226	355	355	0	0.257
ALF	Tank	5052303	05/23/01	-30	-30.1	2	1	30	999	0.275	293	294	0.341297	0.291
ALF	Tank	5052303	05/23/01	-30	-30.1	2	1	60	1002	0.34	238	237	-0.42017	0.325
ALF	Tank	5052303	05/23/01	-30	-30.1	2	1	120	1004	0.433	187	187	0	0.36
ALF	Tank	5052303	05/23/01	-30	-30.1	2	1	240	1007	0.564	144	144	0	0.394
ALF	Tank	5052304	05/23/01	-30	-30.1	2	2	8	1001	0.175	461	461	0	0.25
ALF	Tank	5052304	05/23/01	-30	-30.1	2	2	15	1003	0.207	391	390	-0.25575	0.28
ALF	Tank	5052304	05/23/01	-30	-30.1	2	2	30	1005	0.255	318	318	0	0.313
ALF	Tank	5052304	05/23/01	-30	-30.1	2	2	60	1008	0.322	252	253	0.396825	0.347
ALF	Tank	5052304	05/23/01	-30	-30.1	2	2	120	1009	0.413	197	197	0	0.38
ALF	Tank	5052304	05/23/01	-30	-30.1	2	2	240	1009	0.545	149	149	0	0.413
ALF	Tank	5052401	05/24/01	-24	-24	1	1	8	974	0.426	184	185	0.543478	0.343
ALF	Tank	5052401	05/24/01	-24	-24	1	1	15	974	0.531	148	148	0	0.368
ALF	Tank	5052401	05/24/01	-24	-24	1	1	30	975	0.692	114	113	-0.87719	0.395
ALF	Tank	5052401	05/24/01	-24	-24	1	1	60	974	0.921	85	85	0	0.423

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	Tank	5052401	05/24/01	-24	-24	1	1	120	975	1.251	63	63	0	0.45
ALF	Tank	5052401	05/24/01	-24	-24	1	1	240	985	1.732	46	46	0	0.477
ALF	Tank	5052402	05/24/01	-24	-24	1	2	8	991	0.412	194	194	0	0.345
ALF	Tank	5052402	05/24/01	-24	-24	1	2	15	994	0.517	155	155	0	0.373
ALF	Tank	5052402	05/24/01	-24	-24	1	2	30	996	0.678	118	118	0	0.403
ALF	Tank	5052402	05/24/01	-24	-24	1	2	60	995	0.907	88	89	1.136364	0.434
ALF	Tank	5052402	05/24/01	-24	-24	1	2	120	994	1.237	65	65	0	0.465
ALF	Tank	5052402	05/24/01	-24	-24	1	2	240	997	1.728	47	46	-2.12766	0.495
ALF	Tank	5052403	05/24/01	-24	-24	2	1	8	1014	0.362	226	226	0	0.351
ALF	Tank	5052403	05/24/01	-24	-24	2	1	15	1015	0.456	179	180	0.558659	0.377
ALF	Tank	5052403	05/24/01	-24	-24	2	1	30	1018	0.599	137	137	0	0.405
ALF	Tank	5052403	05/24/01	-24	-24	2	1	60	1020	0.802	103	103	0	0.432
ALF	Tank	5052403	05/24/01	-24	-24	2	1	120	1023	1.097	75	75	0	0.46
ALF	Tank	5052403	05/24/01	-24	-24	2	1	240	1029	1.532	54	54	0	0.488
ALF	Tank	5052404	05/24/01	-24	-24	2	2	8	996	0.395	203	203	0	0.358
ALF	Tank	5052404	05/24/01	-24	-24	2	2	15	997	0.498	161	161	0	0.382
ALF	Tank	5052404	05/24/01	-24	-24	2	2	30	998	0.655	123	123	0	0.408
ALF	Tank	5052404	05/24/01	-24	-24	2	2	60	1000	0.882	91	92	1.098901	0.435
ALF	Tank	5052404	05/24/01	-24	-24	2	2	120	1005	1.207	67	67	0	0.461
ALF	Tank	5052404	05/24/01	-24	-24	2	2	240	1010	1.684	48	48	0	0.488

Table 95. ALF RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	RTFOT	6042701	04/27/06	-36	-36	1	1	8	1005	0.088	921	921	0	0.178
ALF	RTFOT	6042701	04/27/06	-36	-36	1	1	15	1004	0.099	818	818	0	0.199
ALF	RTFOT	6042701	04/27/06	-36	-36	1	1	30	1006	0.115	705	706	0.141844	0.222
ALF	RTFOT	6042701	04/27/06	-36	-36	1	1	60	1008	0.135	602	601	-0.16611	0.245
ALF	RTFOT	6042701	04/27/06	-36	-36	1	1	120	1009	0.162	502	503	0.199203	0.268
ALF	RTFOT	6042701	04/27/06	-36	-36	1	1	240	1012	0.197	414	414	0	0.291
ALF	RTFOT	6042702	04/27/06	-36	-35.9	1	2	8	998	0.081	993	994	0.100705	0.185

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	RTFOT	6042702	04/27/06	-36	-35.9	1	2	15	1001	0.092	877	878	0.114025	0.208
ALF	RTFOT	6042702	04/27/06	-36	-35.9	1	2	30	1004	0.107	757	754	-0.3963	0.233
ALF	RTFOT	6042702	04/27/06	-36	-35.9	1	2	60	1008	0.128	635	636	0.15748	0.258
ALF	RTFOT	6042702	04/27/06	-36	-35.9	1	2	120	1011	0.155	526	527	0.190114	0.284
ALF	RTFOT	6042702	04/27/06	-36	-35.9	1	2	240	1018	0.191	430	429	-0.23256	0.309
ALF	RTFOT	6042703	04/27/06	-36	-35.9	2	1	8	1009	0.087	935	934	-0.10695	0.153
ALF	RTFOT	6042703	04/27/06	-36	-35.9	2	1	15	1012	0.097	841	840	-0.11891	0.186
ALF	RTFOT	6042703	04/27/06	-36	-35.9	2	1	30	1016	0.113	725	729	0.551724	0.222
ALF	RTFOT	6042703	04/27/06	-36	-35.9	2	1	60	1020	0.133	618	618	0	0.258
ALF	RTFOT	6042703	04/27/06	-36	-35.9	2	1	120	1024	0.161	513	510	-0.5848	0.294
ALF	RTFOT	6042703	04/27/06	-36	-35.9	2	1	240	1027	0.202	410	411	0.243902	0.329
ALF	RTFOT	6042704	04/27/06	-36	-36.1	2	2	8	1025	0.086	961	959	-0.20812	0.171
ALF	RTFOT	6042704	04/27/06	-36	-36.1	2	2	15	1025	0.097	852	855	0.352113	0.194
ALF	RTFOT	6042704	04/27/06	-36	-36.1	2	2	30	1027	0.112	739	741	0.270636	0.22
ALF	RTFOT	6042704	04/27/06	-36	-36.1	2	2	60	1029	0.131	633	630	-0.47393	0.245
ALF	RTFOT	6042704	04/27/06	-36	-36.1	2	2	120	1032	0.158	527	527	0	0.271
ALF	RTFOT	6042704	04/27/06	-36	-36.1	2	2	240	1036	0.193	433	433	0	0.297
ALF	RTFOT	6041805	04/18/06	-30	-29.9	1	1	8	993	0.178	450	449	-0.22222	0.21
ALF	RTFOT	6041805	04/18/06	-30	-29.9	1	1	15	995	0.207	388	389	0.257732	0.241
ALF	RTFOT	6041805	04/18/06	-30	-29.9	1	1	30	998	0.247	326	326	0	0.275
ALF	RTFOT	6041805	04/18/06	-30	-29.9	1	1	60	1000	0.302	267	266	-0.37453	0.309
ALF	RTFOT	6041805	04/18/06	-30	-29.9	1	1	120	1002	0.381	212	212	0	0.343
ALF	RTFOT	6041805	04/18/06	-30	-29.9	1	1	240	1005	0.49	165	165	0	0.377
ALF	RTFOT	6041806	04/18/06	-30	-30	1	2	8	1022	0.147	561	561	0	0.247
ALF	RTFOT	6041806	04/18/06	-30	-30	1	2	15	1023	0.173	477	476	-0.20964	0.272
ALF	RTFOT	6041806	04/18/06	-30	-30	1	2	30	1024	0.211	391	391	0	0.299
ALF	RTFOT	6041806	04/18/06	-30	-30	1	2	60	1025	0.263	314	315	0.318471	0.326
ALF	RTFOT	6041806	04/18/06	-30	-30	1	2	120	1025	0.332	249	249	0	0.353
ALF	RTFOT	6041806	04/18/06	-30	-30	1	2	240	1024	0.428	193	193	0	0.38
ALF	RTFOT	6041807	04/18/06	-30	-30	2	1	8	1026	0.148	559	558	-0.17889	0.249
ALF	RTFOT	6041807	04/18/06	-30	-30	2	1	15	1026	0.175	473	474	0.211416	0.274
ALF	RTFOT	6041807	04/18/06	-30	-30	2	1	30	1027	0.213	389	388	-0.25707	0.3
ALF	RTFOT	6041807	04/18/06	-30	-30	2	1	60	1028	0.265	313	312	-0.31949	0.327

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	RTFOT	6041807	04/18/06	-30	-30	2	1	120	1030	0.337	246	247	0.406504	0.354
ALF	RTFOT	6041807	04/18/06	-30	-30	2	1	240	1032	0.435	191	191	0	0.381
ALF	RTFOT	6041808	04/18/06	-30	-30	2	2	8	1018	0.179	459	458	-0.21786	0.21
ALF	RTFOT	6041808	04/18/06	-30	-30	2	2	15	1020	0.207	397	398	0.251889	0.238
ALF	RTFOT	6041808	04/18/06	-30	-30	2	2	30	1021	0.247	333	334	0.3003	0.27
ALF	RTFOT	6041808	04/18/06	-30	-30	2	2	60	1024	0.301	274	274	0	0.301
ALF	RTFOT	6041808	04/18/06	-30	-30	2	2	120	1025	0.376	220	220	0	0.332
ALF	RTFOT	6041808	04/18/06	-30	-30	2	2	240	1028	0.48	173	173	0	0.363
ALF	RTFOT	6042109	04/21/06	-24	-24	1	1	8	1010	0.389	209	209	0	0.32
ALF	RTFOT	6042109	04/21/06	-24	-24	1	1	15	1010	0.481	169	170	0.591716	0.344
ALF	RTFOT	6042109	04/21/06	-24	-24	1	1	30	1010	0.614	133	132	-0.75188	0.37
ALF	RTFOT	6042109	04/21/06	-24	-24	1	1	60	1011	0.802	102	102	0	0.396
ALF	RTFOT	6042109	04/21/06	-24	-24	1	1	120	1010	1.065	76	76	0	0.423
ALF	RTFOT	6042109	04/21/06	-24	-24	1	1	240	1009	1.439	57	57	0	0.449
ALF	RTFOT	6042110	04/21/06	-24	-24	1	2	8	1026	0.383	216	216	0	0.334
ALF	RTFOT	6042110	04/21/06	-24	-24	1	2	15	1025	0.476	174	174	0	0.357
ALF	RTFOT	6042110	04/21/06	-24	-24	1	2	30	1024	0.614	134	134	0	0.383
ALF	RTFOT	6042110	04/21/06	-24	-24	1	2	60	1024	0.808	102	102	0	0.409
ALF	RTFOT	6042110	04/21/06	-24	-24	1	2	120	1023	1.082	76	76	0	0.435
ALF	RTFOT	6042110	04/21/06	-24	-24	1	2	240	1024	1.477	56	56	0	0.461
ALF	RTFOT	6042111	04/21/06	-24	-24	2	1	8	1009	0.408	199	199	0	0.319
ALF	RTFOT	6042111	04/21/06	-24	-24	2	1	15	1010	0.505	161	162	0.621118	0.342
ALF	RTFOT	6042111	04/21/06	-24	-24	2	1	30	1015	0.647	126	126	0	0.368
ALF	RTFOT	6042111	04/21/06	-24	-24	2	1	60	1021	0.847	97	97	0	0.393
ALF	RTFOT	6042111	04/21/06	-24	-24	2	1	120	1027	1.128	73	73	0	0.419
ALF	RTFOT	6042111	04/21/06	-24	-24	2	1	240	1033	1.535	54	54	0	0.445
ALF	RTFOT	6042112	04/21/06	-24	-24	2	2	8	1017	0.435	189	188	-0.5291	0.317
ALF	RTFOT	6042112	04/21/06	-24	-24	2	2	15	1019	0.537	153	153	0	0.341
ALF	RTFOT	6042112	04/21/06	-24	-24	2	2	30	1023	0.688	120	120	0	0.366
ALF	RTFOT	6042112	04/21/06	-24	-24	2	2	60	1027	0.898	92	92	0	0.392
ALF	RTFOT	6042112	04/21/06	-24	-24	2	2	120	1032	1.195	70	70	0	0.418
ALF	RTFOT	6042112	04/21/06	-24	-24	2	2	240	1037	1.62	52	52	0	0.444

Table 96. ALF SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	SAFT	6042705	04/27/06	-36	-36	1	1	8	1030	0.09	923	923	0	0.169
ALF	SAFT	6042705	04/27/06	-36	-36	1	1	15	1031	0.101	823	823	0	0.197
ALF	SAFT	6042705	04/27/06	-36	-36	1	1	30	1031	0.117	711	710	-0.14065	0.228
ALF	SAFT	6042705	04/27/06	-36	-36	1	1	60	1033	0.139	599	600	0.166945	0.259
ALF	SAFT	6042705	04/27/06	-36	-36	1	1	120	1033	0.168	496	496	0	0.29
ALF	SAFT	6042705	04/27/06	-36	-36	1	1	240	1035	0.208	401	401	0	0.321
ALF	SAFT	6042706	04/27/06	-36	-36	1	2	8	1032	0.091	914	912	-0.21882	0.171
ALF	SAFT	6042706	04/27/06	-36	-36	1	2	15	1033	0.103	809	812	0.370828	0.197
ALF	SAFT	6042706	04/27/06	-36	-36	1	2	30	1035	0.119	701	701	0	0.227
ALF	SAFT	6042706	04/27/06	-36	-36	1	2	60	1038	0.141	594	593	-0.16835	0.256
ALF	SAFT	6042706	04/27/06	-36	-36	1	2	120	1040	0.17	493	492	-0.20284	0.285
ALF	SAFT	6042706	04/27/06	-36	-36	1	2	240	1043	0.211	399	399	0	0.315
ALF	SAFT	6042707	04/27/06	-36	-36	2	1	8	1020	0.093	884	884	0	0.162
ALF	SAFT	6042707	04/27/06	-36	-36	2	1	15	1021	0.104	792	792	0	0.188
ALF	SAFT	6042707	04/27/06	-36	-36	2	1	30	1023	0.12	687	688	0.14556	0.217
ALF	SAFT	6042707	04/27/06	-36	-36	2	1	60	1025	0.141	586	586	0	0.246
ALF	SAFT	6042707	04/27/06	-36	-36	2	1	120	1026	0.169	490	489	-0.20408	0.275
ALF	SAFT	6042707	04/27/06	-36	-36	2	1	240	1027	0.207	400	400	0	0.304
ALF	SAFT	6042708	04/27/06	-36	-36	2	2	8	1026	0.087	951	951	0	0.158
ALF	SAFT	6042708	04/27/06	-36	-36	2	2	15	1027	0.097	854	853	-0.1171	0.188
ALF	SAFT	6042708	04/27/06	-36	-36	2	2	30	1028	0.112	740	740	0	0.221
ALF	SAFT	6042708	04/27/06	-36	-36	2	2	60	1030	0.132	629	628	-0.15898	0.254
ALF	SAFT	6042708	04/27/06	-36	-36	2	2	120	1030	0.16	519	521	0.385356	0.287
ALF	SAFT	6042708	04/27/06	-36	-36	2	2	240	1032	0.197	422	422	0	0.32
ALF	SAFT	6042620	04/26/06	-30	-30	1	1	8	1028	0.201	412	412	0	0.202
ALF	SAFT	6042620	04/26/06	-30	-30	1	1	15	1029	0.231	359	359	0	0.234
ALF	SAFT	6042620	04/26/06	-30	-30	1	1	30	1029	0.275	302	302	0	0.269
ALF	SAFT	6042620	04/26/06	-30	-30	1	1	60	1030	0.335	248	248	0	0.304
ALF	SAFT	6042620	04/26/06	-30	-30	1	1	120	1030	0.419	198	198	0	0.339
ALF	SAFT	6042620	04/26/06	-30	-30	1	1	240	1032	0.538	155	155	0	0.374
ALF	SAFT	6042621	04/26/06	-30	-30	1	2	8	1026	0.164	504	505	0.198413	0.256

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	SAFT	6042621	04/26/06	-30	-30	1	2	15	1026	0.194	426	426	0	0.283
ALF	SAFT	6042621	04/26/06	-30	-30	1	2	30	1029	0.24	346	346	0	0.314
ALF	SAFT	6042621	04/26/06	-30	-30	1	2	60	1031	0.301	276	276	0	0.344
ALF	SAFT	6042621	04/26/06	-30	-30	1	2	120	1034	0.388	215	215	0	0.374
ALF	SAFT	6042621	04/26/06	-30	-30	1	2	240	1041	0.511	164	164	0	0.404
ALF	SAFT	6042622	04/26/06	-30	-30	2	1	8	1031	0.186	447	447	0	0.231
ALF	SAFT	6042622	04/26/06	-30	-30	2	1	15	1032	0.217	383	383	0	0.259
ALF	SAFT	6042622	04/26/06	-30	-30	2	1	30	1032	0.263	316	317	0.316456	0.29
ALF	SAFT	6042622	04/26/06	-30	-30	2	1	60	1033	0.325	256	256	0	0.321
ALF	SAFT	6042622	04/26/06	-30	-30	2	1	120	1038	0.412	203	203	0	0.353
ALF	SAFT	6042622	04/26/06	-30	-30	2	1	240	1044	0.536	157	157	0	0.384
ALF	SAFT	6042623	04/26/06	-30	-30	2	2	8	1047	0.17	497	496	-0.20121	0.266
ALF	SAFT	6042623	04/26/06	-30	-30	2	2	15	1048	0.203	416	417	0.240385	0.289
ALF	SAFT	6042623	04/26/06	-30	-30	2	2	30	1049	0.251	337	338	0.296736	0.316
ALF	SAFT	6042623	04/26/06	-30	-30	2	2	60	1049	0.314	269	269	0	0.342
ALF	SAFT	6042623	04/26/06	-30	-30	2	2	120	1051	0.402	211	210	-0.47393	0.368
ALF	SAFT	6042623	04/26/06	-30	-30	2	2	240	1054	0.527	161	162	0.621118	0.394
ALF	SAFT	6042114	04/21/06	-24	-24	1	1	8	1010	0.49	166	166	0	0.319
ALF	SAFT	6042114	04/21/06	-24	-24	1	1	15	1014	0.607	135	135	0	0.346
ALF	SAFT	6042114	04/21/06	-24	-24	1	1	30	1020	0.783	105	105	0	0.375
ALF	SAFT	6042114	04/21/06	-24	-24	1	1	60	1024	1.031	80	80	0	0.405
ALF	SAFT	6042114	04/21/06	-24	-24	1	1	120	1029	1.385	60	60	0	0.434
ALF	SAFT	6042114	04/21/06	-24	-24	1	1	240	1035	1.902	44	44	0	0.464
ALF	SAFT	6042115	04/21/06	-24	-24	1	2	8	1005	0.455	178	178	0	0.337
ALF	SAFT	6042115	04/21/06	-24	-24	1	2	15	1006	0.566	143	143	0	0.361
ALF	SAFT	6042115	04/21/06	-24	-24	1	2	30	1009	0.738	110	110	0	0.388
ALF	SAFT	6042115	04/21/06	-24	-24	1	2	60	1012	0.977	84	84	0	0.415
ALF	SAFT	6042115	04/21/06	-24	-24	1	2	120	1018	1.321	62	62	0	0.441
ALF	SAFT	6042115	04/21/06	-24	-24	1	2	240	1023	1.82	45	45	0	0.468
ALF	SAFT	6042116	04/21/06	-24	-24	2	1	8	1018	0.431	190	190	0	0.345
ALF	SAFT	6042116	04/21/06	-24	-24	2	1	15	1019	0.541	152	152	0	0.37
ALF	SAFT	6042116	04/21/06	-24	-24	2	1	30	1020	0.706	116	117	0.862069	0.396
ALF	SAFT	6042116	04/21/06	-24	-24	2	1	60	1020	0.936	88	88	0	0.423

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	SAFT	6042116	04/21/06	-24	-24	2	1	120	1020	1.269	65	65	0	0.45
ALF	SAFT	6042116	04/21/06	-24	-24	2	1	240	1021	1.751	47	47	0	0.477
ALF	SAFT	6042117	04/21/06	-24	-24	2	2	8	1033	0.432	193	193	0	0.348
ALF	SAFT	6042117	04/21/06	-24	-24	2	2	15	1032	0.541	154	154	0	0.371
ALF	SAFT	6042117	04/21/06	-24	-24	2	2	30	1035	0.709	118	118	0	0.396
ALF	SAFT	6042117	04/21/06	-24	-24	2	2	60	1037	0.941	89	89	0	0.421
ALF	SAFT	6042117	04/21/06	-24	-24	2	2	120	1040	1.274	66	66	0	0.447
ALF	SAFT	6042117	04/21/06	-24	-24	2	2	240	1043	1.761	48	48	0	0.472

Table 97. ALF MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	MGRF	9090105	09/01/09	-36	-36	1	1	8	986	0.088	903	903	0	0.151
ALF	MGRF	9090105	09/01/09	-36	-36	1	1	15	989	0.098	814	814	0	0.176
ALF	MGRF	9090105	09/01/09	-36	-36	1	1	30	990	0.112	713	714	0.140252	0.203
ALF	MGRF	9090105	09/01/09	-36	-36	1	1	60	992	0.13	615	614	-0.1626	0.231
ALF	MGRF	9090105	09/01/09	-36	-36	1	1	120	992	0.154	519	519	0	0.258
ALF	MGRF	9090105	09/01/09	-36	-36	1	1	240	995	0.187	429	430	0.2331	0.286
ALF	MGRF	9090206	09/02/09	-36	-36.1	1	2	8	978	0.103	766	765	-0.13055	0.129
ALF	MGRF	9090206	09/02/09	-36	-36.1	1	2	15	981	0.113	700	700	0	0.153
ALF	MGRF	9090206	09/02/09	-36	-36.1	1	2	30	983	0.127	624	624	0	0.181
ALF	MGRF	9090206	09/02/09	-36	-36.1	1	2	60	985	0.146	544	545	0.183824	0.208
ALF	MGRF	9090206	09/02/09	-36	-36.1	1	2	120	989	0.17	469	468	-0.21322	0.235
ALF	MGRF	9090206	09/02/09	-36	-36.1	1	2	240	995	0.204	393	394	0.254453	0.262
ALF	MGRF	9090207	09/02/09	-36	-36	2	1	8	1002	0.084	962	960	-0.2079	0.159
ALF	MGRF	9090207	09/02/09	-36	-36	2	1	15	1003	0.094	860	862	0.232558	0.184
ALF	MGRF	9090207	09/02/09	-36	-36	2	1	30	1005	0.108	750	751	0.133333	0.213
ALF	MGRF	9090207	09/02/09	-36	-36	2	1	60	1007	0.126	644	642	-0.31056	0.241
ALF	MGRF	9090207	09/02/09	-36	-36	2	1	120	1007	0.151	538	538	0	0.269
ALF	MGRF	9090207	09/02/09	-36	-36	2	1	240	1009	0.184	442	442	0	0.297
ALF	MGRF	9090208	09/02/09	-36	-36.1	2	2	8	978	0.085	928	926	-0.21552	0.153

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	MGRF	9090208	09/02/09	-36	-36.1	2	2	15	981	0.095	833	834	0.120048	0.178
ALF	MGRF	9090208	09/02/09	-36	-36.1	2	2	30	985	0.109	729	730	0.137174	0.207
ALF	MGRF	9090208	09/02/09	-36	-36.1	2	2	60	988	0.127	627	627	0	0.235
ALF	MGRF	9090208	09/02/09	-36	-36.1	2	2	120	991	0.151	529	527	-0.37807	0.263
ALF	MGRF	9090208	09/02/09	-36	-36.1	2	2	240	996	0.185	434	435	0.230415	0.291
ALF	MGRF	9090105	09/01/09	-30	-30	1	2	8	969	0.196	399	398	-0.25063	0.183
ALF	MGRF	9090105	09/01/09	-30	-30	1	2	15	972	0.223	351	352	0.2849	0.213
ALF	MGRF	9090105	09/01/09	-30	-30	1	2	30	977	0.263	300	300	0	0.247
ALF	MGRF	9090105	09/01/09	-30	-30	1	2	60	981	0.316	250	250	0	0.28
ALF	MGRF	9090105	09/01/09	-30	-30	1	2	120	984	0.39	203	203	0	0.313
ALF	MGRF	9090105	09/01/09	-30	-30	1	2	240	988	0.492	162	162	0	0.346
ALF	MGRF	9090106	09/01/09	-30	-30	1	2	8	976	0.148	532	532	0	0.241
ALF	MGRF	9090106	09/01/09	-30	-30	1	2	15	979	0.174	454	453	-0.22026	0.268
ALF	MGRF	9090106	09/01/09	-30	-30	1	2	30	981	0.212	373	373	0	0.297
ALF	MGRF	9090106	09/01/09	-30	-30	1	2	60	983	0.264	300	300	0	0.327
ALF	MGRF	9090106	09/01/09	-30	-30	1	2	120	986	0.336	237	237	0	0.357
ALF	MGRF	9090106	09/01/09	-30	-30	1	2	240	989	0.435	183	183	0	0.386
ALF	MGRF	9090107	09/01/09	-30	-30	2	1	8	977	0.158	499	498	-0.2004	0.229
ALF	MGRF	9090107	09/01/09	-30	-30	2	1	15	981	0.185	428	428	0	0.257
ALF	MGRF	9090107	09/01/09	-30	-30	2	1	30	984	0.224	354	354	0	0.288
ALF	MGRF	9090107	09/01/09	-30	-30	2	1	60	987	0.277	287	287	0	0.319
ALF	MGRF	9090107	09/01/09	-30	-30	2	1	120	989	0.351	227	228	0.440529	0.35
ALF	MGRF	9090107	09/01/09	-30	-30	2	1	240	991	0.452	177	177	0	0.381
ALF	MGRF	9090108	09/01/09	-30	-30	2	2	8	995	0.152	528	527	-0.18939	0.252
ALF	MGRF	9090108	09/01/09	-30	-30	2	2	15	995	0.18	446	447	0.224215	0.275
ALF	MGRF	9090108	09/01/09	-30	-30	2	2	30	997	0.22	365	366	0.273973	0.301
ALF	MGRF	9090108	09/01/09	-30	-30	2	2	60	998	0.273	295	294	-0.33898	0.327
ALF	MGRF	9090108	09/01/09	-30	-30	2	2	120	997	0.346	232	232	0	0.354
ALF	MGRF	9090108	09/01/09	-30	-30	2	2	240	996	0.446	180	180	0	0.38
ALF	MGRF	9082105	08/21/09	-24	-24	1	1	8	965	0.385	202	202	0	0.286
ALF	MGRF	9082105	08/21/09	-24	-24	1	1	15	966	0.466	167	167	0	0.313
ALF	MGRF	9082105	08/21/09	-24	-24	1	1	30	969	0.587	133	133	0	0.342
ALF	MGRF	9082105	08/21/09	-24	-24	1	1	60	973	0.752	104	104	0	0.372

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
ALF	MGRF	9082105	08/21/09	-24	-24	1	1	120	975	0.988	80	80	0	0.402
ALF	MGRF	9082105	08/21/09	-24	-24	1	1	240	978	1.323	60	60	0	0.432
ALF	MGRF	9082106	08/21/09	-24	-24	1	2	8	986	0.335	237	237	0	0.327
ALF	MGRF	9082106	08/21/09	-24	-24	1	2	15	986	0.414	192	192	0	0.349
ALF	MGRF	9082106	08/21/09	-24	-24	1	2	30	986	0.532	149	149	0	0.375
ALF	MGRF	9082106	08/21/09	-24	-24	1	2	60	985	0.695	114	114	0	0.4
ALF	MGRF	9082106	08/21/09	-24	-24	1	2	120	984	0.926	86	86	0	0.425
ALF	MGRF	9082106	08/21/09	-24	-24	1	2	240	988	1.256	63	63	0	0.45
ALF	MGRF	9082107	08/21/09	-24	-24	2	1	8	967	0.348	224	224	0	0.316
ALF	MGRF	9082107	08/21/09	-24	-24	2	1	15	970	0.429	182	182	0	0.341
ALF	MGRF	9082107	08/21/09	-24	-24	2	1	30	972	0.55	142	143	0.704225	0.368
ALF	MGRF	9082107	08/21/09	-24	-24	2	1	60	974	0.718	109	109	0	0.396
ALF	MGRF	9082107	08/21/09	-24	-24	2	1	120	974	0.954	82	82	0	0.424
ALF	MGRF	9082107	08/21/09	-24	-24	2	1	240	973	1.291	61	61	0	0.451
ALF	MGRF	9082108	08/21/09	-24	-24	2	2	8	989	0.352	227	226	-0.44053	0.319
ALF	MGRF	9082108	08/21/09	-24	-24	2	2	15	989	0.434	184	184	0	0.345
ALF	MGRF	9082108	08/21/09	-24	-24	2	2	30	989	0.556	143	143	0	0.372
ALF	MGRF	9082108	08/21/09	-24	-24	2	2	60	988	0.726	110	110	0	0.4
ALF	MGRF	9082108	08/21/09	-24	-24	2	2	120	986	0.965	82	82	0	0.428
ALF	MGRF	9082108	08/21/09	-24	-24	2	2	240	984	1.308	61	61	0	0.455

Table 98. Citgoflex Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	Tank	5053109	05/31/05	-24	-24	1	1	8	1061	0.077	1111	1111	0	0.145
Citgoflex	Tank	5053109	05/31/05	-24	-24	1	1	15	1060	0.085	1006	1005	-0.0994	0.173
Citgoflex	Tank	5053109	05/31/05	-24	-24	1	1	30	1060	0.097	881	882	0.113507	0.205
Citgoflex	Tank	5053109	05/31/05	-24	-24	1	1	60	1059	0.113	756	757	0.132275	0.236

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	Tank	5053109	05/31/05	-24	-24	1	1	120	1059	0.134	637	635	-0.31397	0.268
Citgoflex	Tank	5053109	05/31/05	-24	-24	1	1	240	1060	0.164	521	522	0.191939	0.3
Citgoflex	Tank	5053110	05/31/05	-24	-23.9	1	2	8	1063	0.101	849	848	-0.11779	0.154
Citgoflex	Tank	5053110	05/31/05	-24	-23.9	1	2	15	1064	0.112	766	765	-0.13055	0.174
Citgoflex	Tank	5053110	05/31/05	-24	-23.9	1	2	30	1066	0.128	671	673	0.298063	0.197
Citgoflex	Tank	5053110	05/31/05	-24	-23.9	1	2	60	1068	0.148	582	583	0.171821	0.219
Citgoflex	Tank	5053110	05/31/05	-24	-23.9	1	2	120	1071	0.173	499	497	-0.4008	0.242
Citgoflex	Tank	5053110	05/31/05	-24	-23.9	1	2	240	1078	0.209	416	417	0.240385	0.264
Citgoflex	Tank	5053111	05/31/05	-24	-24	2	1	8	1076	0.079	1098	1098	0	0.137
Citgoflex	Tank	5053111	05/31/05	-24	-24	2	1	15	1078	0.087	999	997	-0.2002	0.169
Citgoflex	Tank	5053111	05/31/05	-24	-24	2	1	30	1080	0.1	871	876	0.574053	0.205
Citgoflex	Tank	5053111	05/31/05	-24	-24	2	1	60	1081	0.116	751	750	-0.13316	0.241
Citgoflex	Tank	5053111	05/31/05	-24	-24	2	1	120	1084	0.139	629	627	-0.31797	0.277
Citgoflex	Tank	5053111	05/31/05	-24	-24	2	1	240	1087	0.172	510	511	0.196078	0.313
Citgoflex	Tank	5053112	05/31/05	-24	-24	2	2	8	1084	0.078	1121	1119	-0.17841	0.156
Citgoflex	Tank	5053112	05/31/05	-24	-24	2	2	15	1085	0.087	1006	1007	0.099404	0.181
Citgoflex	Tank	5053112	05/31/05	-24	-24	2	2	30	1088	0.1	877	880	0.342075	0.209
Citgoflex	Tank	5053112	05/31/05	-24	-24	2	2	60	1089	0.116	757	754	-0.3963	0.237
Citgoflex	Tank	5053112	05/31/05	-24	-24	2	2	120	1091	0.139	633	634	0.157978	0.264
Citgoflex	Tank	5053112	05/31/05	-24	-24	2	2	240	1095	0.169	522	523	0.191571	0.292
Citgoflex	Tank	5052607	05/27/05	-18	-18	1	1	8	982	0.147	539	538	-0.18553	0.17
Citgoflex	Tank	5052607	05/27/05	-18	-18	1	1	15	983	0.166	477	479	0.419287	0.202
Citgoflex	Tank	5052607	05/27/05	-18	-18	1	1	30	983	0.193	411	411	0	0.237
Citgoflex	Tank	5052607	05/27/05	-18	-18	1	1	60	983	0.23	345	344	-0.28986	0.273
Citgoflex	Tank	5052607	05/27/05	-18	-18	1	1	120	983	0.281	282	282	0	0.308
Citgoflex	Tank	5052607	05/27/05	-18	-18	1	1	240	985	0.354	224	225	0.446429	0.344
Citgoflex	Tank	5052608	05/27/05	-18	-18	1	2	8	979	0.14	564	563	-0.1773	0.174
Citgoflex	Tank	5052608	05/27/05	-18	-18	1	2	15	982	0.159	498	499	0.200803	0.208
Citgoflex	Tank	5052608	05/27/05	-18	-18	1	2	30	984	0.186	427	427	0	0.246
Citgoflex	Tank	5052608	05/27/05	-18	-18	1	2	60	987	0.224	355	355	0	0.283
Citgoflex	Tank	5052608	05/27/05	-18	-18	1	2	120	991	0.277	288	288	0	0.32
Citgoflex	Tank	5052608	05/27/05	-18	-18	1	2	240	996	0.353	227	228	0.440529	0.358
Citgoflex	Tank	5052609	05/27/05	-18	-18	2	1	8	994	0.142	564	564	0	0.182

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	Tank	5052609	05/27/05	-18	-18	2	1	15	995	0.161	498	498	0	0.213
Citgoflex	Tank	5052609	05/27/05	-18	-18	2	1	30	996	0.189	425	425	0	0.248
Citgoflex	Tank	5052609	05/27/05	-18	-18	2	1	60	998	0.228	353	353	0	0.282
Citgoflex	Tank	5052609	05/27/05	-18	-18	2	1	120	999	0.28	288	287	-0.34722	0.317
Citgoflex	Tank	5052609	05/27/05	-18	-18	2	1	240	1005	0.356	228	228	0	0.351
Citgoflex	Tank	5052610	05/27/05	-18	-18	2	2	8	994	0.138	581	580	-0.17212	0.188
Citgoflex	Tank	5052610	05/27/05	-18	-18	2	2	15	995	0.158	508	510	0.393701	0.218
Citgoflex	Tank	5052610	05/27/05	-18	-18	2	2	30	998	0.185	435	434	-0.22989	0.252
Citgoflex	Tank	5052610	05/27/05	-18	-18	2	2	60	999	0.224	360	360	0	0.285
Citgoflex	Tank	5052610	05/27/05	-18	-18	2	2	120	1001	0.276	292	292	0	0.319
Citgoflex	Tank	5052610	05/27/05	-18	-18	2	2	240	1004	0.35	231	231	0	0.352
Citgoflex	Tank	5052712	05/27/05	-12	-11.9	1	1	8	1052	0.332	255	253	-0.78431	0.334
Citgoflex	Tank	5052712	05/27/05	-12	-11.9	1	1	15	1055	0.419	203	204	0.492611	0.355
Citgoflex	Tank	5052712	05/27/05	-12	-11.9	1	1	30	1059	0.551	155	158	1.935484	0.378
Citgoflex	Tank	5052712	05/27/05	-12	-11.9	1	1	60	1062	0.699	123	121	-1.62602	0.402
Citgoflex	Tank	5052712	05/27/05	-12	-11.9	1	1	120	1060	0.929	92	91	-1.08696	0.425
Citgoflex	Tank	5052712	05/27/05	-12	-11.9	1	1	240	1061	1.29	66	67	1.515152	0.448
Citgoflex	Tank	5052713	05/27/05	-12	-12	1	2	8	1050	0.308	275	274	-0.36364	0.342
Citgoflex	Tank	5052713	05/27/05	-12	-12	1	2	15	1052	0.388	219	219	0	0.375
Citgoflex	Tank	5052713	05/27/05	-12	-12	1	2	30	1056	0.511	167	167	0	0.412
Citgoflex	Tank	5052713	05/27/05	-12	-12	1	2	60	1060	0.69	124	124	0	0.449
Citgoflex	Tank	5052713	05/27/05	-12	-12	1	2	120	1063	0.958	89	89	0	0.486
Citgoflex	Tank	5052713	05/27/05	-12	-12	1	2	240	1069	1.369	63	63	0	0.523
Citgoflex	Tank	5052714	05/27/05	-12	-12	2	1	8	1050	0.308	275	274	-0.36364	0.342
Citgoflex	Tank	5052714	05/27/05	-12	-12	2	1	15	1052	0.388	219	219	0	0.375
Citgoflex	Tank	5052714	05/27/05	-12	-12	2	1	30	1056	0.511	167	167	0	0.412
Citgoflex	Tank	5052714	05/27/05	-12	-12	2	1	60	1060	0.69	124	124	0	0.449
Citgoflex	Tank	5052714	05/27/05	-12	-12	2	1	120	1063	0.958	89	89	0	0.486
Citgoflex	Tank	5052714	05/27/05	-12	-12	2	1	240	1069	1.369	63	63	0	0.523
Citgoflex	Tank	5052715	05/27/05	-12	-12	2	2	8	1054	0.326	261	261	0	0.345
Citgoflex	Tank	5052715	05/27/05	-12	-12	2	2	15	1054	0.41	207	207	0	0.378
Citgoflex	Tank	5052715	05/27/05	-12	-12	2	2	30	1055	0.54	158	158	0	0.415
Citgoflex	Tank	5052715	05/27/05	-12	-12	2	2	60	1059	0.73	117	117	0	0.451

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	Tank	5052715	05/27/05	-12	-12	2	2	120	1062	1.016	84	84	0	0.487
Citgoflex	Tank	5052715	05/27/05	-12	-12	2	2	240	1069	1.451	59	59	0	0.524

Table 99. Citgoflex RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	RTFOT	6042101	04/21/06	-24	-24	1	1	8	1029	0.068	1220	1216	-0.32787	0.13
Citgoflex	RTFOT	6042101	04/21/06	-24	-24	1	1	15	1030	0.075	1107	1112	0.451671	0.156
Citgoflex	RTFOT	6042101	04/21/06	-24	-24	1	1	30	1030	0.084	989	988	-0.10111	0.185
Citgoflex	RTFOT	6042101	04/21/06	-24	-24	1	1	60	1031	0.097	857	861	0.466744	0.213
Citgoflex	RTFOT	6042101	04/21/06	-24	-24	1	1	120	1032	0.112	743	735	-1.07672	0.242
Citgoflex	RTFOT	6042101	04/21/06	-24	-24	1	1	240	1033	0.136	612	615	0.490196	0.271
Citgoflex	RTFOT	6042102	04/21/06	-24	-24	1	2	8	1015	0.078	1049	1034	-1.42993	0.159
Citgoflex	RTFOT	6042102	04/21/06	-24	-24	1	2	15	1015	0.09	909	933	2.640264	0.169
Citgoflex	RTFOT	6042102	04/21/06	-24	-24	1	2	30	1016	0.099	827	826	-0.12092	0.181
Citgoflex	RTFOT	6042102	04/21/06	-24	-24	1	2	60	1018	0.112	733	726	-0.95498	0.193
Citgoflex	RTFOT	6042102	04/21/06	-24	-24	1	2	120	1019	0.129	637	632	-0.78493	0.205
Citgoflex	RTFOT	6042102	04/21/06	-24	-24	1	2	240	1023	0.152	543	547	0.736648	0.216
Citgoflex	RTFOT	6042103	04/21/06	-24	-24.1	2	1	8	1012	0.066	1236	1233	-0.24272	0.133
Citgoflex	RTFOT	6042103	04/21/06	-24	-24.1	2	1	15	1014	0.073	1120	1125	0.446429	0.159
Citgoflex	RTFOT	6042103	04/21/06	-24	-24.1	2	1	30	1017	0.082	1000	998	-0.2	0.187
Citgoflex	RTFOT	6042103	04/21/06	-24	-24.1	2	1	60	1020	0.095	866	868	0.230947	0.216
Citgoflex	RTFOT	6042103	04/21/06	-24	-24.1	2	1	120	1023	0.111	743	740	-0.40377	0.244
Citgoflex	RTFOT	6042103	04/21/06	-24	-24.1	2	1	240	1026	0.134	617	619	0.324149	0.272
Citgoflex	RTFOT	6042104	04/21/06	-24	-24	2	2	8	1025	0.068	1215	1214	-0.0823	0.138
Citgoflex	RTFOT	6042104	04/21/06	-24	-24	2	2	15	1026	0.075	1103	1104	0.090662	0.164
Citgoflex	RTFOT	6042104	04/21/06	-24	-24	2	2	30	1027	0.085	974	975	0.102669	0.194
Citgoflex	RTFOT	6042104	04/21/06	-24	-24	2	2	60	1028	0.098	846	844	-0.23641	0.223
Citgoflex	RTFOT	6042104	04/21/06	-24	-24	2	2	120	1029	0.116	715	716	0.13986	0.253
Citgoflex	RTFOT	6042104	04/21/06	-24	-24	2	2	240	1032	0.14	594	594	0	0.282
Citgoflex	RTFOT	6041701	04/17/06	-18	-18	1	1	8	1006	0.175	464	463	-0.21552	0.134

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	RTFOT	6041701	04/17/06	-18	-18	1	1	15	1008	0.193	421	421	0	0.169
Citgoflex	RTFOT	6041701	04/17/06	-18	-18	1	1	30	1010	0.221	368	370	0.543478	0.208
Citgoflex	RTFOT	6041701	04/17/06	-18	-18	1	1	60	1012	0.258	316	316	0	0.247
Citgoflex	RTFOT	6041701	04/17/06	-18	-18	1	1	120	1014	0.311	263	263	0	0.286
Citgoflex	RTFOT	6041701	04/17/06	-18	-18	1	1	240	1016	0.386	212	212	0	0.324
Citgoflex	RTFOT	6041702	04/17/06	-18	-18	1	2	8	1011	0.234	348	348	0	0.106
Citgoflex	RTFOT	6041702	04/17/06	-18	-18	1	2	15	1012	0.254	321	322	0.311526	0.137
Citgoflex	RTFOT	6041702	04/17/06	-18	-18	1	2	30	1012	0.282	289	289	0	0.171
Citgoflex	RTFOT	6041702	04/17/06	-18	-18	1	2	60	1013	0.321	254	254	0	0.205
Citgoflex	RTFOT	6041702	04/17/06	-18	-18	1	2	120	1014	0.375	218	218	0	0.239
Citgoflex	RTFOT	6041702	04/17/06	-18	-18	1	2	240	1019	0.451	182	182	0	0.273
Citgoflex	RTFOT	6041703	04/17/06	-18	-18	2	1	8	1016	0.222	369	368	-0.271	0.122
Citgoflex	RTFOT	6041703	04/17/06	-18	-18	2	1	15	1017	0.243	337	338	0.296736	0.153
Citgoflex	RTFOT	6041703	04/17/06	-18	-18	2	1	30	1017	0.274	299	300	0.334448	0.188
Citgoflex	RTFOT	6041703	04/17/06	-18	-18	2	1	60	1019	0.315	261	260	-0.38314	0.223
Citgoflex	RTFOT	6041703	04/17/06	-18	-18	2	1	120	1021	0.372	221	221	0	0.257
Citgoflex	RTFOT	6041703	04/17/06	-18	-18	2	1	240	1024	0.454	182	182	0	0.292
Citgoflex	RTFOT	6041704	04/17/06	-18	-18	2	2	8	1023	0.152	543	542	-0.18416	0.169
Citgoflex	RTFOT	6041704	04/17/06	-18	-18	2	2	15	1024	0.171	483	483	0	0.201
Citgoflex	RTFOT	6041704	04/17/06	-18	-18	2	2	30	1027	0.2	414	415	0.241546	0.236
Citgoflex	RTFOT	6041704	04/17/06	-18	-18	2	2	60	1029	0.238	349	348	-0.28653	0.272
Citgoflex	RTFOT	6041704	04/17/06	-18	-18	2	2	120	1032	0.292	285	285	0	0.307
Citgoflex	RTFOT	6041704	04/17/06	-18	-18	2	2	240	1037	0.368	227	227	0	0.342
Citgoflex	RTFOT	6041904	04/19/06	-12	-12	1	1	8	1061	0.254	337	337	0	0.303
Citgoflex	RTFOT	6041904	04/19/06	-12	-12	1	1	15	1061	0.31	276	276	0	0.332
Citgoflex	RTFOT	6041904	04/19/06	-12	-12	1	1	30	1060	0.395	216	217	0.462963	0.365
Citgoflex	RTFOT	6041904	04/19/06	-12	-12	1	1	60	1061	0.514	166	166	0	0.397
Citgoflex	RTFOT	6041904	04/19/06	-12	-12	1	1	120	1065	0.687	125	125	0	0.429
Citgoflex	RTFOT	6041904	04/19/06	-12	-12	1	1	240	1068	0.939	92	92	0	0.462
Citgoflex	RTFOT	6041905	04/19/06	-12	-12	1	2	8	1066	0.257	334	334	0	0.301
Citgoflex	RTFOT	6041905	04/19/06	-12	-12	1	2	15	1065	0.314	273	274	0.3663	0.332
Citgoflex	RTFOT	6041905	04/19/06	-12	-12	1	2	30	1066	0.4	215	215	0	0.367
Citgoflex	RTFOT	6041905	04/19/06	-12	-12	1	2	60	1067	0.522	165	165	0	0.401

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	RTFOT	6041905	04/19/06	-12	-12	1	2	120	1069	0.699	123	123	0	0.435
Citgoflex	RTFOT	6041905	04/19/06	-12	-12	1	2	240	1070	0.958	90	90	0	0.469
Citgoflex	RTFOT	6041906	04/19/06	-12	-12	2	1	8	1058	0.302	282	282	0	0.273
Citgoflex	RTFOT	6041906	04/19/06	-12	-12	2	1	15	1060	0.364	235	235	0	0.309
Citgoflex	RTFOT	6041906	04/19/06	-12	-12	2	1	30	1062	0.457	187	187	0	0.348
Citgoflex	RTFOT	6041906	04/19/06	-12	-12	2	1	60	1064	0.591	145	145	0	0.388
Citgoflex	RTFOT	6041906	04/19/06	-12	-12	2	1	120	1064	0.784	109	109	0	0.427
Citgoflex	RTFOT	6041906	04/19/06	-12	-12	2	1	240	1065	1.07	80	80	0	0.467
Citgoflex	RTFOT	6041907	04/19/06	-12	-12	2	2	8	1059	0.292	292	293	0.342466	0.316
Citgoflex	RTFOT	6041907	04/19/06	-12	-12	2	2	15	1059	0.359	238	238	0	0.346
Citgoflex	RTFOT	6041907	04/19/06	-12	-12	2	2	30	1060	0.463	185	185	0	0.38
Citgoflex	RTFOT	6041907	04/19/06	-12	-12	2	2	60	1060	0.609	140	140	0	0.413
Citgoflex	RTFOT	6041907	04/19/06	-12	-12	2	2	120	1060	0.821	104	104	0	0.447
Citgoflex	RTFOT	6041907	04/19/06	-12	-12	2	2	240	1062	1.133	76	76	0	0.48

Table 100. Citgoflex SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	SAFT	6042616	04/26/06	-24	-24	1	1	8	1024	0.107	772	770	-0.25907	0.112
Citgoflex	SAFT	6042616	04/26/06	-24	-24	1	1	15	1024	0.116	712	712	0	0.139
Citgoflex	SAFT	6042616	04/26/06	-24	-24	1	1	30	1025	0.13	636	640	0.628931	0.168
Citgoflex	SAFT	6042616	04/26/06	-24	-24	1	1	60	1026	0.146	567	564	-0.5291	0.198
Citgoflex	SAFT	6042616	04/26/06	-24	-24	1	1	120	1028	0.17	488	486	-0.40984	0.228
Citgoflex	SAFT	6042616	04/26/06	-24	-24	1	1	240	1033	0.203	410	411	0.243902	0.257
Citgoflex	SAFT	6042617	04/26/06	-24	-24	1	2	8	1018	0.088	933	932	-0.10718	0.116
Citgoflex	SAFT	6042617	04/26/06	-24	-24	1	2	15	1020	0.096	857	859	0.233372	0.144
Citgoflex	SAFT	6042617	04/26/06	-24	-24	1	2	30	1022	0.107	770	769	-0.12987	0.176
Citgoflex	SAFT	6042617	04/26/06	-24	-24	1	2	60	1026	0.123	673	673	0	0.208
Citgoflex	SAFT	6042617	04/26/06	-24	-24	1	2	120	1029	0.144	576	576	0	0.239
Citgoflex	SAFT	6042617	04/26/06	-24	-24	1	2	240	1036	0.173	483	483	0	0.271
Citgoflex	SAFT	6042618	04/26/06	-24	-24	2	1	8	1035	0.079	1056	1060	0.378788	0.134

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	SAFT	6042618	04/26/06	-24	-24	2	1	15	1037	0.086	972	966	-0.61728	0.161
Citgoflex	SAFT	6042618	04/26/06	-24	-24	2	1	30	1040	0.098	856	855	-0.11682	0.191
Citgoflex	SAFT	6042618	04/26/06	-24	-24	2	1	60	1042	0.114	737	741	0.542741	0.222
Citgoflex	SAFT	6042618	04/26/06	-24	-24	2	1	120	1046	0.134	629	629	0	0.252
Citgoflex	SAFT	6042618	04/26/06	-24	-24	2	1	240	1051	0.162	523	523	0	0.282
Citgoflex	SAFT	6042619	04/26/06	-24	-24	2	2	8	1038	0.155	540	539	-0.18519	0.059
Citgoflex	SAFT	6042619	04/26/06	-24	-24	2	2	15	1039	0.163	514	515	0.194553	0.083
Citgoflex	SAFT	6042619	04/26/06	-24	-24	2	2	30	1041	0.174	482	482	0	0.109
Citgoflex	SAFT	6042619	04/26/06	-24	-24	2	2	60	1044	0.19	443	443	0	0.135
Citgoflex	SAFT	6042619	04/26/06	-24	-24	2	2	120	1046	0.21	402	400	-0.49751	0.16
Citgoflex	SAFT	6042619	04/26/06	-24	-24	2	2	240	1050	0.239	354	355	0.282486	0.186
Citgoflex	SAFT	6042413	04/24/06	-18	-18	1	1	8	1059	0.138	619	619	0	0.227
Citgoflex	SAFT	6042413	04/24/06	-18	-18	1	1	15	1058	0.16	533	532	-0.18762	0.258
Citgoflex	SAFT	6042413	04/24/06	-18	-18	1	1	30	1059	0.195	438	439	0.228311	0.292
Citgoflex	SAFT	6042413	04/24/06	-18	-18	1	1	60	1061	0.241	355	355	0	0.326
Citgoflex	SAFT	6042413	04/24/06	-18	-18	1	1	120	1062	0.306	280	280	0	0.361
Citgoflex	SAFT	6042413	04/24/06	-18	-18	1	1	240	1064	0.399	215	215	0	0.395
Citgoflex	SAFT	6042414	04/24/06	-18	-18	1	2	8	1062	0.132	649	648	-0.15408	0.232
Citgoflex	SAFT	6042414	04/24/06	-18	-18	1	2	15	1063	0.155	553	554	0.180832	0.265
Citgoflex	SAFT	6042414	04/24/06	-18	-18	1	2	30	1063	0.188	456	456	0	0.3
Citgoflex	SAFT	6042414	04/24/06	-18	-18	1	2	60	1064	0.235	365	365	0	0.336
Citgoflex	SAFT	6042414	04/24/06	-18	-18	1	2	120	1063	0.299	287	286	-0.34843	0.372
Citgoflex	SAFT	6042414	04/24/06	-18	-18	1	2	240	1062	0.393	218	218	0	0.408
Citgoflex	SAFT	6042415	04/24/06	-18	-18	2	1	8	1053	0.19	447	446	-0.22371	0.159
Citgoflex	SAFT	6042415	04/24/06	-18	-18	2	1	15	1054	0.213	399	400	0.250627	0.192
Citgoflex	SAFT	6042415	04/24/06	-18	-18	2	1	30	1057	0.247	345	345	0	0.229
Citgoflex	SAFT	6042415	04/24/06	-18	-18	2	1	60	1059	0.293	291	291	0	0.265
Citgoflex	SAFT	6042415	04/24/06	-18	-18	2	1	120	1060	0.357	239	239	0	0.302
Citgoflex	SAFT	6042415	04/24/06	-18	-18	2	1	240	1061	0.447	191	192	0.52356	0.338
Citgoflex	SAFT	6042416	04/24/06	-18	-18	2	2	8	1067	0.124	694	693	-0.14409	0.23
Citgoflex	SAFT	6042416	04/24/06	-18	-18	2	2	15	1068	0.145	594	594	0	0.261
Citgoflex	SAFT	6042416	04/24/06	-18	-18	2	2	30	1068	0.176	489	490	0.204499	0.296
Citgoflex	SAFT	6042416	04/24/06	-18	-18	2	2	60	1071	0.219	394	394	0	0.33

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	SAFT	6042416	04/24/06	-18	-18	2	2	120	1072	0.278	311	310	-0.32154	0.364
Citgoflex	SAFT	6042416	04/24/06	-18	-18	2	2	240	1073	0.364	238	238	0	0.399
Citgoflex	SAFT	6042005	04/20/06	-12	-12	1	1	8	1080	0.302	288	288	0	0.328
Citgoflex	SAFT	6042005	04/20/06	-12	-12	1	1	15	1080	0.375	232	232	0	0.36
Citgoflex	SAFT	6042005	04/20/06	-12	-12	1	1	30	1082	0.488	179	179	0	0.395
Citgoflex	SAFT	6042005	04/20/06	-12	-12	1	1	60	1085	0.651	134	134	0	0.431
Citgoflex	SAFT	6042005	04/20/06	-12	-12	1	1	120	1088	0.892	98	98	0	0.466
Citgoflex	SAFT	6042005	04/20/06	-12	-12	1	1	240	1090	1.249	70	70	0	0.502
Citgoflex	SAFT	6042006	04/20/06	-12	-12	1	2	8	1059	0.325	263	263	0	0.305
Citgoflex	SAFT	6042006	04/20/06	-12	-12	1	2	15	1060	0.399	214	214	0	0.34
Citgoflex	SAFT	6042006	04/20/06	-12	-12	1	2	30	1062	0.512	167	167	0	0.377
Citgoflex	SAFT	6042006	04/20/06	-12	-12	1	2	60	1065	0.676	127	127	0	0.415
Citgoflex	SAFT	6042006	04/20/06	-12	-12	1	2	120	1068	0.915	94	94	0	0.453
Citgoflex	SAFT	6042006	04/20/06	-12	-12	1	2	240	1069	1.272	68	68	0	0.491
Citgoflex	SAFT	6042007	04/20/06	-12	-12	2	1	8	1080	0.312	279	279	0	0.328
Citgoflex	SAFT	6042007	04/20/06	-12	-12	2	1	15	1080	0.388	224	225	0.446429	0.36
Citgoflex	SAFT	6042007	04/20/06	-12	-12	2	1	30	1081	0.505	173	173	0	0.395
Citgoflex	SAFT	6042007	04/20/06	-12	-12	2	1	60	1082	0.671	130	130	0	0.431
Citgoflex	SAFT	6042007	04/20/06	-12	-12	2	1	120	1083	0.917	95	95	0	0.466
Citgoflex	SAFT	6042007	04/20/06	-12	-12	2	1	240	1084	1.285	68	68	0	0.501
Citgoflex	SAFT	6042008	04/20/06	-12	-12	2	2	8	1082	0.301	290	290	0	0.329
Citgoflex	SAFT	6042008	04/20/06	-12	-12	2	2	15	1082	0.374	233	233	0	0.362
Citgoflex	SAFT	6042008	04/20/06	-12	-12	2	2	30	1082	0.487	179	179	0	0.398
Citgoflex	SAFT	6042008	04/20/06	-12	-12	2	2	60	1082	0.649	134	134	0	0.434
Citgoflex	SAFT	6042008	04/20/06	-12	-12	2	2	120	1081	0.887	98	98	0	0.47
Citgoflex	SAFT	6042008	04/20/06	-12	-12	2	2	240	1080	1.243	70	70	0	0.506

Table 101. Citgoflex MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	MGRF	9082009	08/20/09	-24	-23.9	1	1	8	983	0.073	1086	1088	0.184162	0.117
Citgoflex	MGRF	9082009	08/20/09	-24	-23.9	1	1	15	986	0.079	1006	1002	-0.39761	0.145
Citgoflex	MGRF	9082009	08/20/09	-24	-23.9	1	1	30	989	0.089	896	896	0	0.177
Citgoflex	MGRF	9082009	08/20/09	-24	-23.9	1	1	60	990	0.102	783	784	0.127714	0.208
Citgoflex	MGRF	9082009	08/20/09	-24	-23.9	1	1	120	991	0.119	671	671	0	0.24
Citgoflex	MGRF	9082009	08/20/09	-24	-23.9	1	1	240	991	0.142	563	562	-0.17762	0.272
Citgoflex	MGRF	9082006	08/20/09	-24	-24	1	2	8	993	0.067	1195	1193	-0.16736	0.133
Citgoflex	MGRF	9082006	08/20/09	-24	-24	1	2	15	995	0.074	1084	1088	0.369004	0.158
Citgoflex	MGRF	9082006	08/20/09	-24	-24	1	2	30	997	0.083	969	966	-0.3096	0.186
Citgoflex	MGRF	9082006	08/20/09	-24	-24	1	2	60	999	0.096	839	841	0.238379	0.214
Citgoflex	MGRF	9082006	08/20/09	-24	-24	1	2	120	999	0.112	719	717	-0.27816	0.243
Citgoflex	MGRF	9082006	08/20/09	-24	-24	1	2	240	997	0.134	600	601	0.166667	0.271
Citgoflex	MGRF	9081107	08/11/09	-24	-24	2	1	8	982	0.075	1056	1053	-0.28409	0.116
Citgoflex	MGRF	9081107	08/11/09	-24	-24	2	1	15	983	0.082	967	971	0.41365	0.142
Citgoflex	MGRF	9081107	08/11/09	-24	-24	2	1	30	985	0.091	873	871	-0.2291	0.171
Citgoflex	MGRF	9081107	08/11/09	-24	-24	2	1	60	986	0.104	764	766	0.26178	0.2
Citgoflex	MGRF	9081107	08/11/09	-24	-24	2	1	120	987	0.12	663	660	-0.45249	0.228
Citgoflex	MGRF	9081107	08/11/09	-24	-24	2	1	240	988	0.143	557	558	0.179533	0.257
Citgoflex	MGRF	9081108	08/11/09	-24	-24	2	2	8	999	0.067	1202	1206	0.332779	0.135
Citgoflex	MGRF	9081108	08/11/09	-24	-24	2	2	15	1000	0.073	1105	1099	-0.54299	0.162
Citgoflex	MGRF	9081108	08/11/09	-24	-24	2	2	30	1002	0.083	973	972	-0.10277	0.191
Citgoflex	MGRF	9081108	08/11/09	-24	-24	2	2	60	1001	0.096	841	843	0.237812	0.22
Citgoflex	MGRF	9081108	08/11/09	-24	-24	2	2	120	1001	0.113	714	716	0.280112	0.25
Citgoflex	MGRF	9081108	08/11/09	-24	-24	2	2	240	1001	0.135	598	596	-0.33445	0.279
Citgoflex	MGRF	9071605	07/16/09	-18	-18	1	1	8	997	0.115	699	698	-0.14306	0.219
Citgoflex	MGRF	9071605	07/16/09	-18	-18	1	1	15	999	0.134	601	603	0.332779	0.248
Citgoflex	MGRF	9071605	07/16/09	-18	-18	1	1	30	1000	0.161	501	502	0.199601	0.28
Citgoflex	MGRF	9071605	07/16/09	-18	-18	1	1	60	1001	0.197	410	409	-0.2439	0.312
Citgoflex	MGRF	9071605	07/16/09	-18	-18	1	1	120	1002	0.248	326	325	-0.30675	0.344
Citgoflex	MGRF	9071605	07/16/09	-18	-18	1	1	240	1005	0.32	253	254	0.395257	0.376
Citgoflex	MGRF	9071606	07/16/09	-18	-17.9	1	2	8	990	0.119	671	669	-0.29806	0.206

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	MGRF	9071606	07/16/09	-18	-17.9	1	2	15	991	0.138	579	582	0.518135	0.237
Citgoflex	MGRF	9071606	07/16/09	-18	-17.9	1	2	30	993	0.164	488	488	0	0.271
Citgoflex	MGRF	9071606	07/16/09	-18	-17.9	1	2	60	994	0.2	401	400	-0.24938	0.304
Citgoflex	MGRF	9071606	07/16/09	-18	-17.9	1	2	120	994	0.25	321	320	-0.31153	0.338
Citgoflex	MGRF	9071606	07/16/09	-18	-17.9	1	2	240	995	0.321	250	250	0	0.372
Citgoflex	MGRF	9072413	07/24/09	-18	-18	2	1	8	973	0.132	594	595	0.16835	0.191
Citgoflex	MGRF	9072413	07/24/09	-18	-18	2	1	15	976	0.15	525	523	-0.38095	0.221
Citgoflex	MGRF	9072413	07/24/09	-18	-18	2	1	30	978	0.178	443	444	0.225734	0.254
Citgoflex	MGRF	9072413	07/24/09	-18	-18	2	1	60	981	0.215	368	368	0	0.286
Citgoflex	MGRF	9072413	07/24/09	-18	-18	2	1	120	983	0.266	298	298	0	0.319
Citgoflex	MGRF	9072413	07/24/09	-18	-18	2	1	240	986	0.336	237	236	-0.42194	0.352
Citgoflex	MGRF	9072414	07/24/09	-18	-18	2	2	8	989	0.125	638	638	0	0.198
Citgoflex	MGRF	9072414	07/24/09	-18	-18	2	2	15	989	0.143	558	558	0	0.228
Citgoflex	MGRF	9072414	07/24/09	-18	-18	2	2	30	990	0.17	470	470	0	0.262
Citgoflex	MGRF	9072414	07/24/09	-18	-18	2	2	60	991	0.206	388	388	0	0.295
Citgoflex	MGRF	9072414	07/24/09	-18	-18	2	2	120	992	0.255	314	313	-0.31847	0.328
Citgoflex	MGRF	9072414	07/24/09	-18	-18	2	2	240	991	0.325	246	246	0	0.361
Citgoflex	MGRF	9073103	07/31/09	-12	-12	1	1	8	993	0.245	327	327	0	0.314
Citgoflex	MGRF	9073103	07/31/09	-12	-12	1	1	15	994	0.302	265	266	0.377358	0.343
Citgoflex	MGRF	9073103	07/31/09	-12	-12	1	1	30	993	0.387	207	207	0	0.375
Citgoflex	MGRF	9073103	07/31/09	-12	-12	1	1	60	993	0.507	158	158	0	0.407
Citgoflex	MGRF	9073103	07/31/09	-12	-12	1	1	120	994	0.68	118	118	0	0.439
Citgoflex	MGRF	9073103	07/31/09	-12	-12	1	1	240	996	0.936	86	86	0	0.471
Citgoflex	MGRF	9073104	07/31/09	-12	-12	1	2	8	987	0.243	327	327	0	0.305
Citgoflex	MGRF	9073104	07/31/09	-12	-12	1	2	15	988	0.298	267	268	0.374532	0.334
Citgoflex	MGRF	9073104	07/31/09	-12	-12	1	2	30	988	0.38	210	210	0	0.365
Citgoflex	MGRF	9073104	07/31/09	-12	-12	1	2	60	988	0.493	162	161	-0.61728	0.397
Citgoflex	MGRF	9073104	07/31/09	-12	-12	1	2	120	988	0.657	121	121	0	0.429
Citgoflex	MGRF	9073104	07/31/09	-12	-12	1	2	240	989	0.897	89	89	0	0.461
Citgoflex	MGRF	9073115	07/31/09	-12	-12	2	1	8	1008	0.243	334	334	0	0.313
Citgoflex	MGRF	9073115	07/31/09	-12	-12	2	1	15	1007	0.299	272	272	0	0.342
Citgoflex	MGRF	9073115	07/31/09	-12	-12	2	1	30	1007	0.383	212	212	0	0.373
Citgoflex	MGRF	9073115	07/31/09	-12	-12	2	1	60	1005	0.499	162	162	0	0.404

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Citgoflex	MGRF	9073115	07/31/09	-12	-12	2	1	120	1004	0.666	122	121	-0.81967	0.435
Citgoflex	MGRF	9073115	07/31/09	-12	-12	2	1	240	1002	0.911	89	89	0	0.466
Citgoflex	MGRF	9073116	07/31/09	-12	-12	2	2	8	998	0.268	300	300	0	0.287
Citgoflex	MGRF	9073116	07/31/09	-12	-12	2	2	15	1000	0.325	248	248	0	0.318
Citgoflex	MGRF	9073116	07/31/09	-12	-12	2	2	30	1002	0.412	196	197	0.510204	0.352
Citgoflex	MGRF	9073116	07/31/09	-12	-12	2	2	60	1005	0.531	153	152	-0.65359	0.386
Citgoflex	MGRF	9073116	07/31/09	-12	-12	2	2	120	1005	0.702	115	115	0	0.42
Citgoflex	MGRF	9073116	07/31/09	-12	-12	2	2	240	1005	0.954	85	85	0	0.455

Table 102. Elvaloy Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	Tank	5091601	09/12/05	-30	-30	1	1	8	999	0.074	1089	1091	0.183655	0.141
Elvaloy	Tank	5091601	09/12/05	-30	-30	1	1	15	1000	0.081	995	988	-0.70352	0.174
Elvaloy	Tank	5091601	09/12/05	-30	-30	1	1	30	1001	0.094	859	865	0.698487	0.21
Elvaloy	Tank	5091601	09/12/05	-30	-30	1	1	60	1001	0.109	740	739	-0.13514	0.246
Elvaloy	Tank	5091601	09/12/05	-30	-30	1	1	120	1002	0.131	617	616	-0.16207	0.282
Elvaloy	Tank	5091601	09/12/05	-30	-30	1	1	240	1004	0.162	500	500	0	0.318
Elvaloy	Tank	5091602	09/12/05	-30	-29.9	1	2	8	1016	0.079	1037	1035	-0.19286	0.169
Elvaloy	Tank	5091602	09/12/05	-30	-29.9	1	2	15	1018	0.089	922	925	0.32538	0.187
Elvaloy	Tank	5091602	09/12/05	-30	-29.9	1	2	30	1020	0.102	806	807	0.124069	0.208
Elvaloy	Tank	5091602	09/12/05	-30	-29.9	1	2	60	1023	0.119	693	694	0.1443	0.228
Elvaloy	Tank	5091602	09/12/05	-30	-29.9	1	2	120	1026	0.14	591	588	-0.50761	0.249
Elvaloy	Tank	5091602	09/12/05	-30	-29.9	1	2	240	1033	0.17	490	491	0.204082	0.269
Elvaloy	Tank	5091603	09/16/05	-30	-29.9	2	1	8	1017	0.074	1108	1108	0	0.148
Elvaloy	Tank	5091603	09/16/05	-30	-29.9	2	1	15	1018	0.082	1001	1001	0	0.177
Elvaloy	Tank	5091603	09/16/05	-30	-29.9	2	1	30	1020	0.094	875	875	0	0.209
Elvaloy	Tank	5091603	09/16/05	-30	-29.9	2	1	60	1022	0.11	749	749	0	0.242
Elvaloy	Tank	5091603	09/16/05	-30	-29.9	2	1	120	1025	0.132	626	626	0	0.274
Elvaloy	Tank	5091603	09/16/05	-30	-29.9	2	1	240	1029	0.162	512	512	0	0.306
Elvaloy	Tank	5091604	09/16/05	-30	-29.9	2	2	8	1029	0.075	1106	1103	-0.27125	0.154

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	Tank	5091604	09/16/05	-30	-29.9	2	2	15	1030	0.084	989	993	0.404449	0.181
Elvaloy	Tank	5091604	09/16/05	-30	-29.9	2	2	30	1032	0.096	867	867	0	0.21
Elvaloy	Tank	5091604	09/16/05	-30	-29.9	2	2	60	1034	0.112	744	742	-0.26882	0.239
Elvaloy	Tank	5091604	09/16/05	-30	-29.9	2	2	120	1036	0.134	623	623	0	0.268
Elvaloy	Tank	5091604	09/16/05	-30	-29.9	2	2	240	1040	0.164	511	512	0.195695	0.297
Elvaloy	Tank	5091201	09/12/05	-24	-24	1	1	8	1027	0.125	662	662	0	0.215
Elvaloy	Tank	5091201	09/12/05	-24	-24	1	1	15	1028	0.145	572	572	0	0.249
Elvaloy	Tank	5091201	09/12/05	-24	-24	1	1	30	1029	0.175	474	475	0.21097	0.287
Elvaloy	Tank	5091201	09/12/05	-24	-24	1	1	60	1029	0.216	384	384	0	0.325
Elvaloy	Tank	5091201	09/12/05	-24	-24	1	1	120	1032	0.274	304	303	-0.32895	0.363
Elvaloy	Tank	5091201	09/12/05	-24	-24	1	1	240	1033	0.359	232	232	0	0.4
Elvaloy	Tank	5091202	09/12/05	-24	-24	1	2	8	1012	0.129	633	633	0	0.237
Elvaloy	Tank	5091202	09/12/05	-24	-24	1	2	15	1012	0.151	540	540	0	0.269
Elvaloy	Tank	5091202	09/12/05	-24	-24	1	2	30	1014	0.185	442	443	0.226244	0.304
Elvaloy	Tank	5091202	09/12/05	-24	-24	1	2	60	1016	0.231	355	354	-0.28169	0.34
Elvaloy	Tank	5091202	09/12/05	-24	-24	1	2	120	1020	0.298	276	276	0	0.375
Elvaloy	Tank	5091202	09/12/05	-24	-24	1	2	240	1029	0.394	211	210	-0.47393	0.411
Elvaloy	Tank	5091203	09/12/05	-24	-24	2	1	8	974	0.156	503	503	0	0.195
Elvaloy	Tank	5091203	09/12/05	-24	-24	2	1	15	975	0.179	439	440	0.22779	0.23
Elvaloy	Tank	5091203	09/12/05	-24	-24	2	1	30	976	0.213	369	370	0.271003	0.269
Elvaloy	Tank	5091203	09/12/05	-24	-24	2	1	60	977	0.26	303	303	0	0.307
Elvaloy	Tank	5091203	09/12/05	-24	-24	2	1	120	977	0.325	242	242	0	0.346
Elvaloy	Tank	5091203	09/12/05	-24	-24	2	1	240	978	0.421	187	188	0.534759	0.384
Elvaloy	Tank	5091204	09/12/05	-24	-24	2	2	8	1007	0.13	625	625	0	0.223
Elvaloy	Tank	5091204	09/12/05	-24	-24	2	2	15	1008	0.151	538	537	-0.18587	0.257
Elvaloy	Tank	5091204	09/12/05	-24	-24	2	2	30	1008	0.184	442	444	0.452489	0.294
Elvaloy	Tank	5091204	09/12/05	-24	-24	2	2	60	1009	0.227	358	357	-0.27933	0.331
Elvaloy	Tank	5091204	09/12/05	-24	-24	2	2	120	1010	0.29	281	281	0	0.368
Elvaloy	Tank	5091204	09/12/05	-24	-24	2	2	240	1011	0.38	215	215	0	0.405
Elvaloy	Tank	5091901	09/19/05	-18	-18	1	1	8	1013	0.307	266	266	0	0.269
Elvaloy	Tank	5091901	09/19/05	-18	-18	1	1	15	1014	0.369	222	222	0	0.308
Elvaloy	Tank	5091901	09/19/05	-18	-18	1	1	30	1015	0.464	176	176	0	0.351
Elvaloy	Tank	5091901	09/19/05	-18	-18	1	1	60	1015	0.6	136	136	0	0.395

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	Tank	5091901	09/19/05	-18	-18	1	1	120	1014	0.8	102	102	0	0.438
Elvaloy	Tank	5091901	09/19/05	-18	-18	1	1	240	1012	1.099	74	74	0	0.481
Elvaloy	Tank	5091902	09/19/05	-18	-18	1	2	8	1013	0.251	325	325	0	0.321
Elvaloy	Tank	5091902	09/19/05	-18	-18	1	2	15	1013	0.311	263	263	0	0.354
Elvaloy	Tank	5091902	09/19/05	-18	-18	1	2	30	1016	0.403	203	203	0	0.39
Elvaloy	Tank	5091902	09/19/05	-18	-18	1	2	60	1017	0.535	153	153	0	0.426
Elvaloy	Tank	5091902	09/19/05	-18	-18	1	2	120	1017	0.729	112	113	0.892857	0.463
Elvaloy	Tank	5091902	09/19/05	-18	-18	1	2	240	1017	1.017	81	81	0	0.499
Elvaloy	Tank	5091903	09/19/05	-18	-18	2	1	8	1010	0.274	297	297	0	0.309
Elvaloy	Tank	5091903	09/19/05	-18	-18	2	1	15	1011	0.337	242	242	0	0.343
Elvaloy	Tank	5091903	09/19/05	-18	-18	2	1	30	1013	0.434	188	188	0	0.381
Elvaloy	Tank	5091903	09/19/05	-18	-18	2	1	60	1015	0.573	143	143	0	0.419
Elvaloy	Tank	5091903	09/19/05	-18	-18	2	1	120	1015	0.777	105	105	0	0.457
Elvaloy	Tank	5091903	09/19/05	-18	-18	2	1	240	1013	1.079	76	76	0	0.495
Elvaloy	Tank	5091905	09/19/05	-18	-18	2	2	8	1000	0.283	285	285	0	0.276
Elvaloy	Tank	5091905	09/19/05	-18	-18	2	2	15	1003	0.343	236	236	0	0.314
Elvaloy	Tank	5091905	09/19/05	-18	-18	2	2	30	1006	0.433	187	187	0	0.357
Elvaloy	Tank	5091905	09/19/05	-18	-18	2	2	60	1009	0.564	144	144	0	0.399
Elvaloy	Tank	5091905	09/19/05	-18	-18	2	2	120	1011	0.756	108	108	0	0.442
Elvaloy	Tank	5091905	09/19/05	-18	-18	2	2	240	1011	1.044	78	78	0	0.484

Table 103. Elvaloy RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	RTFOT	6042401	04/24/06	-18	-18.1	1	1	8	1025	0.231	358	357	-0.27933	0.284
Elvaloy	RTFOT	6042401	04/24/06	-18	-18.1	1	1	15	1026	0.28	295	296	0.338983	0.312
Elvaloy	RTFOT	6042401	04/24/06	-18	-18.1	1	1	30	1029	0.351	236	236	0	0.342
Elvaloy	RTFOT	6042401	04/24/06	-18	-18.1	1	1	60	1030	0.45	185	184	-0.54054	0.373
Elvaloy	RTFOT	6042401	04/24/06	-18	-18.1	1	1	120	1029	0.589	141	141	0	0.404
Elvaloy	RTFOT	6042401	04/24/06	-18	-18.1	1	1	240	1029	0.788	105	105	0	0.435
Elvaloy	RTFOT	6042402	04/24/06	-18	-18.1	1	2	8	1023	0.248	333	332	-0.3003	0.267

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	RTFOT	6042402	04/24/06	-18	-18.1	1	2	15	1025	0.298	277	278	0.361011	0.297
Elvaloy	RTFOT	6042402	04/24/06	-18	-18.1	1	2	30	1028	0.37	224	224	0	0.329
Elvaloy	RTFOT	6042402	04/24/06	-18	-18.1	1	2	60	1031	0.471	176	176	0	0.361
Elvaloy	RTFOT	6042402	04/24/06	-18	-18.1	1	2	120	1033	0.614	136	136	0	0.394
Elvaloy	RTFOT	6042402	04/24/06	-18	-18.1	1	2	240	1037	0.819	102	102	0	0.426
Elvaloy	RTFOT	6042403	04/24/06	-18	-18.1	2	1	8	1029	0.27	307	307	0	0.247
Elvaloy	RTFOT	6042403	04/24/06	-18	-18.1	2	1	15	1032	0.32	260	260	0	0.28
Elvaloy	RTFOT	6042403	04/24/06	-18	-18.1	2	1	30	1035	0.395	211	212	0.473934	0.316
Elvaloy	RTFOT	6042403	04/24/06	-18	-18.1	2	1	60	1038	0.498	168	168	0	0.351
Elvaloy	RTFOT	6042403	04/24/06	-18	-18.1	2	1	120	1042	0.645	130	130	0	0.387
Elvaloy	RTFOT	6042403	04/24/06	-18	-18.1	2	1	240	1046	0.86	98	98	0	0.423
Elvaloy	RTFOT	6042404	04/24/06	-18	-18.1	2	2	8	1038	0.228	367	367	0	0.29
Elvaloy	RTFOT	6042404	04/24/06	-18	-18.1	2	2	15	1039	0.277	302	303	0.331126	0.319
Elvaloy	RTFOT	6042404	04/24/06	-18	-18.1	2	2	30	1039	0.349	240	240	0	0.35
Elvaloy	RTFOT	6042404	04/24/06	-18	-18.1	2	2	60	1040	0.45	186	186	0	0.382
Elvaloy	RTFOT	6042404	04/24/06	-18	-18.1	2	2	120	1040	0.592	142	141	-0.70423	0.413
Elvaloy	RTFOT	6042404	04/24/06	-18	-18.1	2	2	240	1039	0.798	105	105	0	0.445
Elvaloy	RTFOT	6041801	04/18/06	-24	-24	1	1	8	1007	0.114	712	711	-0.14045	0.216
Elvaloy	RTFOT	6041801	04/18/06	-24	-24	1	1	15	1007	0.132	615	616	0.162602	0.242
Elvaloy	RTFOT	6041801	04/18/06	-24	-24	1	1	30	1008	0.158	514	515	0.194553	0.272
Elvaloy	RTFOT	6041801	04/18/06	-24	-24	1	1	60	1008	0.192	423	423	0	0.301
Elvaloy	RTFOT	6041801	04/18/06	-24	-24	1	1	120	1009	0.239	340	340	0	0.33
Elvaloy	RTFOT	6041801	04/18/06	-24	-24	1	1	240	1010	0.305	267	267	0	0.36
Elvaloy	RTFOT	6041802	04/18/06	-24	-23.9	1	2	8	1006	0.112	724	724	0	0.206
Elvaloy	RTFOT	6041802	04/18/06	-24	-23.9	1	2	15	1008	0.129	630	630	0	0.234
Elvaloy	RTFOT	6041802	04/18/06	-24	-23.9	1	2	30	1010	0.154	529	530	0.189036	0.264
Elvaloy	RTFOT	6041802	04/18/06	-24	-23.9	1	2	60	1014	0.187	437	437	0	0.294
Elvaloy	RTFOT	6041802	04/18/06	-24	-23.9	1	2	120	1018	0.232	354	353	-0.28249	0.325
Elvaloy	RTFOT	6041802	04/18/06	-24	-23.9	1	2	240	1024	0.297	278	279	0.359712	0.355
Elvaloy	RTFOT	6041803	04/18/06	-24	-24	2	1	8	1009	0.179	455	454	-0.21978	0.138
Elvaloy	RTFOT	6041803	04/18/06	-24	-24	2	1	15	1009	0.197	413	413	0	0.167
Elvaloy	RTFOT	6041803	04/18/06	-24	-24	2	1	30	1012	0.225	363	363	0	0.2
Elvaloy	RTFOT	6041803	04/18/06	-24	-24	2	1	60	1014	0.261	313	313	0	0.232

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	RTFOT	6041803	04/18/06	-24	-24	2	1	120	1018	0.311	264	264	0	0.264
Elvaloy	RTFOT	6041803	04/18/06	-24	-24	2	1	240	1025	0.381	217	217	0	0.296
Elvaloy	RTFOT	6041804	04/18/06	-24	-24	2	2	8	1026	0.122	678	677	-0.14749	0.22
Elvaloy	RTFOT	6041804	04/18/06	-24	-24	2	2	15	1026	0.142	583	584	0.171527	0.248
Elvaloy	RTFOT	6041804	04/18/06	-24	-24	2	2	30	1027	0.17	487	487	0	0.278
Elvaloy	RTFOT	6041804	04/18/06	-24	-24	2	2	60	1028	0.208	398	397	-0.25126	0.309
Elvaloy	RTFOT	6041804	04/18/06	-24	-24	2	2	120	1029	0.262	317	317	0	0.34
Elvaloy	RTFOT	6041804	04/18/06	-24	-24	2	2	240	1031	0.335	248	248	0	0.37
Elvaloy	RTFOT	6042601	04/26/06	-30	-30	1	1	8	1012	0.078	1046	1047	0.095602	0.126
Elvaloy	RTFOT	6042601	04/26/06	-30	-30	1	1	15	1013	0.085	961	959	-0.20812	0.154
Elvaloy	RTFOT	6042601	04/26/06	-30	-30	1	1	30	1013	0.096	851	853	0.235018	0.184
Elvaloy	RTFOT	6042601	04/26/06	-30	-30	1	1	60	1014	0.11	743	743	0	0.215
Elvaloy	RTFOT	6042601	04/26/06	-30	-30	1	1	120	1014	0.129	634	633	-0.15773	0.245
Elvaloy	RTFOT	6042601	04/26/06	-30	-30	1	1	240	1016	0.155	529	529	0	0.276
Elvaloy	RTFOT	6042602	04/26/06	-30	-30	1	2	8	1016	0.081	1011	1012	0.098912	0.155
Elvaloy	RTFOT	6042602	04/26/06	-30	-30	1	2	15	1017	0.09	911	912	0.109769	0.177
Elvaloy	RTFOT	6042602	04/26/06	-30	-30	1	2	30	1019	0.102	806	800	-0.74442	0.201
Elvaloy	RTFOT	6042602	04/26/06	-30	-30	1	2	60	1021	0.12	686	690	0.58309	0.225
Elvaloy	RTFOT	6042602	04/26/06	-30	-30	1	2	120	1025	0.141	586	586	0	0.249
Elvaloy	RTFOT	6042602	04/26/06	-30	-30	1	2	240	1031	0.17	489	489	0	0.274
Elvaloy	RTFOT	6042603	04/26/06	-30	-30	2	1	8	1023	0.069	1195	1194	-0.08368	0.132
Elvaloy	RTFOT	6042603	04/26/06	-30	-30	2	1	15	1024	0.076	1086	1089	0.276243	0.161
Elvaloy	RTFOT	6042603	04/26/06	-30	-30	2	1	30	1025	0.086	961	963	0.208117	0.193
Elvaloy	RTFOT	6042603	04/26/06	-30	-30	2	1	60	1028	0.099	837	833	-0.4779	0.225
Elvaloy	RTFOT	6042603	04/26/06	-30	-30	2	1	120	1030	0.118	704	705	0.142045	0.257
Elvaloy	RTFOT	6042603	04/26/06	-30	-30	2	1	240	1035	0.143	584	584	0	0.289
Elvaloy	RTFOT	6042604	04/26/06	-30	-30	2	2	8	1017	0.072	1139	1138	-0.0878	0.127
Elvaloy	RTFOT	6042604	04/26/06	-30	-30	2	2	15	1019	0.079	1040	1041	0.096154	0.155
Elvaloy	RTFOT	6042604	04/26/06	-30	-30	2	2	30	1021	0.089	925	925	0	0.186
Elvaloy	RTFOT	6042604	04/26/06	-30	-30	2	2	60	1023	0.103	801	804	0.374532	0.217
Elvaloy	RTFOT	6042604	04/26/06	-30	-30	2	2	120	1025	0.12	689	684	-0.72569	0.248
Elvaloy	RTFOT	6042604	04/26/06	-30	-30	2	2	240	1029	0.146	568	570	0.352113	0.279

Table 104. Elvaloy SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	SAFT	6042605	04/26/06	-30	-30	1	1	8	1022	0.08	1030	1025	-0.48544	0.134
Elvaloy	SAFT	6042605	04/26/06	-30	-30	1	1	15	1024	0.089	928	935	0.75431	0.16
Elvaloy	SAFT	6042605	04/26/06	-30	-30	1	1	30	1027	0.1	828	828	0	0.189
Elvaloy	SAFT	6042605	04/26/06	-30	-30	1	1	60	1030	0.115	722	719	-0.41551	0.218
Elvaloy	SAFT	6042605	04/26/06	-30	-30	1	1	120	1033	0.136	612	612	0	0.247
Elvaloy	SAFT	6042605	04/26/06	-30	-30	1	1	240	1036	0.164	509	510	0.196464	0.276
Elvaloy	SAFT	6042606	04/26/06	-30	-30	1	2	8	1027	0.076	1090	1089	-0.09174	0.14
Elvaloy	SAFT	6042606	04/26/06	-30	-30	1	2	15	1029	0.084	988	988	0	0.17
Elvaloy	SAFT	6042606	04/26/06	-30	-30	1	2	30	1032	0.096	867	868	0.11534	0.203
Elvaloy	SAFT	6042606	04/26/06	-30	-30	1	2	60	1035	0.112	745	746	0.134228	0.236
Elvaloy	SAFT	6042606	04/26/06	-30	-30	1	2	120	1036	0.133	628	626	-0.31847	0.269
Elvaloy	SAFT	6042606	04/26/06	-30	-30	1	2	240	1037	0.163	513	514	0.194932	0.302
Elvaloy	SAFT	6042607	04/26/06	-30	-30	2	1	8	1040	0.077	1089	1084	-0.45914	0.141
Elvaloy	SAFT	6042607	04/26/06	-30	-30	2	1	15	1041	0.086	976	984	0.819672	0.168
Elvaloy	SAFT	6042607	04/26/06	-30	-30	2	1	30	1044	0.097	868	867	-0.11521	0.197
Elvaloy	SAFT	6042607	04/26/06	-30	-30	2	1	60	1044	0.112	752	749	-0.39894	0.227
Elvaloy	SAFT	6042607	04/26/06	-30	-30	2	1	120	1045	0.133	634	633	-0.15773	0.256
Elvaloy	SAFT	6042607	04/26/06	-30	-30	2	1	240	1046	0.161	524	525	0.19084	0.286
Elvaloy	SAFT	6042608	04/26/06	-30	-30	2	2	8	1035	0.076	1098	1093	-0.45537	0.146
Elvaloy	SAFT	6042608	04/26/06	-30	-30	2	2	15	1036	0.085	983	988	0.508647	0.173
Elvaloy	SAFT	6042608	04/26/06	-30	-30	2	2	30	1038	0.097	863	867	0.463499	0.203
Elvaloy	SAFT	6042608	04/26/06	-30	-30	2	2	60	1041	0.112	749	746	-0.40053	0.233
Elvaloy	SAFT	6042608	04/26/06	-30	-30	2	2	120	1042	0.133	632	628	-0.63291	0.263
Elvaloy	SAFT	6042608	04/26/06	-30	-30	2	2	240	1043	0.163	516	518	0.387597	0.292
Elvaloy	SAFT	6042513	04/25/06	-24	-24	1	1	8	951	0.124	618	618	0	0.218
Elvaloy	SAFT	6042513	04/25/06	-24	-24	1	1	15	952	0.144	533	533	0	0.25
Elvaloy	SAFT	6042513	04/25/06	-24	-24	1	1	30	955	0.174	443	443	0	0.286
Elvaloy	SAFT	6042513	04/25/06	-24	-24	1	1	60	957	0.215	359	359	0	0.321
Elvaloy	SAFT	6042513	04/25/06	-24	-24	1	1	120	959	0.272	284	284	0	0.357
Elvaloy	SAFT	6042513	04/25/06	-24	-24	1	1	240	960	0.354	219	219	0	0.392
Elvaloy	SAFT	6042514	04/25/06	-24	-24	1	2	8	956	0.131	588	588	0	0.217

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	SAFT	6042514	04/25/06	-24	-24	1	2	15	957	0.152	508	508	0	0.249
Elvaloy	SAFT	6042514	04/25/06	-24	-24	1	2	30	959	0.183	423	422	-0.23641	0.285
Elvaloy	SAFT	6042514	04/25/06	-24	-24	1	2	60	960	0.226	342	342	0	0.32
Elvaloy	SAFT	6042514	04/25/06	-24	-24	1	2	120	961	0.286	271	271	0	0.356
Elvaloy	SAFT	6042514	04/25/06	-24	-24	1	2	240	962	0.371	209	209	0	0.392
Elvaloy	SAFT	6042515	04/25/06	-24	-24	2	1	8	961	0.124	625	625	0	0.224
Elvaloy	SAFT	6042515	04/25/06	-24	-24	2	1	15	961	0.144	538	537	-0.18587	0.256
Elvaloy	SAFT	6042515	04/25/06	-24	-24	2	1	30	962	0.175	443	445	0.451467	0.291
Elvaloy	SAFT	6042515	04/25/06	-24	-24	2	1	60	962	0.216	359	359	0	0.325
Elvaloy	SAFT	6042515	04/25/06	-24	-24	2	1	120	962	0.273	284	283	-0.35211	0.36
Elvaloy	SAFT	6042515	04/25/06	-24	-24	2	1	240	961	0.356	218	218	0	0.395
Elvaloy	SAFT	6042516	04/25/06	-24	-24	2	2	8	943	0.15	507	506	-0.19724	0.177
Elvaloy	SAFT	6042516	04/25/06	-24	-24	2	2	15	945	0.17	448	449	0.223214	0.21
Elvaloy	SAFT	6042516	04/25/06	-24	-24	2	2	30	948	0.2	382	383	0.26178	0.247
Elvaloy	SAFT	6042516	04/25/06	-24	-24	2	2	60	950	0.24	319	319	0	0.283
Elvaloy	SAFT	6042516	04/25/06	-24	-24	2	2	120	953	0.297	259	258	-0.3861	0.32
Elvaloy	SAFT	6042516	04/25/06	-24	-24	2	2	240	955	0.377	204	204	0	0.357
Elvaloy	SAFT	6042405	04/24/06	-18	-18	1	1	8	1044	0.34	248	247	-0.40323	0.252
Elvaloy	SAFT	6042405	04/24/06	-18	-18	1	1	15	1046	0.405	208	209	0.480769	0.291
Elvaloy	SAFT	6042405	04/24/06	-18	-18	1	1	30	1049	0.504	168	168	0	0.334
Elvaloy	SAFT	6042405	04/24/06	-18	-18	1	1	60	1053	0.646	131	131	0	0.377
Elvaloy	SAFT	6042405	04/24/06	-18	-18	1	1	120	1056	0.854	100	100	0	0.42
Elvaloy	SAFT	6042405	04/24/06	-18	-18	1	1	240	1058	1.164	73	73	0	0.463
Elvaloy	SAFT	6042406	04/24/06	-18	-18	1	2	8	1030	0.31	268	268	0	0.286
Elvaloy	SAFT	6042406	04/24/06	-18	-18	1	2	15	1030	0.375	221	221	0	0.32
Elvaloy	SAFT	6042406	04/24/06	-18	-18	1	2	30	1032	0.476	175	175	0	0.359
Elvaloy	SAFT	6042406	04/24/06	-18	-18	1	2	60	1034	0.619	135	135	0	0.397
Elvaloy	SAFT	6042406	04/24/06	-18	-18	1	2	120	1034	0.826	101	101	0	0.436
Elvaloy	SAFT	6042406	04/24/06	-18	-18	1	2	240	1034	1.133	74	74	0	0.474
Elvaloy	SAFT	6042407	04/24/06	-18	-18	2	1	8	1054	0.245	347	346	-0.28818	0.315
Elvaloy	SAFT	6042407	04/24/06	-18	-18	2	1	15	1056	0.303	281	282	0.355872	0.344
Elvaloy	SAFT	6042407	04/24/06	-18	-18	2	1	30	1061	0.39	219	219	0	0.376
Elvaloy	SAFT	6042407	04/24/06	-18	-18	2	1	60	1064	0.513	167	167	0	0.409

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	SAFT	6042407	04/24/06	-18	-18	2	1	120	1068	0.691	125	124	-0.8	0.441
Elvaloy	SAFT	6042407	04/24/06	-18	-18	2	1	240	1073	0.955	91	91	0	0.473
Elvaloy	SAFT	6042408	04/24/06	-18	-18	2	2	8	1032	0.274	304	304	0	0.306
Elvaloy	SAFT	6042408	04/24/06	-18	-18	2	2	15	1033	0.336	248	248	0	0.339
Elvaloy	SAFT	6042408	04/24/06	-18	-18	2	2	30	1034	0.431	193	194	0.518135	0.376
Elvaloy	SAFT	6042408	04/24/06	-18	-18	2	2	60	1038	0.568	147	147	0	0.413
Elvaloy	SAFT	6042408	04/24/06	-18	-18	2	2	120	1041	0.769	109	109	0	0.449
Elvaloy	SAFT	6042408	04/24/06	-18	-18	2	2	240	1042	1.064	79	79	0	0.486

Table 105. Elvaloy MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	MGRF	9090101	40057	-30	-30	1	1	8	970	0.07	1117	1117	0	0.133
Elvaloy	MGRF	9090101	40057	-30	-30	1	1	15	972	0.077	1018	1018	0	0.162
Elvaloy	MGRF	9090101	40057	-30	-30	1	1	30	974	0.087	903	901	-0.22148	0.193
Elvaloy	MGRF	9090101	40057	-30	-30	1	1	60	974	0.101	778	779	0.128535	0.224
Elvaloy	MGRF	9090101	40057	-30	-30	1	1	120	975	0.119	661	660	-0.15129	0.255
Elvaloy	MGRF	9090101	40057	-30	-30	1	1	240	977	0.144	547	547	0	0.287
Elvaloy	MGRF	9090102	40057	-30	-30	1	2	8	982	0.068	1164	1160	-0.34364	0.144
Elvaloy	MGRF	9090102	40057	-30	-30	1	2	15	984	0.076	1044	1052	0.766284	0.167
Elvaloy	MGRF	9090102	40057	-30	-30	1	2	30	985	0.085	934	929	-0.53533	0.193
Elvaloy	MGRF	9090102	40057	-30	-30	1	2	60	986	0.099	803	805	0.249066	0.219
Elvaloy	MGRF	9090102	40057	-30	-30	1	2	120	989	0.116	687	686	-0.14556	0.244
Elvaloy	MGRF	9090102	40057	-30	-30	1	2	240	995	0.14	573	574	0.17452	0.27
Elvaloy	MGRF	9090103	40057	-30	-30	2	1	8	989	0.071	1123	1123	0	0.134
Elvaloy	MGRF	9090103	40057	-30	-30	2	1	15	990	0.078	1023	1024	0.097752	0.161
Elvaloy	MGRF	9090103	40057	-30	-30	2	1	30	991	0.088	908	907	-0.11013	0.19
Elvaloy	MGRF	9090103	40057	-30	-30	2	1	60	994	0.102	786	787	0.127226	0.219
Elvaloy	MGRF	9090103	40057	-30	-30	2	1	120	996	0.12	669	669	0	0.248
Elvaloy	MGRF	9090103	40057	-30	-30	2	1	240	1003	0.145	558	558	0	0.278
Elvaloy	MGRF	9090104	40057	-30	-29.9	2	2	8	972	0.085	922	921	-0.10846	0.123

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	MGRF	9090104	40057	-30	-29.9	2	2	15	974	0.093	844	846	0.236967	0.147
Elvaloy	MGRF	9090104	40057	-30	-29.9	2	2	30	977	0.104	757	757	0	0.174
Elvaloy	MGRF	9090104	40057	-30	-29.9	2	2	60	979	0.119	663	664	0.15083	0.202
Elvaloy	MGRF	9090104	40057	-30	-29.9	2	2	120	982	0.138	574	572	-0.34843	0.229
Elvaloy	MGRF	9090104	40057	-30	-29.9	2	2	240	989	0.165	483	484	0.207039	0.256
Elvaloy	MGRF	9082101	39681	-24	-24	1	1	8	963	0.109	712	713	0.140449	0.216
Elvaloy	MGRF	9082101	39681	-24	-24	1	1	15	965	0.126	618	617	-0.16181	0.244
Elvaloy	MGRF	9082101	39681	-24	-24	1	1	30	966	0.151	516	515	-0.1938	0.275
Elvaloy	MGRF	9082101	39681	-24	-24	1	1	60	965	0.185	421	421	0	0.307
Elvaloy	MGRF	9082101	39681	-24	-24	1	1	120	965	0.231	337	337	0	0.338
Elvaloy	MGRF	9082101	39681	-24	-24	1	1	240	965	0.295	264	264	0	0.369
Elvaloy	MGRF	9082102	39681	-24	-24	1	2	8	980	0.112	706	705	-0.14164	0.22
Elvaloy	MGRF	9082102	39681	-24	-24	1	2	15	981	0.13	608	609	0.164474	0.245
Elvaloy	MGRF	9082102	39681	-24	-24	1	2	30	982	0.156	508	509	0.19685	0.273
Elvaloy	MGRF	9082102	39681	-24	-24	1	2	60	984	0.19	418	417	-0.23923	0.301
Elvaloy	MGRF	9082102	39681	-24	-24	1	2	120	985	0.236	337	335	-0.59347	0.329
Elvaloy	MGRF	9082102	39681	-24	-24	1	2	240	989	0.302	264	265	0.378788	0.356
Elvaloy	MGRF	9082103	39681	-24	-24	2	1	8	974	0.121	649	650	0.154083	0.207
Elvaloy	MGRF	9082103	39681	-24	-24	2	1	15	976	0.139	566	565	-0.17668	0.236
Elvaloy	MGRF	9082103	39681	-24	-24	2	1	30	978	0.166	475	474	-0.21053	0.268
Elvaloy	MGRF	9082103	39681	-24	-24	2	1	60	979	0.203	389	390	0.257069	0.3
Elvaloy	MGRF	9082103	39681	-24	-24	2	1	120	981	0.253	313	313	0	0.332
Elvaloy	MGRF	9082103	39681	-24	-24	2	1	240	985	0.323	246	246	0	0.365
Elvaloy	MGRF	9082104	39681	-24	-24	2	2	8	963	0.139	559	558	-0.17889	0.169
Elvaloy	MGRF	9082104	39681	-24	-24	2	2	15	964	0.156	498	498	0	0.197
Elvaloy	MGRF	9082104	39681	-24	-24	2	2	30	967	0.182	428	430	0.46729	0.229
Elvaloy	MGRF	9082104	39681	-24	-24	2	2	60	968	0.215	363	363	0	0.26
Elvaloy	MGRF	9082104	39681	-24	-24	2	2	120	970	0.261	300	299	-0.33333	0.292
Elvaloy	MGRF	9082104	39681	-24	-24	2	2	240	974	0.325	242	242	0	0.324
Elvaloy	MGRF	9082809	37131	-18	-18	1	1	8	945	0.239	319	318	-0.31348	0.267
Elvaloy	MGRF	9082809	37131	-18	-18	1	1	15	947	0.287	266	267	0.37594	0.296
Elvaloy	MGRF	9082809	37131	-18	-18	1	1	30	949	0.356	215	215	0	0.327
Elvaloy	MGRF	9082809	37131	-18	-18	1	1	60	953	0.453	170	170	0	0.358

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Elvaloy	MGRF	9082809	37131	-18	-18	1	1	120	955	0.588	131	131	0	0.39
Elvaloy	MGRF	9082809	37131	-18	-18	1	1	240	958	0.783	99	99	0	0.421
Elvaloy	MGRF	9082810	37131	-18	-18	1	2	8	953	0.221	348	348	0	0.288
Elvaloy	MGRF	9082810	37131	-18	-18	1	2	15	956	0.268	288	288	0	0.315
Elvaloy	MGRF	9082810	37131	-18	-18	1	2	30	959	0.338	229	229	0	0.345
Elvaloy	MGRF	9082810	37131	-18	-18	1	2	60	962	0.435	178	178	0	0.375
Elvaloy	MGRF	9082810	37131	-18	-18	1	2	120	965	0.572	136	136	0	0.404
Elvaloy	MGRF	9082810	37131	-18	-18	1	2	240	972	0.77	102	102	0	0.434
Elvaloy	MGRF	9082811	37131	-18	-18	2	1	8	974	0.205	383	383	0	0.297
Elvaloy	MGRF	9082811	37131	-18	-18	2	1	15	975	0.25	314	315	0.318471	0.325
Elvaloy	MGRF	9082811	37131	-18	-18	2	1	30	975	0.316	249	249	0	0.356
Elvaloy	MGRF	9082811	37131	-18	-18	2	1	60	976	0.409	192	192	0	0.386
Elvaloy	MGRF	9082811	37131	-18	-18	2	1	120	977	0.541	146	146	0	0.417
Elvaloy	MGRF	9082811	37131	-18	-18	2	1	240	980	0.732	108	108	0	0.447
Elvaloy	MGRF	9082812	37131	-18	-18	2	2	8	976	0.216	364	364	0	0.285
Elvaloy	MGRF	9082812	37131	-18	-18	2	2	15	979	0.262	301	302	0.332226	0.316
Elvaloy	MGRF	9082812	37131	-18	-18	2	2	30	981	0.33	240	240	0	0.349
Elvaloy	MGRF	9082812	37131	-18	-18	2	2	60	982	0.426	186	186	0	0.382
Elvaloy	MGRF	9082812	37131	-18	-18	2	2	120	983	0.562	141	141	0	0.415
Elvaloy	MGRF	9082812	37131	-18	-18	2	2	240	984	0.759	105	105	0	0.449

Table 106. Novophalt Tank BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	TANK	5053105	05/31/05	-24	-24	1	1	8	1060	0.072	1187	1185	-0.16849	0.129
Novophalt	TANK	5053105	05/31/05	-24	-24	1	1	15	1060	0.079	1082	1084	0.184843	0.156
Novophalt	TANK	5053105	05/31/05	-24	-24	1	1	30	1061	0.089	961	963	0.208117	0.186
Novophalt	TANK	5053105	05/31/05	-24	-24	1	1	60	1062	0.102	839	838	-0.11919	0.216
Novophalt	TANK	5053105	05/31/05	-24	-24	1	1	120	1063	0.12	714	714	0	0.245
Novophalt	TANK	5053105	05/31/05	-24	-24	1	1	240	1064	0.144	596	596	0	0.275
Novophalt	TANK	5053106	05/31/05	-24	-24	1	2	8	1068	0.069	1248	1247	-0.08013	0.138

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	TANK	5053106	05/31/05	-24	-24	1	2	15	1069	0.076	1134	1135	0.088183	0.161
Novophalt	TANK	5053106	05/31/05	-24	-24	1	2	30	1069	0.086	1002	1006	0.399202	0.187
Novophalt	TANK	5053106	05/31/05	-24	-24	1	2	60	1069	0.098	880	876	-0.45455	0.212
Novophalt	TANK	5053106	05/31/05	-24	-24	1	2	120	1069	0.115	750	750	0	0.238
Novophalt	TANK	5053106	05/31/05	-24	-24	1	2	240	1070	0.137	630	630	0	0.263
Novophalt	TANK	5053107	05/31/05	-24	-24	2	1	8	1054	0.071	1197	1194	-0.25063	0.126
Novophalt	TANK	5053107	05/31/05	-24	-24	2	1	15	1056	0.078	1092	1094	0.18315	0.153
Novophalt	TANK	5053107	05/31/05	-24	-24	2	1	30	1058	0.088	969	974	0.515996	0.183
Novophalt	TANK	5053107	05/31/05	-24	-24	2	1	60	1060	0.1	855	849	-0.70175	0.212
Novophalt	TANK	5053107	05/31/05	-24	-24	2	1	120	1061	0.118	725	726	0.137931	0.242
Novophalt	TANK	5053107	05/31/05	-24	-24	2	1	240	1061	0.141	607	607	0	0.271
Novophalt	TANK	5053108	05/31/05	-24	-24	2	2	8	1062	0.073	1173	1173	0	0.13
Novophalt	TANK	5053108	05/31/05	-24	-24	2	2	15	1063	0.08	1071	1072	0.093371	0.157
Novophalt	TANK	5053108	05/31/05	-24	-24	2	2	30	1065	0.09	954	952	-0.20964	0.187
Novophalt	TANK	5053108	05/31/05	-24	-24	2	2	60	1066	0.104	826	828	0.242131	0.216
Novophalt	TANK	5053108	05/31/05	-24	-24	2	2	120	1066	0.122	705	705	0	0.246
Novophalt	TANK	5053108	05/31/05	-24	-24	2	2	240	1066	0.146	589	588	-0.16978	0.276
Novophalt	TANK	5052615	05/26/05	-18	-18	1	1	8	1012	0.141	579	579	0	0.222
Novophalt	TANK	5052615	05/26/05	-18	-18	1	1	15	1013	0.164	498	498	0	0.256
Novophalt	TANK	5052615	05/26/05	-18	-18	1	1	30	1011	0.198	412	412	0	0.294
Novophalt	TANK	5052615	05/26/05	-18	-18	1	1	60	1010	0.246	331	331	0	0.332
Novophalt	TANK	5052615	05/26/05	-18	-18	1	1	120	1010	0.313	260	260	0	0.369
Novophalt	TANK	5052615	05/26/05	-18	-18	1	1	240	1012	0.411	199	199	0	0.407
Novophalt	TANK	5052612	05/26/05	-18	-18	1	2	8	1009	0.153	532	532	0	0.223
Novophalt	TANK	5052612	05/26/05	-18	-18	1	2	15	1009	0.178	457	457	0	0.257
Novophalt	TANK	5052612	05/26/05	-18	-18	1	2	30	1011	0.216	377	378	0.265252	0.293
Novophalt	TANK	5052612	05/26/05	-18	-18	1	2	60	1012	0.268	304	304	0	0.33
Novophalt	TANK	5052612	05/26/05	-18	-18	1	2	120	1012	0.341	239	239	0	0.367
Novophalt	TANK	5052612	05/26/05	-18	-18	1	2	240	1012	0.446	183	183	0	0.403
Novophalt	TANK	5052613	05/26/05	-18	-18	2	1	8	1035	0.13	642	642	0	0.234
Novophalt	TANK	5052613	05/26/05	-18	-18	2	1	15	1036	0.152	550	549	-0.18182	0.268
Novophalt	TANK	5052613	05/26/05	-18	-18	2	1	30	1037	0.186	450	450	0	0.305
Novophalt	TANK	5052613	05/26/05	-18	-18	2	1	60	1039	0.233	360	360	0	0.342

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	TANK	5052613	05/26/05	-18	-18	2	1	120	1039	0.299	280	280	0	0.379
Novophalt	TANK	5052613	05/26/05	-18	-18	2	1	240	1039	0.394	213	213	0	0.416
Novophalt	TANK	5052614	05/26/05	-18	-18	2	2	8	1039	0.188	446	445	-0.22422	0.171
Novophalt	TANK	5052614	05/26/05	-18	-18	2	2	15	1039	0.212	395	395	0	0.209
Novophalt	TANK	5052614	05/26/05	-18	-18	2	2	30	1038	0.249	336	337	0.297619	0.25
Novophalt	TANK	5052614	05/26/05	-18	-18	2	2	60	1038	0.299	280	279	-0.35714	0.292
Novophalt	TANK	5052614	05/26/05	-18	-18	2	2	120	1036	0.371	225	225	0	0.334
Novophalt	TANK	5052614	05/26/05	-18	-18	2	2	240	1035	0.475	176	176	0	0.375
Novophalt	TANK	5052708	05/27/05	-12	-12	1	1	8	1026	0.278	298	297	-0.33557	0.293
Novophalt	TANK	5052708	05/27/05	-12	-12	1	1	15	1028	0.339	245	245	0	0.325
Novophalt	TANK	5052708	05/27/05	-12	-12	1	1	30	1032	0.431	193	193	0	0.36
Novophalt	TANK	5052708	05/27/05	-12	-12	1	1	60	1036	0.562	149	149	0	0.395
Novophalt	TANK	5052708	05/27/05	-12	-12	1	1	120	1040	0.75	112	112	0	0.43
Novophalt	TANK	5052708	05/27/05	-12	-12	1	1	240	1043	1.028	82	82	0	0.465
Novophalt	TANK	5052709	05/27/05	-12	-11.9	1	2	8	1025	0.269	307	307	0	0.297
Novophalt	TANK	5052709	05/27/05	-12	-11.9	1	2	15	1026	0.328	252	252	0	0.327
Novophalt	TANK	5052709	05/27/05	-12	-11.9	1	2	30	1027	0.417	199	199	0	0.36
Novophalt	TANK	5052709	05/27/05	-12	-11.9	1	2	60	1029	0.541	153	153	0	0.394
Novophalt	TANK	5052709	05/27/05	-12	-11.9	1	2	120	1031	0.721	115	115	0	0.427
Novophalt	TANK	5052709	05/27/05	-12	-11.9	1	2	240	1035	0.986	85	85	0	0.461
Novophalt	TANK	5052710	05/27/05	-12	-11.9	2	1	8	1037	0.275	304	304	0	0.292
Novophalt	TANK	5052710	05/27/05	-12	-11.9	2	1	15	1038	0.334	251	251	0	0.324
Novophalt	TANK	5052710	05/27/05	-12	-11.9	2	1	30	1042	0.425	198	198	0	0.359
Novophalt	TANK	5052710	05/27/05	-12	-11.9	2	1	60	1045	0.553	152	152	0	0.394
Novophalt	TANK	5052710	05/27/05	-12	-11.9	2	1	120	1047	0.737	115	115	0	0.429
Novophalt	TANK	5052710	05/27/05	-12	-11.9	2	1	240	1049	1.006	84	84	0	0.464
Novophalt	TANK	5052711	05/27/05	-12	-12	2	2	8	1043	0.261	322	322	0	0.312
Novophalt	TANK	5052711	05/27/05	-12	-12	2	2	15	1046	0.322	262	262	0	0.342
Novophalt	TANK	5052711	05/27/05	-12	-12	2	2	30	1049	0.414	204	204	0	0.375
Novophalt	TANK	5052711	05/27/05	-12	-12	2	2	60	1052	0.544	156	156	0	0.408
Novophalt	TANK	5052711	05/27/05	-12	-12	2	2	120	1054	0.731	116	116	0	0.441
Novophalt	TANK	5052711	05/27/05	-12	-12	2	2	240	1055	1.007	84	85	1.190476	0.474

Table 107. Novophalt RTFOT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	RTFOT	6042501	04/25/06	-24	-24	1	1	8	1054	0.068	1250	1245	-0.4	0.125
Novophalt	RTFOT	6042501	04/25/06	-24	-24	1	1	15	1054	0.075	1133	1143	0.882613	0.148
Novophalt	RTFOT	6042501	04/25/06	-24	-24	1	1	30	1057	0.083	1027	1022	-0.48685	0.174
Novophalt	RTFOT	6042501	04/25/06	-24	-24	1	1	60	1057	0.095	897	898	0.111483	0.2
Novophalt	RTFOT	6042501	04/25/06	-24	-24	1	1	120	1058	0.11	776	775	-0.12887	0.225
Novophalt	RTFOT	6042501	04/25/06	-24	-24	1	1	240	1058	0.13	656	657	0.152439	0.251
Novophalt	RTFOT	6042502	04/25/06	-24	-24	1	2	8	1027	0.085	974	972	-0.20534	0.099
Novophalt	RTFOT	6042502	04/25/06	-24	-24	1	2	15	1030	0.092	903	907	0.442968	0.123
Novophalt	RTFOT	6042502	04/25/06	-24	-24	1	2	30	1033	0.101	825	825	0	0.15
Novophalt	RTFOT	6042502	04/25/06	-24	-24	1	2	60	1035	0.113	739	736	-0.40595	0.177
Novophalt	RTFOT	6042502	04/25/06	-24	-24	1	2	120	1039	0.13	644	645	0.15528	0.204
Novophalt	RTFOT	6042502	04/25/06	-24	-24	1	2	240	1045	0.152	554	555	0.180505	0.231
Novophalt	RTFOT	6042503	04/25/06	-24	-24	2	1	8	1067	0.071	1212	1213	0.082508	0.117
Novophalt	RTFOT	6042503	04/25/06	-24	-24	2	1	15	1069	0.077	1119	1118	-0.08937	0.142
Novophalt	RTFOT	6042503	04/25/06	-24	-24	2	1	30	1070	0.086	1003	1003	0	0.171
Novophalt	RTFOT	6042503	04/25/06	-24	-24	2	1	60	1072	0.098	882	882	0	0.199
Novophalt	RTFOT	6042503	04/25/06	-24	-24	2	1	120	1074	0.114	760	761	0.131579	0.228
Novophalt	RTFOT	6042503	04/25/06	-24	-24	2	1	240	1078	0.135	644	643	-0.15528	0.256
Novophalt	RTFOT	6042504	04/25/06	-24	-24	2	2	8	1051	0.108	785	784	-0.12739	0.085
Novophalt	RTFOT	6042504	04/25/06	-24	-24	2	2	15	1053	0.115	738	739	0.135501	0.103
Novophalt	RTFOT	6042504	04/25/06	-24	-24	2	2	30	1056	0.125	681	683	0.293686	0.124
Novophalt	RTFOT	6042504	04/25/06	-24	-24	2	2	60	1059	0.137	623	622	-0.16051	0.145
Novophalt	RTFOT	6042504	04/25/06	-24	-24	2	2	120	1062	0.153	560	559	-0.17857	0.165
Novophalt	RTFOT	6042504	04/25/06	-24	-24	2	2	240	1066	0.174	494	495	0.202429	0.186
Novophalt	RTFOT	6041913	04/17/06	-18	-18	1	1	8	1006	0.141	575	574	-0.17391	0.17
Novophalt	RTFOT	6041913	04/17/06	-18	-18	1	1	15	1007	0.159	511	512	0.195695	0.194
Novophalt	RTFOT	6041913	04/17/06	-18	-18	1	1	30	1010	0.184	443	443	0	0.221
Novophalt	RTFOT	6041913	04/17/06	-18	-18	1	1	60	1013	0.216	378	377	-0.26455	0.248
Novophalt	RTFOT	6041913	04/17/06	-18	-18	1	1	120	1015	0.26	315	315	0	0.275
Novophalt	RTFOT	6041913	04/17/06	-18	-18	1	1	240	1018	0.319	257	258	0.389105	0.301
Novophalt	RTFOT	6041914	04/17/06	-18	-18	1	2	8	1013	0.143	571	571	0	0.158

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	RTFOT	6041914	04/17/06	-18	-18	1	2	15	1014	0.16	511	512	0.195695	0.184
Novophalt	RTFOT	6041914	04/17/06	-18	-18	1	2	30	1016	0.183	448	446	-0.44643	0.214
Novophalt	RTFOT	6041914	04/17/06	-18	-18	1	2	60	1019	0.216	380	381	0.263158	0.243
Novophalt	RTFOT	6041914	04/17/06	-18	-18	1	2	120	1021	0.258	319	319	0	0.273
Novophalt	RTFOT	6041914	04/17/06	-18	-18	1	2	240	1023	0.316	261	261	0	0.302
Novophalt	RTFOT	6041915	04/17/06	-18	-18	2	1	8	1025	0.127	651	651	0	0.177
Novophalt	RTFOT	6041915	04/17/06	-18	-18	2	1	15	1025	0.143	578	578	0	0.2
Novophalt	RTFOT	6041915	04/17/06	-18	-18	2	1	30	1027	0.166	499	499	0	0.225
Novophalt	RTFOT	6041915	04/17/06	-18	-18	2	1	60	1027	0.196	422	423	0.236967	0.249
Novophalt	RTFOT	6041915	04/17/06	-18	-18	2	1	120	1028	0.234	354	353	-0.28249	0.274
Novophalt	RTFOT	6041915	04/17/06	-18	-18	2	1	240	1029	0.287	289	289	0	0.299
Novophalt	RTFOT	6041916	04/17/06	-18	-18	2	2	8	1024	0.123	671	671	0	0.176
Novophalt	RTFOT	6041916	04/17/06	-18	-18	2	2	15	1026	0.139	595	596	0.168067	0.203
Novophalt	RTFOT	6041916	04/17/06	-18	-18	2	2	30	1029	0.162	512	512	0	0.232
Novophalt	RTFOT	6041916	04/17/06	-18	-18	2	2	60	1031	0.192	433	432	-0.23095	0.261
Novophalt	RTFOT	6041916	04/17/06	-18	-18	2	2	120	1033	0.234	356	357	0.280899	0.291
Novophalt	RTFOT	6041916	04/17/06	-18	-18	2	2	240	1035	0.289	289	289	0	0.32
Novophalt	RTFOT	6041909	04/19/06	-12	-12	1	1	8	1035	0.264	316	316	0	0.238
Novophalt	RTFOT	6041909	04/19/06	-12	-12	1	1	15	1034	0.31	269	270	0.371747	0.266
Novophalt	RTFOT	6041909	04/19/06	-12	-12	1	1	30	1034	0.376	222	222	0	0.298
Novophalt	RTFOT	6041909	04/19/06	-12	-12	1	1	60	1034	0.467	179	178	-0.55866	0.329
Novophalt	RTFOT	6041909	04/19/06	-12	-12	1	1	120	1035	0.594	140	140	0	0.361
Novophalt	RTFOT	6041909	04/19/06	-12	-12	1	1	240	1037	0.773	108	108	0	0.392
Novophalt	RTFOT	6041910	04/19/06	-12	-12	1	2	8	1052	0.239	355	355	0	0.261
Novophalt	RTFOT	6041910	04/19/06	-12	-12	1	2	15	1051	0.284	298	299	0.33557	0.288
Novophalt	RTFOT	6041910	04/19/06	-12	-12	1	2	30	1051	0.35	242	242	0	0.318
Novophalt	RTFOT	6041910	04/19/06	-12	-12	1	2	60	1050	0.441	192	192	0	0.348
Novophalt	RTFOT	6041910	04/19/06	-12	-12	1	2	120	1049	0.566	149	149	0	0.378
Novophalt	RTFOT	6041910	04/19/06	-12	-12	1	2	240	1048	0.743	114	114	0	0.408
Novophalt	RTFOT	6041911	04/19/06	-12	-12	2	1	8	1047	0.245	345	344	-0.28986	0.246
Novophalt	RTFOT	6041911	04/19/06	-12	-12	2	1	15	1049	0.289	293	293	0	0.274
Novophalt	RTFOT	6041911	04/19/06	-12	-12	2	1	30	1050	0.354	239	240	0.41841	0.304
Novophalt	RTFOT	6041911	04/19/06	-12	-12	2	1	60	1053	0.442	192	192	0	0.334

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	RTFOT	6041911	04/19/06	-12	-12	2	1	120	1054	0.563	151	151	0	0.364
Novophalt	RTFOT	6041911	04/19/06	-12	-12	2	1	240	1057	0.736	116	116	0	0.395
Novophalt	RTFOT	6041912	04/19/06	-12	-12	2	2	8	1045	0.267	316	315	-0.31646	0.254
Novophalt	RTFOT	6041912	04/19/06	-12	-12	2	2	15	1045	0.316	267	267	0	0.28
Novophalt	RTFOT	6041912	04/19/06	-12	-12	2	2	30	1046	0.388	217	217	0	0.309
Novophalt	RTFOT	6041912	04/19/06	-12	-12	2	2	60	1046	0.485	174	174	0	0.337
Novophalt	RTFOT	6041912	04/19/06	-12	-12	2	2	120	1047	0.619	136	136	0	0.366
Novophalt	RTFOT	6041912	04/19/06	-12	-12	2	2	240	1046	0.806	105	105	0	0.395

Table 108. Novophalt SAFT BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	SAFT	6042609	04/26/06	-24	-24	1	1	8	1011	0.069	1181	1183	0.169348	0.128
Novophalt	SAFT	6042609	04/26/06	-24	-24	1	1	15	1011	0.075	1087	1083	-0.36799	0.154
Novophalt	SAFT	6042609	04/26/06	-24	-24	1	1	30	1012	0.085	960	964	0.416667	0.182
Novophalt	SAFT	6042609	04/26/06	-24	-24	1	1	60	1014	0.097	843	841	-0.23725	0.211
Novophalt	SAFT	6042609	04/26/06	-24	-24	1	1	120	1015	0.114	718	719	0.139276	0.24
Novophalt	SAFT	6042609	04/26/06	-24	-24	1	1	240	1018	0.136	604	603	-0.16556	0.268
Novophalt	SAFT	6042610	04/26/06	-24	-24	1	2	8	1010	0.104	783	779	-0.51086	0.085
Novophalt	SAFT	6042610	04/26/06	-24	-24	1	2	15	1011	0.112	728	734	0.824176	0.108
Novophalt	SAFT	6042610	04/26/06	-24	-24	1	2	30	1013	0.121	675	675	0	0.133
Novophalt	SAFT	6042610	04/26/06	-24	-24	1	2	60	1016	0.134	611	610	-0.16367	0.158
Novophalt	SAFT	6042610	04/26/06	-24	-24	1	2	120	1019	0.151	544	542	-0.36765	0.183
Novophalt	SAFT	6042610	04/26/06	-24	-24	1	2	240	1024	0.175	472	473	0.211864	0.208
Novophalt	SAFT	6042611	04/26/06	-24	-24	2	1	8	1016	0.113	725	723	-0.27586	0.07
Novophalt	SAFT	6042611	04/26/06	-24	-24	2	1	15	1017	0.12	683	687	0.585652	0.093
Novophalt	SAFT	6042611	04/26/06	-24	-24	2	1	30	1019	0.129	637	638	0.156986	0.119
Novophalt	SAFT	6042611	04/26/06	-24	-24	2	1	60	1022	0.141	584	583	-0.17123	0.144
Novophalt	SAFT	6042611	04/26/06	-24	-24	2	1	120	1026	0.158	524	523	-0.19084	0.169
Novophalt	SAFT	6042611	04/26/06	-24	-24	2	1	240	1032	0.181	460	461	0.217391	0.195
Novophalt	SAFT	6042612	04/26/06	-24	-24	2	2	8	1019	0.074	1110	1111	0.09009	0.112

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	SAFT	6042612	04/26/06	-24	-24	2	2	15	1021	0.08	1029	1026	-0.29155	0.141
Novophalt	SAFT	6042612	04/26/06	-24	-24	2	2	30	1023	0.09	916	920	0.436681	0.174
Novophalt	SAFT	6042612	04/26/06	-24	-24	2	2	60	1025	0.102	810	807	-0.37037	0.206
Novophalt	SAFT	6042612	04/26/06	-24	-24	2	2	120	1026	0.12	689	692	0.435414	0.238
Novophalt	SAFT	6042612	04/26/06	-24	-24	2	2	240	1029	0.143	580	580	0	0.271
Novophalt	SAFT	6042421	04/24/06	-18	-18	1	1	8	1036	0.144	580	580	0	0.18
Novophalt	SAFT	6042421	04/24/06	-18	-18	1	1	15	1036	0.163	512	513	0.195313	0.208
Novophalt	SAFT	6042421	04/24/06	-18	-18	1	1	30	1037	0.19	440	440	0	0.239
Novophalt	SAFT	6042421	04/24/06	-18	-18	1	1	60	1038	0.227	369	369	0	0.27
Novophalt	SAFT	6042421	04/24/06	-18	-18	1	1	120	1039	0.277	302	303	0.331126	0.3
Novophalt	SAFT	6042421	04/24/06	-18	-18	1	1	240	1043	0.346	243	243	0	0.331
Novophalt	SAFT	6042422	04/24/06	-18	-18	1	2	8	1056	0.123	692	692	0	0.189
Novophalt	SAFT	6042422	04/24/06	-18	-18	1	2	15	1057	0.14	609	609	0	0.218
Novophalt	SAFT	6042422	04/24/06	-18	-18	1	2	30	1058	0.165	517	518	0.193424	0.251
Novophalt	SAFT	6042422	04/24/06	-18	-18	1	2	60	1060	0.199	429	430	0.2331	0.283
Novophalt	SAFT	6042422	04/24/06	-18	-18	1	2	120	1062	0.244	351	350	-0.2849	0.315
Novophalt	SAFT	6042422	04/24/06	-18	-18	1	2	240	1063	0.309	277	278	0.361011	0.348
Novophalt	SAFT	6042423	04/24/06	-18	-18	2	1	8	1053	0.192	442	442	0	0.126
Novophalt	SAFT	6042423	04/24/06	-18	-18	2	1	15	1054	0.21	405	405	0	0.156
Novophalt	SAFT	6042423	04/24/06	-18	-18	2	1	30	1055	0.237	359	359	0	0.188
Novophalt	SAFT	6042423	04/24/06	-18	-18	2	1	60	1055	0.273	312	312	0	0.221
Novophalt	SAFT	6042423	04/24/06	-18	-18	2	1	120	1055	0.321	265	265	0	0.253
Novophalt	SAFT	6042423	04/24/06	-18	-18	2	1	240	1055	0.388	219	219	0	0.286
Novophalt	SAFT	6042424	04/24/06	-18	-18	2	2	8	1039	0.165	508	508	0	0.14
Novophalt	SAFT	6042424	04/24/06	-18	-18	2	2	15	1040	0.182	461	461	0	0.17
Novophalt	SAFT	6042424	04/24/06	-18	-18	2	2	30	1042	0.208	404	405	0.247525	0.204
Novophalt	SAFT	6042424	04/24/06	-18	-18	2	2	60	1043	0.242	348	347	-0.28736	0.237
Novophalt	SAFT	6042424	04/24/06	-18	-18	2	2	120	1044	0.289	291	291	0	0.271
Novophalt	SAFT	6042424	04/24/06	-18	-18	2	2	240	1044	0.353	238	239	0.420168	0.304
Novophalt	SAFT	6042013	04/20/06	-12	-12	1	1	8	1008	0.274	297	296	-0.3367	0.272
Novophalt	SAFT	6042013	04/20/06	-12	-12	1	1	15	1008	0.329	247	247	0	0.3
Novophalt	SAFT	6042013	04/20/06	-12	-12	1	1	30	1009	0.41	198	199	0.505051	0.331
Novophalt	SAFT	6042013	04/20/06	-12	-12	1	1	60	1010	0.52	157	156	-0.63694	0.362

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	SAFT	6042013	04/20/06	-12	-12	1	1	120	1011	0.676	121	120	-0.82645	0.394
Novophalt	SAFT	6042013	04/20/06	-12	-12	1	1	240	1014	0.904	90	91	1.111111	0.425
Novophalt	SAFT	6042014	04/20/06	-12	-12	1	2	8	1009	0.284	286	286	0	0.262
Novophalt	SAFT	6042014	04/20/06	-12	-12	1	2	15	1009	0.339	240	240	0	0.293
Novophalt	SAFT	6042014	04/20/06	-12	-12	1	2	30	1010	0.42	194	194	0	0.327
Novophalt	SAFT	6042014	04/20/06	-12	-12	1	2	60	1011	0.533	153	153	0	0.361
Novophalt	SAFT	6042014	04/20/06	-12	-12	1	2	120	1013	0.694	118	118	0	0.395
Novophalt	SAFT	6042014	04/20/06	-12	-12	1	2	240	1015	0.927	88	88	0	0.429
Novophalt	SAFT	6042015	04/20/06	-12	-12	2	1	8	1041	0.233	360	361	0.277778	0.288
Novophalt	SAFT	6042015	04/20/06	-12	-12	2	1	15	1041	0.281	299	298	-0.33445	0.315
Novophalt	SAFT	6042015	04/20/06	-12	-12	2	1	30	1041	0.354	237	237	0	0.346
Novophalt	SAFT	6042015	04/20/06	-12	-12	2	1	60	1041	0.455	184	185	0.543478	0.377
Novophalt	SAFT	6042015	04/20/06	-12	-12	2	1	120	1042	0.597	141	141	0	0.407
Novophalt	SAFT	6042015	04/20/06	-12	-12	2	1	240	1042	0.8	105	105	0	0.438
Novophalt	SAFT	6042016	04/20/06	-12	-12	2	2	8	1025	0.255	324	324	0	0.275
Novophalt	SAFT	6042016	04/20/06	-12	-12	2	2	15	1025	0.307	269	270	0.371747	0.304
Novophalt	SAFT	6042016	04/20/06	-12	-12	2	2	30	1027	0.383	216	216	0	0.336
Novophalt	SAFT	6042016	04/20/06	-12	-12	2	2	60	1029	0.489	170	169	-0.58824	0.368
Novophalt	SAFT	6042016	04/20/06	-12	-12	2	2	120	1030	0.64	130	130	0	0.4
Novophalt	SAFT	6042016	04/20/06	-12	-12	2	2	240	1032	0.856	97	97	0	0.433

Table 109. Novophalt MGRF BBR Data.

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	MGRF	9080411	08/04/09	-24	-24	1	1	8	964	0.075	1036	1036	0	0.111
Novophalt	MGRF	9080411	08/04/09	-24	-24	1	1	15	966	0.081	962	960	-0.2079	0.132
Novophalt	MGRF	9080411	08/04/09	-24	-24	1	1	30	966	0.09	865	870	0.578035	0.155
Novophalt	MGRF	9080411	08/04/09	-24	-24	1	1	60	967	0.1	780	775	-0.64103	0.177
Novophalt	MGRF	9080411	08/04/09	-24	-24	1	1	120	967	0.115	678	680	0.294985	0.2
Novophalt	MGRF	9080411	08/04/09	-24	-24	1	1	240	969	0.133	587	587	0	0.223
Novophalt	MGRF	9080412	08/04/09	-24	-24	1	2	8	978	0.07	1127	1127	0	0.123

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	MGRF	9080412	08/04/09	-24	-24	1	2	15	978	0.076	1038	1036	-0.19268	0.143
Novophalt	MGRF	9080412	08/04/09	-24	-24	1	2	30	979	0.085	929	931	0.215285	0.166
Novophalt	MGRF	9080412	08/04/09	-24	-24	1	2	60	979	0.096	822	823	0.121655	0.189
Novophalt	MGRF	9080412	08/04/09	-24	-24	1	2	120	980	0.11	718	716	-0.27855	0.212
Novophalt	MGRF	9080412	08/04/09	-24	-24	1	2	240	980	0.129	613	613	0	0.235
Novophalt	MGRF	9081111	08/11/09	-24	-24	2	1	8	993	0.07	1144	1143	-0.08741	0.114
Novophalt	MGRF	9081111	08/11/09	-24	-24	2	1	15	994	0.076	1055	1057	0.189573	0.138
Novophalt	MGRF	9081111	08/11/09	-24	-24	2	1	30	996	0.084	956	952	-0.41841	0.164
Novophalt	MGRF	9081111	08/11/09	-24	-24	2	1	60	997	0.096	837	842	0.597372	0.19
Novophalt	MGRF	9081111	08/11/09	-24	-24	2	1	120	1001	0.11	734	731	-0.40872	0.216
Novophalt	MGRF	9081111	08/11/09	-24	-24	2	1	240	1005	0.13	623	624	0.160514	0.243
Novophalt	MGRF	9081112	08/11/09	-24	-24	2	2	8	1008	0.068	1195	1195	0	0.118
Novophalt	MGRF	9081112	08/11/09	-24	-24	2	2	15	1009	0.074	1099	1101	0.181984	0.142
Novophalt	MGRF	9081112	08/11/09	-24	-24	2	2	30	1010	0.082	993	989	-0.40282	0.169
Novophalt	MGRF	9081112	08/11/09	-24	-24	2	2	60	1010	0.094	866	871	0.577367	0.196
Novophalt	MGRF	9081112	08/11/09	-24	-24	2	2	120	1012	0.108	756	753	-0.39683	0.223
Novophalt	MGRF	9081112	08/11/09	-24	-24	2	2	240	1015	0.128	639	640	0.156495	0.25
Novophalt	MGRF	9072403	07/24/01	-18	-18	1	1	8	984	0.106	748	749	0.13369	0.2
Novophalt	MGRF	9072403	07/24/01	-18	-18	1	1	15	984	0.121	656	655	-0.15244	0.226
Novophalt	MGRF	9072403	07/24/01	-18	-18	1	1	30	983	0.143	554	555	0.180505	0.254
Novophalt	MGRF	9072403	07/24/01	-18	-18	1	1	60	983	0.172	461	461	0	0.282
Novophalt	MGRF	9072403	07/24/01	-18	-18	1	1	120	982	0.211	375	375	0	0.31
Novophalt	MGRF	9072403	07/24/01	-18	-18	1	1	240	985	0.265	300	300	0	0.338
Novophalt	MGRF	9072404	07/24/01	-18	-18	1	2	8	982	0.107	740	741	0.135135	0.199
Novophalt	MGRF	9072404	07/24/01	-18	-18	1	2	15	983	0.122	650	649	-0.15385	0.225
Novophalt	MGRF	9072404	07/24/01	-18	-18	1	2	30	983	0.144	550	549	-0.18182	0.254
Novophalt	MGRF	9072404	07/24/01	-18	-18	1	2	60	983	0.174	456	456	0	0.283
Novophalt	MGRF	9072404	07/24/01	-18	-18	1	2	120	983	0.214	370	371	0.27027	0.312
Novophalt	MGRF	9072404	07/24/01	-18	-18	1	2	240	985	0.268	296	296	0	0.341
Novophalt	MGRF	9081311	08/13/09	-18	-18	2	1	8	970	0.108	724	724	0	0.207
Novophalt	MGRF	9081311	08/13/09	-18	-18	2	1	15	971	0.124	631	631	0	0.232
Novophalt	MGRF	9081311	08/13/09	-18	-18	2	1	30	972	0.148	530	532	0.377358	0.259
Novophalt	MGRF	9081311	08/13/09	-18	-18	2	1	60	973	0.178	441	440	-0.22676	0.287

Binder	Condition	File	Date	Test Temp, C	Actual Temp, C	Replicate	Beam	Time	Force	Deflection	Measured Stiffness	Estimated Stiffness	Difference	m-value
Novophalt	MGRF	9081311	08/13/09	-18	-18	2	1	120	974	0.219	359	357	-0.5571	0.314
Novophalt	MGRF	9081311	08/13/09	-18	-18	2	1	240	976	0.277	284	285	0.352113	0.342
Novophalt	MGRF	9081312	08/13/09	-18	-18	2	2	8	960	0.107	723	723	0	0.205
Novophalt	MGRF	9081312	08/13/09	-18	-18	2	2	15	962	0.123	631	631	0	0.229
Novophalt	MGRF	9081312	08/13/09	-18	-18	2	2	30	964	0.146	532	533	0.18797	0.256
Novophalt	MGRF	9081312	08/13/09	-18	-18	2	2	60	967	0.176	443	443	0	0.282
Novophalt	MGRF	9081312	08/13/09	-18	-18	2	2	120	968	0.216	361	361	0	0.309
Novophalt	MGRF	9081312	08/13/09	-18	-18	2	2	240	972	0.272	288	288	0	0.336
Novophalt	MGRF	9073105	07/31/09	-12	-12	1	1	8	996	0.22	365	365	0	0.281
Novophalt	MGRF	9073105	07/31/09	-12	-12	1	1	15	994	0.265	302	303	0.331126	0.307
Novophalt	MGRF	9073105	07/31/09	-12	-12	1	1	30	992	0.33	242	243	0.413223	0.335
Novophalt	MGRF	9073105	07/31/09	-12	-12	1	1	60	991	0.419	191	190	-0.52356	0.363
Novophalt	MGRF	9073105	07/31/09	-12	-12	1	1	120	989	0.543	147	147	0	0.391
Novophalt	MGRF	9073105	07/31/09	-12	-12	1	1	240	987	0.719	111	111	0	0.419
Novophalt	MGRF	9073106	07/31/09	-12	-12	1	2	8	985	0.207	384	384	0	0.281
Novophalt	MGRF	9073106	07/31/09	-12	-12	1	2	15	986	0.249	319	319	0	0.306
Novophalt	MGRF	9073106	07/31/09	-12	-12	1	2	30	987	0.312	255	255	0	0.334
Novophalt	MGRF	9073106	07/31/09	-12	-12	1	2	60	989	0.397	201	201	0	0.362
Novophalt	MGRF	9073106	07/31/09	-12	-12	1	2	120	991	0.516	155	155	0	0.389
Novophalt	MGRF	9073106	07/31/09	-12	-12	1	2	240	994	0.685	117	117	0	0.417
Novophalt	MGRF	9081403	08/14/09	-12	-12	2	1	8	986	0.201	396	395	-0.25253	0.272
Novophalt	MGRF	9081403	08/14/09	-12	-12	2	1	15	988	0.241	331	331	0	0.296
Novophalt	MGRF	9081403	08/14/09	-12	-12	2	1	30	990	0.299	267	267	0	0.324
Novophalt	MGRF	9081403	08/14/09	-12	-12	2	1	60	990	0.378	211	211	0	0.351
Novophalt	MGRF	9081403	08/14/09	-12	-12	2	1	120	993	0.488	164	164	0	0.378
Novophalt	MGRF	9081403	08/14/09	-12	-12	2	1	240	999	0.644	125	125	0	0.405
Novophalt	MGRF	9081404	08/14/09	-12	-11.9	2	2	8	987	0.202	394	394	0	0.268
Novophalt	MGRF	9081404	08/14/09	-12	-11.9	2	2	15	987	0.241	330	330	0	0.294
Novophalt	MGRF	9081404	08/14/09	-12	-11.9	2	2	30	988	0.299	266	267	0.37594	0.322
Novophalt	MGRF	9081404	08/14/09	-12	-11.9	2	2	60	989	0.377	212	211	-0.4717	0.35
Novophalt	MGRF	9081404	08/14/09	-12	-11.9	2	2	120	989	0.486	164	164	0	0.379
Novophalt	MGRF	9081404	08/14/09	-12	-11.9	2	2	240	990	0.639	125	125	0	0.407

7.0 BINDER MASTER CURVES

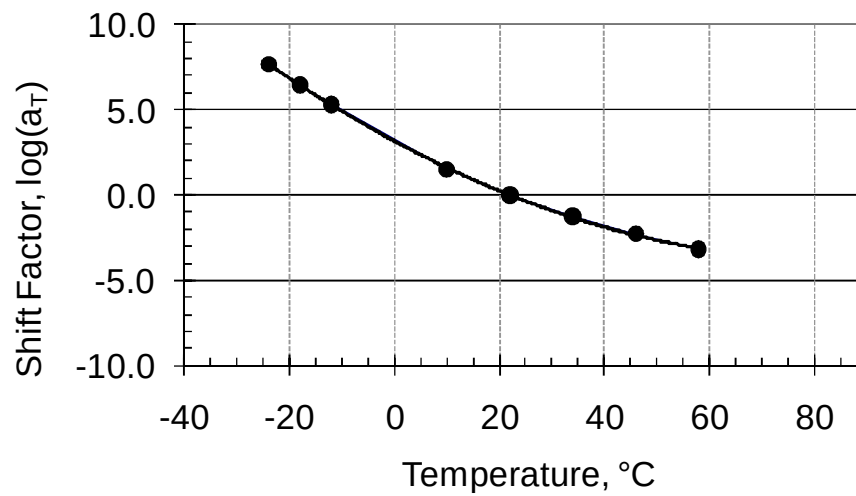
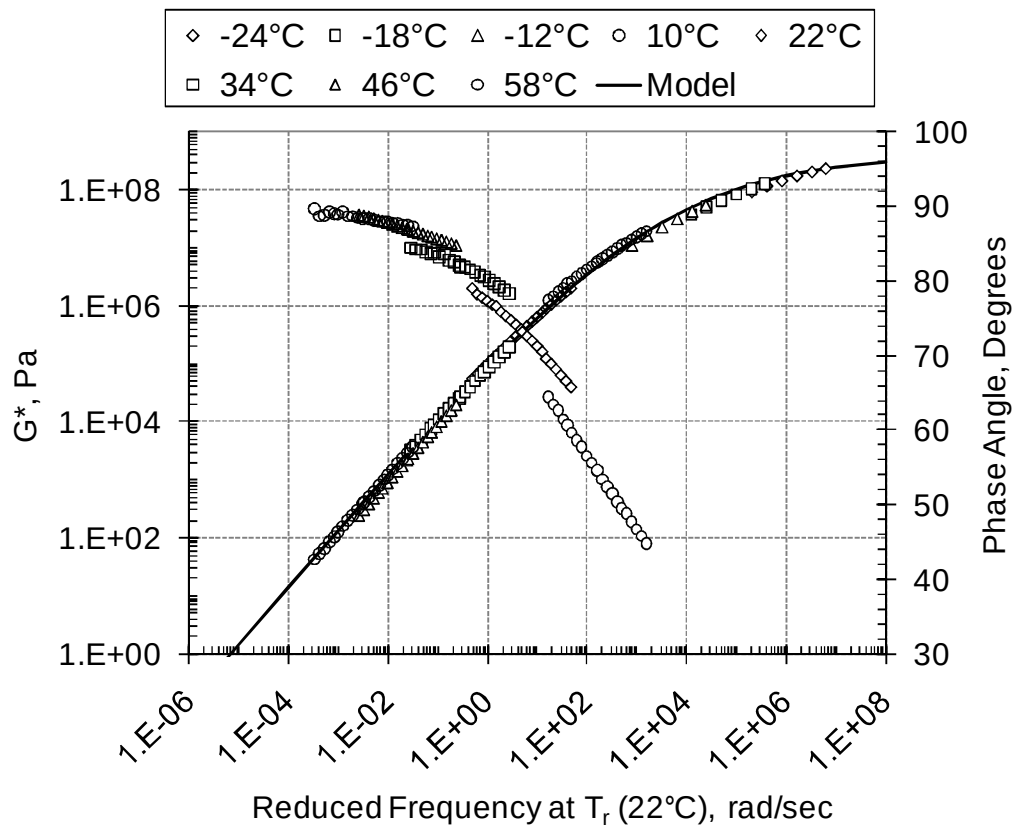


Figure 35. Binder Master Curve and Shift Factors for Tank AAC-1.

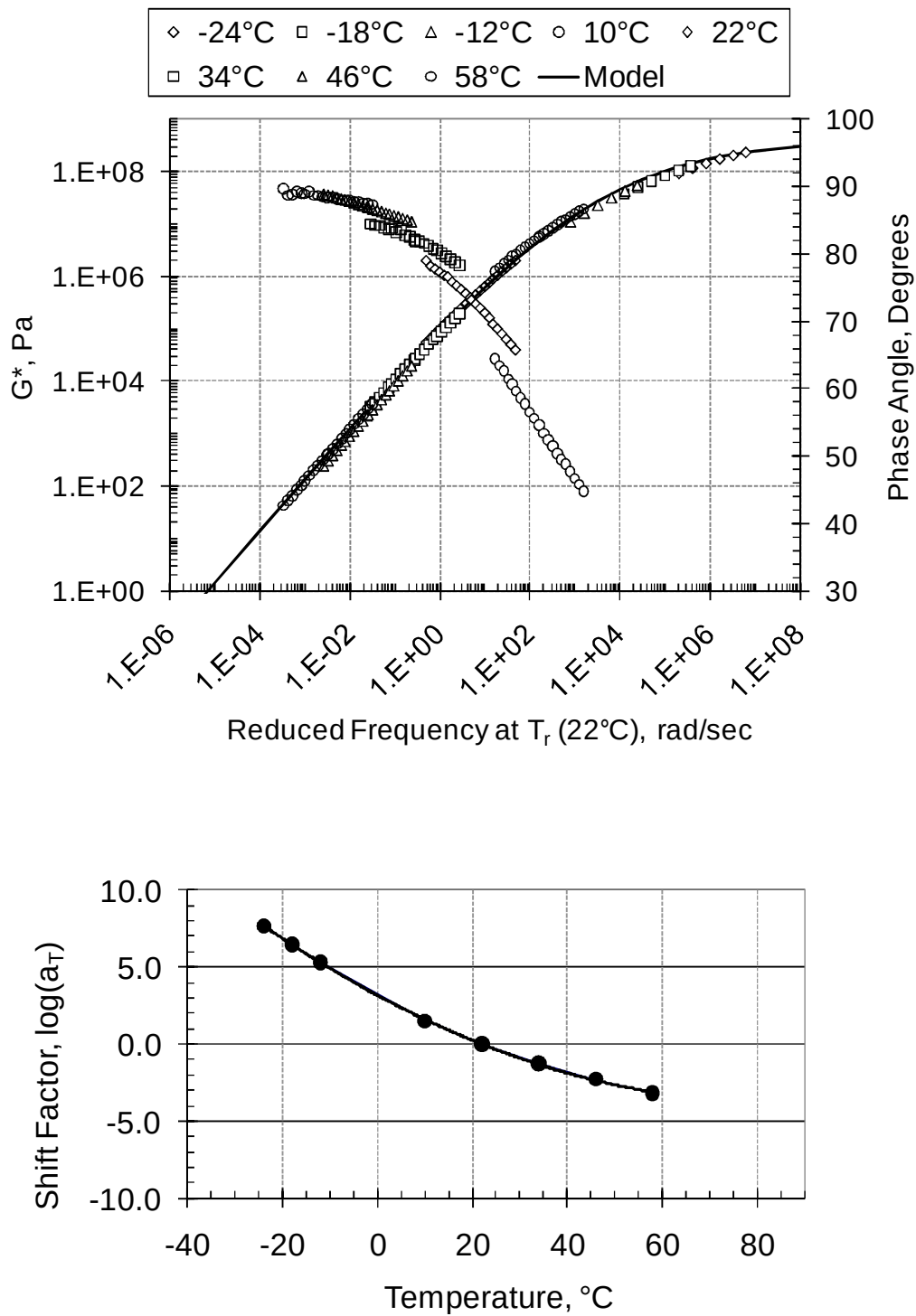


Figure 36. Binder Master Curve and Shift Factors for RTFOT AAC-1.

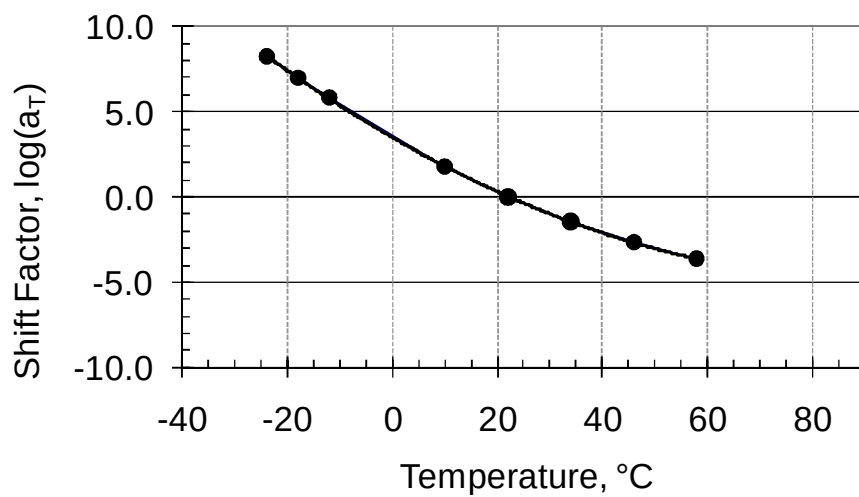
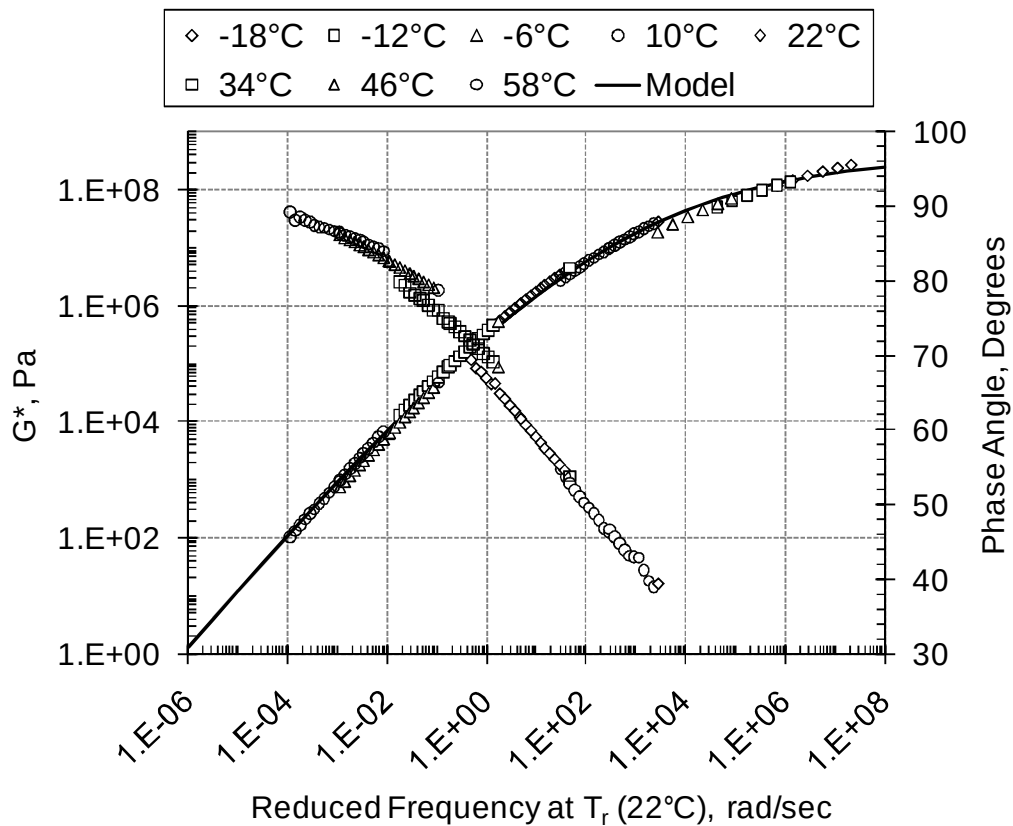


Figure 37. Binder Master Curve and Shift Factors for SAFT AAC-1.

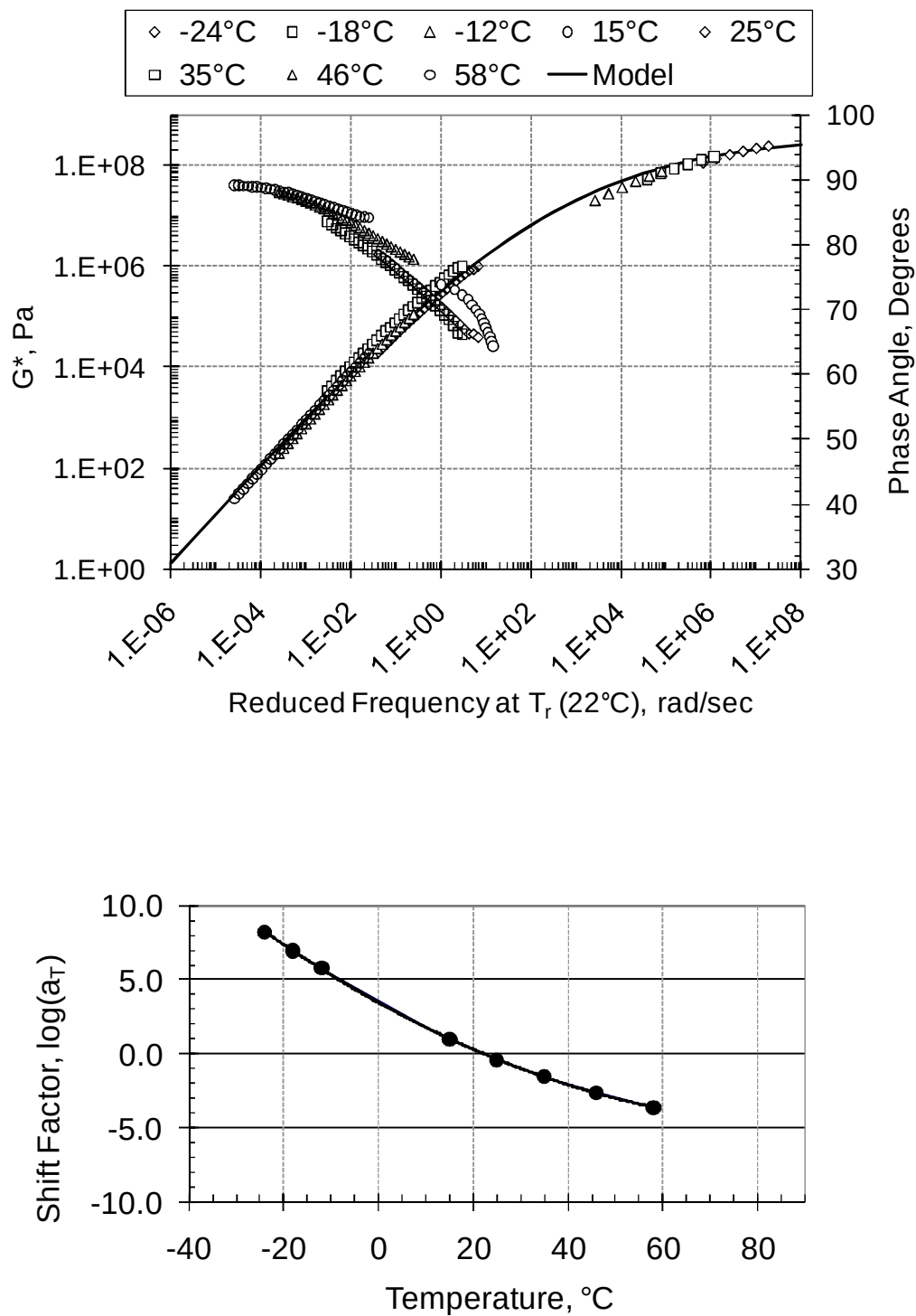


Figure 38. Binder Master Curve and Shift Factors for MGRF AAC-1.

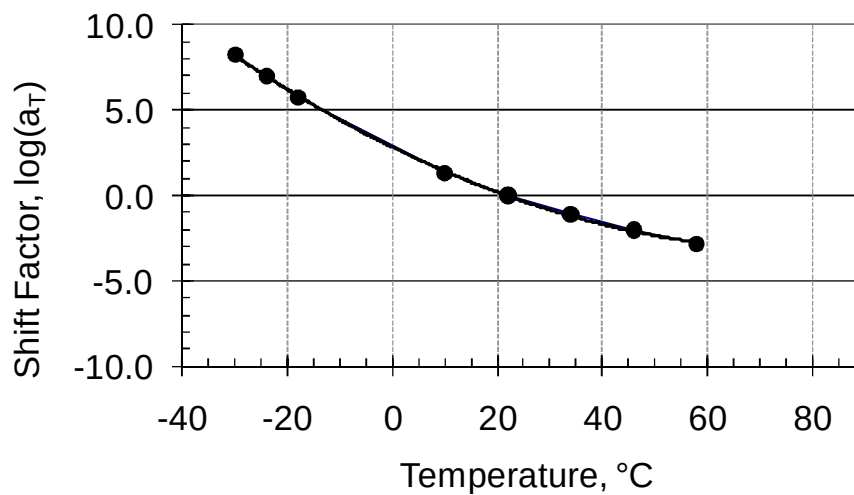
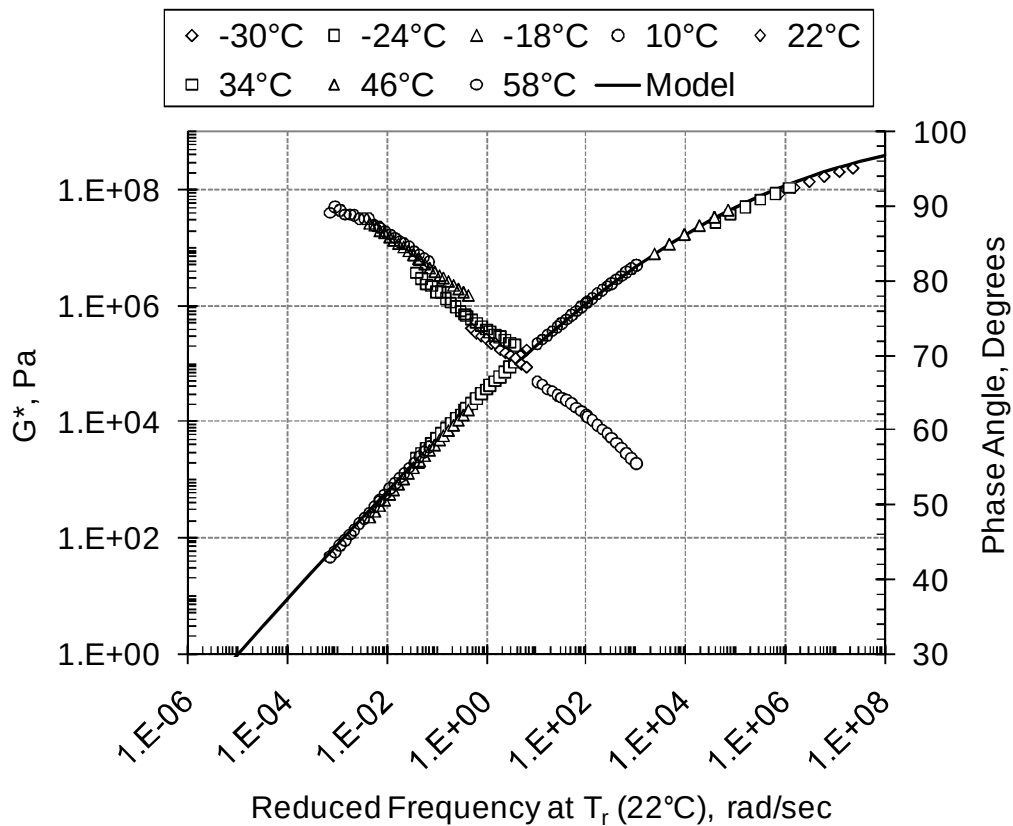


Figure 39. Binder Master Curve and Shift Factors for Tank AAD-2.

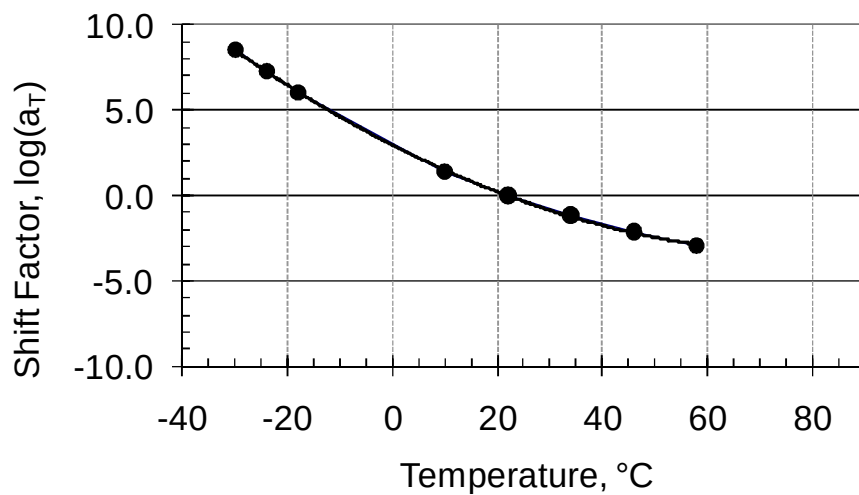
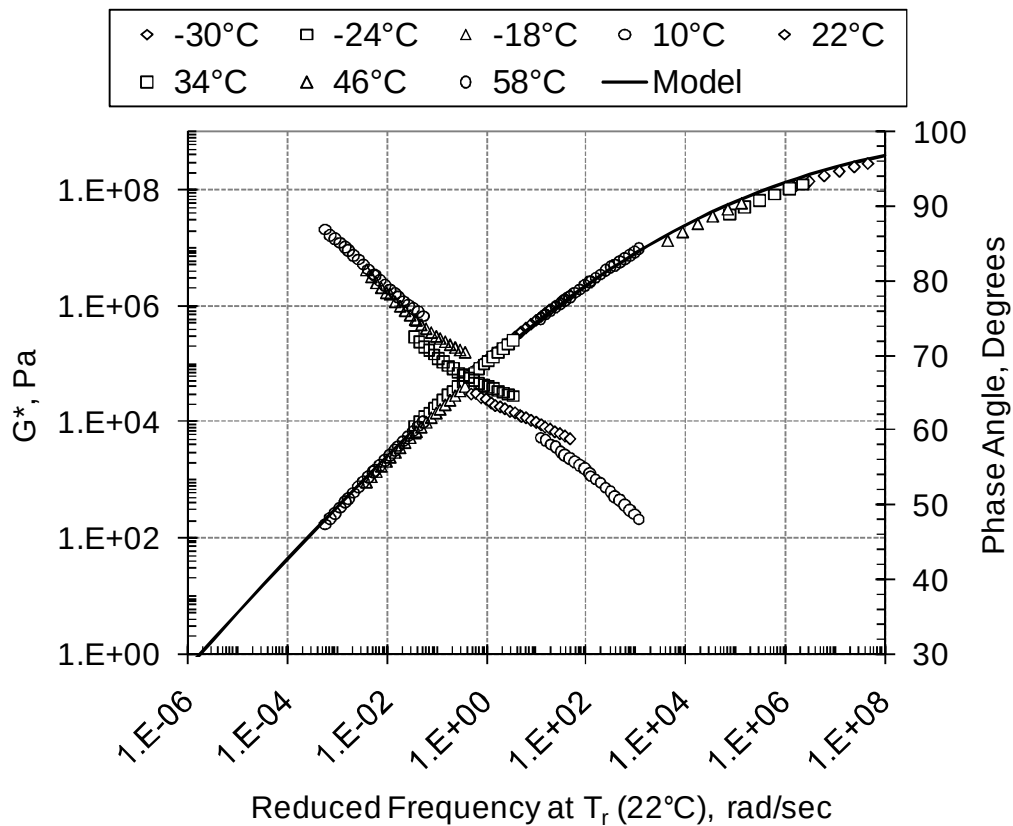


Figure 40. Binder Master Curve and Shift Factors for RTFOT AAD-2.

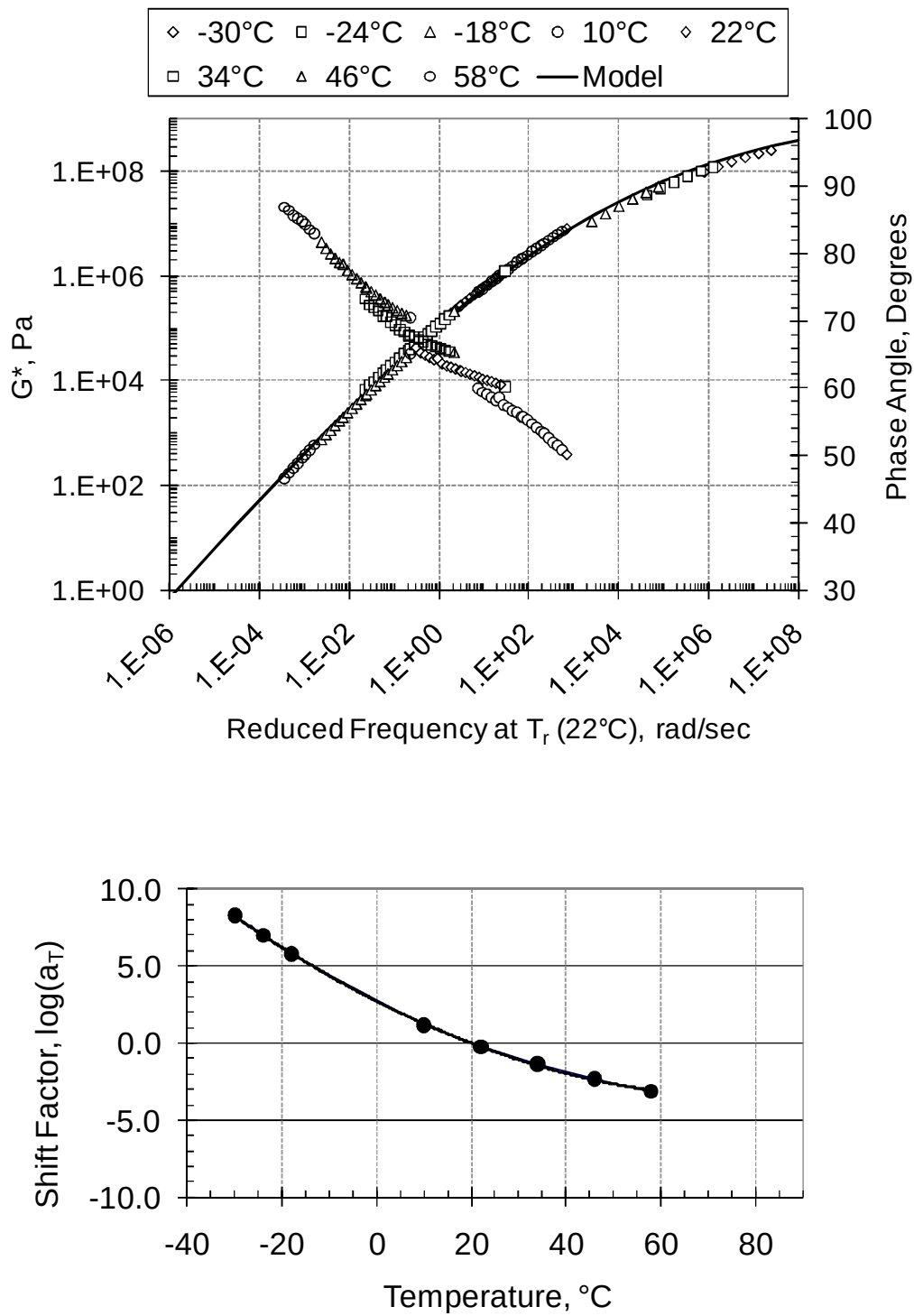


Figure 41. Binder Master Curve and Shift Factors for SAFT AAD-2.

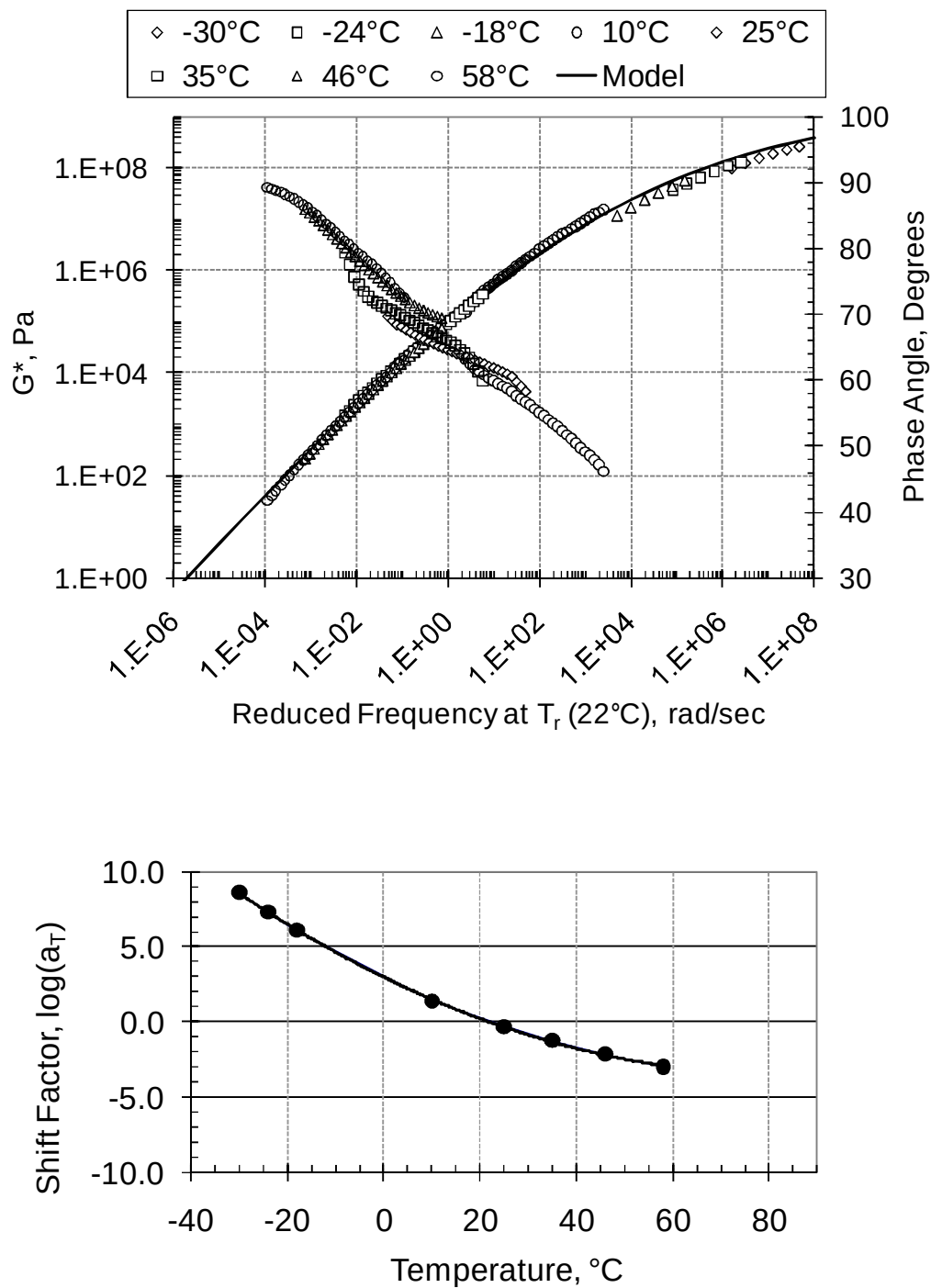


Figure 42. Binder Master Curve and Shift Factors for MGRF AAD-2.

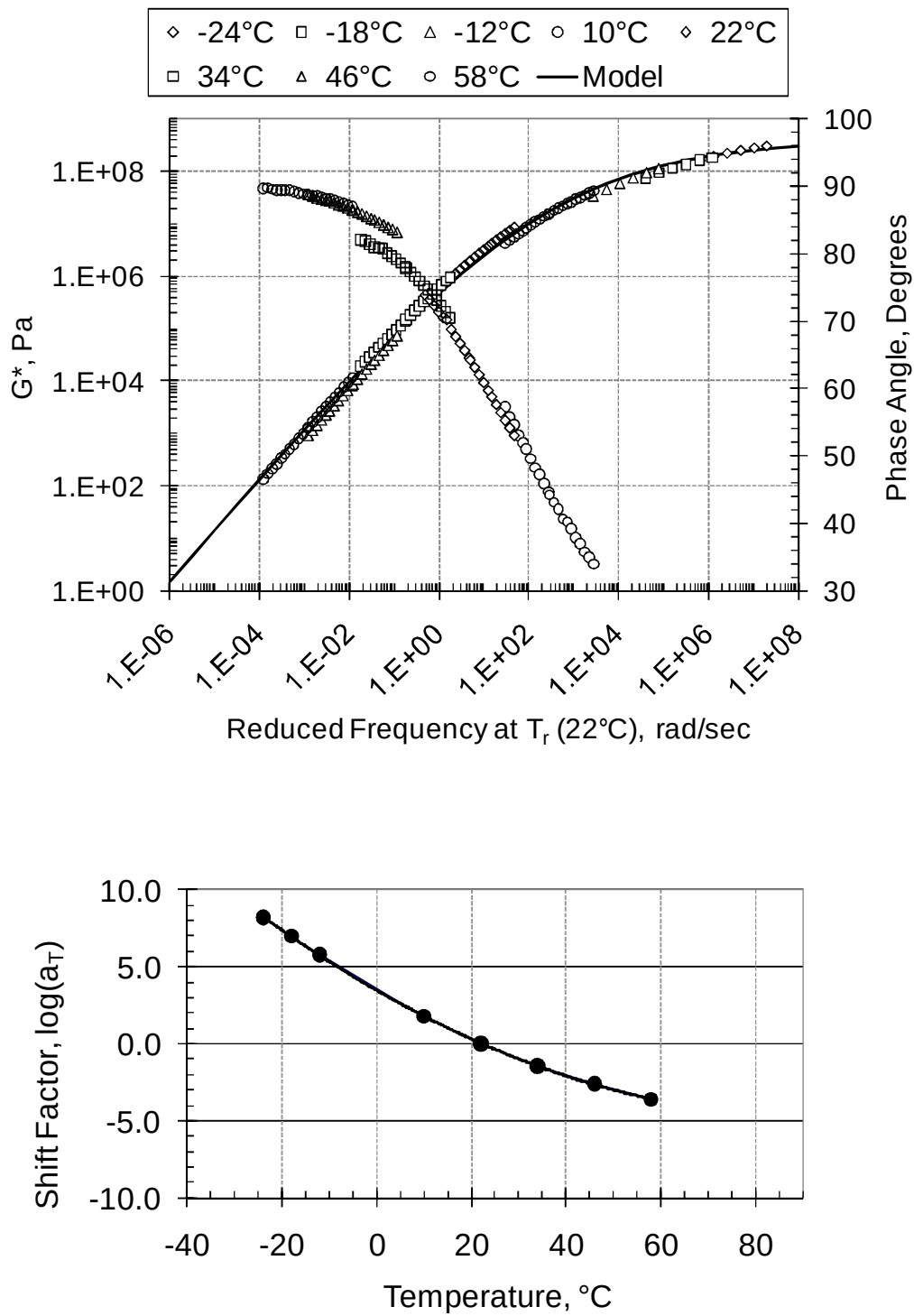


Figure 43. Binder Master Curve and Shift Factors for Tank AAF-1.

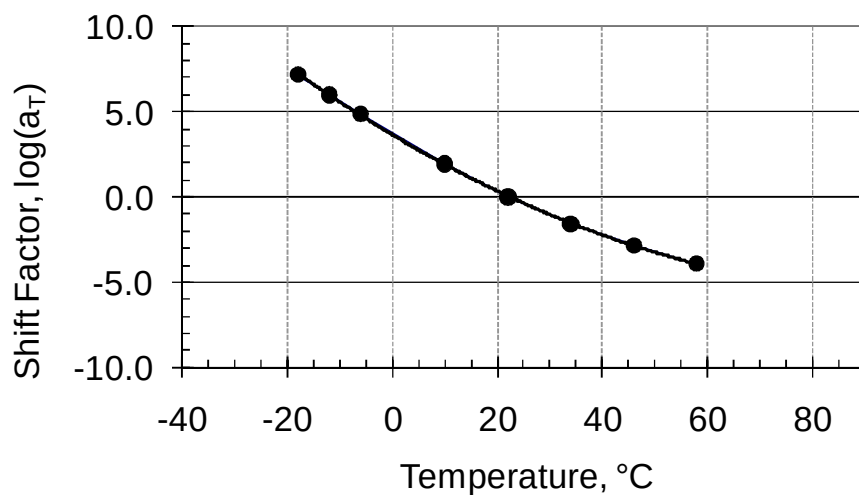
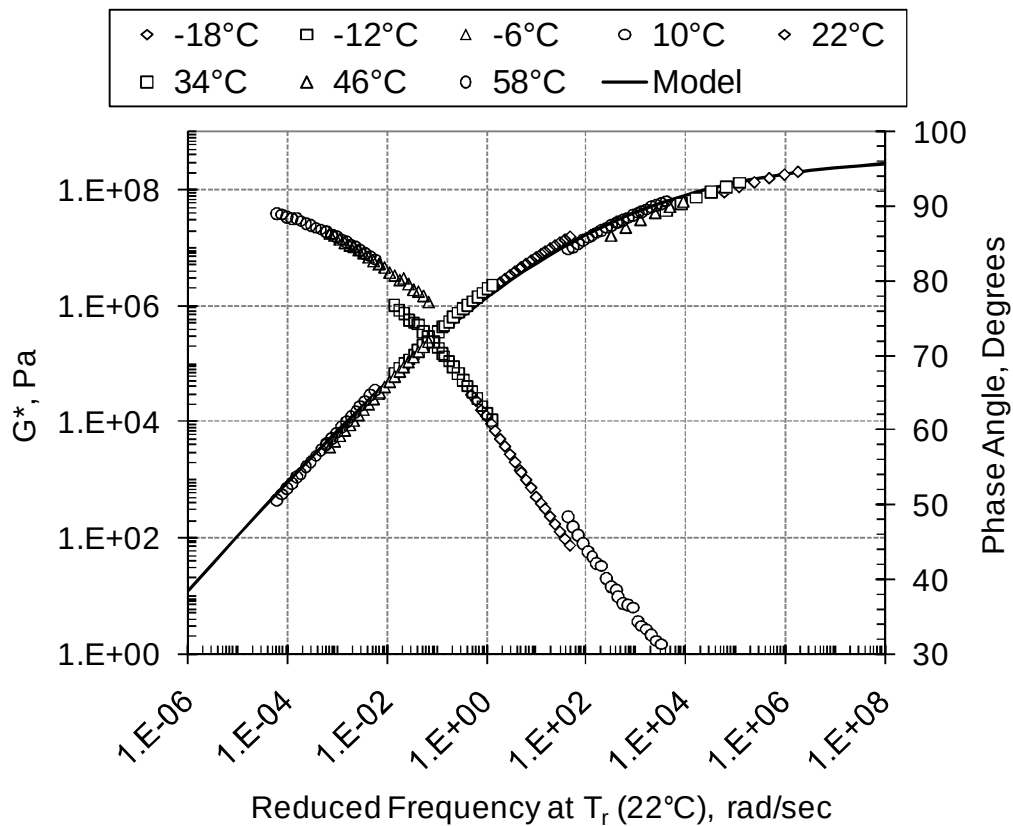


Figure 44. Binder Master Curve and Shift Factors for RTFOT AAF-1.

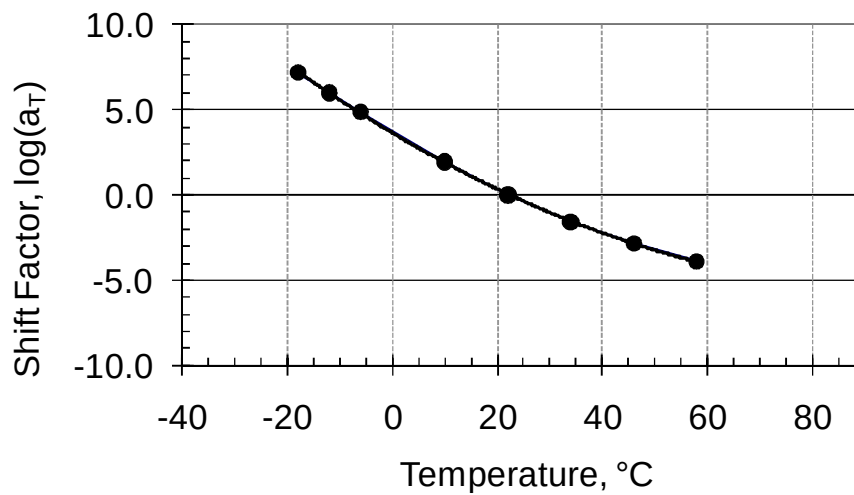
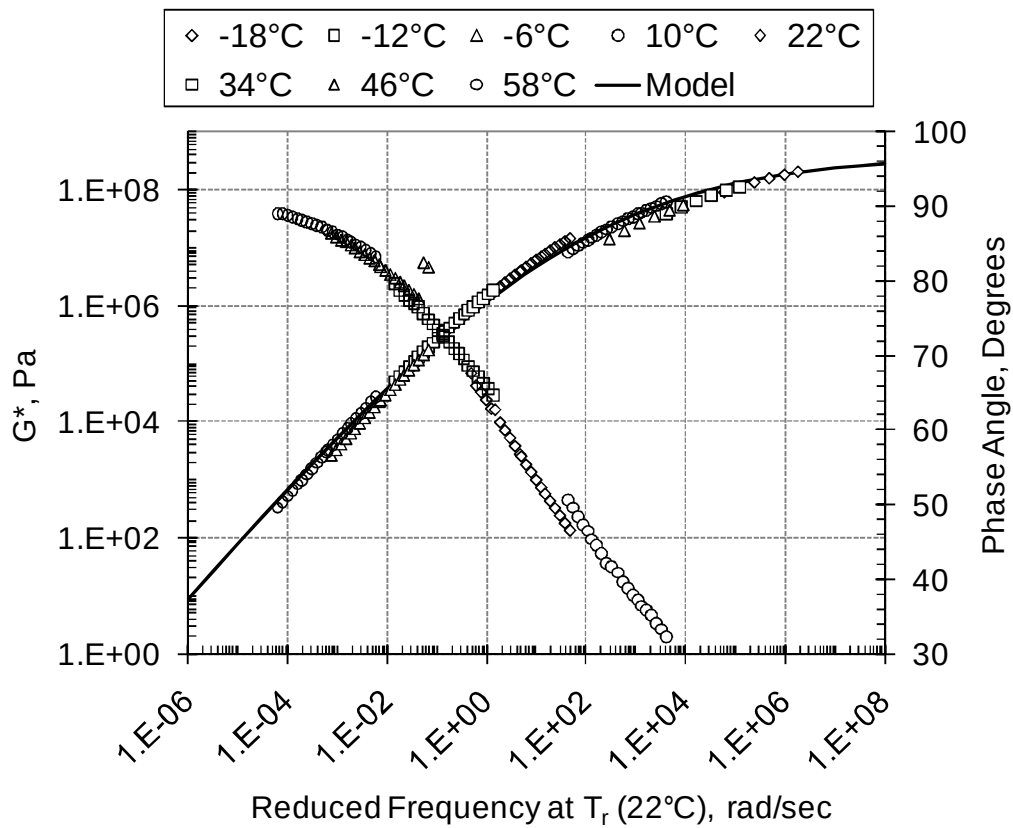


Figure 45. Binder Master Curve and Shift Factors for SAFT AAF-1.

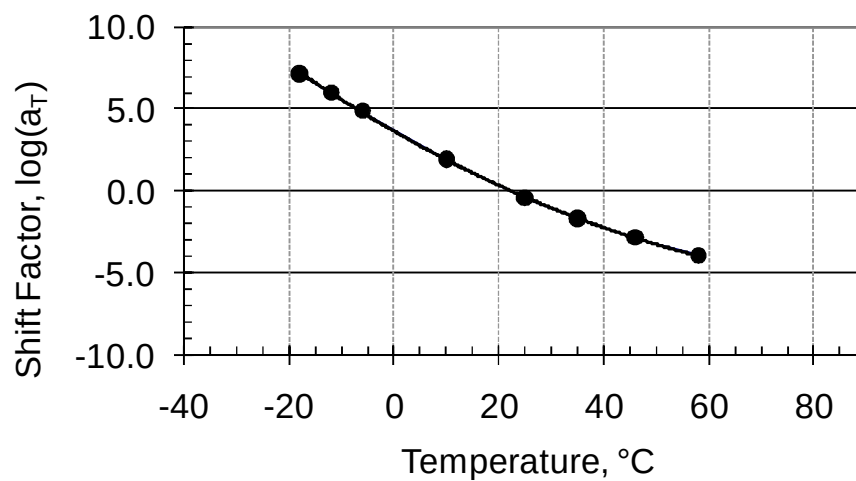
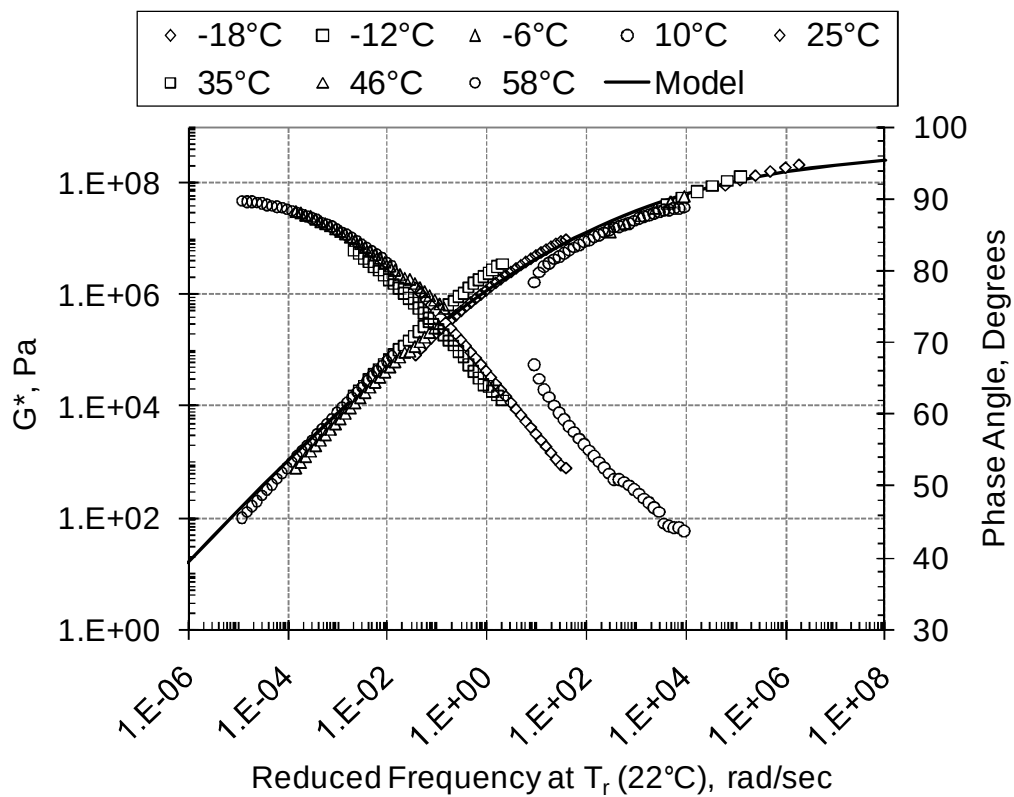


Figure 46. Binder Master Curve and Shift Factors for MGRF AAF-1.

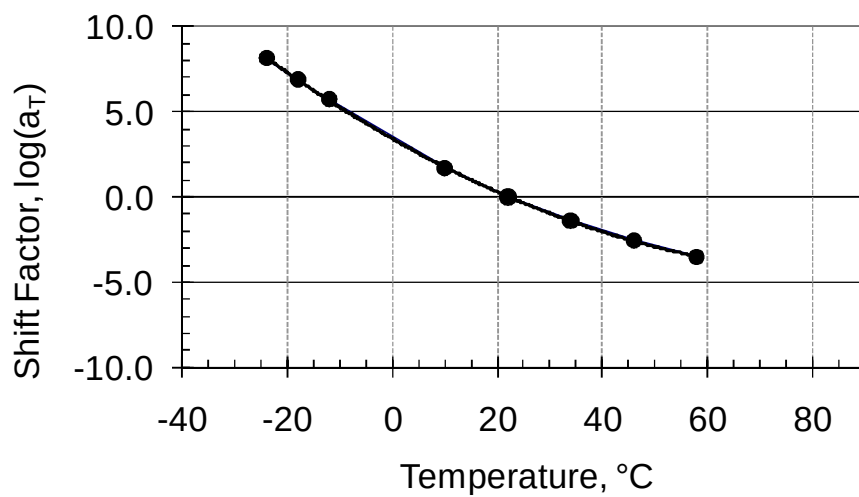
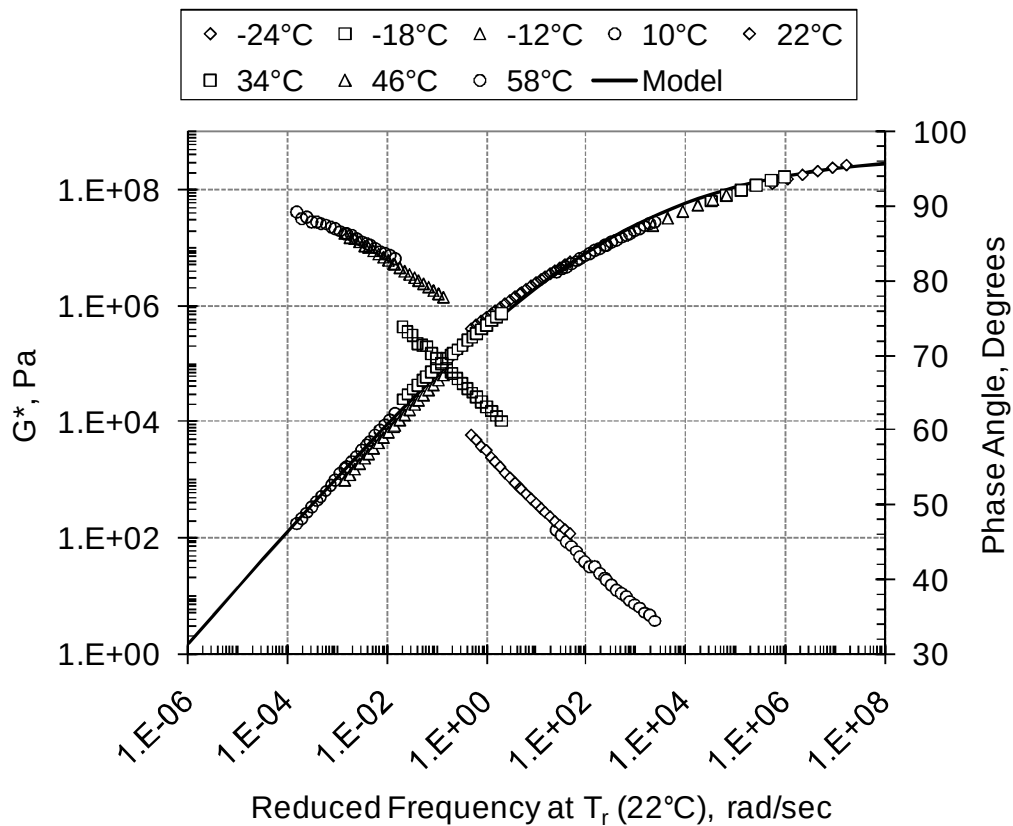


Figure 47. Binder Master Curve and Shift Factors for Tank AAM-1.

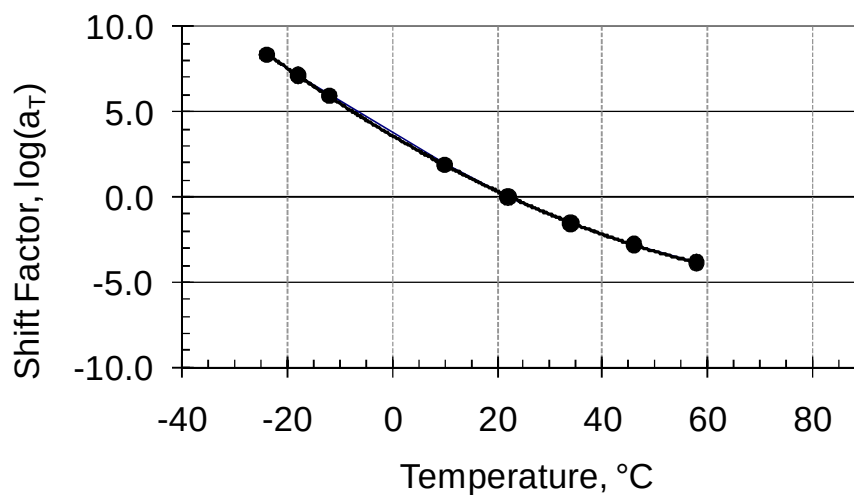
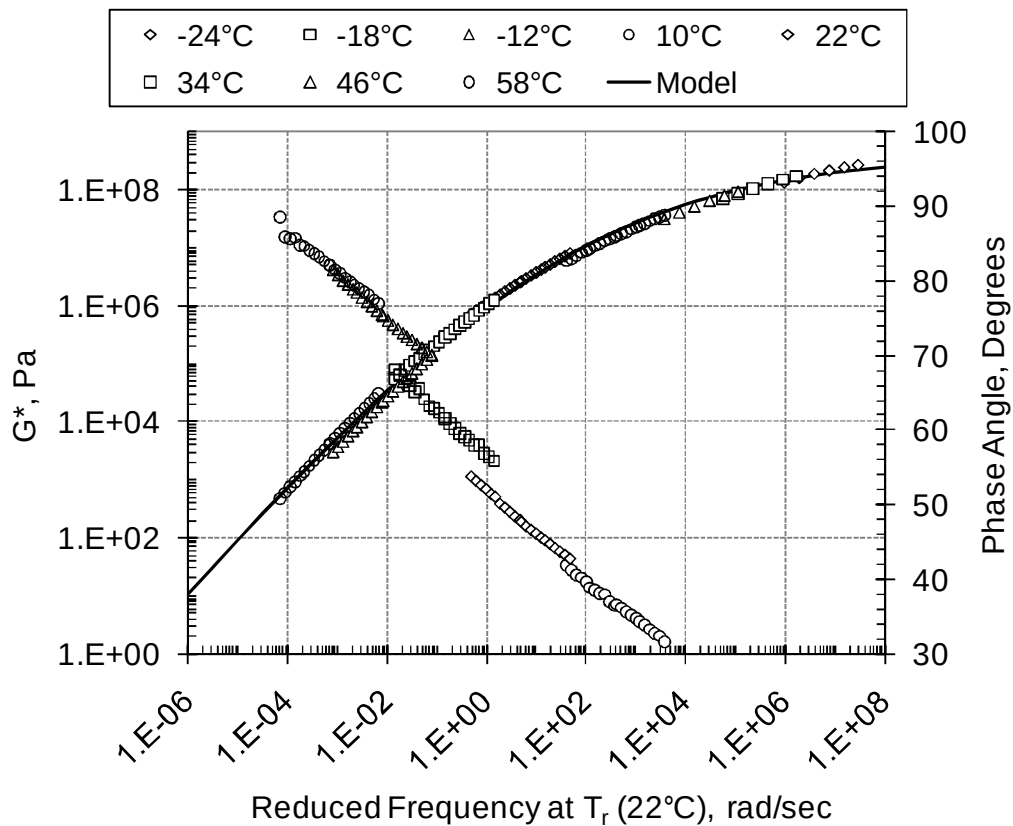


Figure 48. Binder Master Curve and Shift Factors for RTFOT AAM-1.

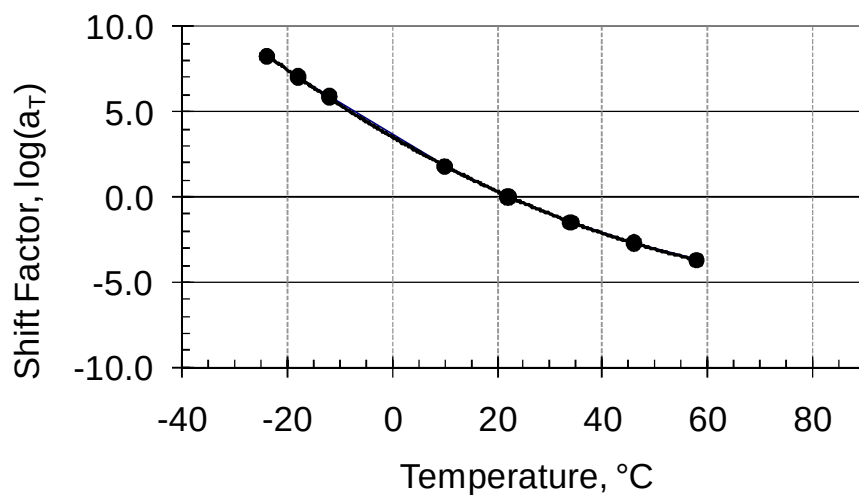
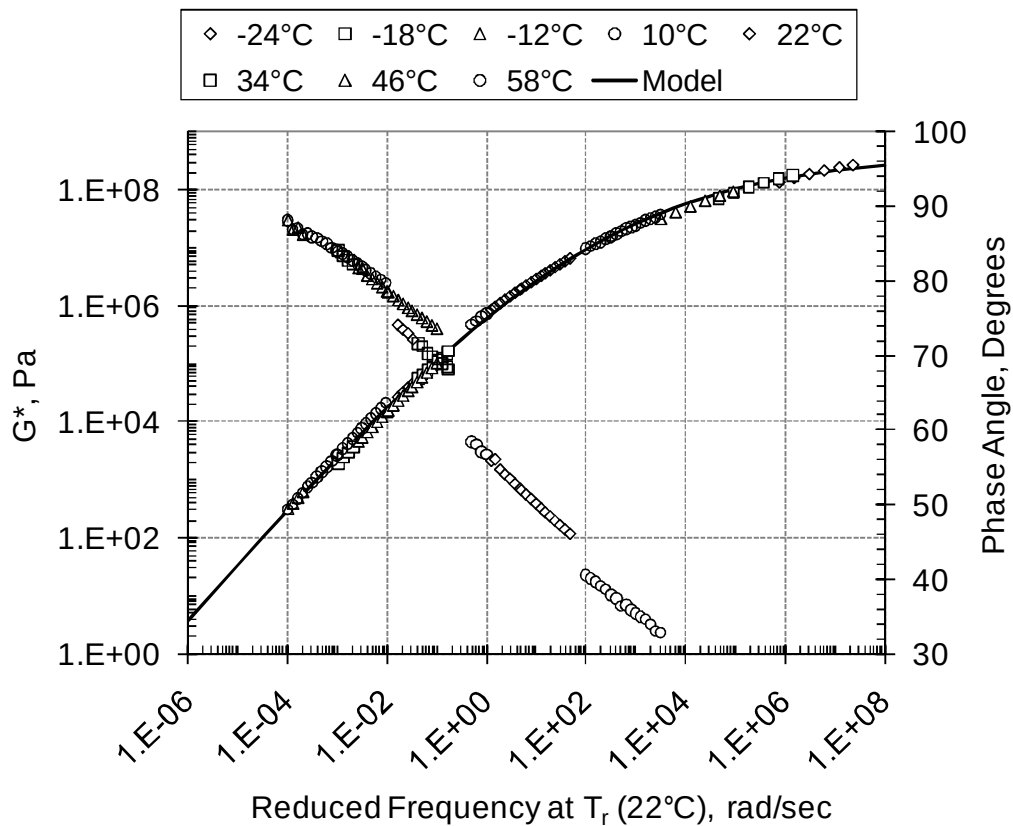


Figure 49. Binder Master Curve and Shift Factors for SAFT AAM-1.

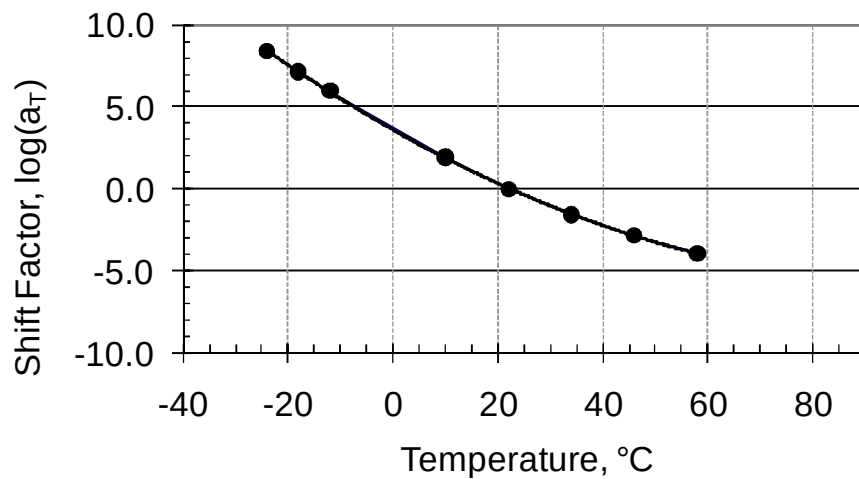
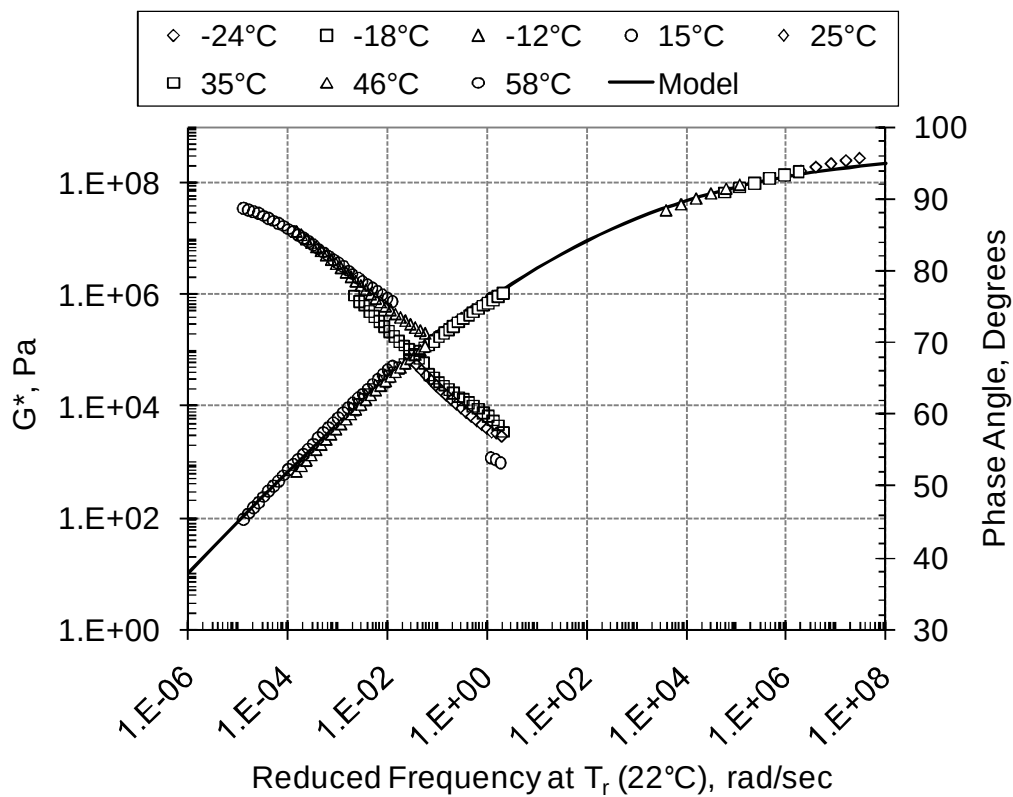


Figure 50. Binder Master Curve and Shift Factors for MGRF AAM-1.

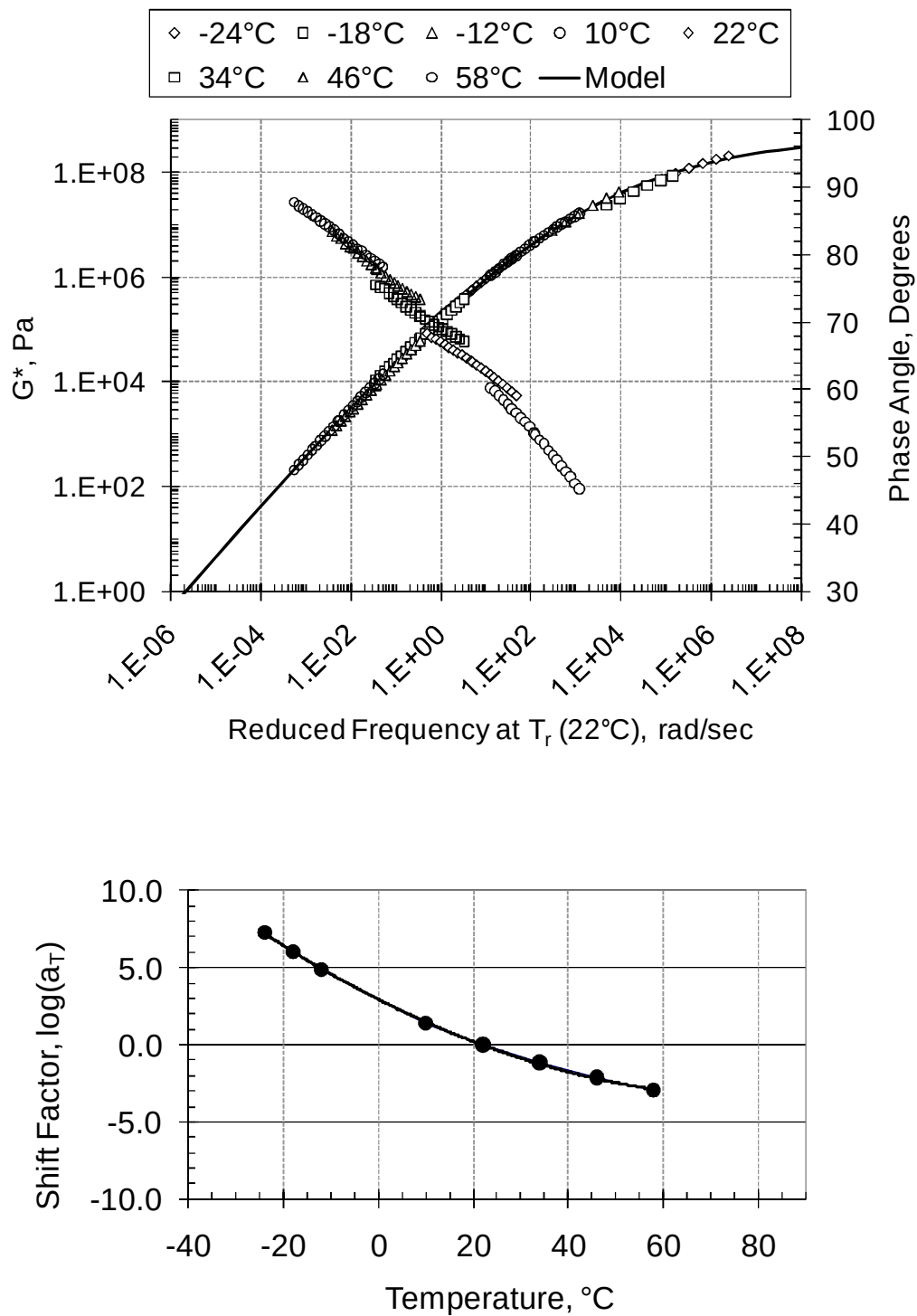


Figure 51. Binder Master Curve and Shift Factors for Tank ABL-1.

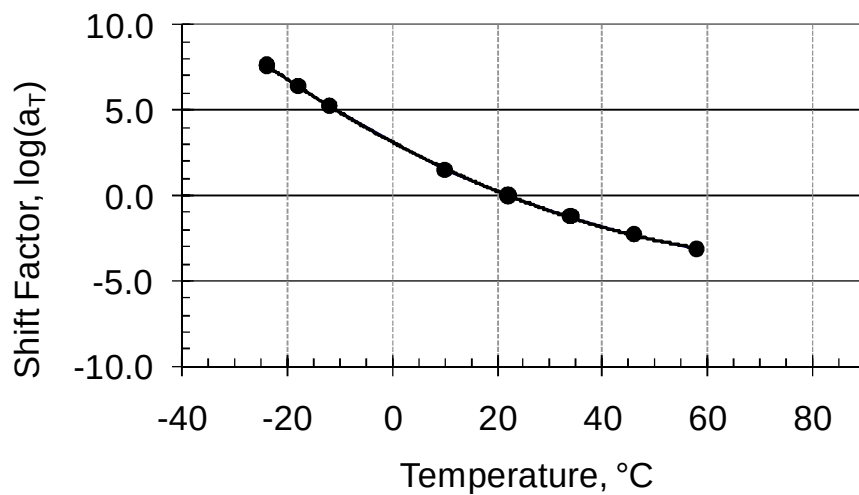
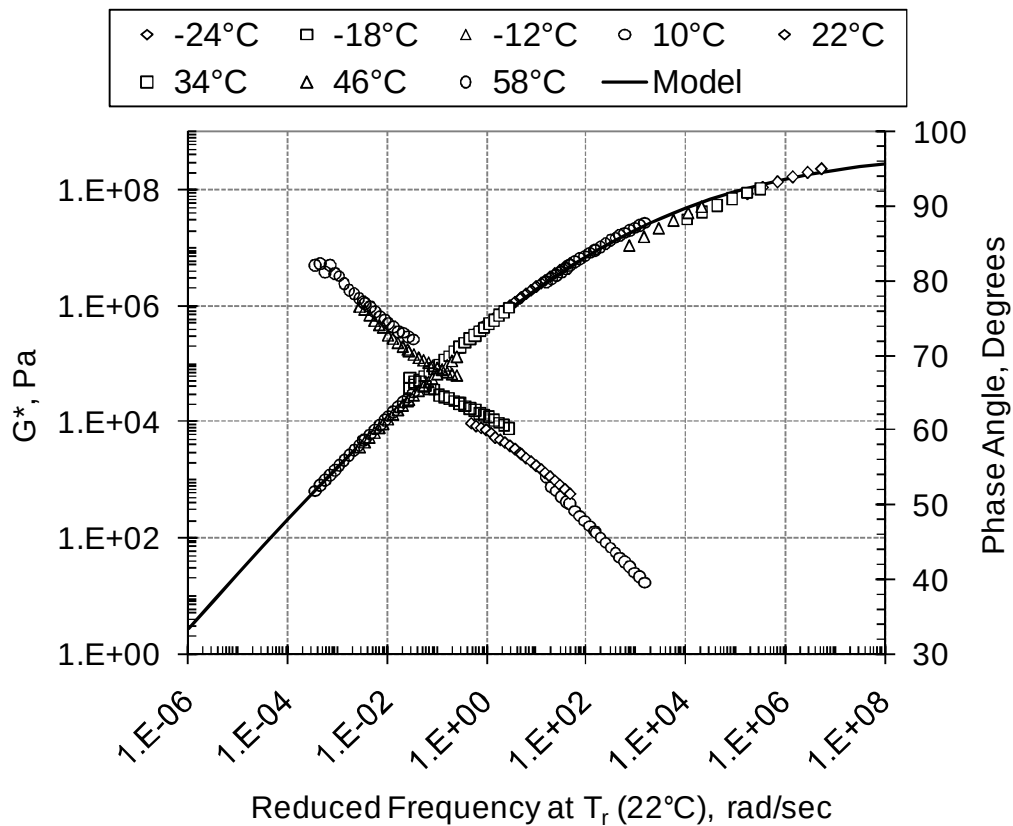


Figure 52. Binder Master Curve and Shift Factors for RTFOT ABL-1.

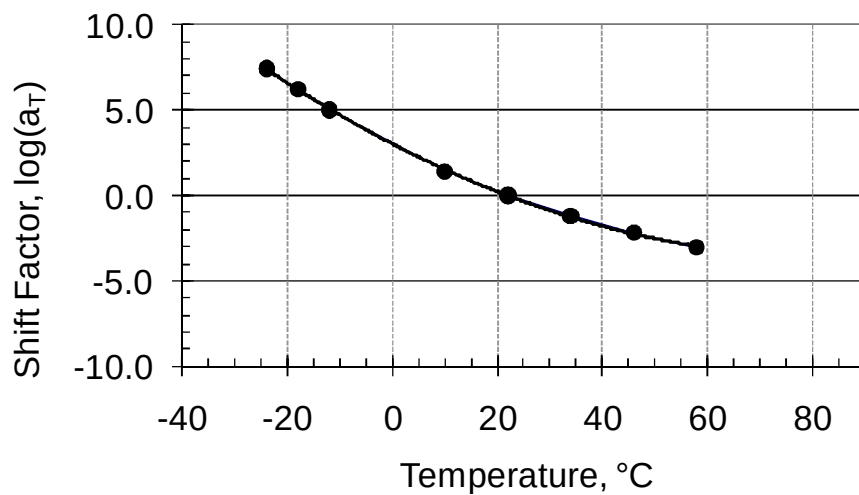
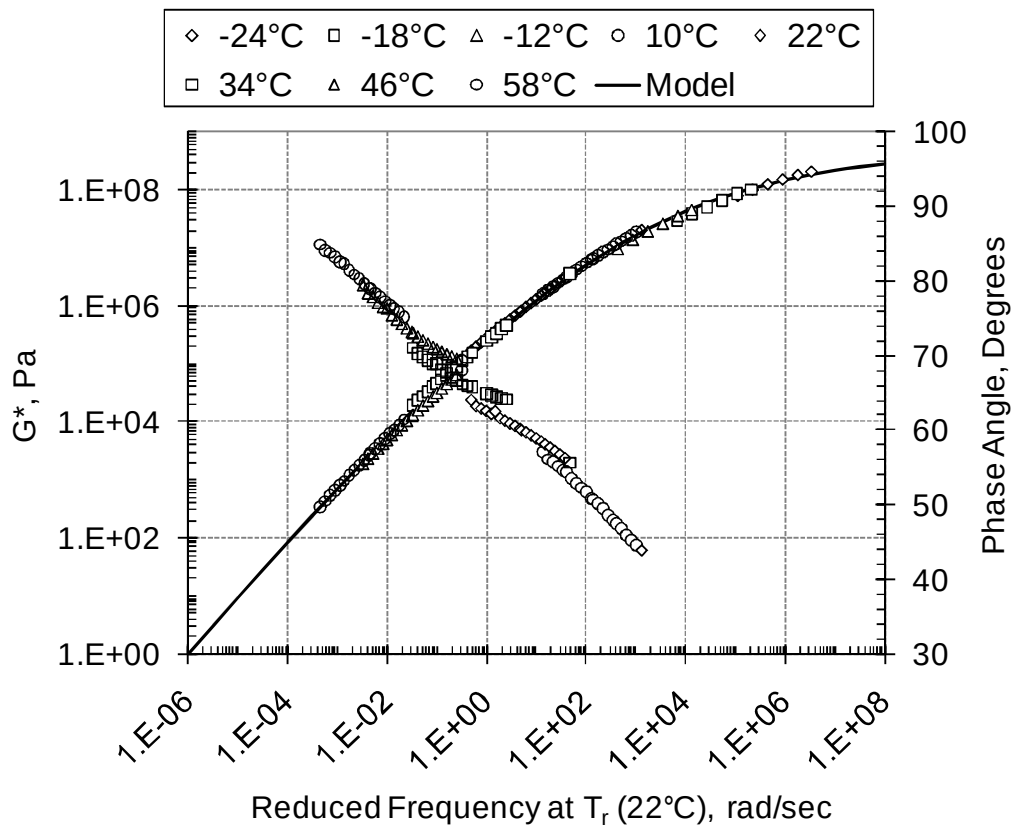


Figure 53. Binder Master Curve and Shift Factors for SAFT ABL-1.

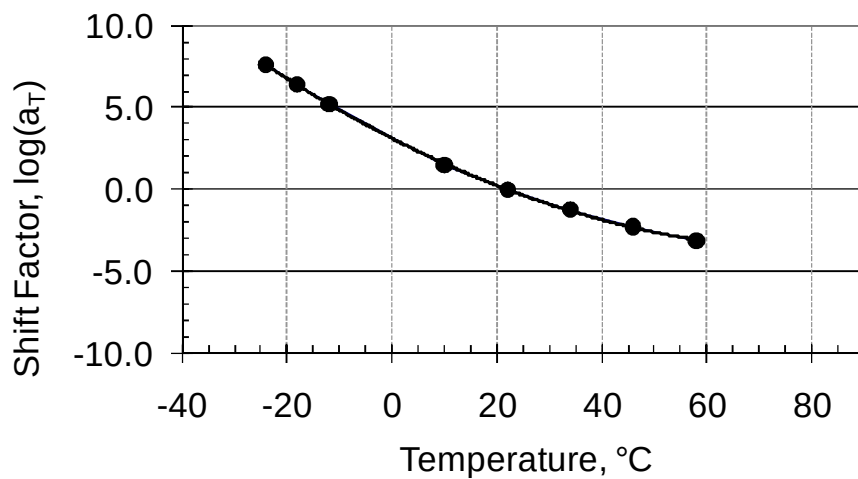
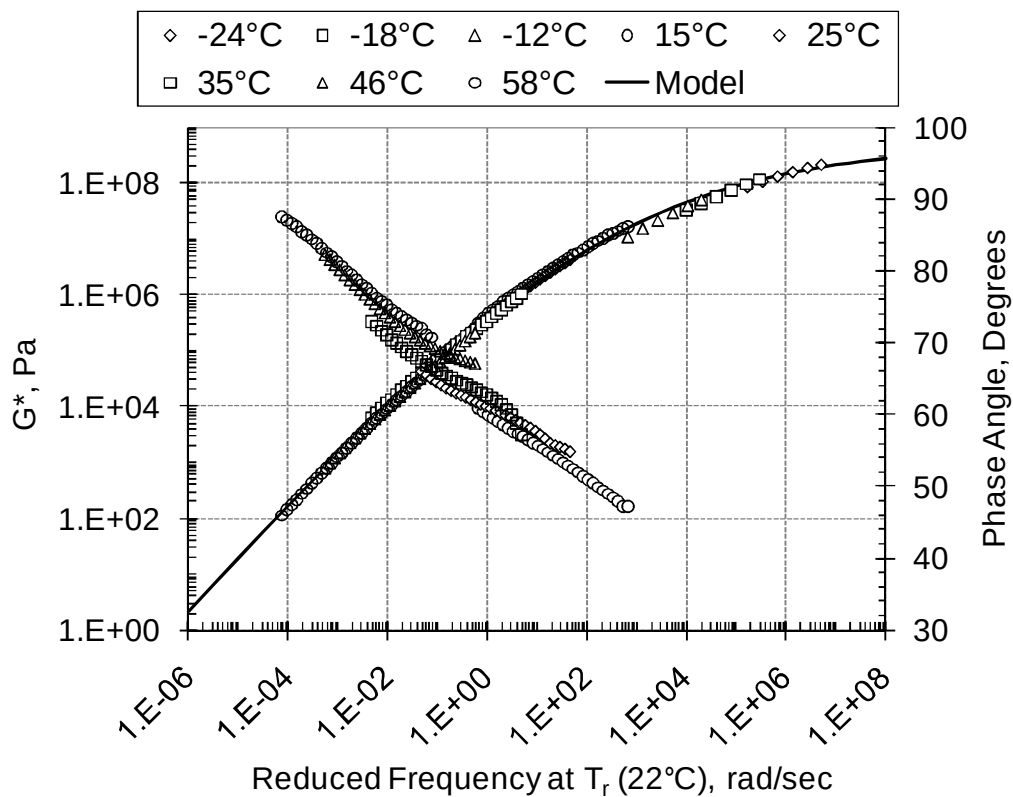


Figure 54. Binder Master Curve and Shift Factors for MGRF ABL-1.

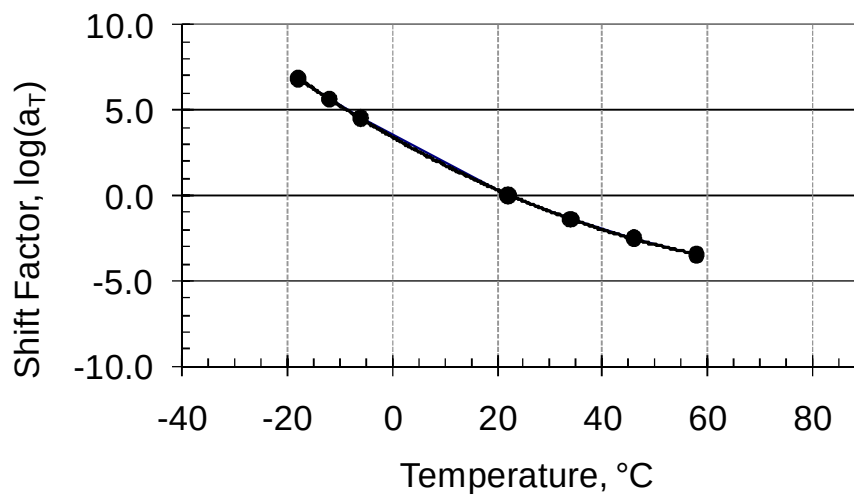
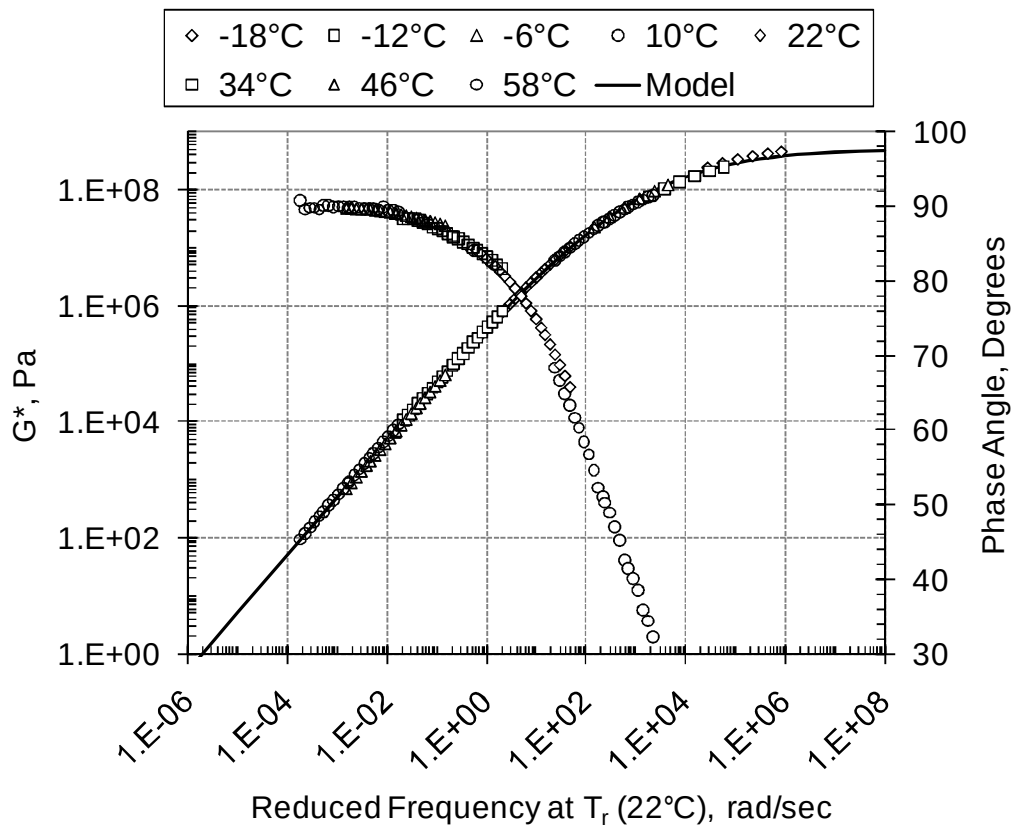


Figure 55. Binder Master Curve and Shift Factors for Tank ABM-2.

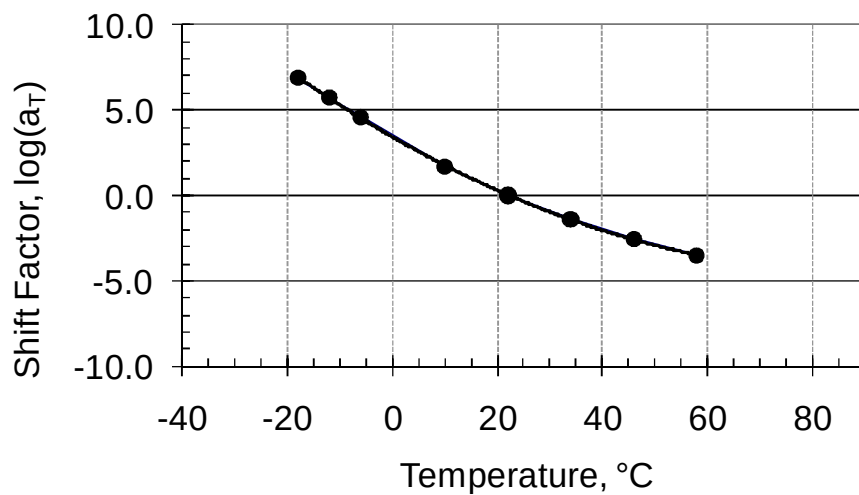
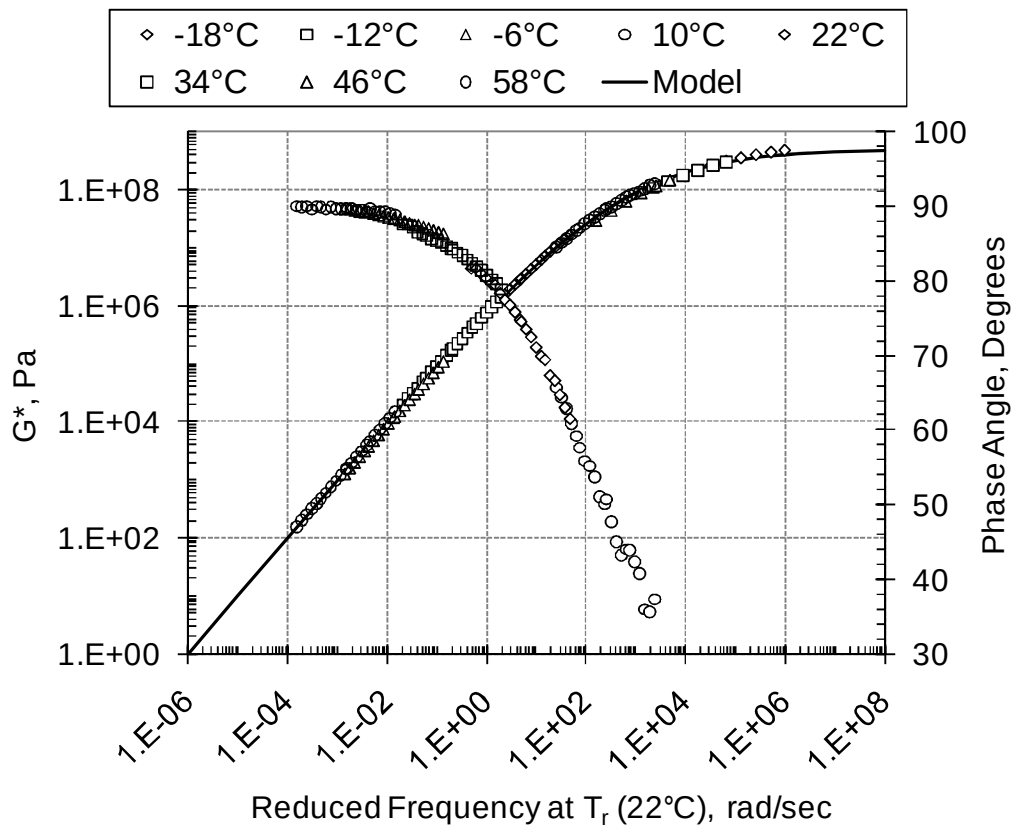


Figure 56. Binder Master Curve and Shift Factors for RTFOT ABM-2.

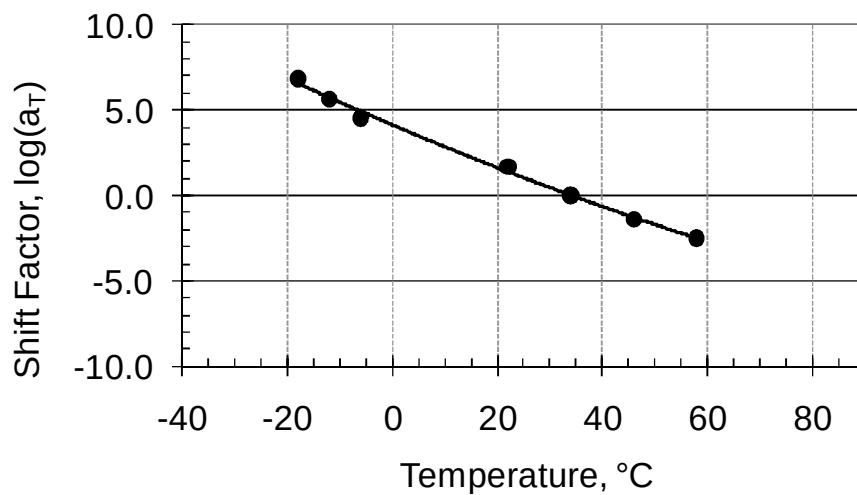
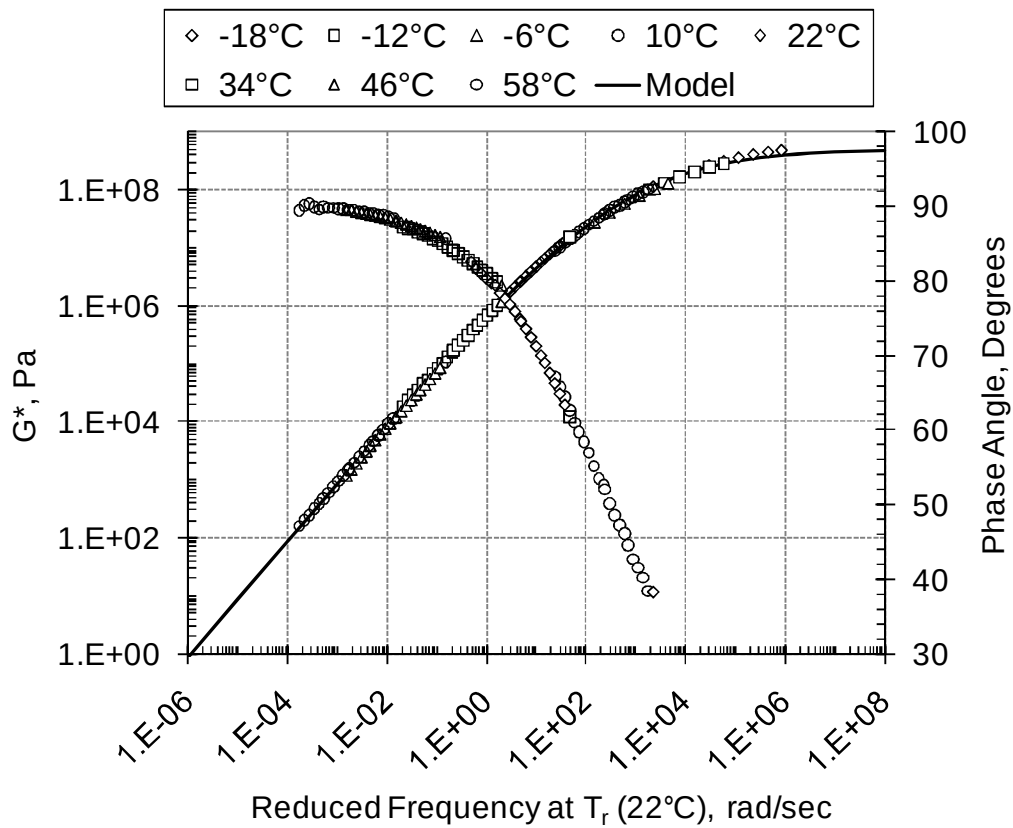


Figure 57. Binder Master Curve and Shift Factors for SAFT ABM-2.

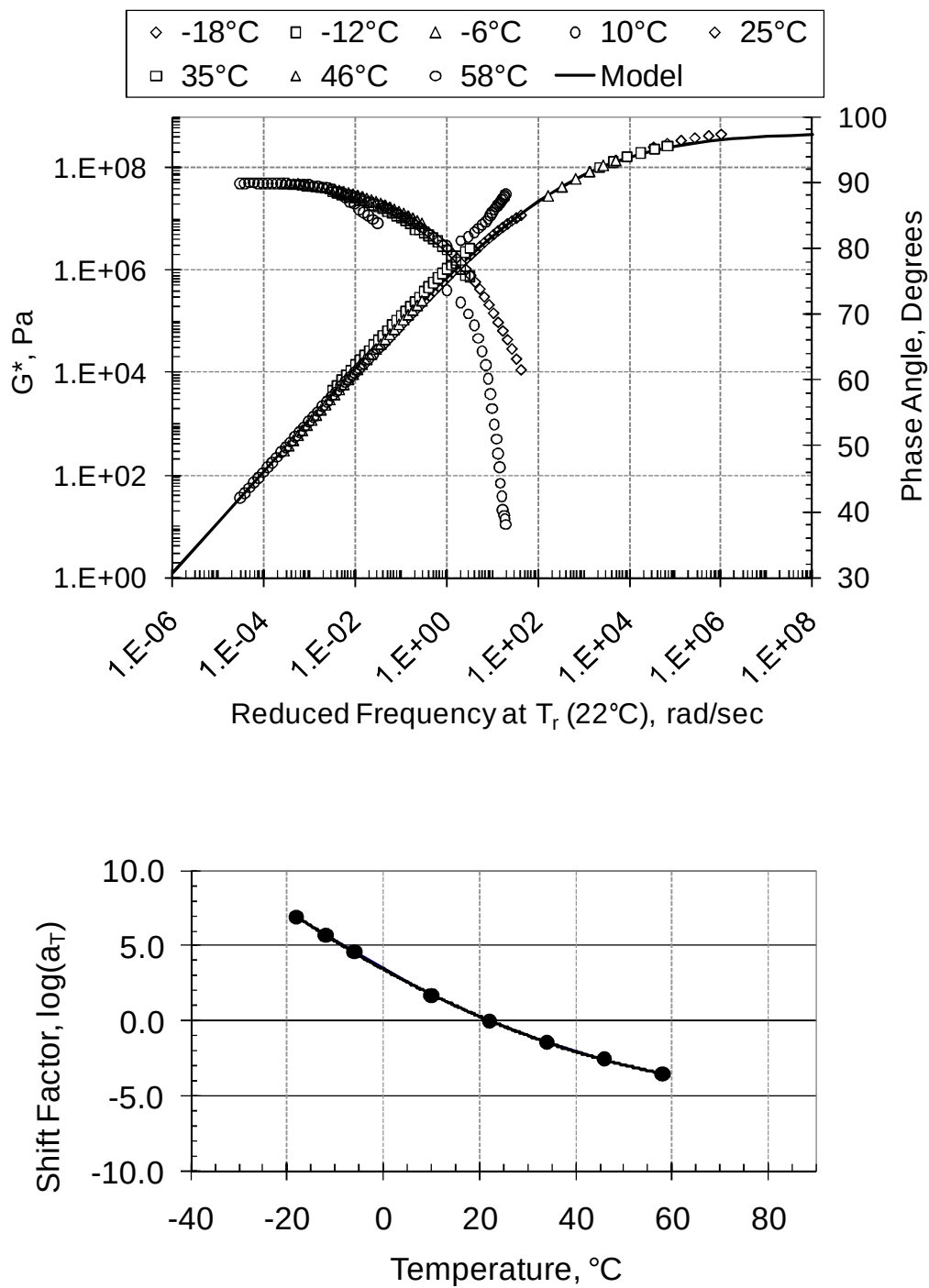


Figure 58. Binder Master Curve and Shift Factors for MGRF ABM-2.

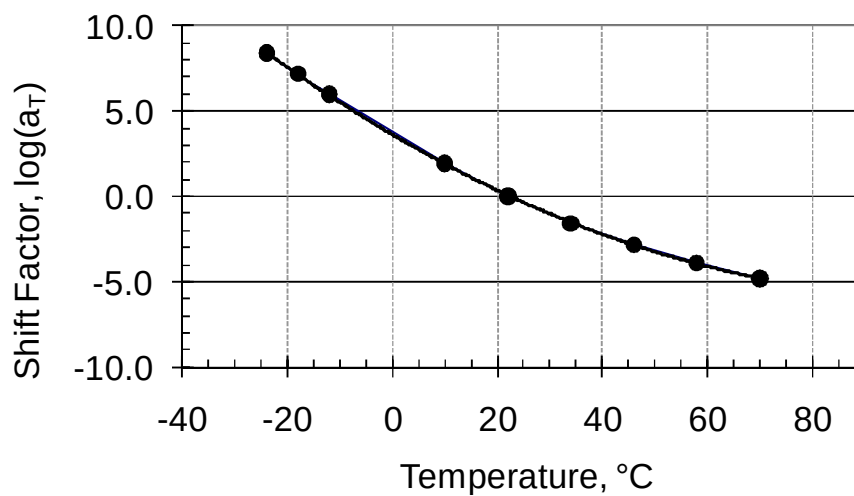
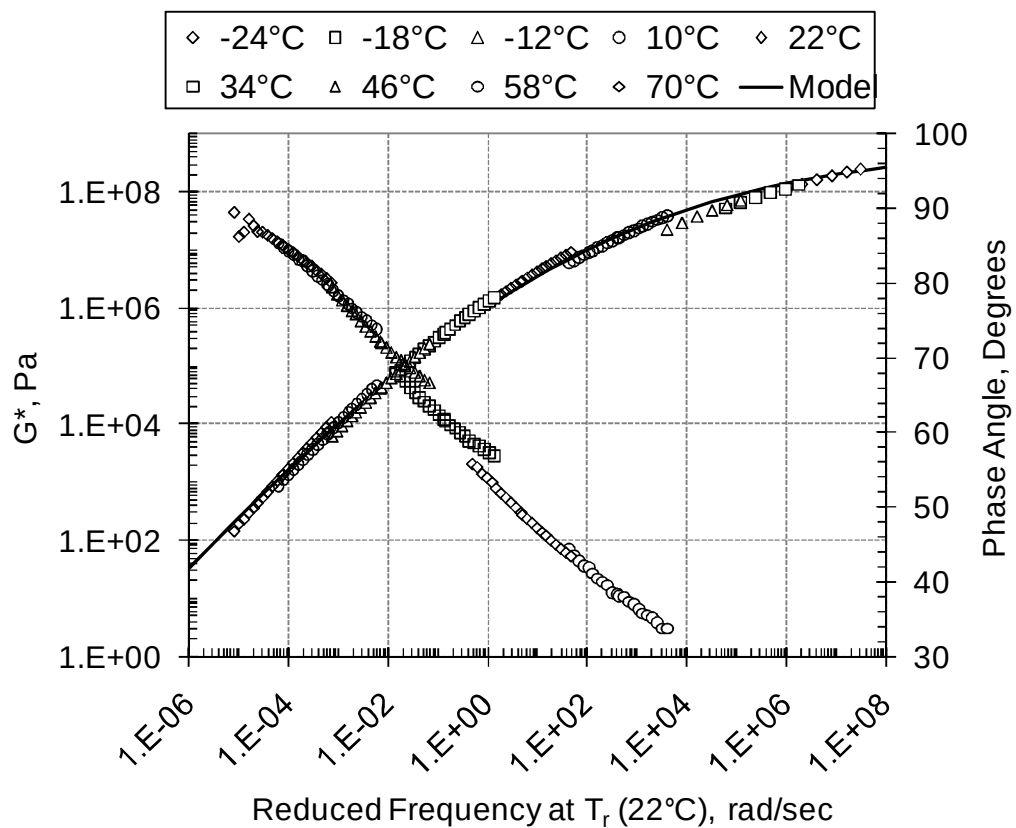


Figure 59. Binder Master Curve and Shift Factors for Tank Airblown.

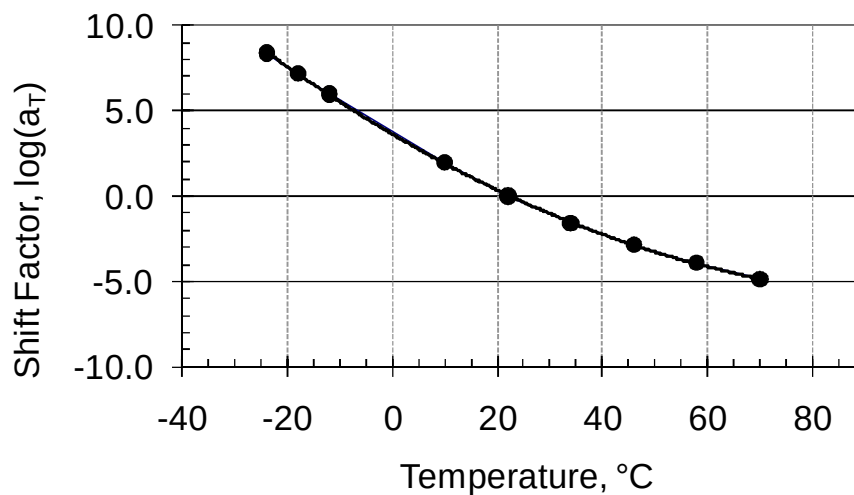
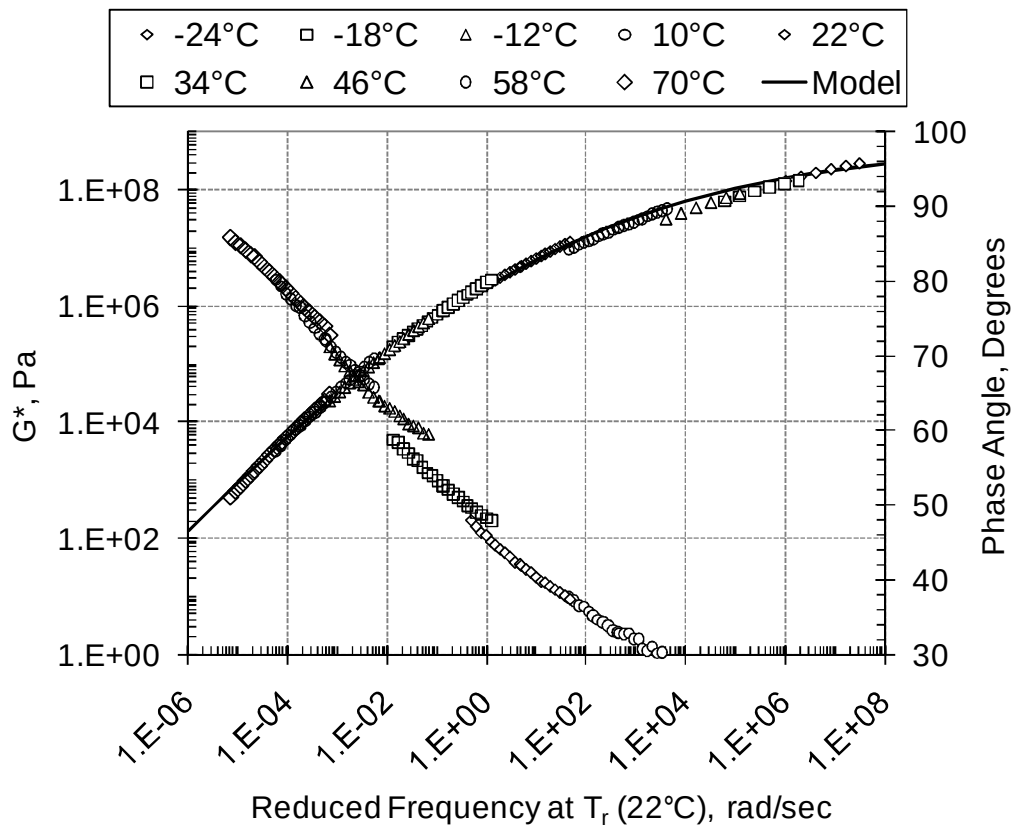


Figure 60. Binder Master Curve and Shift Factors for RTFOT Airblown.

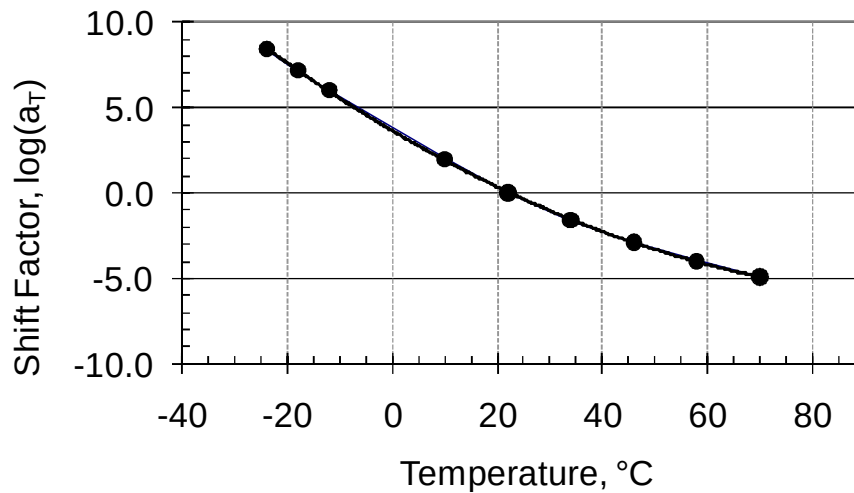
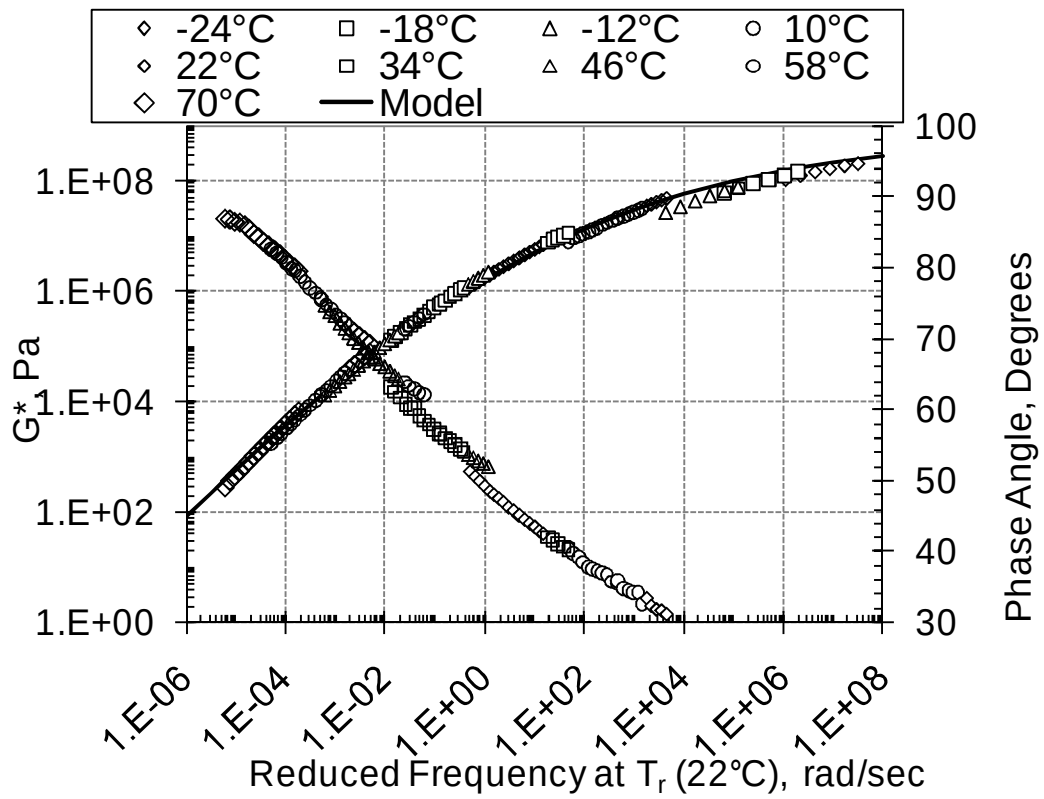


Figure 61. Binder Master Curve and Shift Factors for SAFT Airblown.

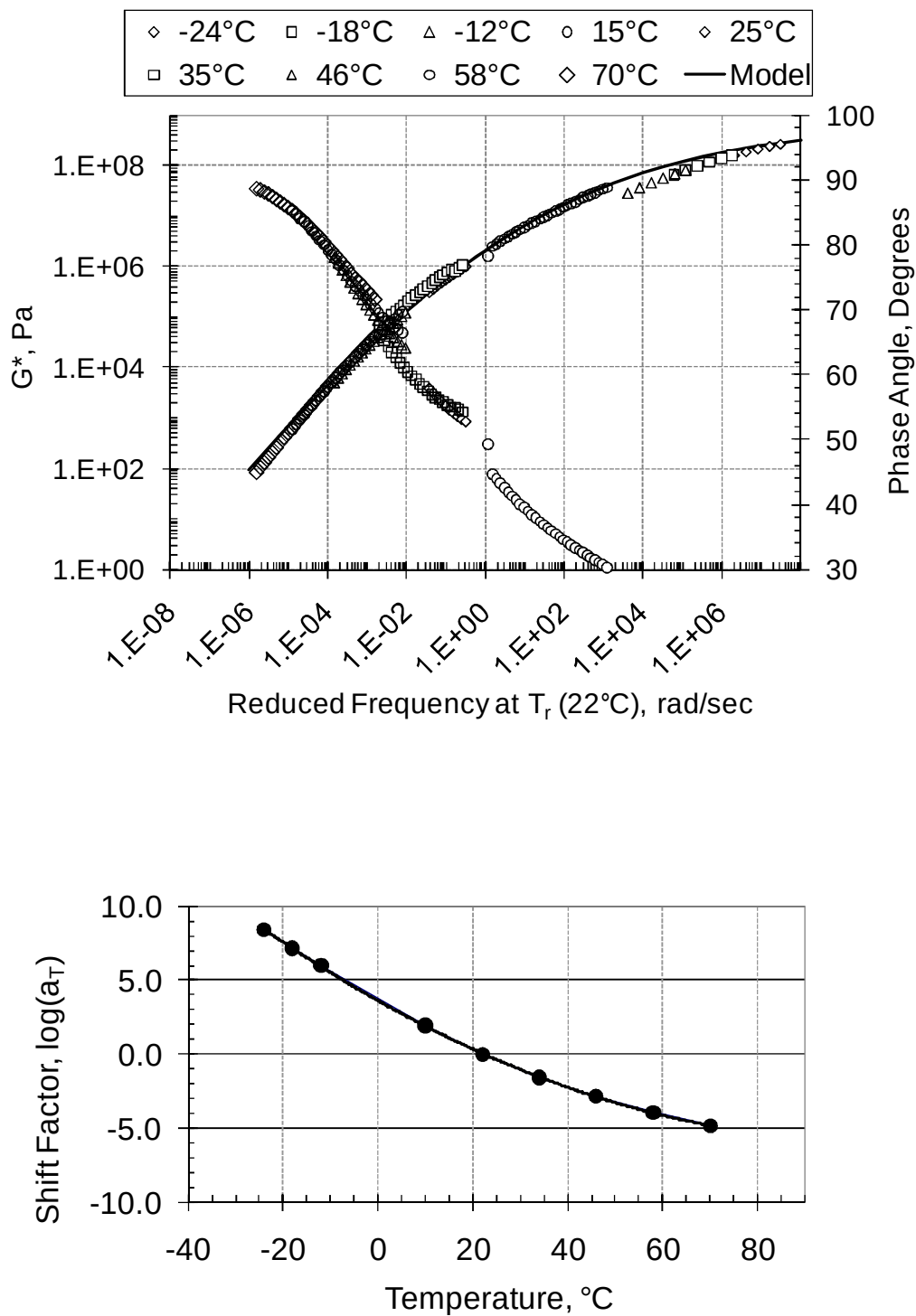


Figure 62. Binder Master Curve and Shift Factors for MGRF Airblown.

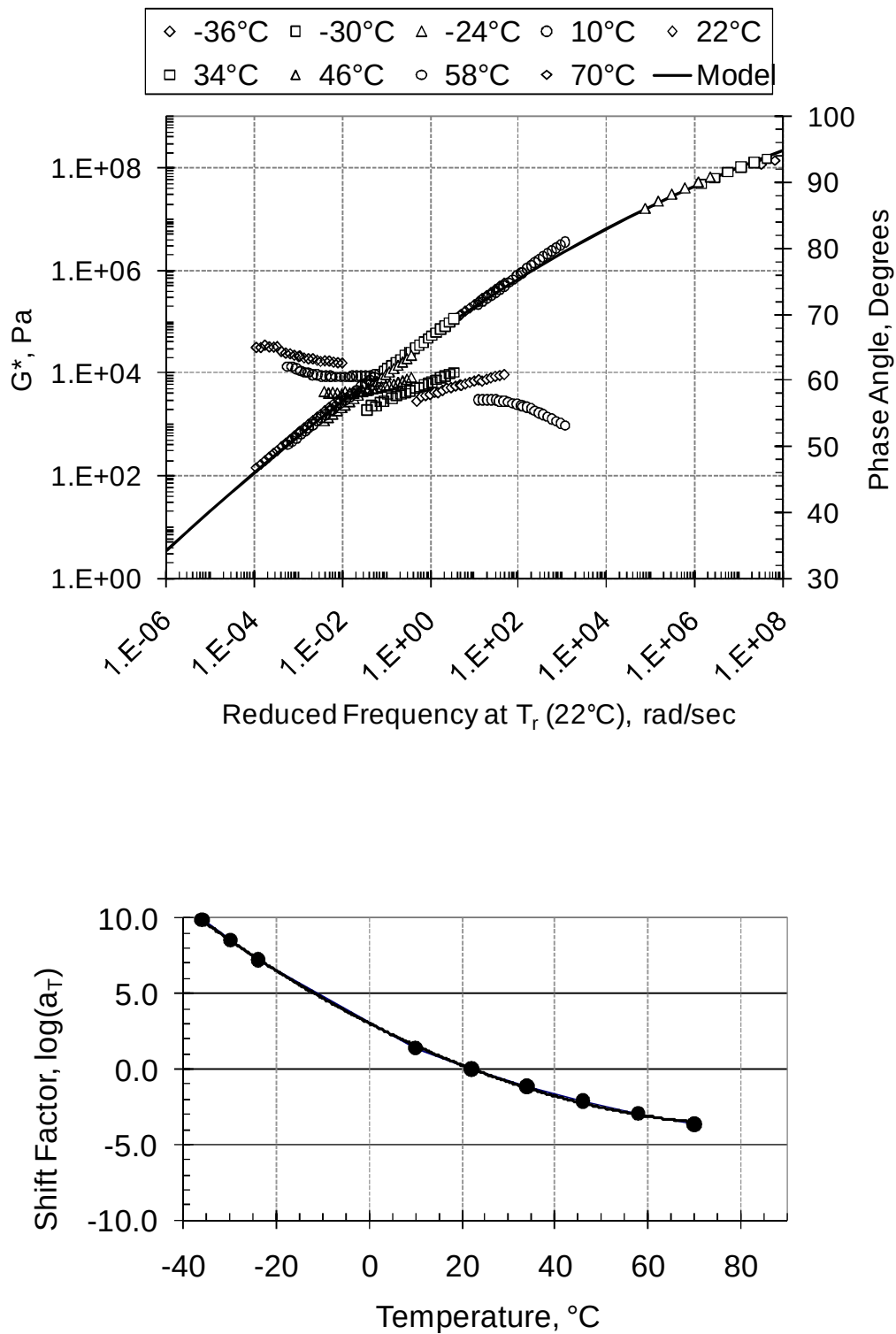


Figure 63. Binder Master Curve and Shift Factors for Tank ALF.

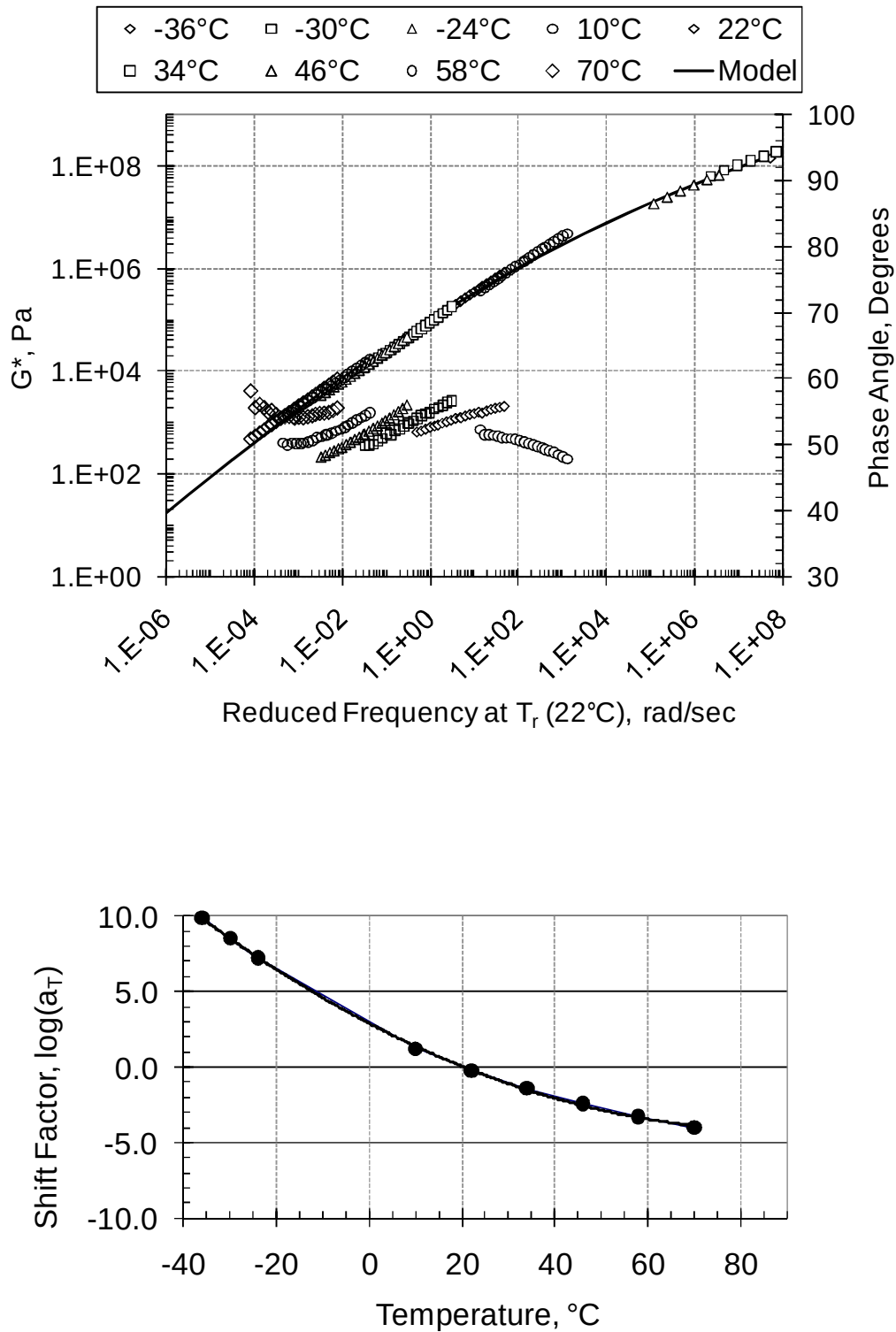


Figure 64. Binder Master Curve and Shift Factors for RTFOT ALF.

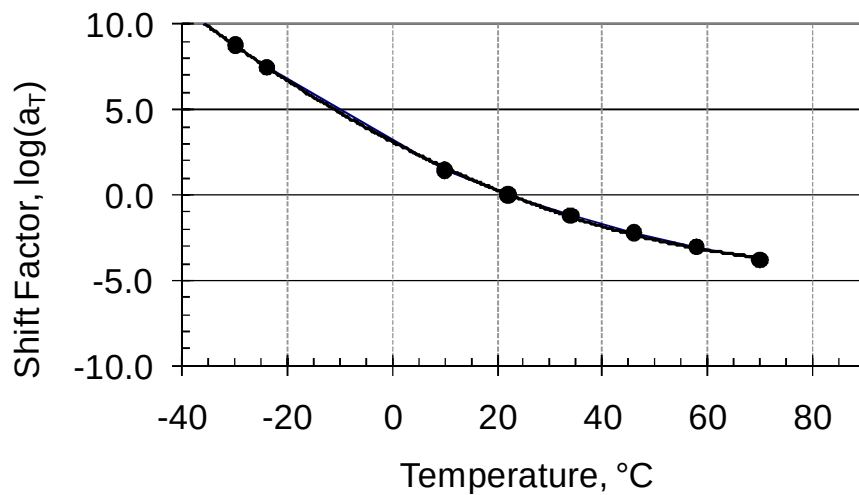
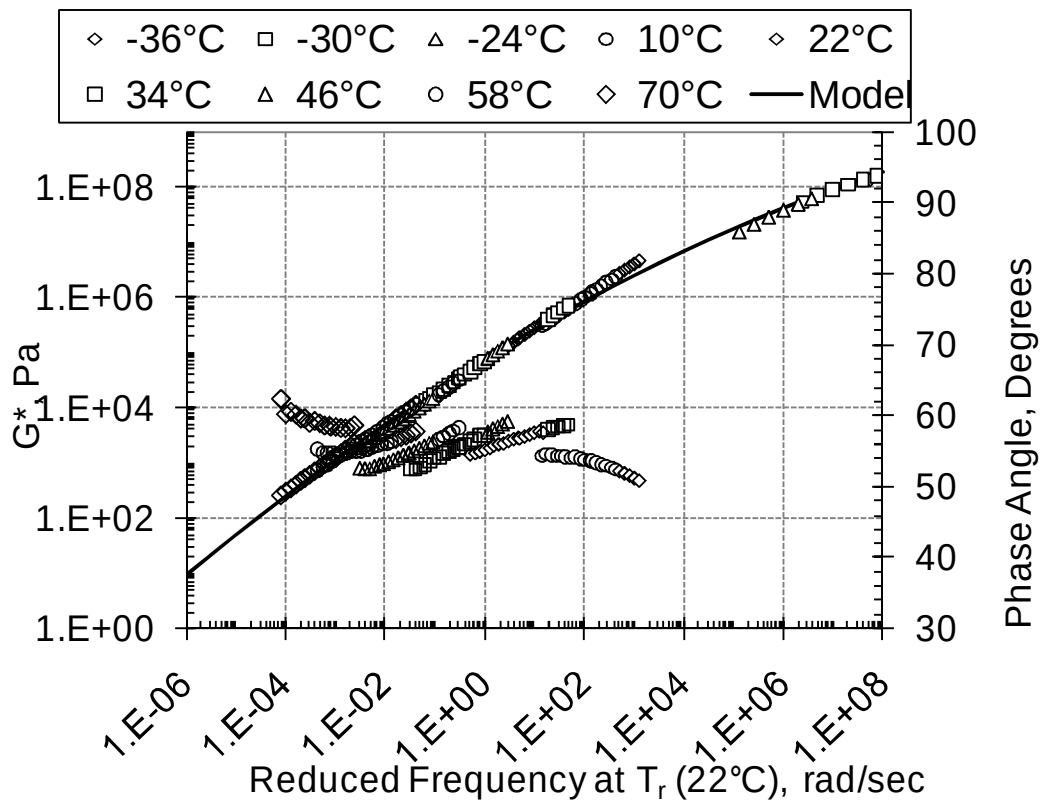


Figure 65. Binder Master Curve and Shift Factors for SAFT ALF.

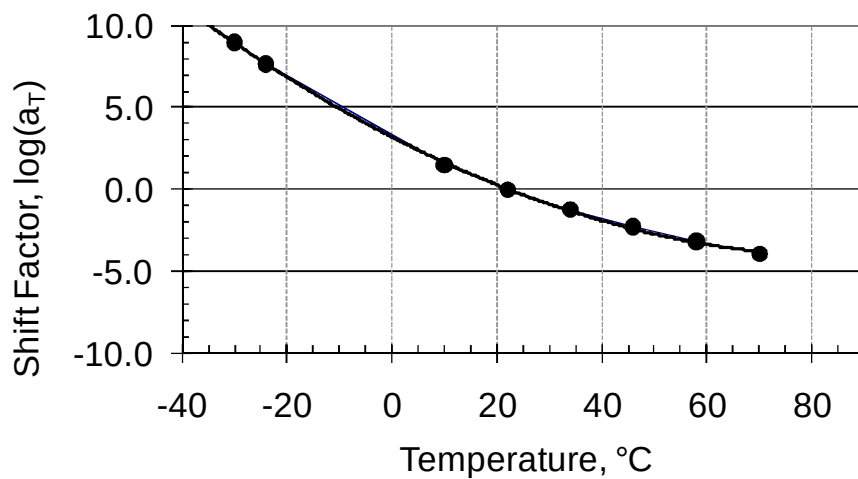
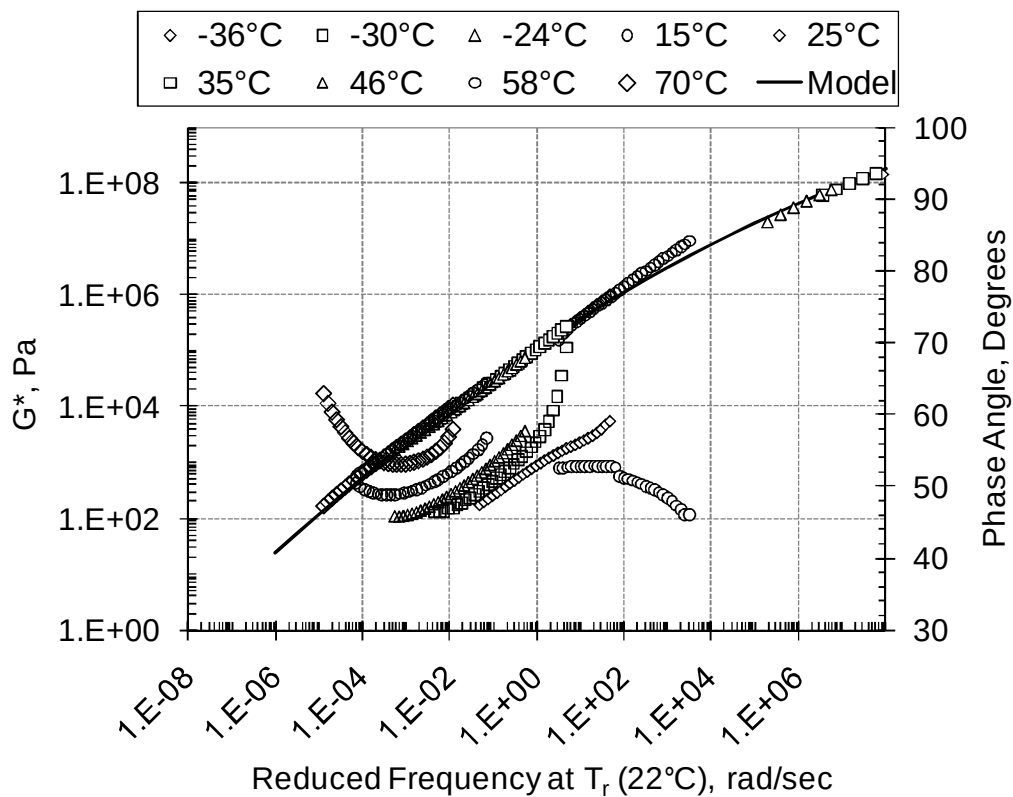


Figure 66. Binder Master Curve and Shift Factors for MGRF ALF.

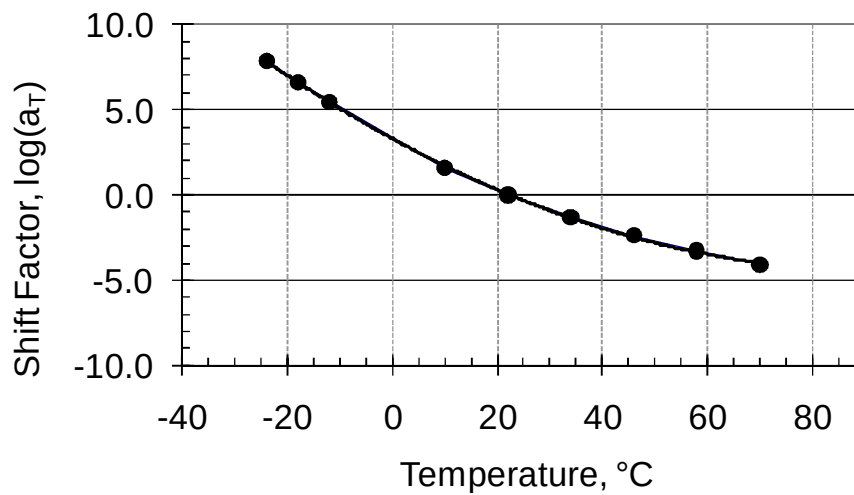
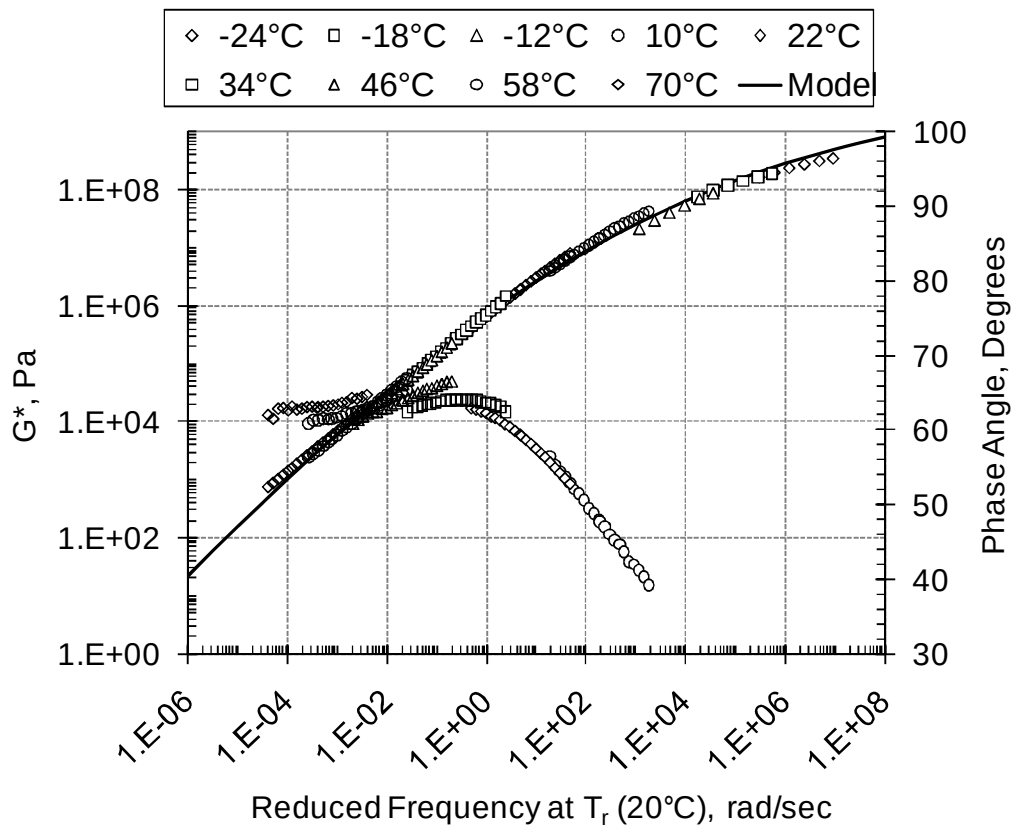


Figure 67. Binder Master Curve and Shift Factors for Tank Citgoflex.

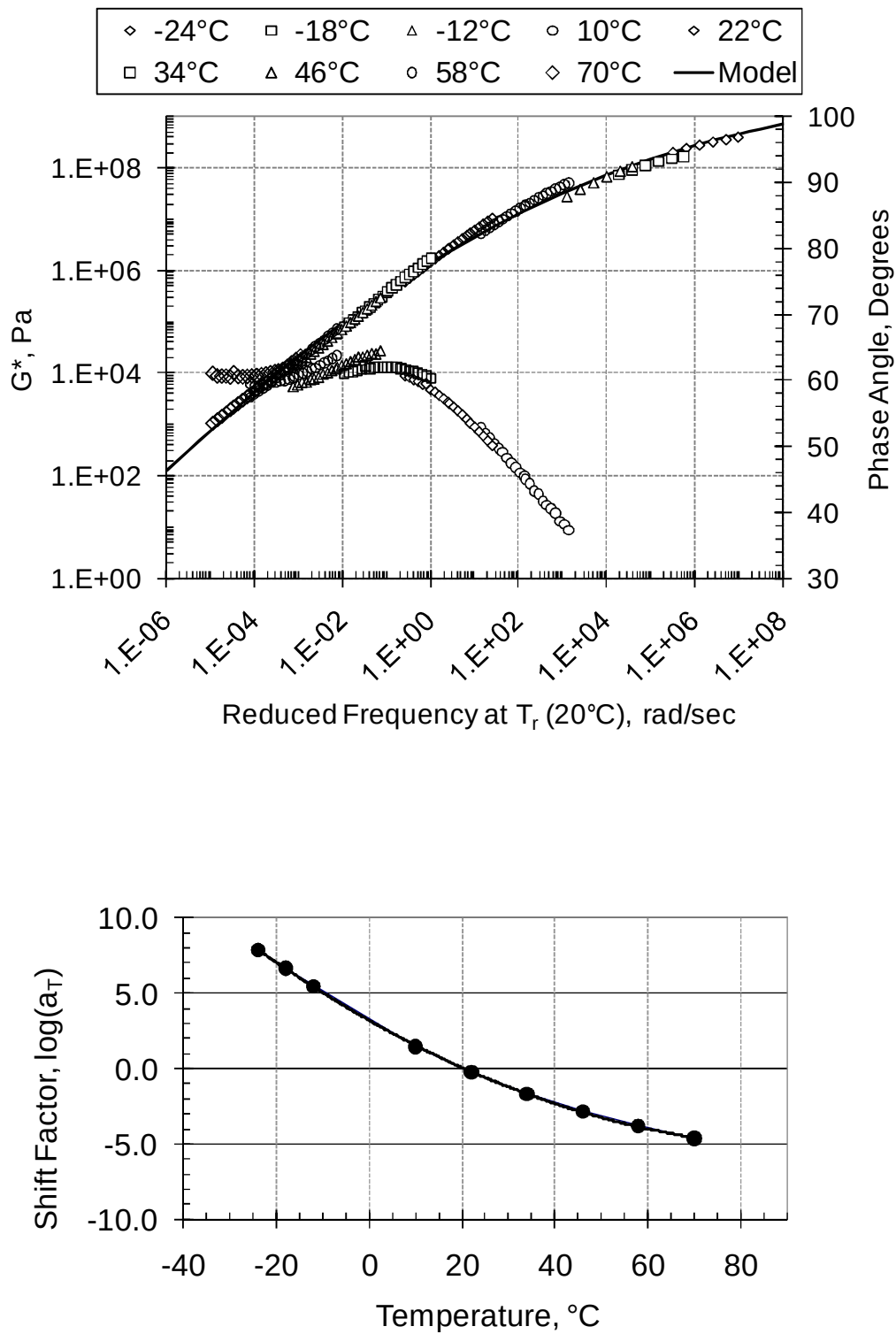


Figure 68. Binder Master Curve and Shift Factors for RTFOT Citgoflex.

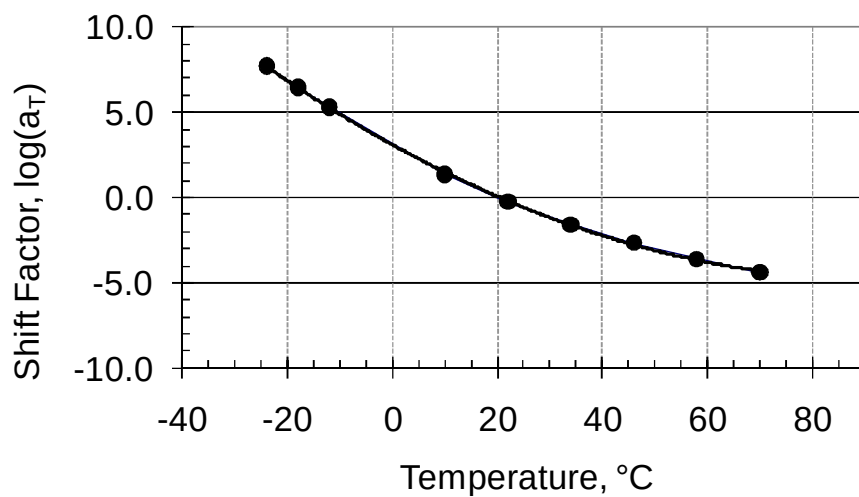
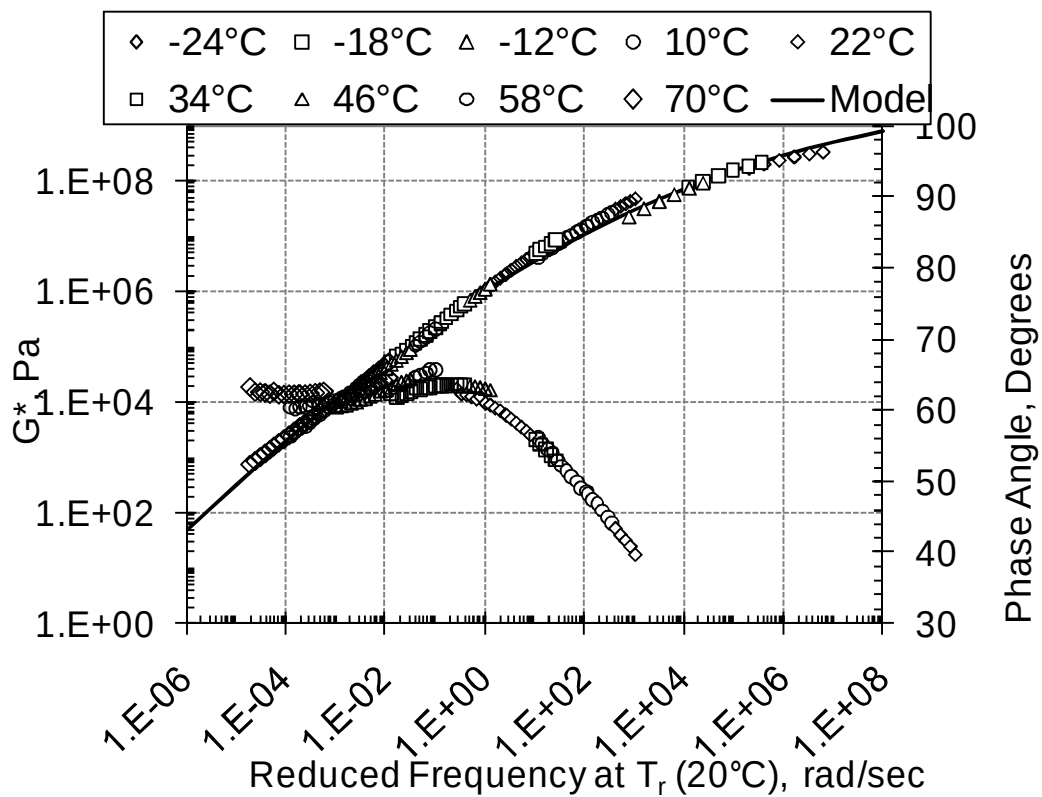


Figure 69. Binder Master Curve and Shift Factors for SAFT Citgoflex.

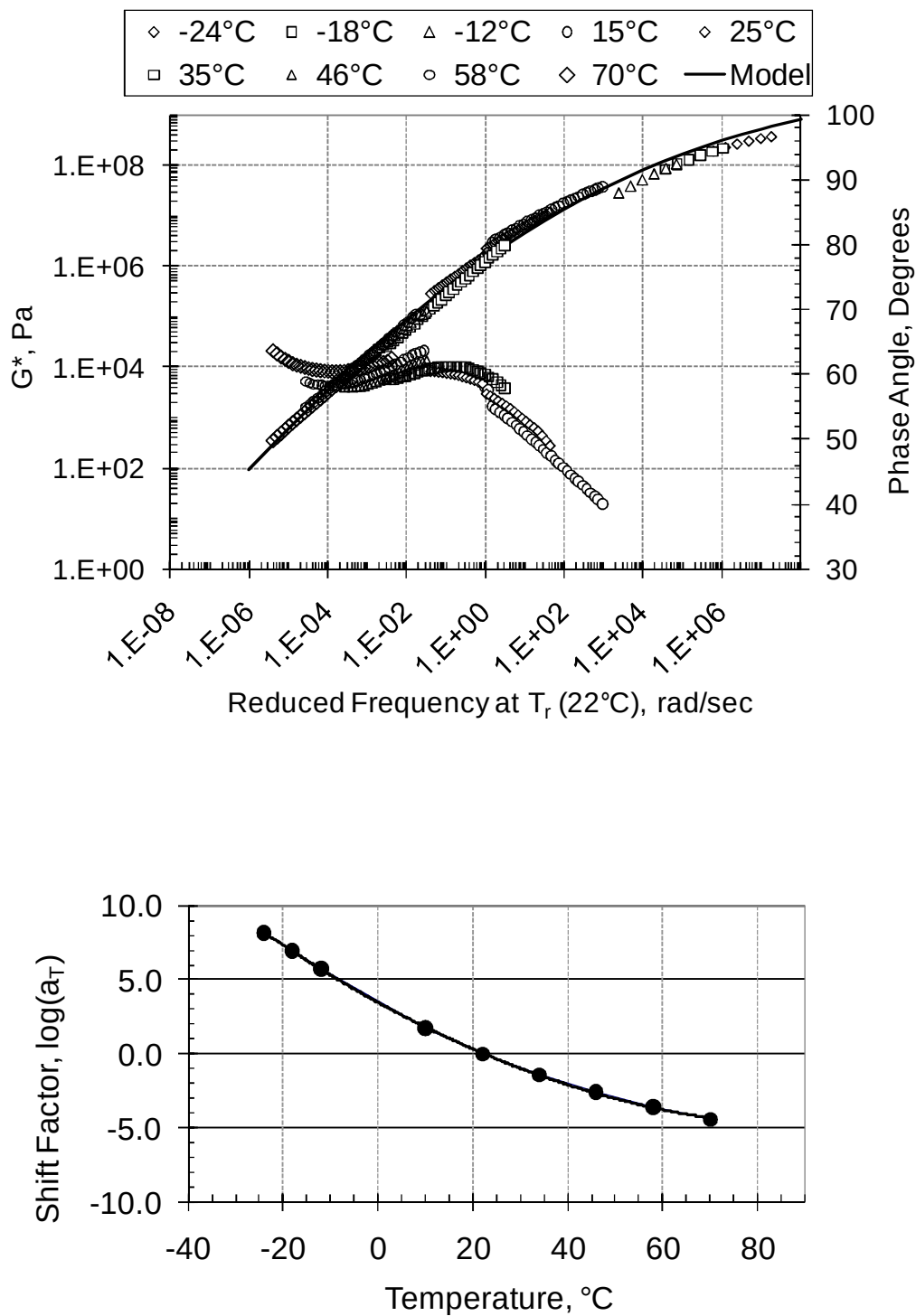


Figure 70. Binder Master Curve and Shift Factors for MGRF Citgoflex.

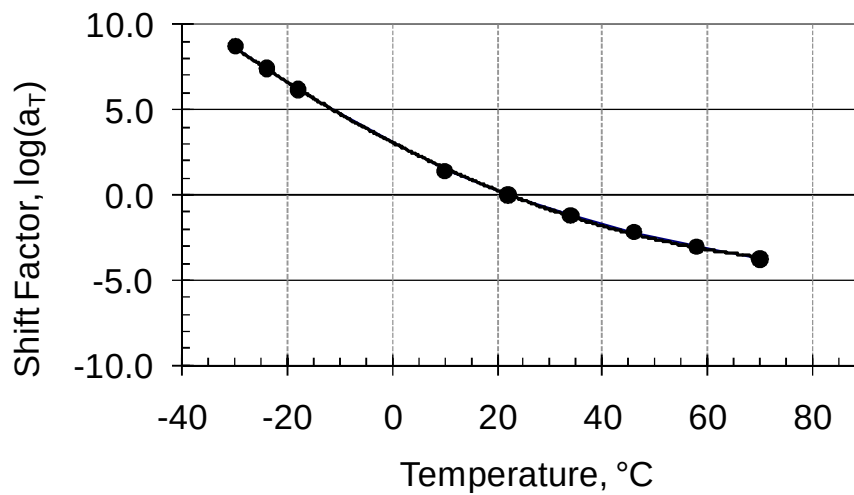
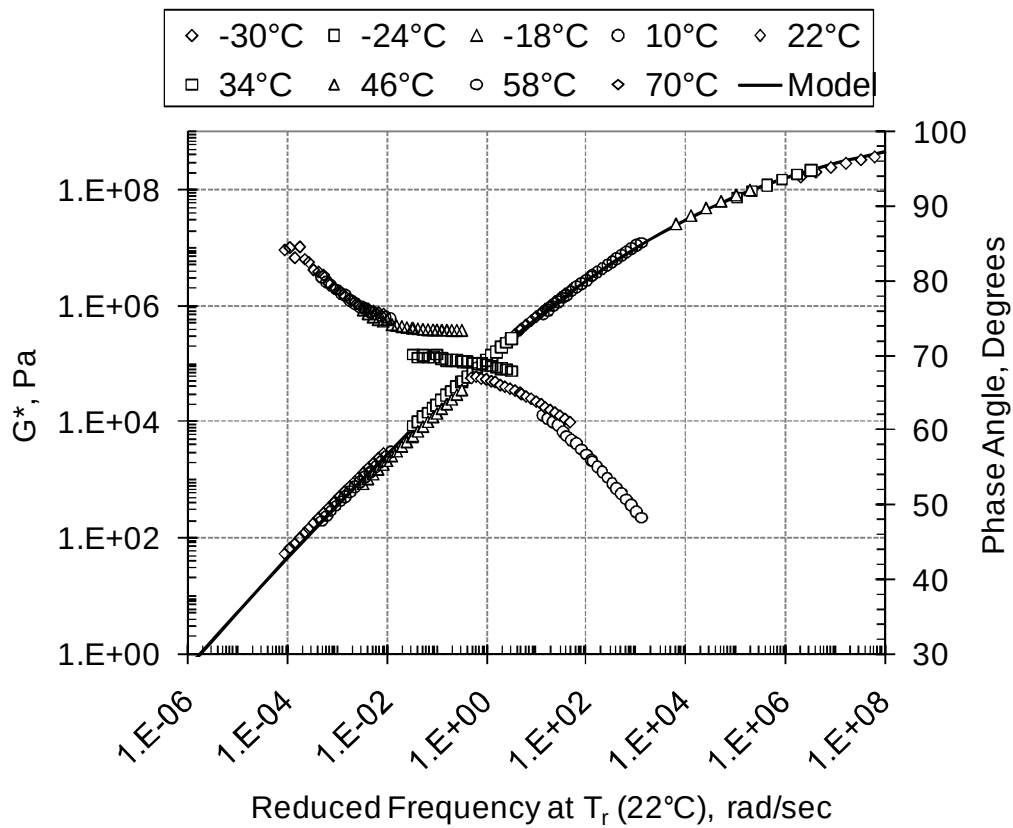


Figure 71. Binder Master Curve and Shift Factors for Tank Elvaloy.

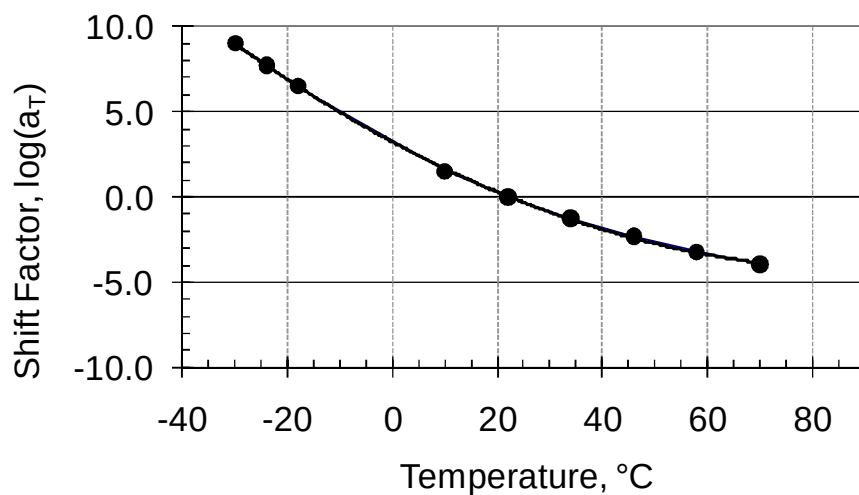
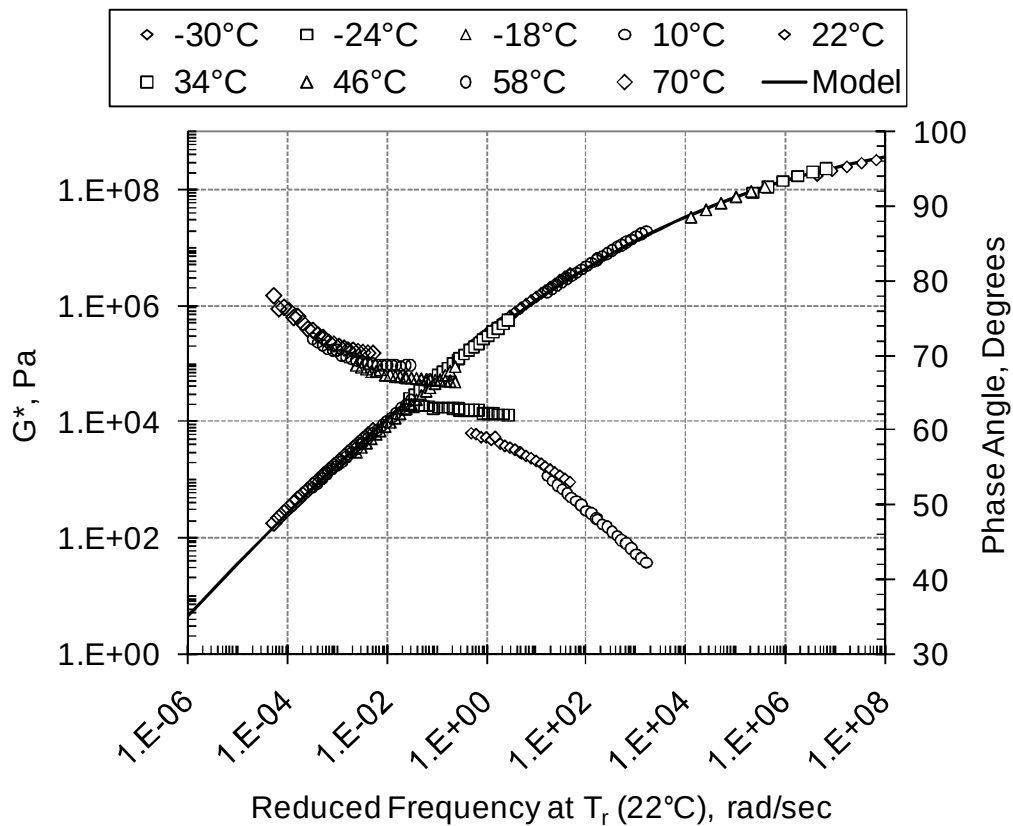


Figure 72. Binder Master Curve and Shift Factors for RTFOT Elvaloy.

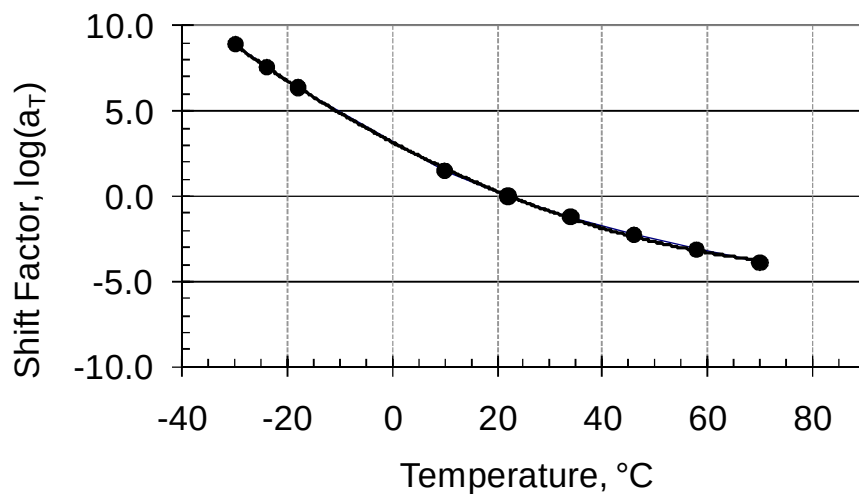
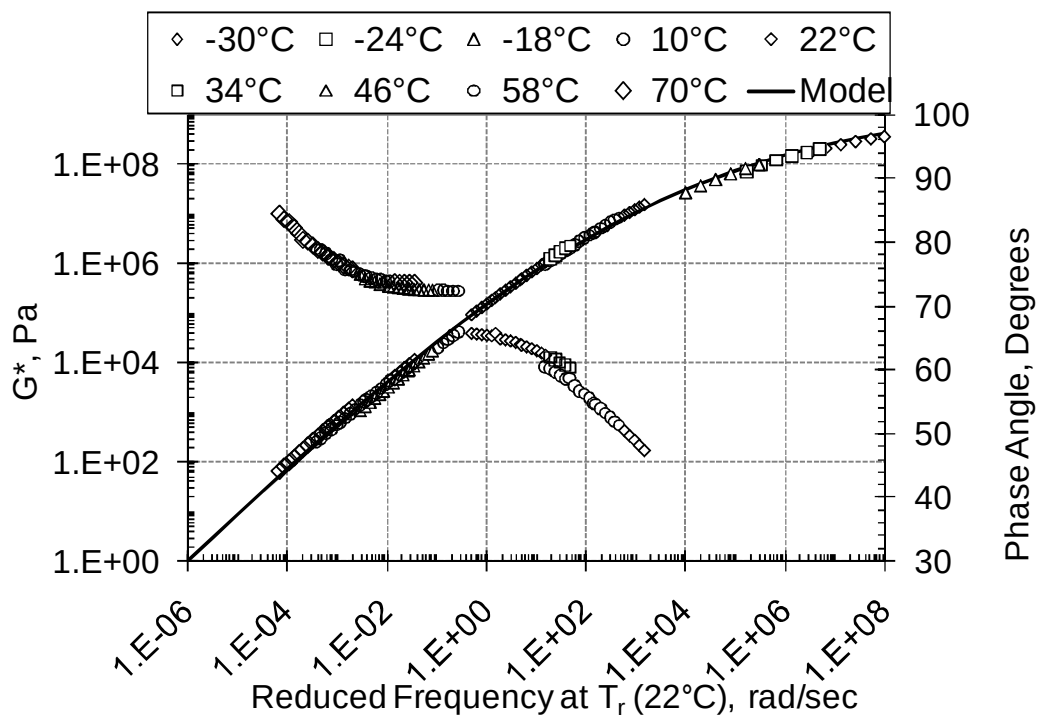


Figure 73. Binder Master Curve and Shift Factors for SAFT Elvaloy.

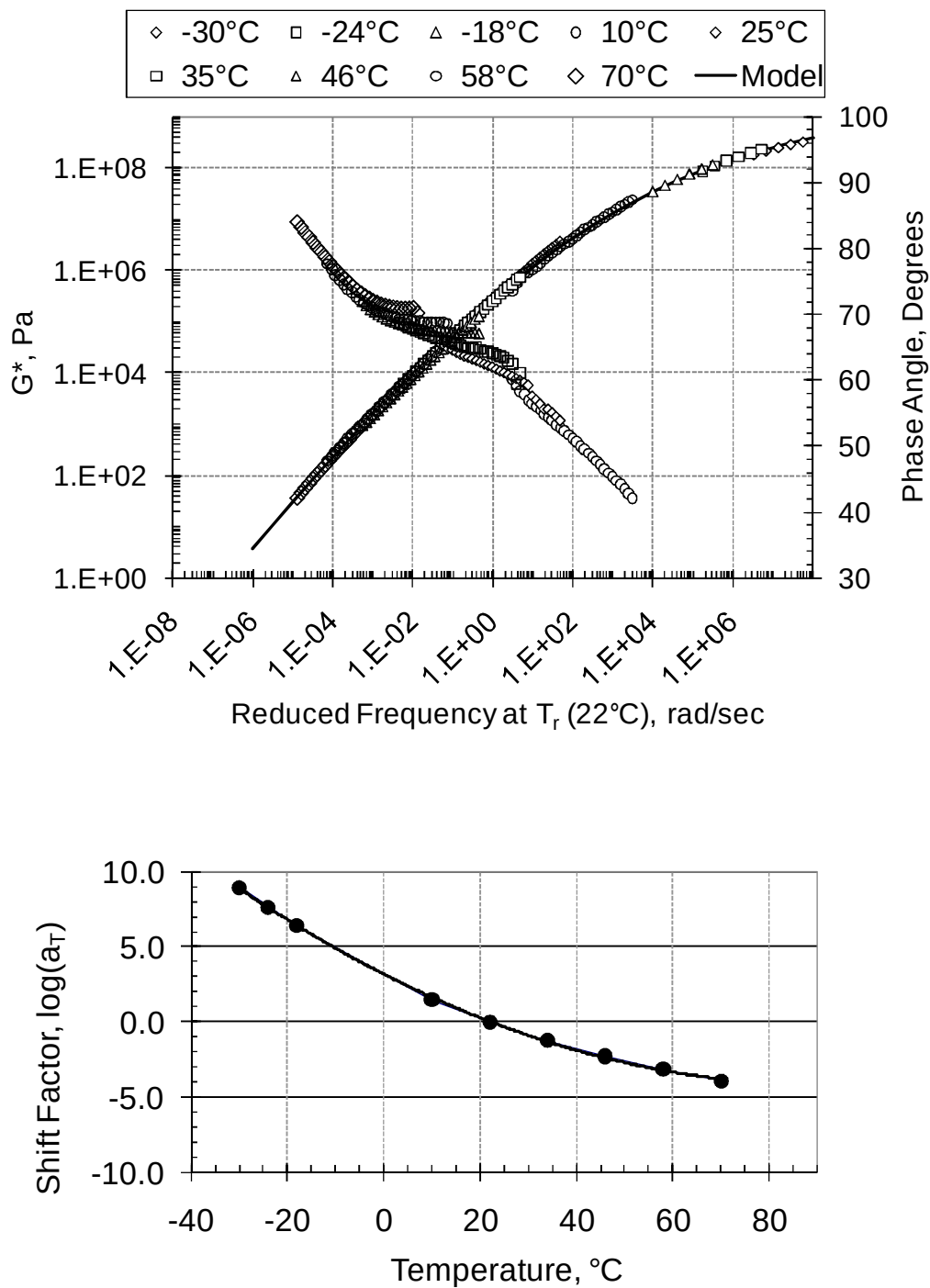


Figure 74. Binder Master Curve and Shift Factors for MGRF Elvaloy.

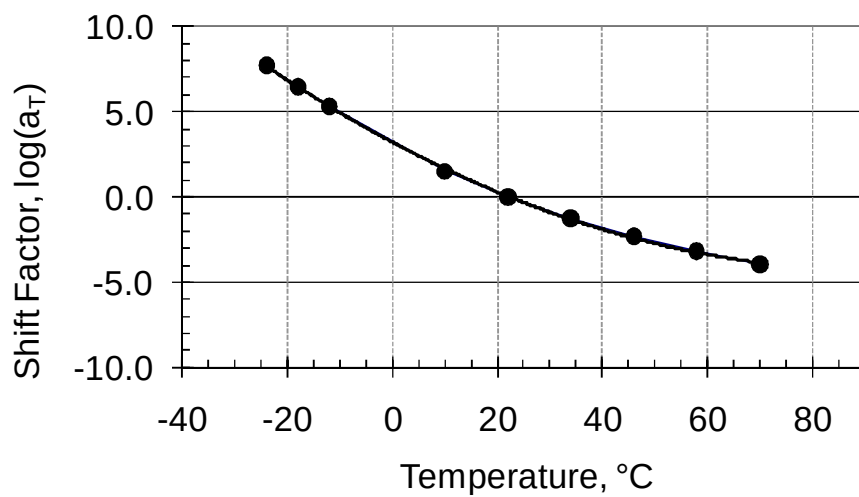
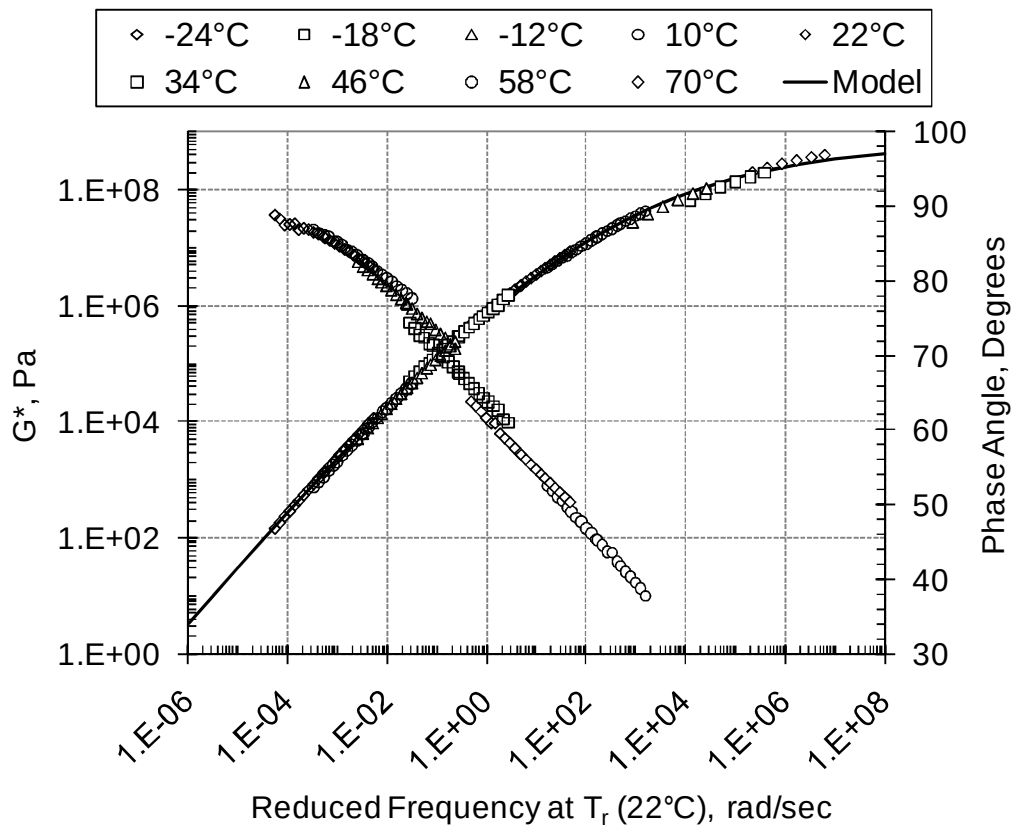


Figure 75. Binder Master Curve and Shift Factors for Tank Novophalt.

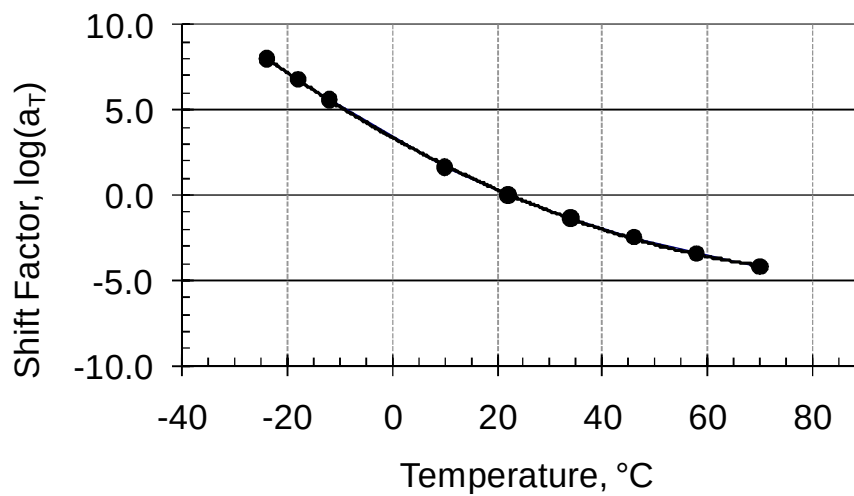
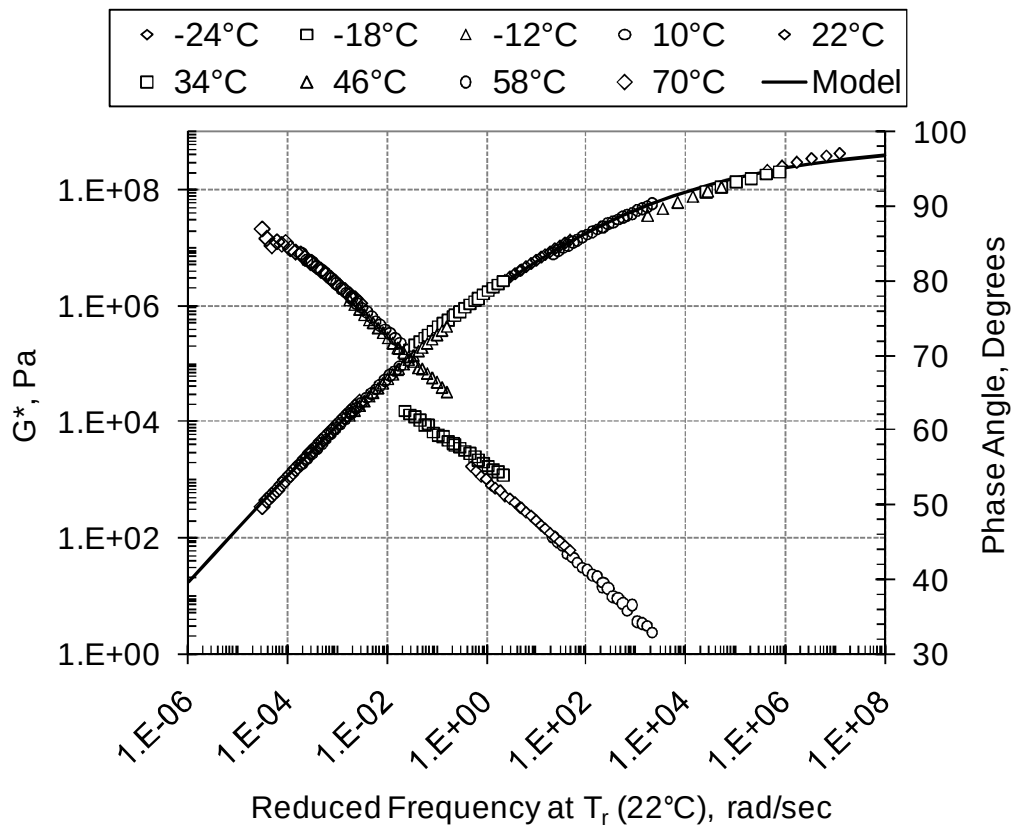


Figure 76. Binder Master Curve and Shift Factors for RTFOT Novophalt.

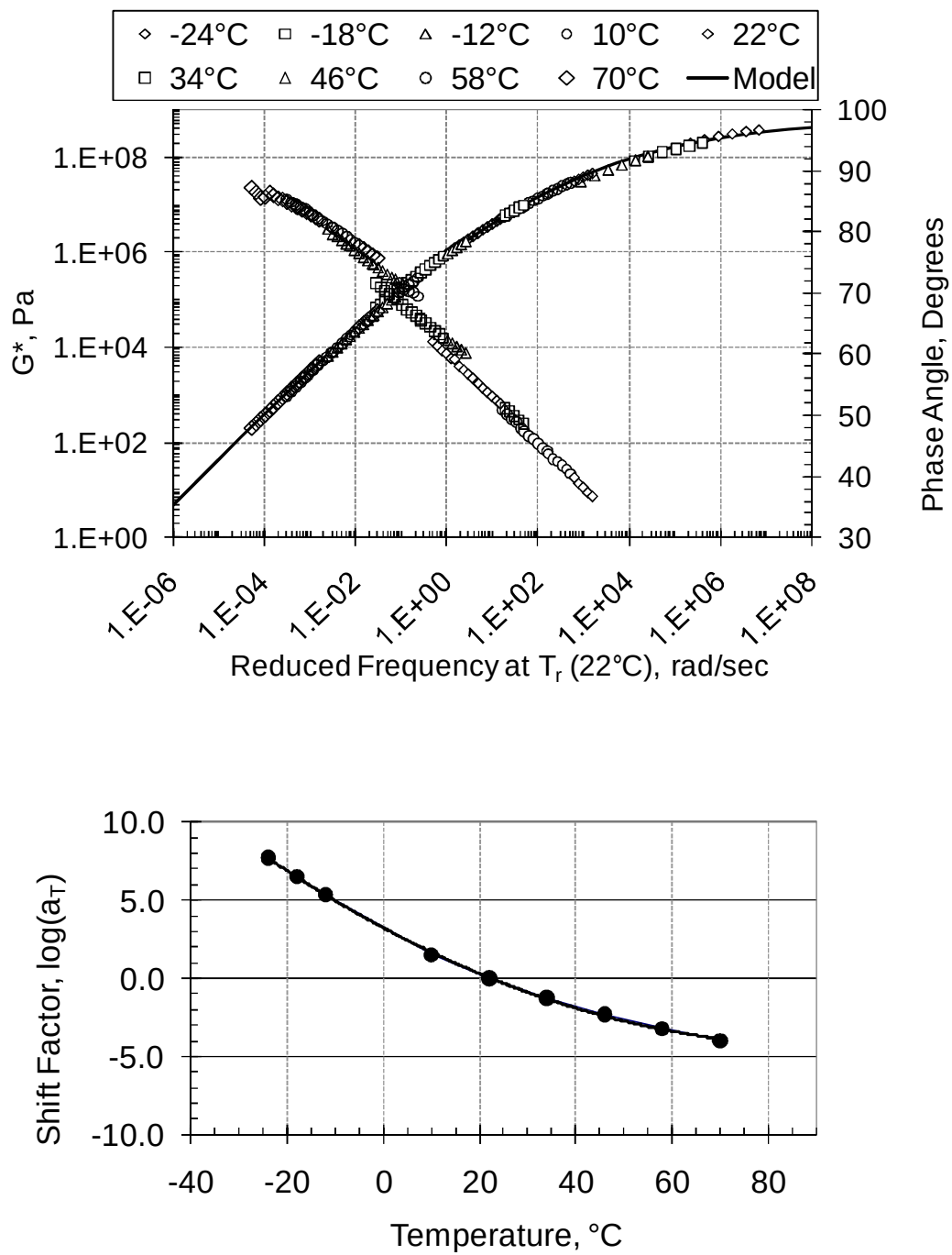


Figure 77. Binder Master Curve and Shift Factors for SAFT Novophalt.

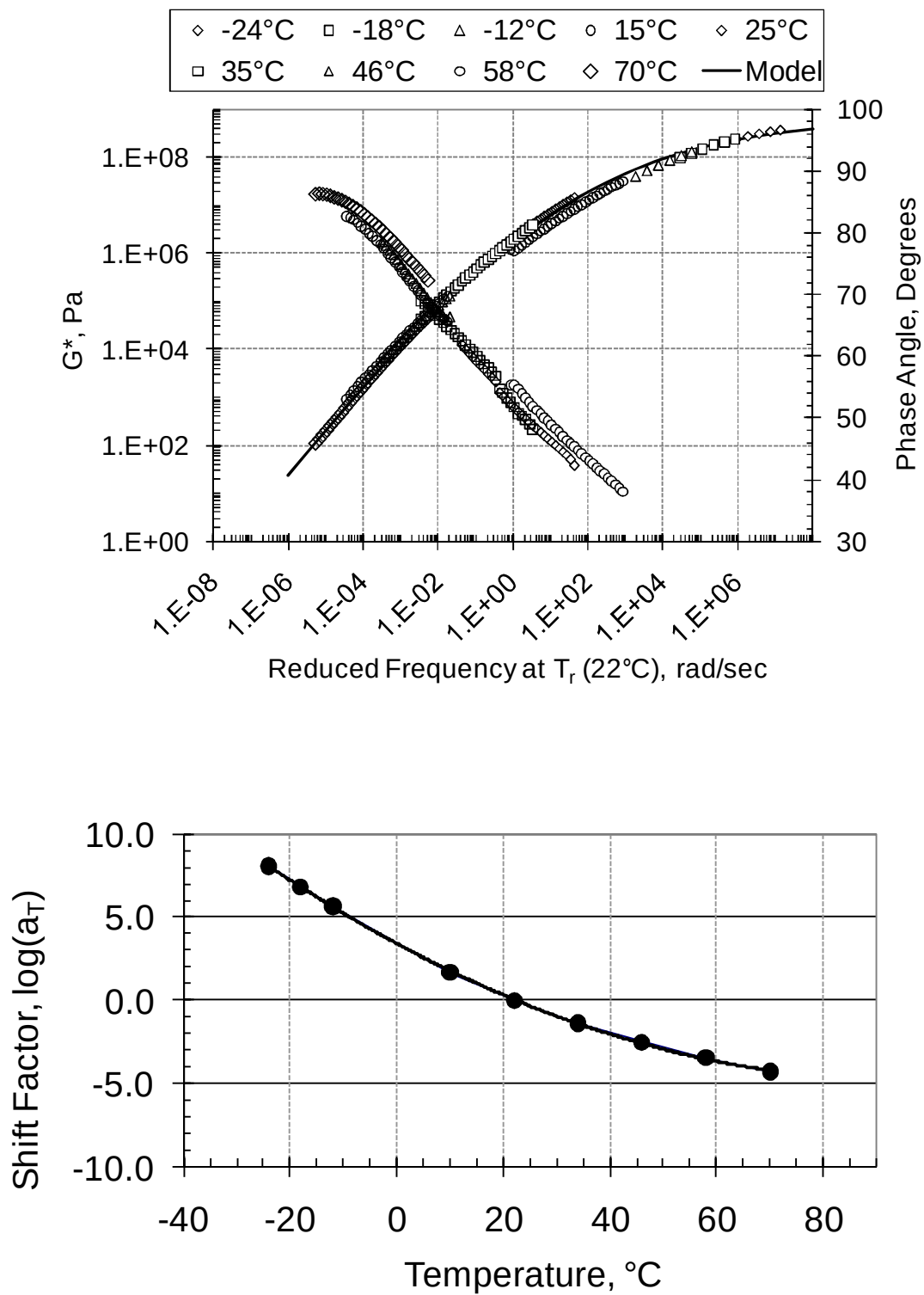


Figure 78. Binder Master Curve and Shift Factors for MGRF Novophalt.

8.0 MIXTURE MODULUS DATA

Table 110. Unaged Dynamic Modulus Data for AAC-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	719.6	27.9	790.9	28.2	743.3	27.6
4	1	1241.2	19.7	1396.3	19.1	1291.3	18.9
4	10	1946.2	13.3	2077.8	13.4	1854.9	13.5
20	0.1	98.9	33.5	97.7	32.9	84.5	33.6
20	1	286.7	32.7	285.7	33.3	250.7	32.4
20	10	676.0	27.1	670.1	27.8	614.5	28.1
34	0.01	19.3	16.0	11.5	16.4	17.1	17.0
34	0.1	26.5	22.0	18.6	22.3	23.3	22.6
34	1	52.0	30.7	45.2	29.8	47.8	30.1
34	10	151.2	35.2	147.2	33.5	144.2	32.9

Table 111. Short-Term Oven Aged Dynamic Modulus Data for AAC-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	841.8	22.0	783.1	23.1	665.6	22.2
4	1	1290.8	15.1	1232.9	15.8	1010.2	15.7
4	10	1731.7	11.3	1697.9	11.7	1363.9	12.2
20	0.1	163.3	32.0	164.5	31.7	170.4	29.2
20	1	382.8	28.4	379.9	28.8	386.7	26.9
20	10	747.4	23.8	725.5	23.3	722.2	22.7
34	0.01	22.0	20.1	22.0	19.5	26.3	18.9
34	0.1	35.4	25.4	35.1	26.1	40.0	24.3
34	1	82.3	29.4	81.4	30.4	97.9	26.9
34	10	217.9	32.4	221.7	32.3	233.3	29.3

Table 112. Unaged Dynamic Modulus Data for AAD-2.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	322.9	30.9	368.9	31.3	361.1	31.3
4	1	659.8	25.0	755.1	25.1	729.4	25.4
4	10	1094.2	19.7	1280.8	19.5	1251.6	19.3
20	0.1	63.6	29.1	65.3	27.7	65.6	28.1
20	1	166.1	29.6	168.6	29.4	167.4	29.2
20	10	389.5	30.4	414.6	30.0	394.1	30.0
34	0.01	11.9	18.9	12.1	18.4	15.3	16.0
34	0.1	18.0	23.5	19.1	22.5	24.4	20.4
34	1	33.8	28.5	39.6	27.7	45.2	25.8
34	10	96.4	31.7	114.5	31.6	119.6	28.8

Table 113. Short-Term Oven Aged Dynamic Modulus Data for AAD-2.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	449.1	26.7	439.2	26.4	565.8	26.8
4	1	807.1	20.6	802.4	20.3	1004.4	20.3
4	10	1232.9	15.3	1257.2	15.8	1523.1	16.2
20	0.1	127.4	28.0	119.6	26.8	154.8	27.0
20	1	261.3	28.4	245.1	27.9	315.3	27.3
20	10	533.6	26.8	507.3	23.9	637.0	24.2
34	0.01	24.9	19.7	21.4	20.0	26.6	19.1
34	0.1	40.2	22.8	34.8	23.5	43.9	22.7
34	1	84.1	25.3	77.4	25.5	95.8	24.9
34	10	186.8	28.9	175.3	29.0	212.6	28.9

Table 114. Unaged Dynamic Modulus Data for AAF-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1170.9	18.8	1214.8	19.6	1443.2	18.5
4	1	1660.8	12.0	1743.5	12.5	2027.0	11.6
4	10	2107.3	8.1	2245.6	8.4	2596.1	8.2
20	0.1	259.1	33.9	289.9	33.5	315.2	34.6
20	1	604.1	27.4	657.3	26.8	711.2	27.0
20	10	1065.1	21.0	1181.5	18.8	1231.4	19.8
40	0.01	17.2	18.6	16.5	18.8	18.8	19.2
40	0.1	26.5	24.8	26.4	26.1	30.6	26.0
40	1	604.1	27.4	63.9	32.1	74.5	32.7
40	10	180.1	35.2	197.6	35.1	220.6	35.2

Table 115. Short-Term Oven Aged Dynamic Modulus Data for AAF-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1371.0	14.2	1596.1	14.6	1646.5	13.6
4	1	1782.3	9.2	2128.8	9.4	2148.5	9.0
4	10	2113.6	6.8	2663.9	6.9	2636.0	6.3
20	0.1	481.0	29.6	490.5	29.5	561.9	28.7
20	1	878.7	21.5	906.4	21.5	982.4	20.4
20	10	1295.2	14.7	1393.2	16.4	1441.5	14.5
40	0.01	24.6	24.0	24.3	23.7	29.1	24.4
40	0.1	46.9	30.3	47.5	30.6	56.3	30.8
40	1	878.7	21.5	132.3	33.6	161.6	32.2
40	10	360.7	30.0	360.7	30.0	411.2	31.0

Table 116. Unaged Dynamic Modulus Data for AAM-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	976.1	18.5			880.3	18.7
4	1	1424.4	13.1	1459.1	13.6	1303.6	13.1
4	10	1903.6	10.1	1935.5	10.1	1697.1	9.7
20	0.1	172.4	30.2	188.0	31.3	171.6	31.2
20	1	397.2	26.6	423.7	26.8	392.3	26.5
20	10	757.3	20.7	792.9	22.5	707.1	22.9
40	0.01	12.8	18.6	15.6	16.7	12.7	17.5
40	0.1	20.8	24.2	22.9	20.8	20.3	24.1
40	1	49.8	28.8	46.0	27.6	45.3	28.9
40	10	139.0	32.7	121.1	33.2	122.8	32.6

Table 117. Short-Term Oven Aged Dynamic Modulus Data for AAM-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1036.5	16.3	1079.2	16.8	1200.9	16.3
4	1	1454.0	11.8	1517.7	12.2	1648.1	11.8
4	10	1889.3	8.7	1979.6	9.0	2155.7	9.0
20	0.1	264.7	28.8	303.3	27.2	299.3	28.8
20	1	494.7	23.8	568.6	22.7	566.9	23.8
20	10	843.3	19.8	960.6	18.5	955.4	19.9
40	0.01	19.6	22.7	20.6	21.8	21.7	21.2
40	0.1	34.8	27.6	33.8	26.4	35.6	26.4
40	1	83.6	28.6	78.6	27.9	81.3	28.5
40	10	189.8	31.8	193.4	28.7	201.3	30.9

Table 118. Unaged Dynamic Modulus Data for ABL-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	605.2	25.6	736.2	26.0	710.1	25.4
4	1	1036.2	18.4	1267.1	18.4	1198.8	17.9
4	10	1471.1	13.5	1868.6	14.2	1675.8	13.2
20	0.1	147.1	28.9	158.1	30.1	165.9	29.2
20	1	335.8	28.7	369.0	28.8	365.6	28.3
20	10	683.8	25.1	752.6	25.6	744.3	25.4
34	0.01	20.3	20.9	28.4	18.9	24.9	21.7
34	0.1	36.1	25.7	43.4	24.6	43.6	25.8
34	1	335.8	28.7	96.3	28.0	103.6	27.5
34	10	226.8	30.4	237.7	30.7	248.3	28.9

Table 119. Short-Term Oven Aged Dynamic Modulus Data for ABL-1.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	746.6	20.8	1028.5	22.5	752.1	21.6
4	1	1159.8	14.9	1711.8	16.4	1159.0	15.3
4	10	1504.5	11.1	2496.9	12.3	1518.8	11.3
20	0.1	214.3	29.3	261.4	30.5	217.7	30.9
20	1	442.5	25.2	536.9	26.4	456.3	26.3
20	10	761.3	21.8	985.0	21.0	806.1	22.0
34	0.01	35.5	21.4	43.9	23.4	37.8	23.6
34	0.1	58.4	25.9	76.7	27.1	66.1	26.5
34	1	442.5	25.2	176.5	27.1	148.4	27.6
34	10	300.8	26.8	368.3	28.3	326.2	28.1

Table 120. Unaged Dynamic Modulus Data for ABM-2.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1339.6	25.8	1705.7	23.2	1460.7	22.4
4	1	2130.0	14.6	2529.9	12.3	2185.3	12.2
4	10	2799.3	8.5	3519.4	7.5	2754.1	7.3
20	0.1	165.4	42.3	191.6	42.1	169.0	39.5
20	1	573.2	35.5	642.6	35.8	571.6	34.8
20	10	1330.4	25.5	1418.6	25.4	1307.3	22.5
34	0.01	15.6	20.8	11.4	23.0	15.6	20.5
34	0.1	26.3	30.1	25.4	32.0	26.7	30.0
34	1	573.2	35.5	94.4	37.5	83.6	36.6
34	10	302.7	40.1	321.9	39.9	300.5	38.8

Table 121. Short-Term Oven Aged Dynamic Modulus Data for ABM-2.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1893.8	21.7	1835.6	19.4	1404.3	19.1
4	1	2792.0	11.8	2534.6	10.6	1950.4	10.8
4	10	4045.0	7.6	3235.7	6.3	2368.0	6.7
20	0.1	263.8	39.7	320.2	39.1	278.9	38.5
20	1	763.1	33.0	862.0	29.9	772.7	30.2
20	10	1596.7	21.5	1615.2	18.4	1429.4	19.5
34	0.01	18.0	20.5	21.2	25.1	22.8	21.2
34	0.1	37.7	29.6	43.9	34.4	43.3	31.4
34	1	763.1	33.0	154.5	36.6	133.6	36.2
34	10	429.2	36.3	483.1	34.0	401.7	36.1

Table 122. Unaged Dynamic Modulus Data for Airblown.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1265.1	16.1	1299.0	16.4	1244.3	16.0
4	1	1742.2	11.4	1778.0	11.6	1661.3	11.4
4	10	2218.2	8.8	2533.2	8.5	2246.5	8.9
20	0.1	376.1	27.8	363.3	27.4	384.2	27.2
20	1	676.1	22.0	656.0	21.8	683.0	21.2
20	10	1093.6	17.9	1017.9	18.2	1070.3	17.9
40	0.01	34.2	22.4	32.6	24.3	27.8	23.8
40	0.1	61.9	26.1	62.2	26.7	53.4	26.9
40	1	139.7	26.6	146.7	26.2	126.6	27.4
40	10	302.6	27.3	319.2	26.7	287.7	27.6

Table 123. Short-Term Oven Aged Dynamic Modulus Data for Airblown.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1074.8	14.1	1295.2	13.7	1387.8	13.4
4	1	1391.3	10.4	1689.3	10.1	1756.0	9.9
4	10	1677.0	8.5	2056.8	8.5	2226.5	7.8
20	0.1	503.7	23.5	476.8	23.8	504.4	23.4
20	1	847.7	18.7	787.5	18.8	802.2	18.5
20	10	1255.5	15.1	1168.1	15.1	1216.7	15.1
40	0.01	67.6	23.7	52.7	24.1	60.4	24.3
40	0.1	129.1	25.5	102.9	26.1	116.9	25.2
40	1	847.7	18.7	208.8	25.4	230.1	24.0
40	10	470.2	23.0	383.3	24.8	411.3	22.1

Table 124. Unaged Dynamic Modulus Data for ALF.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	298.1	27.8	265.6	28.6	260.3	29.4
4	1	584.0	23.7	531.4	24.1	529.0	24.5
4	10	1019.7	19.7	926.6	21.3	901.8	21.3
20	0.1	71.2	27.6	70.1	27.5	74.1	27.2
20	1	141.3	27.7	144.7	27.6	161.1	27.4
20	10	303.1	27.5	295.0	28.6	333.0	28.5
34	0.01	33.4	17.5	33.0	17.2	32.8	17.4
34	0.1	42.9	20.5	41.4	20.2	42.1	20.7
34	1	141.3	27.7	62.4	22.5	64.9	22.9
34	10	126.3	28.2	114.0	27.8	125.3	28.4

Table 125. Short-Term Oven Aged Dynamic Modulus Data for ALF.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	405.2	25.5	378.1	26.1	387.5	26.1
4	1	721.9	20.8	685.4	21.1	712.6	21.4
4	10	1142.0	17.8	1086.1	18.4	1147.1	17.4
20	0.1	125.1	26.1	105.7	26.9	116.2	27.1
20	1	237.8	25.6	208.7	25.9	248.3	24.9
20	10	449.7	26.2	389.2	25.4	449.6	24.9
34	0.01	42.0	20.1	41.4	18.4	42.3	19.5
34	0.1	58.3	22.3	55.8	20.6	58.5	21.6
34	1	237.8	25.6	86.0	22.8	101.1	22.5
34	10	182.5	25.6	166.8	23.5	190.7	23.8

Table 126. Unaged Dynamic Modulus Data for Citgoflex.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1183.9	14.7	1039.6	19.4	1133.5	19.4
4	1	1594.2	10.1	1523.0	13.4	1673.4	13.1
4	10	1951.1	7.4	2003.5	9.0	2228.4	9.5
20	0.1	466.2	25.0	299.7	29.6	302.3	29.8
20	1	832.5	19.3	615.4	25.0	634.1	24.8
20	10	1240.6	14.4	1066.6	19.9	1109.2	19.4
40	0.01	68.4	21.6	45.2	21.7	50.3	20.6
40	0.1	107.5	25.3	67.4	25.1	73.5	24.0
40	1	832.5	19.3	133.9	26.5	139.6	26.2
40	10	423.0	24.9	286.6	29.4	294.4	27.1

Table 127. Short-Term Oven Aged Dynamic Modulus Data for Citgoflex.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1659.1	20.9	2199.8	16.2	1400.1	14.9
4	1	2487.7	14.1	2994.9	10.9	1876.3	10.1
4	10	3393.8	10.2	3857.5	8.3	2326.9	7.8
20	0.1	434.4	29.9	674.6	26.9	478.2	26.4
20	1	871.7	25.6	1201.3	21.0	870.0	20.1
20	10	1572.5	20.0	1898.6	16.4	1330.3	15.1
40	0.01	64.4	22.2	79.3	22.8	69.4	22.8
40	0.1	94.9	25.0	130.8	26.2	119.7	25.1
40	1	180.2	25.6	263.9	26.1	234.6	25.6
40	10	372.6	29.3	534.5	27.2	453.1	25.5

Table 128. Unaged Dynamic Modulus Data for Elvaloy.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	Ksi	Degree
4	0.1	609.7	27.2	523.4	27.5	654.1	27.2
4	1	1077.1	19.9	951.0	20.1	1137.1	19.4
4	10	1594.8	14.7	1357.5	15.0	1695.3	14.1
20	0.1	139.0	29.7	130.2	27.7	138.2	30.0
20	1	311.5	28.5	288.1	27.4	312.1	30.0
20	10	653.0	26.2	609.0	26.5	648.5	27.4
34	0.01	32.1	19.8	28.4	18.8	30.5	20.9
34	0.1	45.1	24.6	41.0	23.9	45.6	24.7
34	1	311.5	28.5	73.3	28.5	85.6	29.1
34	10	208.7	28.7	188.6	30.0	207.5	29.2

Table 129. Short-Term Oven Aged Dynamic Modulus Data for Elvaloy.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	826.2	19.5	805.9	20.2	794.0	19.8
4	1	1230.0	14.0	1206.9	14.7	1181.7	14.4
4	10	1606.0	10.6	1617.8	11.1	1569.3	10.8
20	0.1	242.7	28.3	231.1	29.0	233.5	28.6
20	1	475.2	24.4	462.8	24.8	455.9	24.8
20	10	817.9	20.7	790.2	20.4	787.9	21.1
34	0.01	47.3	22.0	44.4	23.9	49.8	23.0
34	0.1	79.7	25.0	75.4	26.1	82.5	25.7
34	1	475.2	24.4	157.0	26.3	169.5	26.0
34	10	334.8	26.4	316.3	25.5	323.9	26.1

Table 130. Unaged Dynamic Modulus Data for EVA.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	Ksi	Degree
4	0.1	1347.8	16.9	1596.3	19.5	1317.8	17.4
4	1	1864.5	11.9	2332.1	13.8	1807.2	12.4
4	10	2425.1	9.2	3559.1	9.5	2365.2	8.8
20	0.1	437.3	26.9	458.1	29.1	427.7	27.5
20	1	801.5	21.4	848.6	23.8	779.4	22.4
20	10	1277.1	17.4	1411.7	20.2	1264.6	18.6
40	0.01	67.0	25.1	59.1	25.8	64.3	24.8
40	0.1	107.7	27.3	96.0	28.0	103.2	27.1
40	1	801.5	21.4	198.1	26.4	208.1	26.4
40	10	406.7	27.3	387.7	28.0	386.7	27.7

Table 131. Short-Term Oven Aged Dynamic Modulus Data for EVA.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1546.1	13.2	1165.9	12.4	1222.5	13.9
4	1	2013.4	9.4	1501.6	9.0	1605.2	10.0
4	10	2467.0	7.3	1809.4	6.8	2008.6	8.0
20	0.1	641.3	22.2	508.1	21.4	459.9	23.9
20	1	1027.7	17.5	839.2	16.9	762.2	18.7
20	10	1480.0	14.1	1190.5	13.3	1141.6	14.8
40	0.01	93.3	25.8	76.5	26.3	66.4	26.6
40	0.1	163.8	26.8	136.4	27.4	117.2	26.5
40	1	1027.7	17.5	274.1	24.8	240.2	24.0
40	10	559.5	23.7	495.1	23.8	442.4	24.9

Table 132. Unaged Dynamic Modulus Data for Novophalt.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	Ksi	Degree
4	0.1	1050.3	18.3	1092.5	18.4	1556.9	18.5
4	1	1473.8	12.2	1537.4	12.0	2227.8	12.1
4	10	1847.7	8.5	1910.1	8.7	2921.7	8.5
20	0.1	341.5	30.7	355.2	31.0	405.1	31.2
20	1	677.4	24.0	702.4	24.2	826.2	24.5
20	10	1088.8	18.3	1171.9	18.3	1368.1	18.0
40	0.01	36.7	22.5	39.0	22.6	37.1	23.8
40	0.1	61.7	27.1	65.9	26.6	65.3	28.2
40	1	677.4	24.0	156.2	28.5	161.3	29.3
40	10	332.5	29.9	361.0	30.3	369.2	28.8

Table 133. Short-Term Oven Aged Dynamic Modulus Data for Novophalt.

		Specimen 1		Specimen 2		Specimen 3	
Temperature	Frequency	Modulus	Phase Angle	Modulus	Phase Angle	Modulus	Phase Angle
C	Hz	ksi	Degree	ksi	Degree	ksi	Degree
4	0.1	1552.7	15.2	2111.4	16.4	1198.2	14.5
4	1	2096.8	10.1	2829.8	10.9	1597.0	9.9
4	10	2606.3	7.4	3916.2	8.0	1929.1	7.2
20	0.1	580.2	26.4	653.9	28.0	474.7	26.3
20	1	1023.6	19.9	1132.6	20.9	831.4	19.8
20	10	1544.8	15.0	1787.2	16.7	1233.8	14.9
40	0.01	59.1	24.3	59.6	26.8	55.7	25.1
40	0.1	117.1	27.4	117.3	29.7	109.1	27.7
40	1	1023.6	19.9	262.0	29.2	233.6	27.2
40	10	514.1	26.6	561.7	29.3	456.7	26.5

9.0 MIX MASTER CURVES

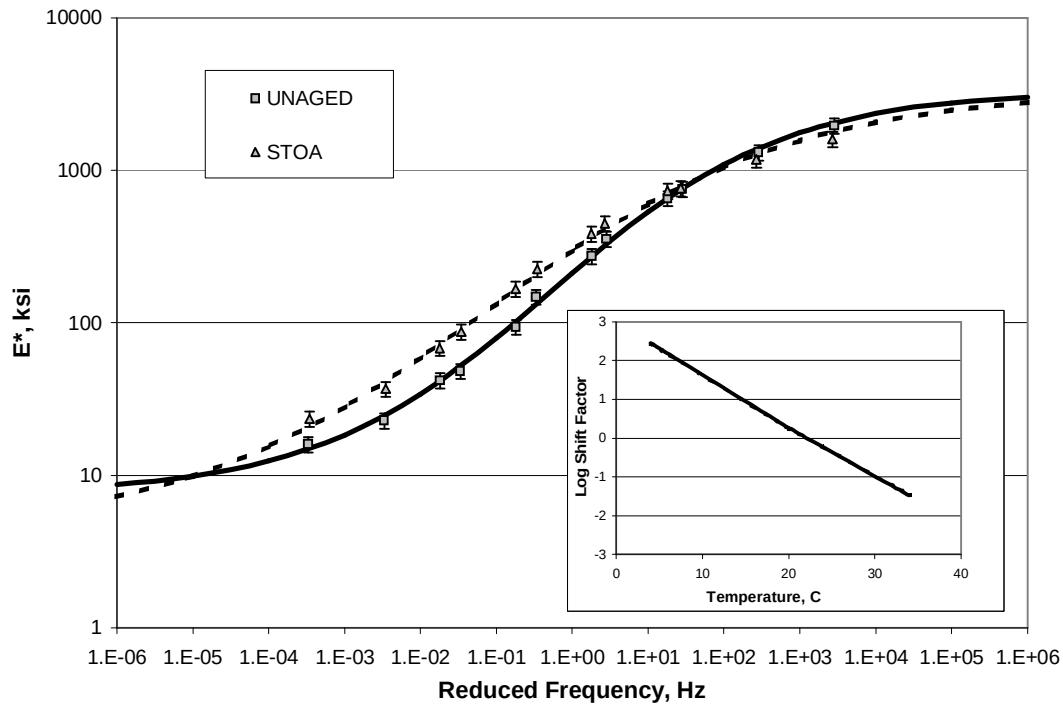


Figure 79. Dynamic Modulus Master Curves for AAC-1.

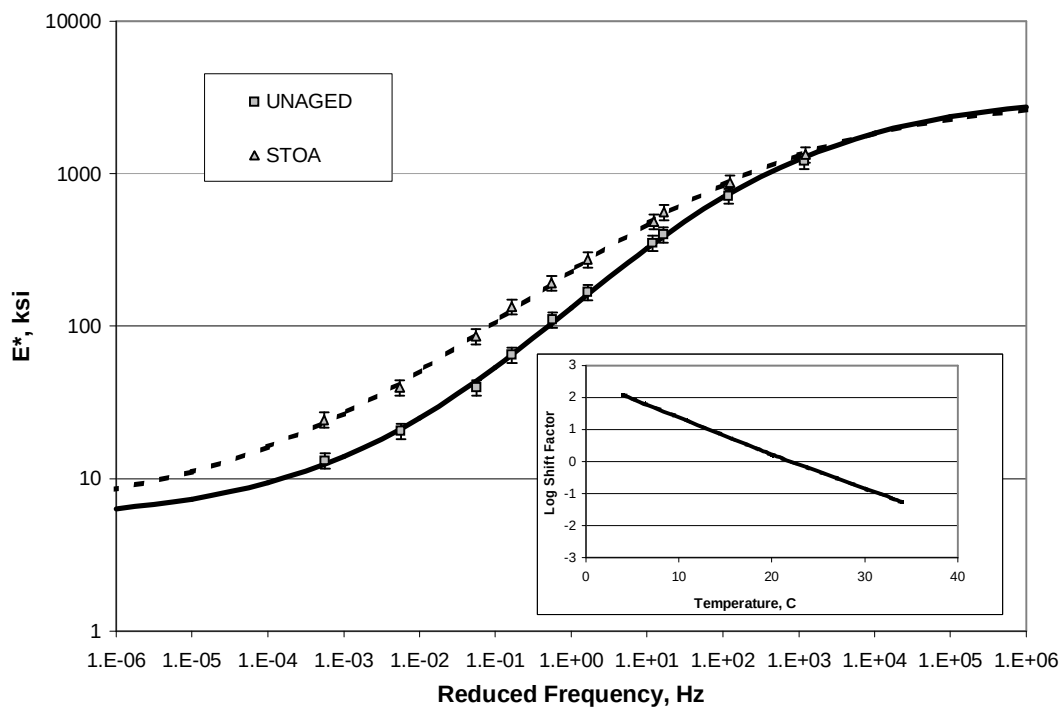


Figure 80. Dynamic Modulus Master Curves for AAD-2.

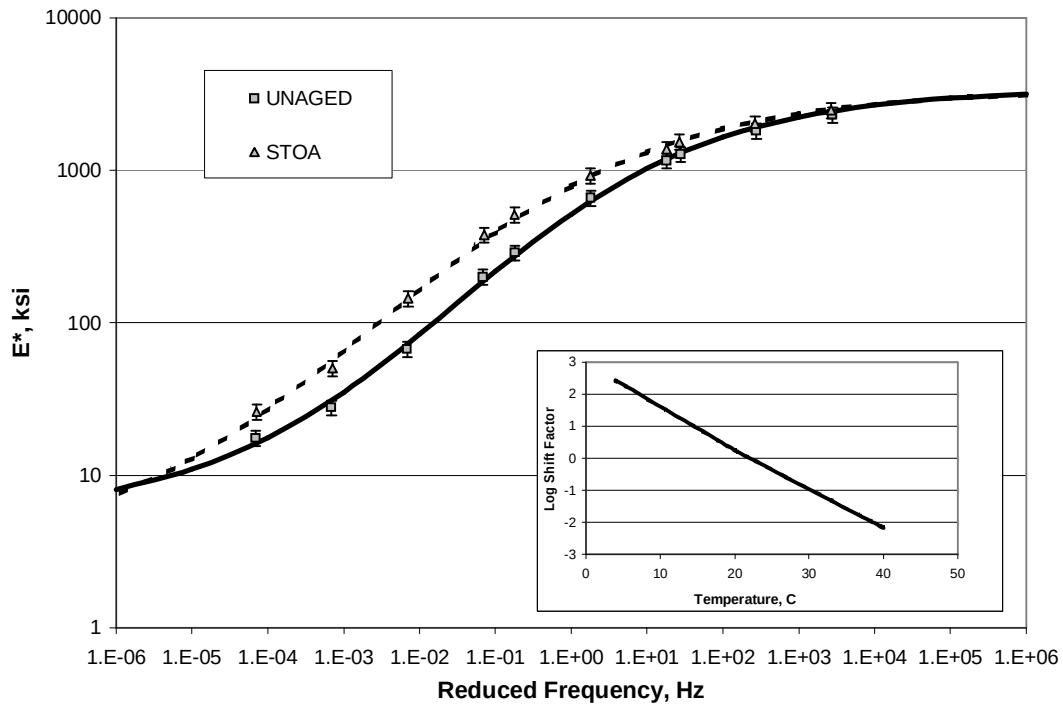


Figure 81. Dynamic Modulus Master Curves for AAF-1.

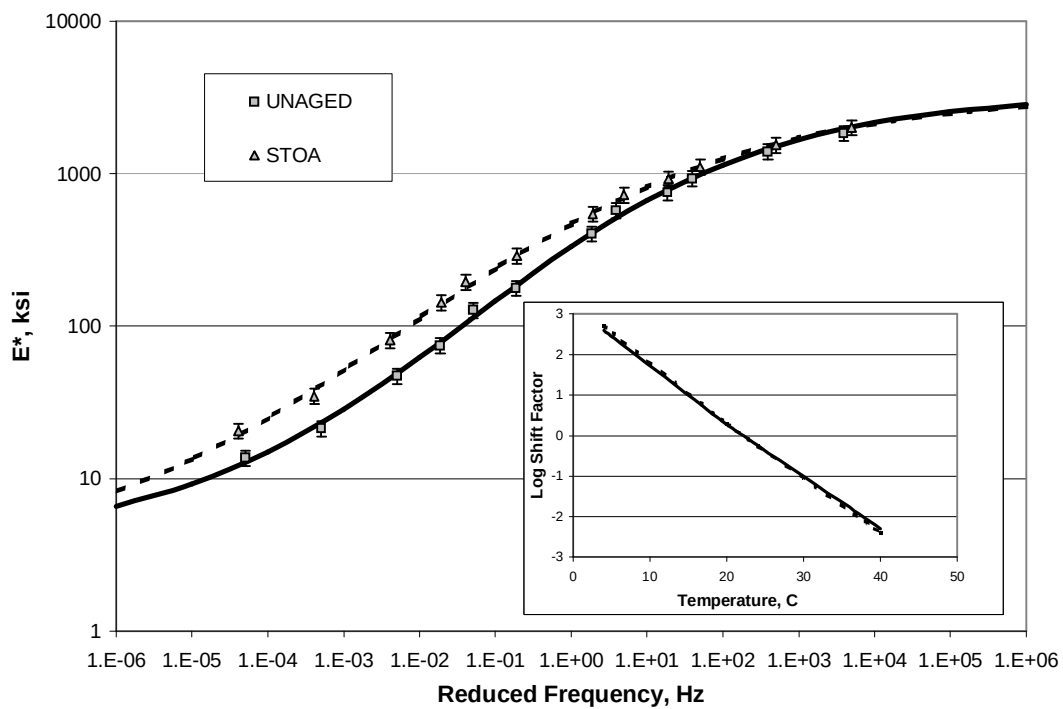


Figure 82. Dynamic Modulus Master Curves for AAM-1.

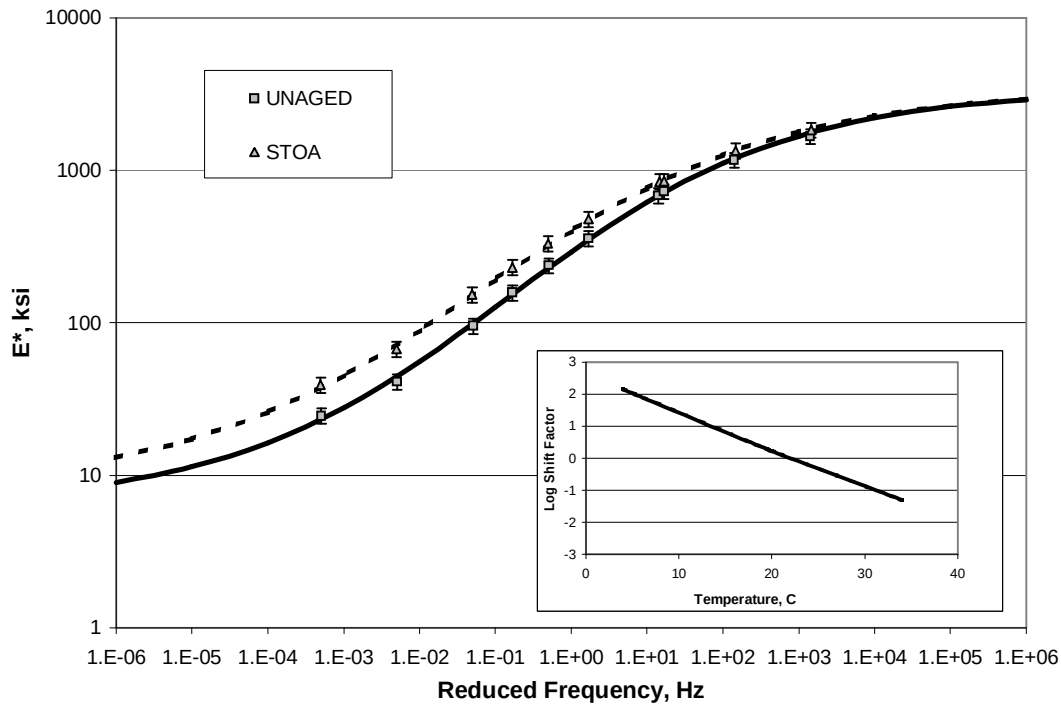


Figure 83. Dynamic Modulus Master Curves for ABL-1.

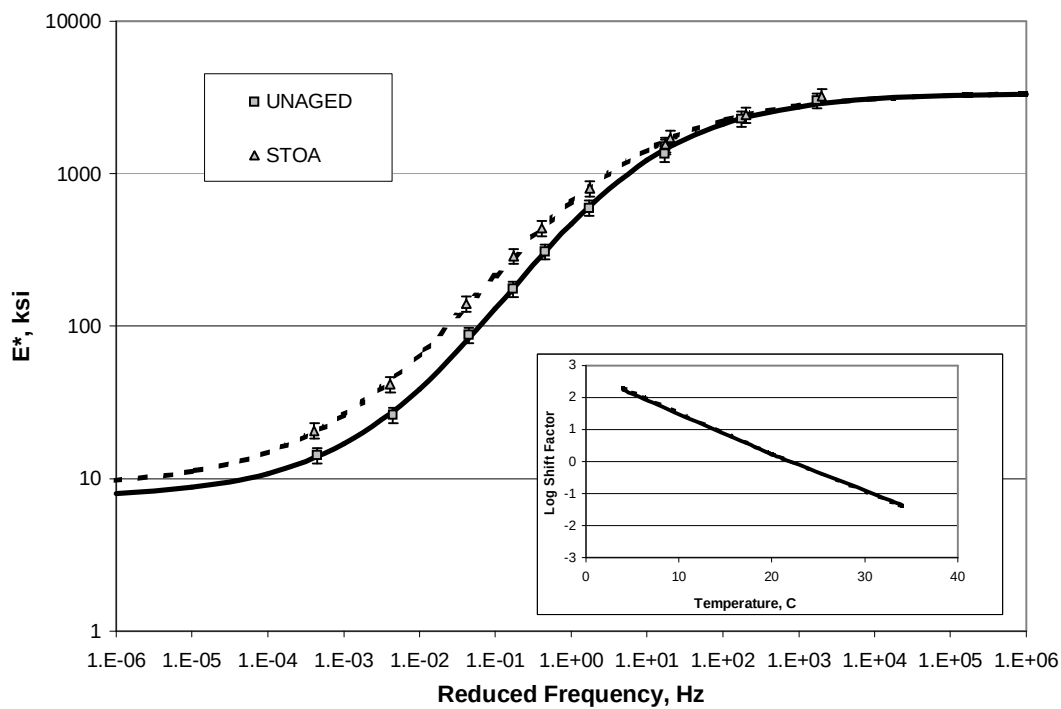


Figure 84. Dynamic Modulus Master Curves for ABM-2.

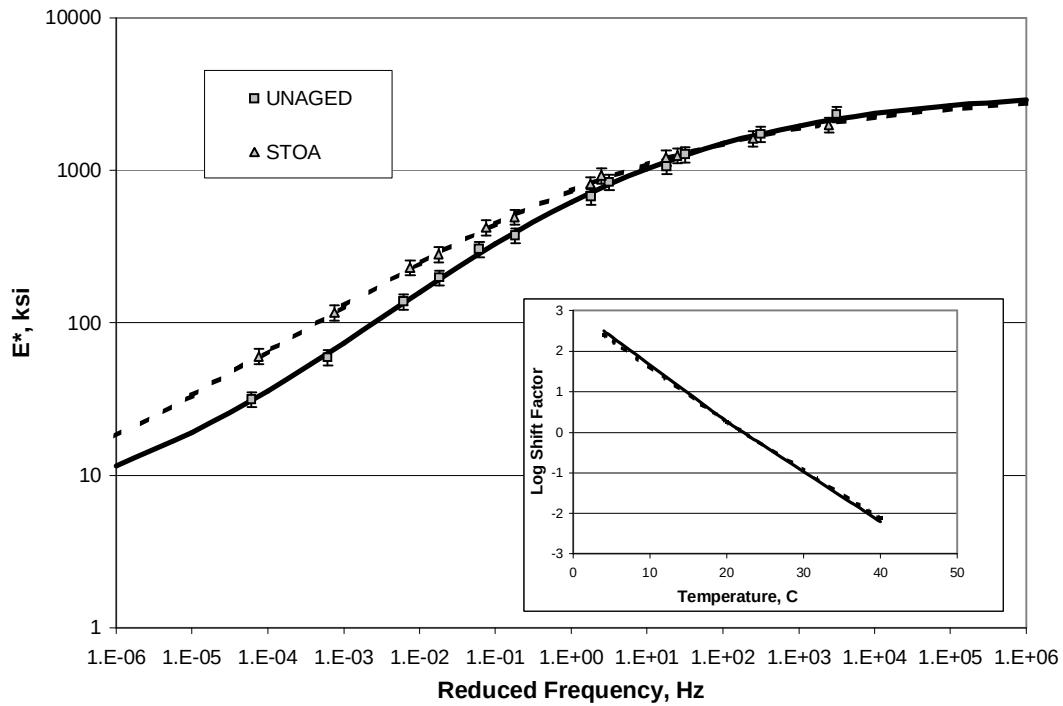


Figure 85. Dynamic Modulus Master Curves for Airblown.

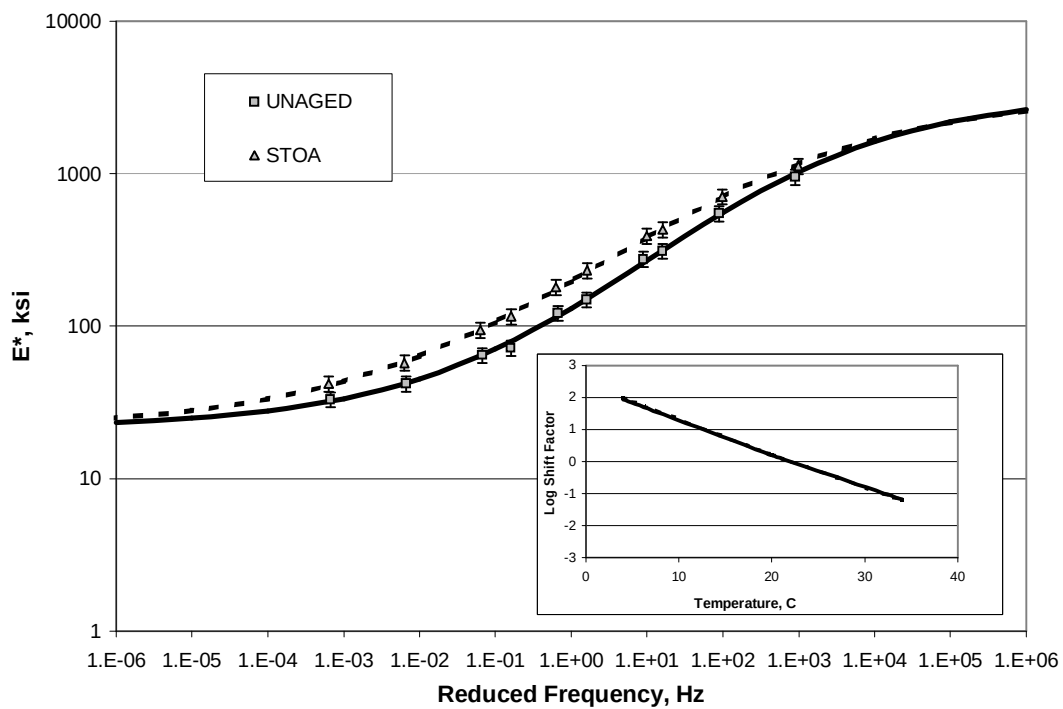


Figure 86. Dynamic Modulus Master Curves for ALF.

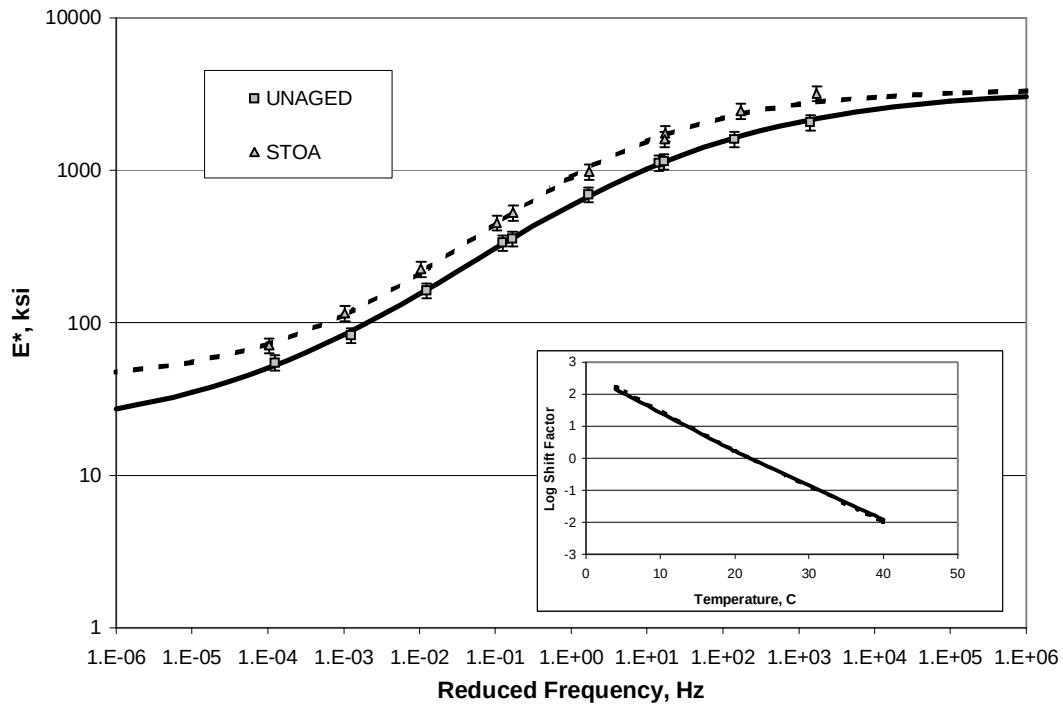


Figure 87. Dynamic Modulus Master Curves for Citgoflex.

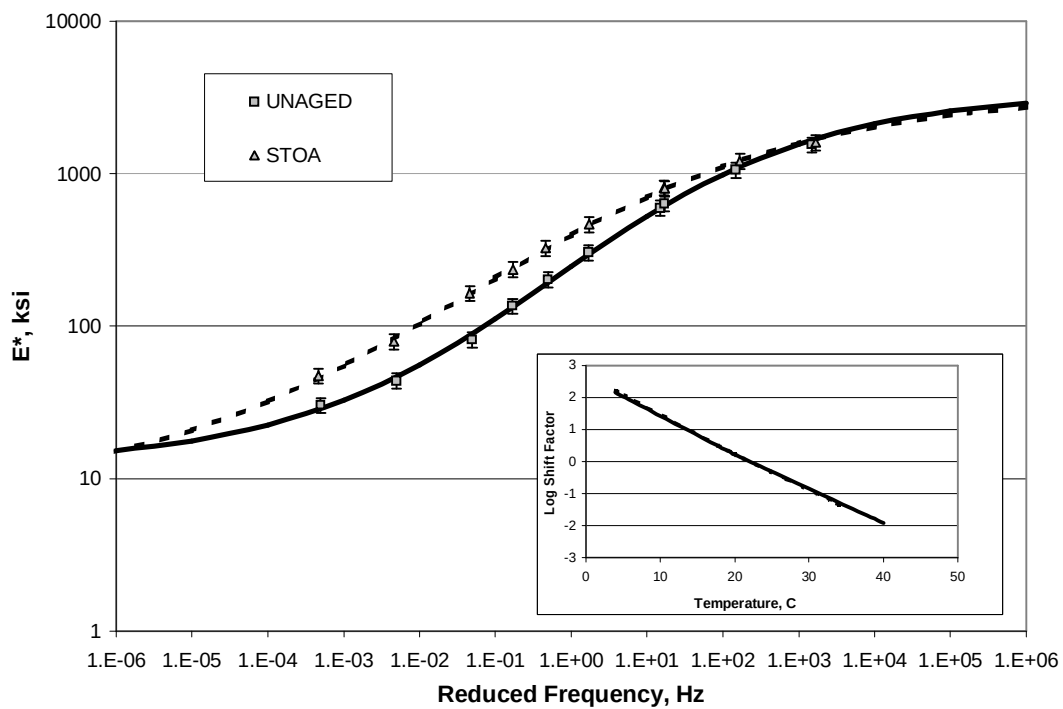


Figure 88. Dynamic Modulus Master Curves for Elvaloy.

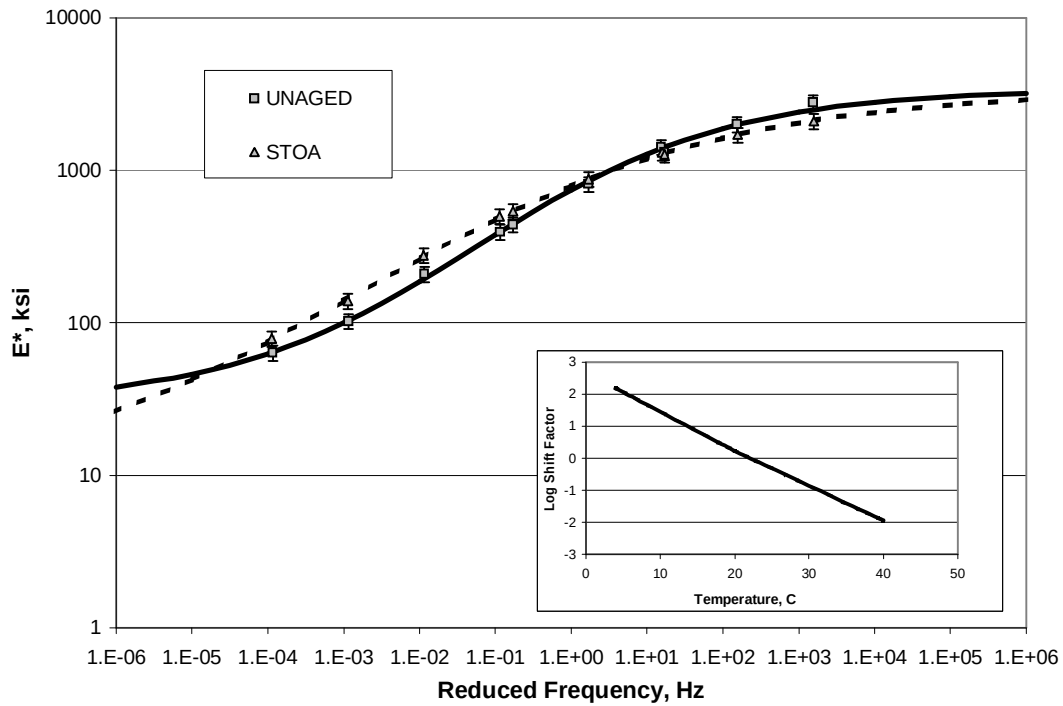


Figure 89. Dynamic Modulus Master Curves for EVA.

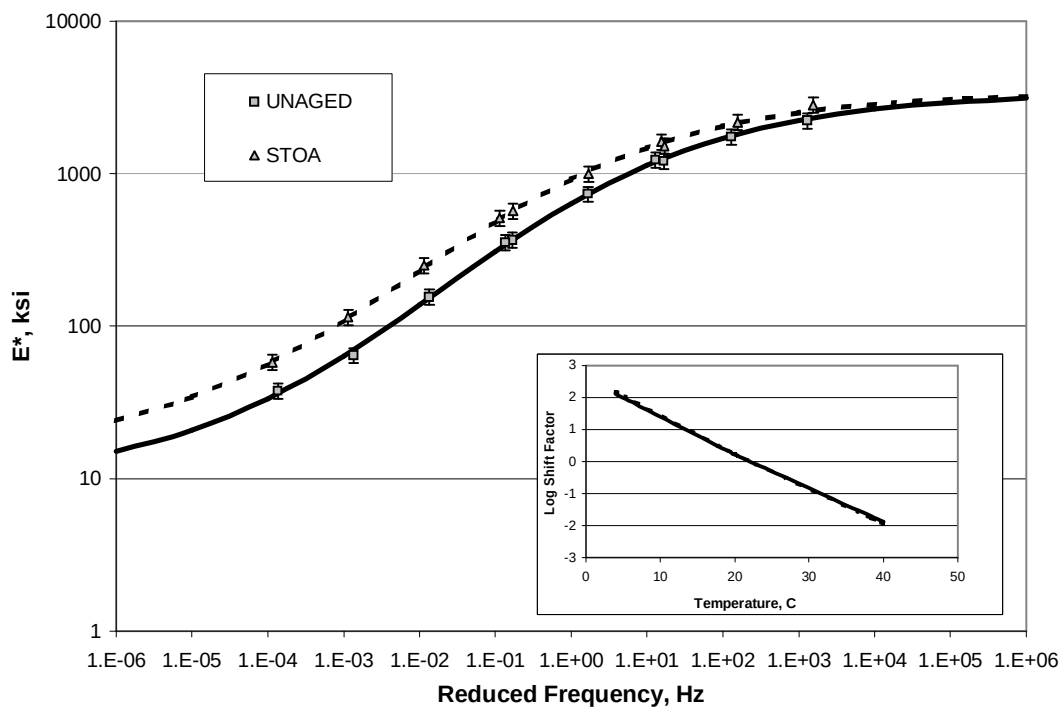


Figure 90. Dynamic Modulus Master Curves for Novophalt.

10.0 BACK CALCULATED BINDER MODULI

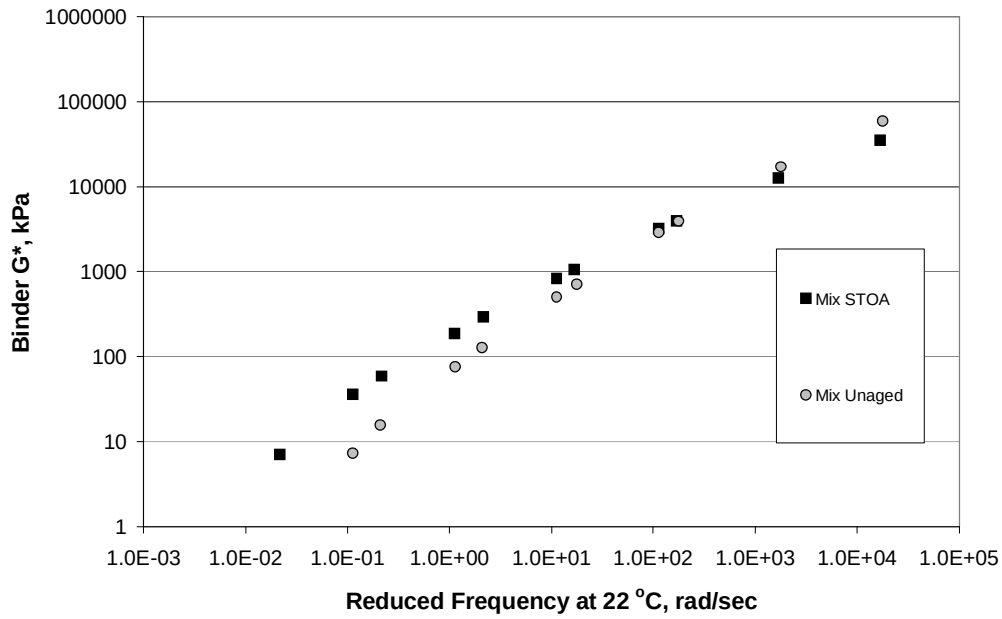


Figure 91. Back Calculated Binder Master Curves for AAC-1.

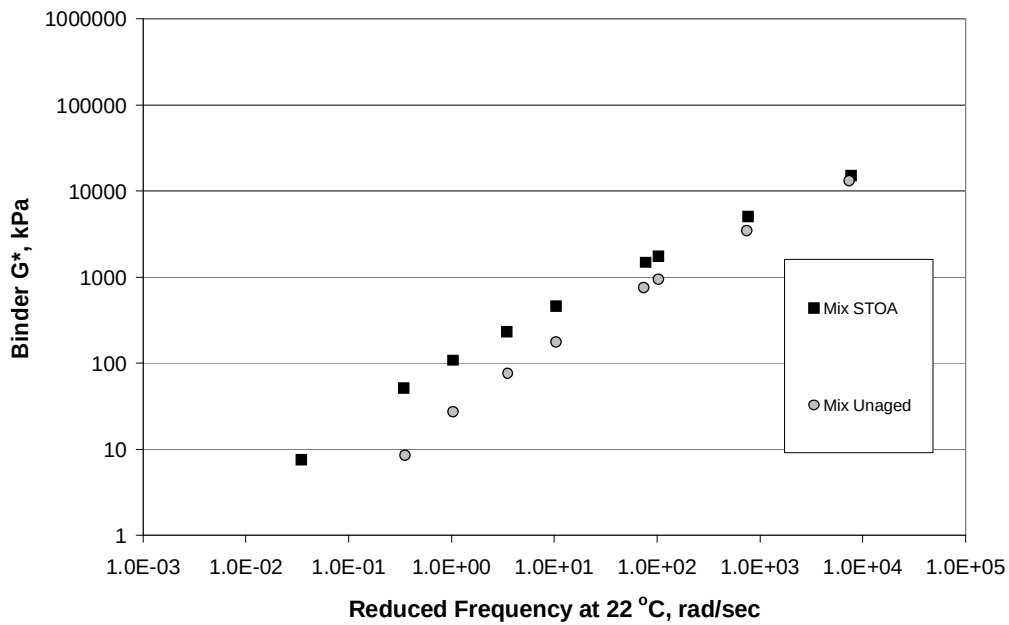


Figure J2. Back Calculated Binder Master Curves for AAD-2.

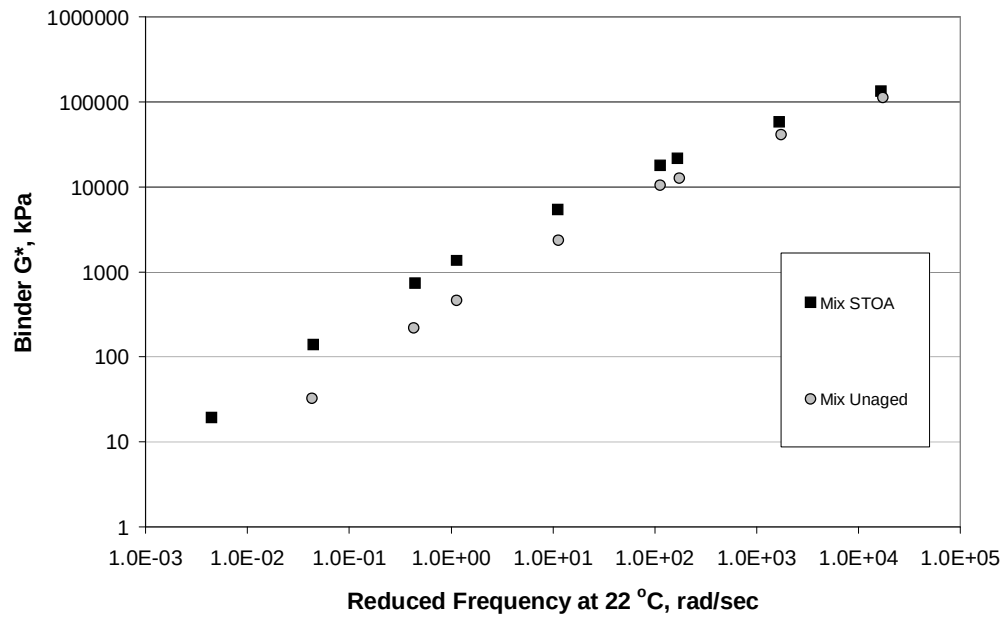


Figure 92. Back Calculated Binder Master Curves for AAF-1.

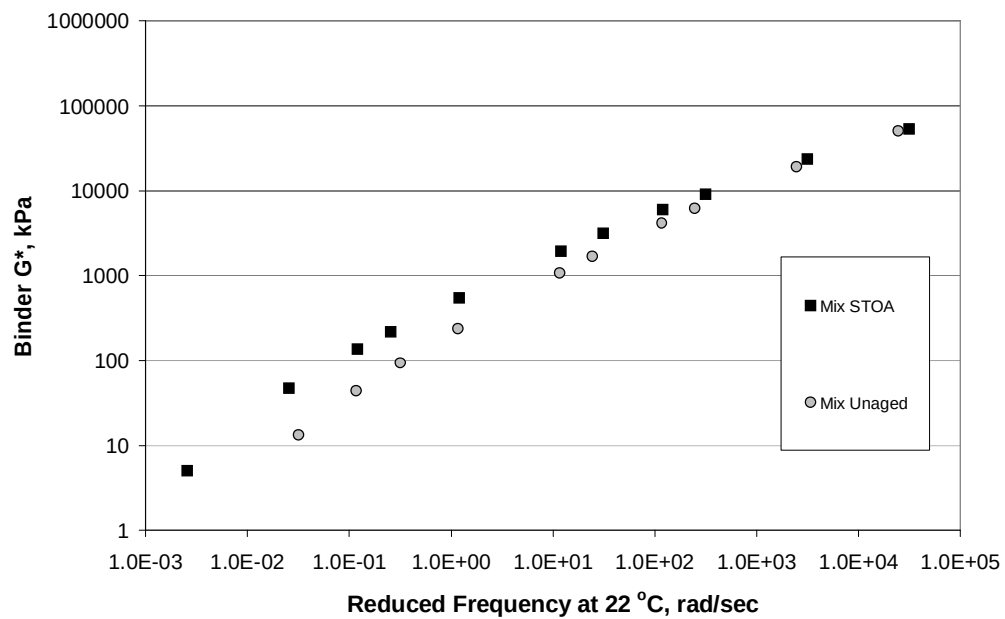


Figure 93. Back Calculated Binder Master Curves for AAM-1.

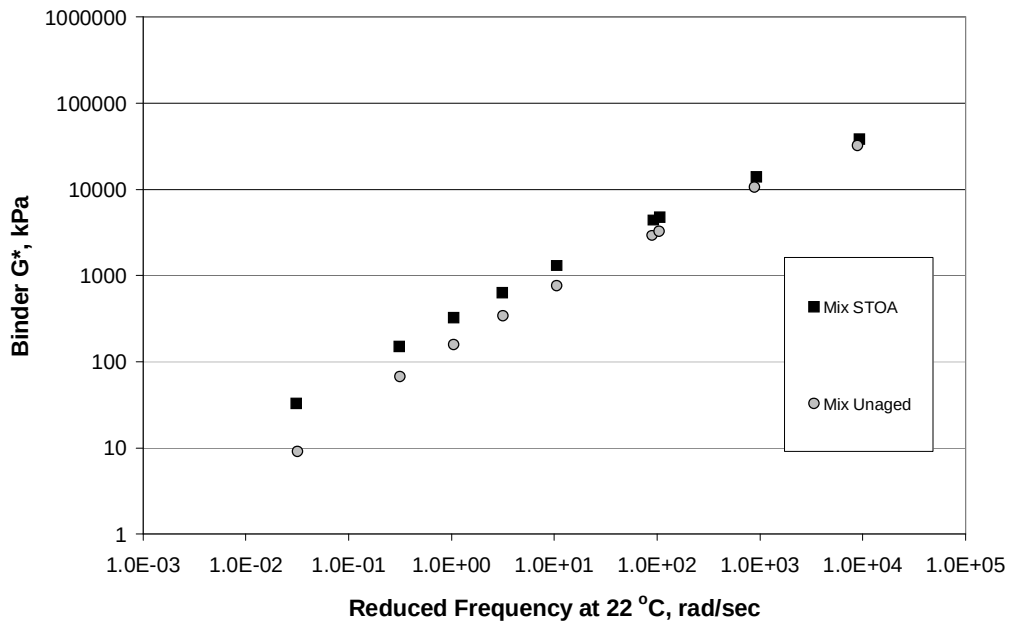


Figure 94. Back Calculated Binder Master Curves for ABL-1.

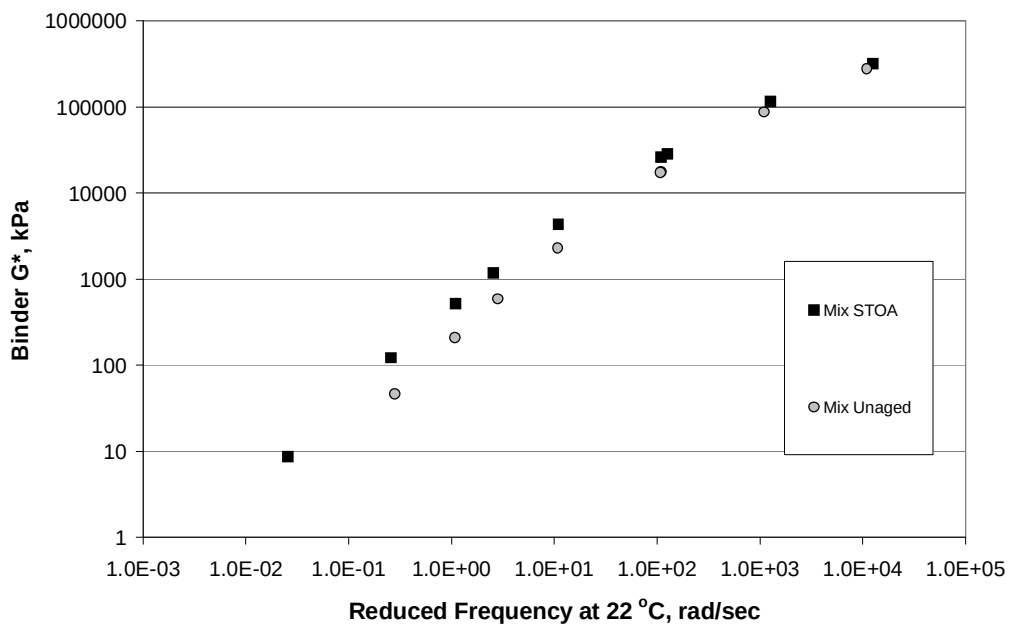


Figure 95. Back Calculated Binder Master Curves for ABM-2.

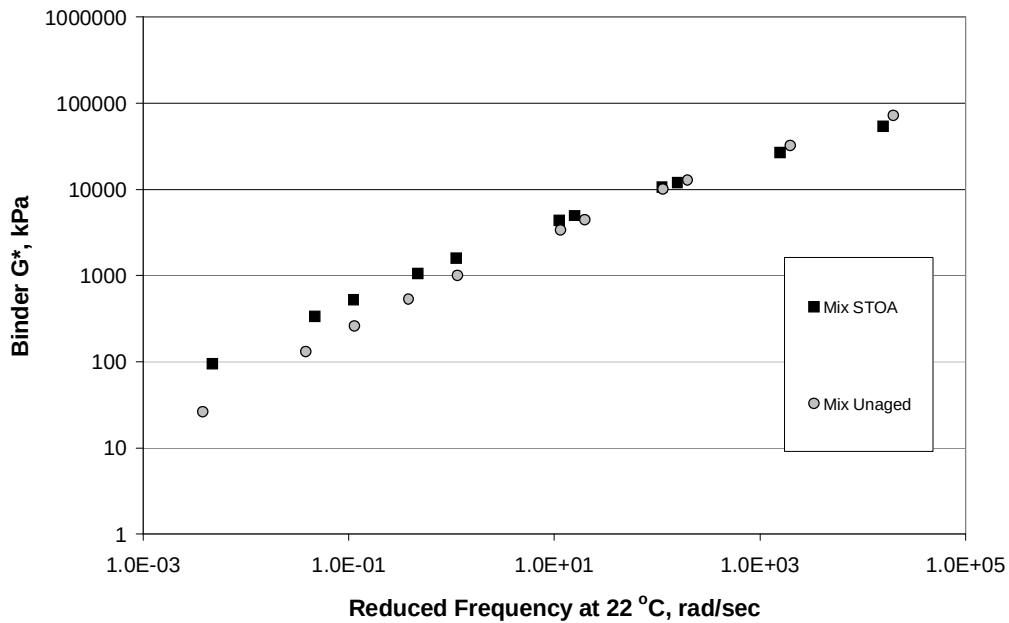


Figure 96. Back Calculated Binder Master Curves for Airblown.

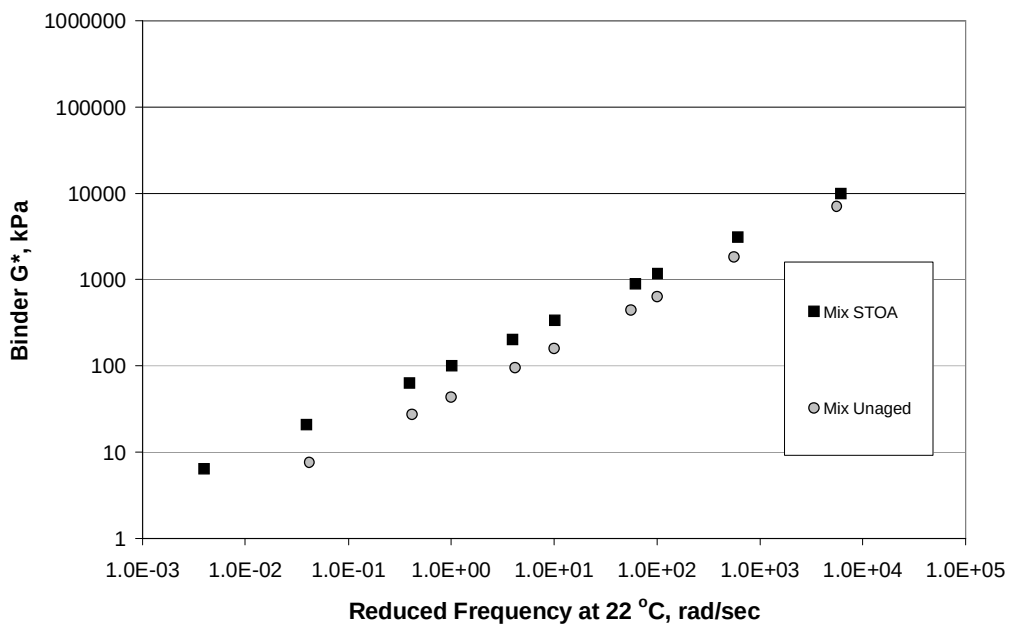


Figure 97. Back Calculated Binder Master Curves for ALF.

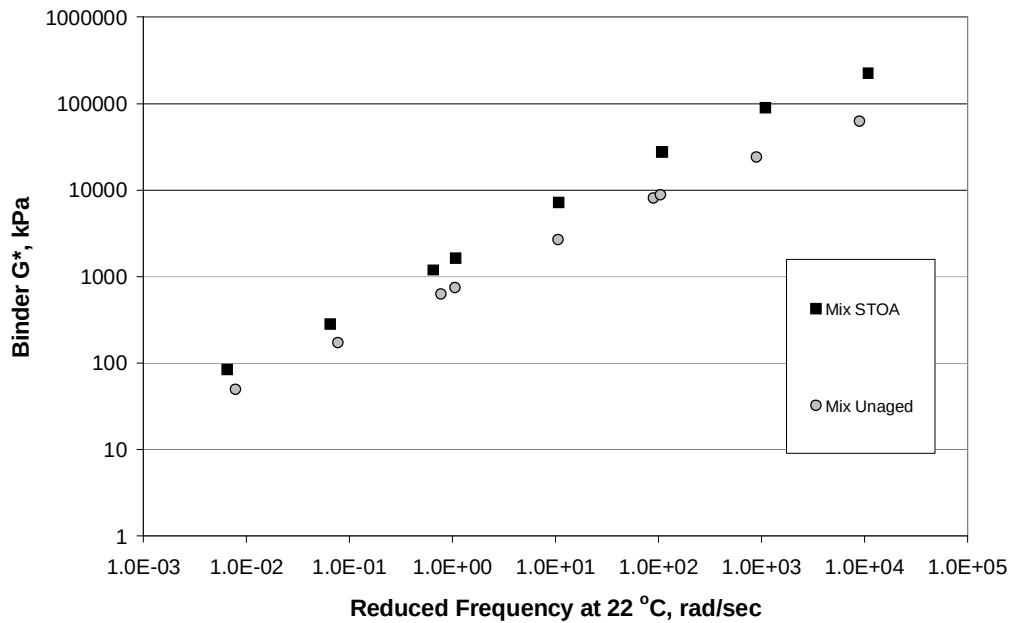


Figure 98. Back Calculated Binder Master Curves for Citgoflex.

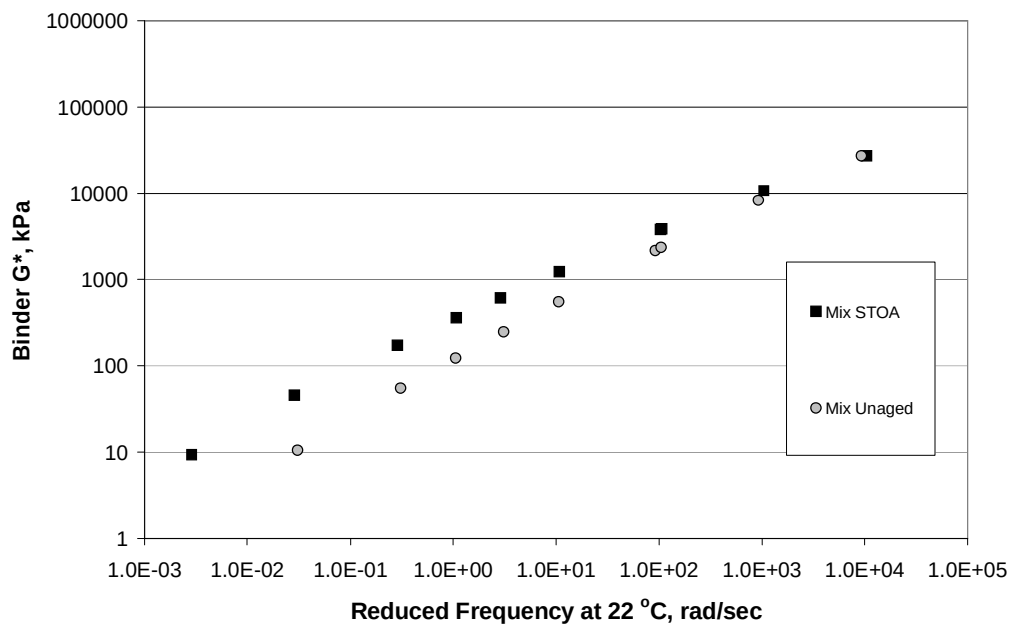


Figure 99. Back Calculated Binder Master Curves for Elvaloy.

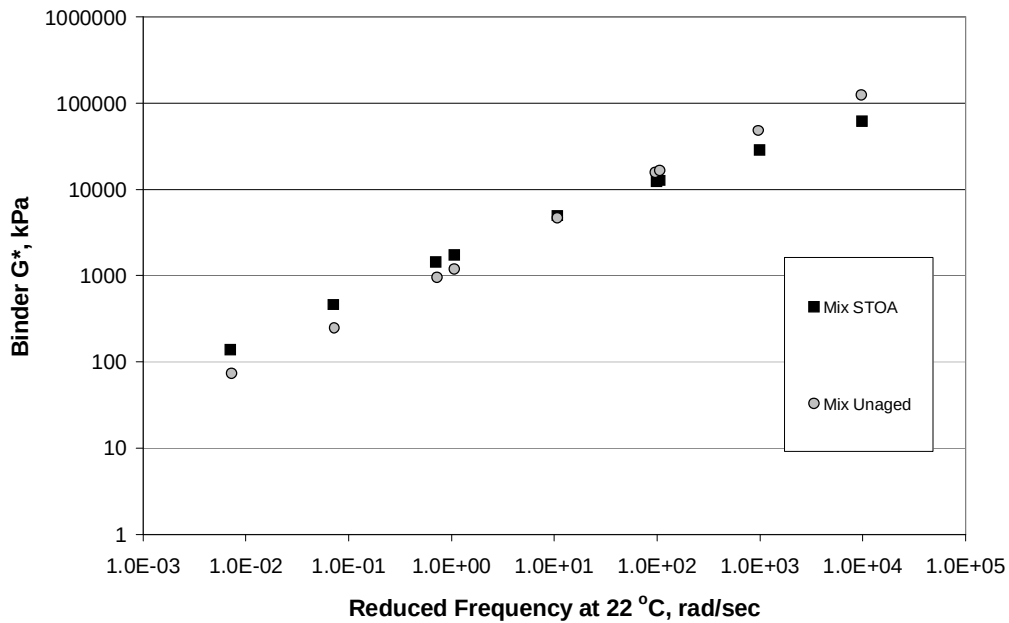


Figure 100. Back Calculated Binder Master Curves for EVA.

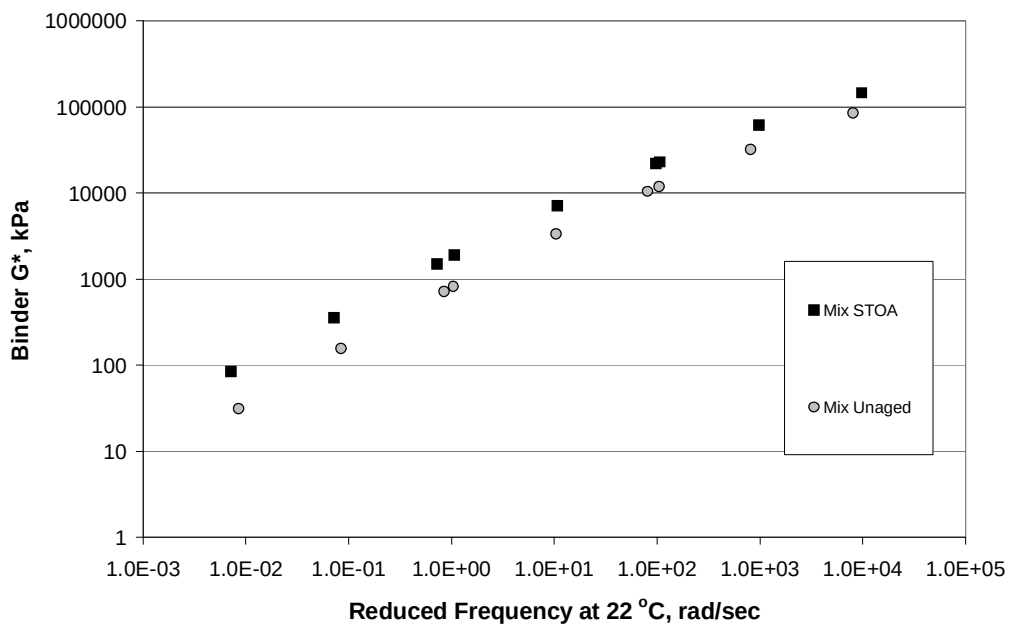


Figure 101. Back Calculated Binder Master Curves for Novophalt.