# APPENDIX D

**TECHNICAL SPECIFICATIONS OF THE SEALANTS USED IN THE DURABILITY TESTING**

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PipeWipe

Description
PipeWipe is a ready to use cement based filler coat to produce a smooth, non-textured finish to concrete surfaces. It contains an extremely fine aggregate system, and a built-in, polymer bonding agent for increased adhesion. When properly mixed with water, PipeWipe can be applied with a heavy brush, trowel or gloved hand. PipeWipe does not form a vapor barrier and has an expansion and contraction rate equal to the concrete substrate. It is especially recommended for dry cast concrete products.

Use
PipeWipe is designed to produce a "sack rubber" finish to fill small voids, blemishes and honeycombs on precast concrete, formed concrete, stucco, cement plaster, and other properly prepared structurally sound concrete surfaces. It can also be used as a smooth coating to improve the appearance of any concrete or masonry surface. It can be used to fill hairline cracks on the gasket surface of O-Ring pipe. It can also be used as a wash coat for cast manholes to fill the surface and produce a uniform appearance.

Variations
PipeWipe comes in different variations. Medium dries normally and looks like concrete. Dark has pure oxide pigments for a darker look, and light contains white cements for better color-matching.

Packaging/Yield
50 lbs. Pail .45 cubic feet
50 lb. Bag .46 cubic feet

Directions
Surface Preparation
Surfaces to receive PipeWipe must be structurally sound and free of all foreign matter, including form release agents, curing compounds, laitance, dust and dirt.

Remove any form marks to prevent "show through". Deep cavities should be opened, routed to sound material and repaired with either HICap or other appropriate products. Allow these deep patches to dry for at least 24 hours. Areas to receive PipeWipe should be thoroughly saturated with water prior to application.

Mixing
Add PipeWipe to clean mix water in a clean pail. Usual mixing ratios are approximately 6 qts water per 50-pound bag. Mix for a minimum of several minutes to be sure all ingredients are uniformly mixed with the water. Small quantities can be mixed by hand and larger quantities can be mixed with a jiffy style mixer. The mix will start to stiffen in approximately 15 minutes.

Application
Wetting surface to the point of saturation. Apply mixture with a trowel, rubber float, rubber-gloved hand, cement masons brush, wide nylon paintbrush or paint roller. Be sure to get the mixture into the depressions. Follow initial set, in approximately 15-30 minutes rub or "sack" the surface using burlap, carpet backing or a stiff brush to remove residual material and produce a smooth finish. Applications should be moist cured with a fine water mist. Allow 24 hours cure before coating.

Clean Up
Use clean water before material sets.

Limitations
Use at temperatures of 40°F and rising. Do not add cements or other additives without checking with the factory. Cold weather retards the setting time and hot weather accelerates it. Do not re-temp or further dilute mixed material. If temperatures are above 90°F, use caution and dampen surfaces thoroughly and repeatedly. Moisture failure following ACI recommendations.
D.2 DuralPrep® A.C.

DURALPREP A.C.
BONDING AGENT AND ANTI-CORROSION COATING FOR REINFORCEMENT

DESCRIPTION
DURALPREP A.C. is a three component, pre-proportioned, water based epoxy modified portland cement bonding agent and anti-corrosion coating. DURALPREP A.C. is used as a bonding agent for placing fresh concrete to existing concrete and for repair and restoration of concrete surfaces. DURALPREP A.C. contains a unique migratory corrosion inhibitor which protects reinforcement when used as an anti-corrosion coating for steel. DURALPREP A.C. has a long open time, is non flammable, VOC compliant, and does not form a water vapor barrier after cure.

PRIMARY APPLICATIONS
- Bonding agent for fresh concrete to existing concrete
- Concrete repairs with cement or epoxy mortars
- Anti-corrosion coating for steel reinforcement
- Exterior or interior
- On grade or above grade applications

FEATURES/BENEFITS
- Can contribute to LEED points
- Long open time
- Migratory corrosion inhibitor

TECHNICAL INFORMATION

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Properties @ 75°F (24°C), 50% R.H.</td>
<td></td>
</tr>
<tr>
<td>Mix ratio (A:B:C): 1 gal: (8.4 lb) 1 gal: (8.8 lb) 36 lbs (16.3 kg)</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Concrete Gray</td>
</tr>
<tr>
<td>Pot Life:</td>
<td>3 days: 75°F (24°C) 30 to 45 mins.</td>
</tr>
<tr>
<td>Contact Time</td>
<td>24 hrs: Up to 24 hours depending on ambient temperature</td>
</tr>
<tr>
<td>Initial Set (ASTM C 269)</td>
<td>2 to 3 hrs</td>
</tr>
<tr>
<td>Bond Strength (ASTM C 882), 7 days: psi (MPa)</td>
<td>28 days: &gt;1,280 (8.8)</td>
</tr>
<tr>
<td>1 hr open time</td>
<td>2,480 (17.1)</td>
</tr>
<tr>
<td>24 hr open time</td>
<td>2,700 (18.6)</td>
</tr>
<tr>
<td>Compressive Strength (ASTM C 109) psi (MPa)</td>
<td>&gt;5,100 (35.2)</td>
</tr>
<tr>
<td>Flexural Strength (ASTM C 348) psi (MPa)</td>
<td>&gt;10,000 (68.9)</td>
</tr>
<tr>
<td>Splitting Tensile Strength (ASTM C 496)</td>
<td>&gt;1280 (8.8)</td>
</tr>
<tr>
<td>Water Vapor Permeability</td>
<td>0.16 grains/ft²/hr.</td>
</tr>
</tbody>
</table>

Values presented are typical and not necessarily referenced to create specifications.

PACKAGING
DURALPREP A.C. is packaged in 3.75 gal (14.2 L) kits and 2/1 gal (3.8 L) units/case.

SHELF LIFE
1 year in original, unopened package.

COVERAGE
One 3.75 gal (14.2 L) kit of DURALPREP A.C. will cover approximately 250 ft² (23.2m²). One 1 gal (3.8 L) unit will cover approximately 65 ft²/6 (3.8 m²).

Bonding Agent: 60 to 80 ft²/gal (1.47 to 1.96 m²/L)
Anti-Corrosion Coating: 60 to 80 ft²/gal/coat (1.47 to 1.96 m²/L)

Note: Coverage rates are approximate, and for estimating purposes only. Test the area prior to application to determine effective coverage rates. Surface temperature, porosity, and texture will determine actual material requirements.

DIRECTIONS FOR USE
Surface Preparation: The surface must be structurally sound, dry, free of grease, oils, curing compounds, efflorescence, laitance and any other contaminants that would interfere with adhesion. All previous coatings on the substrate must be removed. Concrete: Smooth, precast and formed concrete surfaces must be cleaned, roughened and made absorptive by mechanical abrasion. All coatings must be removed completely to provide an absorptive surface. Remove excess moisture, drips and puddles from the surface. The surface should be saturated surface dry (SSD) with no standing water prior to application. Steel: All oils, greases, dirt, old coatings or chemical contaminates must be removed. All steel surfaces should be blasted to a “NEAR WHITE” metal finish using clean dry blasting media.

The Euclid Chemical Company
19218 Redwood Rd. • Cleveland, OH 44110
Phone: [216] 531-9222 • Toll-free: [800] 321-7028 • Fax: [216] 531-9596
www.euclidchemical.com

An RPM Company

NCHRP 18-14, Final Report, Appendix D D-3
Mixing: Mix one full kit at a time. DURALPREP A.C. must be mechanically mixed with a slow speed motor and mixing blade to thoroughly disperse all ingredients. A 1/2" (13mm) drill motor and a "lifty" mixer may be used. Premix each container separately. Bi. Pour the Component A and Component B into a clean container. Start mixer and mix at slow speed for 30 to 45 seconds. Do not aerate the mix. While mixing gradually, add all of the Part C powder into the mixed liquid to produce a smooth lump free consistency. Mix thoroughly for approximately 3 minutes.

Application: Air and surface temperature must be above 45°F (7°C) and rising. Maximum temperature should not exceed 90°F (32°C). The approximate working life is 30 to 45 minutes depending on the temperature. Bonding Agent: Apply DURALPREP A.C. to the SSD surface using a stiff bristle brush or spray equipment. Allow to cure 30 minutes before placing concrete. DURALPREP A.C. has an open time of from 30 min to 24 hrs at 75°F (24°C). Anti-Corrosion Coating: Coat the exposed reinforcing steel, making sure to coat the underside portion of the steel. Apply two coats at 20 mils each by brush or spray, allowing 3 to 6 hours between applications. Place fresh mortar or concrete within the open time of the second coat of DURALPREP A.C. 30 min to 24 hrs at 75°F (24°C).

Clean-Up
Clean tools and equipment with water immediately following use. Clean drips with water while still wet. Dried DURALPREP A.C. will require mechanical abrasion for removal.

Precautions/Limitations
- Mix only one full kit at a time.
- Do not mix for longer than 3 minutes.
- Do not allow components to freeze.
- Do not apply at temperatures below 45°F (7°C), or above 90°F (32°C).
- Do not add water to mix.
- Maximum contact time 24 hours at 40°F (4°C).
- Store at temperatures between 65°F and 80°F (18°C to 27°C).
- Protect from freezing.
- Do not use Component A or B if it has frozen.
- Protect from moisture.
- In all cases, consult the Material Safety Data Sheet before use.
D.3 Transpo Sealate® T-70

Technical Data Sheet

High Molecular Weight Methacrylate (HMWM) Crack Sealer

Sealate™ (T70 and T70 MX-30) is a specially formulated, high molecular weight methacrylate resin system that is highly effective for sealing and filling cracks in concrete structures.

Application Procedure

Surface Preparation: It is strongly recommended that all concrete surfaces that are to receive Sealate™ be thoroughly clean and sound. Remove all surface dirt, grease, paint, rust, and other contaminants by sandblasting, shot-blasting or mechanical abrasion. The concrete surface should be visibly dry and the moisture content in concrete should be tested according to ASTM D 4263. The temperature of the deck and air should be between 50 °F and 100 °F prior to resin application.

Mixing: The following table lists the mixing ratios of the two curing agents. Add appropriate amount of Cobalt Napthenate promoter to Sealate™ resin and stir well. Then, add the corresponding amount of CHP initiator. Stir again for about 1-2 min. If machine applied, Sealate™ should be mixed utilizing a two component resin system using promoted resin for one part and initiated resin for the other part. Mixing ratio of promoted/initiated resin should be 1:1. The mixed resin should be applied to the concrete surface within 5 minutes of complete mixing.

<table>
<thead>
<tr>
<th>Sealate™ T70 / T70 MX-30</th>
<th>Cobalt Napthenate (ml)</th>
<th>CHP (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gallon</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>5 gallon</td>
<td>375</td>
<td>750</td>
</tr>
</tbody>
</table>

Caution: Never mix CHP initiator directly with Cobalt promoter. Violent reaction will result!

Application: The rate of application of promoted/initiated resin should be approximately 100-150 square feet per gallon. However, this will vary depending on the surface, porosity, size and number of cracks present in the area being treated.

Spray equipment, if used, should be airless, generating sufficient pressure to atomize mixed resins. If hand applied, the concrete surface should be flooded with the resin, allowing sufficient time for penetration into the surface and complete filling of all cracks. Excess material should be redistributed using squeegees or brooms within 15 minutes after application. The quantity of initiated/promoted resin mixed at one time should be limited to 5 gallons for manual application.

Broadcasting of Aggregate: Broadcast sand should be applied to the entire treated area prior to cure, typically at 1-2 pounds per square yard. The sand used should be 12 x 16 mesh, #2 or #3 blasting sand, and should have a maximum moisture content no greater than 0.5%. It should placed within 15-20 minutes of the resin application and before any setting of monomer occurs. Traffic can be restored once the treated concrete surface has cured tack-free.

<table>
<thead>
<tr>
<th>Ambient Temperature (°F)</th>
<th>Approximate Cure Time* (hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 F - 70 F</td>
<td>Sealate™ T70: 7 - 12 hrs.</td>
</tr>
<tr>
<td></td>
<td>Sealate™ T70MX-30: 8 - 16 hrs.</td>
</tr>
<tr>
<td>70 F - 100 F</td>
<td>4 - 7 hrs.</td>
</tr>
</tbody>
</table>

* Cure times are approximate and will vary with ambient and deck temperature, humidity, and sunlight. Structure can be opened to traffic only after complete cure is achieved.
Properties*

<table>
<thead>
<tr>
<th>Property</th>
<th>Sealate™ T70</th>
<th>Sealate™ T70 MX-30</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Amber Liquid</td>
<td>Amber Liquid</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>&lt;20 cps (mPa-sec)</td>
<td>&lt;25 cps (mPa-sec)</td>
<td>Brookfield</td>
</tr>
<tr>
<td>Density</td>
<td>8.5 - 9.0 lbs/gal. (1.02 - 1.08 gms/ml)</td>
<td>8.3 - 8.8 lbs/gal. (1.00 - 1.03 gms/ml)</td>
<td>ASTM D2849</td>
</tr>
<tr>
<td>Pot Life (@ 70 °F)</td>
<td>25-40 min</td>
<td>40-60 min</td>
<td>AASHTO T237</td>
</tr>
<tr>
<td>Tack Free Time (@ 70 °F)</td>
<td>4 – 7 hrs.</td>
<td>5 - 8 hrs.</td>
<td>AASHTO T237</td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;210°F (&gt;98°C)</td>
<td>&gt;200°F (&gt;93°C)</td>
<td>ASTM D1310</td>
</tr>
<tr>
<td>Solids Content</td>
<td>100%</td>
<td>100%</td>
<td>ASTM D1644</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>&gt;1600 psi (&gt;11 MPa)</td>
<td>&gt;500 psi (&gt;3.5 MPa)</td>
<td>ASTM D638</td>
</tr>
<tr>
<td>PCC-SSD Bond Strength</td>
<td>&gt;615 psi (&gt;4.2 MPa)</td>
<td>&gt;615 psi (&gt;4.2 MPa)</td>
<td>CA Test 551</td>
</tr>
<tr>
<td>Tensile Elongation</td>
<td>3-5%</td>
<td>30%</td>
<td>ASTM D638</td>
</tr>
<tr>
<td>Compressive Strength (24 hrs)</td>
<td>&gt;8150 psi (&gt;56 MPa)</td>
<td>&gt;3500 psi (&gt;24 MPa)</td>
<td>ASTM C3986</td>
</tr>
<tr>
<td>Volatile Content (@ 1 hr.)</td>
<td>18% (181 gms/L)</td>
<td>18% (181 gms/L)</td>
<td>ASTM D2369</td>
</tr>
<tr>
<td></td>
<td>(@ 24 hrs.)</td>
<td>&lt;3% (30 gms/L)</td>
<td></td>
</tr>
</tbody>
</table>

* To be used as general guidelines only

Packaging

Sealate™ comes in 1, 5 and 55-gallon containers. The initiator, Cumene Hydroperoxide (CHP) and the Cobalt Napthenate promoter, are provided in separate labeled containers and in pre-measured quantities to make scale mixes of Sealate™.

Storage

Sealate™ should be stored in tightly sealed containers in a dry location and at normal room temperatures (50°F - 85°F). The initiator, Cumene Hydroperoxide (CHP) and the Cobalt Napthenate promoter, are provided in separate labeled containers, and should be stored in a cool shaded area separately from each other and away from the monomer.

Caution

Direct contact with Sealate™ T70 or T70 MX-30 may produce minor skin irritations to persons prone to such reactions. It is recommended that all persons involved in mixing and application wear protective clothing such as goggles, rubber boots, and rubber gloves. As with all chemicals, read MSDS prior to use.

Warranty

The following warranty is made in lieu of all other warranties, either expressed or implied. This product is manufactured of selected raw materials by skilled technicians. Neither seller nor manufacturer has any knowledge or control concerning the purchaser’s use of either product and no warranty is made as to the results of any use. The only obligation of either seller or manufacturer shall be to replace any quantity of this product that proves to be defective. Neither seller nor manufacturer assumes any liability for injury, loss or damage resulting from use of this product.

11/05

20 Jones Street, New Rochelle, NY 10801
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Web: http://www.transpo.com Email: info@transpo.com
D.4 Xypex® Concentrate

PRODUCT DATA SHEET

DESCRIPTION
Xypex is a unique chemical treatment for the water-proofing, protection and repair of concrete. XYPEX CONCENTRATE is the most chemically active product within the Xypex Crystalline Waterproofing System. When mixed with water, this light grey powder is applied as a cementitious slurry coat to above-grade or below-grade concrete, either as a single coat or as the first of a two-coat application. It is also mixed in Dry-Pac form for sealing strips at construction joints, or for the repairing of cracks, faulty construction joints and honeycombs. Xypex prevents the penetration of water and other liquids from any direction by causing a catalytic reaction that produces a non-soluble crystalline formation within the pores and capillary tracts of concrete and cement-based materials.

RECOMMENDED FOR:
- Reservoirs
- Sewage and Water Treatment Plants
- Underground Vaults
- Secondary Containment Structures
- Foundations
- Tunnels and Subway Systems
- Swimming Pools
- Parking Structures

ADVANTAGES
- Resists extreme hydrostatic pressure
- Becomes an integral part of the substrate
- Can seal hairline cracks up to 0.4 mm
- Allows concrete to breathe
- Highly resistant to aggressive chemicals
- Non-toxic
- Does not require a dry surface
- Cannot puncture, tear or come apart at the seams
- No costly surface priming or leveling prior to application
- Does not require sealing, lapping and finishing of seams at corners, edges or between membranes
- Can be applied to the positive or the negative side of the concrete surface
- Does not require protection during backfilling or during placement of steel, wire mesh or other materials
- Less costly to apply than most other methods
- Not subject to deterioration
- Permanent

PACKAGING
Xypex Concentrate is available in 20 lb. (9.1 kg) pails, 60 lb. (27.2 kg) pails and 50 lb. (22.7 kg) bags.

STORAGE
Xypex products must be stored dry at a minimum temperature of 45°F (7°C). Shelf life is one year when stored under proper conditions.

COVERAGE
For normal surface conditions, the coverage rate for each Xypex coat is 6 to 7.2 sq. ft./lb. (1.25 - 1.5 lb./sq. yd. or 0.65 - 0.8 kg/m²).

TEST DATA
PERMEABILITY
U.S. Army Corps of Engineers (USACE) CRD C48-73
"Permeability of Concrete" Pacific Testing Labs, Seattle, USA
Two inch (51 mm) thick, 2000 psi (13.8 MPa) Xypex-treated concrete samples were pressure tested up to a 405 ft. (124 m) water head (175 psi/1.2 MPa), the limit of the testing apparatus. While untreated samples showed marked leakage, the Xypex-treated samples (as a result of the crystallization process) became totally sealed and exhibited no measurable leakage.

DIN 1048 "Water Impermeability of Concrete" Baustest – Corporation for Research & Testing of Building Materials, Augsburg, Germany
Twenty cm thick Xypex-treated concrete samples were pressure tested up to 7 bars (230 ft./70 m water head) for 24 hours to determine water impermeability. While the reference specimens measured water penetration up to a depth of 92 mm, Xypex-treated samples measured water penetration of zero to an average of 4 mm.
ONORM B 3303 “Water Impermeability of Concrete”
Technologisches GewerbeMuseum, Federal Higher
Technical Education & Research Institute, Vienna, Austria

Xypex-treated concrete samples were pressure tested to
a maximum 7 bars (230 ft./70 m water head) for 10 days.
Test revealed that while 25 ml of water had penetrated
the untreated concrete samples, zero ml had penetrated
the Xypex-treated samples. Test specimens were then
broken and showed water penetration to a depth of
15 mm on untreated samples but no measurable water
penetration on the Xypex-treated samples.

CSN 1209/1321 “Impermeability and Resistance to
Pressurized Water” Institute of Civil Engineering, Technology
and Testing, Bratislava, Slovak Republic

Xypex-treated and untreated concrete samples were
exposed to 1.2 MPa of pressure to determine water
permeability. Results showed the Xypex-treated samples
provided effective protection against hydrostatic water
pressure. Treated and untreated samples were also
subjected to contact with sludge juices and various petro-
leum products (e.g. diesel oil, transformer oil, gasoline)
at 14 kPa for 28 days. The Xypex-treated samples
significantly reduced the penetration of these solutions.

CHEMICAL RESISTANCE

ASTM C 267-77 “Chemical Resistance to Mortars”
Pacific Testing Labs, Seattle, USA

Xypex-treated cylinders and untreated cylinders were
exposed to hydrochloric acid, caustic soda, toluene, mineral
oil, ethylene glycol, pool chlorine and brake fluid and
other chemicals. Results indicated that chemical exposure
did not have any detrimental effects on the Xypex
coring. Tests following chemical exposure measured
an average 17% higher compressive strength in the Xypex-
treated specimens over the untreated control samples.

IWATE University Technical Report “Resistance to Acid
Attack” Tokyo, Japan

Xypex-treated mortar and untreated mortar were measured
for acid resistance after exposure to a 5% H2SO4 solution
for 100 days. Xypex suppressed concrete erosion to 1/8 of
the reference samples.

FREEZE/THAW DURABILITY

ASTM C 672 “Standard Test Method for Scaling Resistance
of Concrete Surfaces Exposed to De-icing Chemicals”
Twin City Testing Lab, St. Paul, USA

Xypex-treated samples restricted chloride ion concentra-
tion to below the level necessary to promote electrolytic
corrosion of reinforcing steel. Visual examination of
untreated panels after 50 freeze/thaw cycles showed a
marked increase in surface deterioration compared to
Xypex-treated samples.

JIS A 6204 “Concrete Freeze/Thaw” Japan Testing Center
For Construction Materials, Tokyo, Japan

The resonating frequency of both untreated and Xypex-
treated concrete samples were measured throughout
435 freeze/thaw cycles. At 204 cycles, the Xypex-treated
samples showed 98% relative durability compared to 90%
in the untreated samples. At 345 cycles, the Xypex-treated
samples measured 91% relative durability compared to 78%
in the untreated reference samples.

POTABLE WATER EXPOSURE

NSF 61 “Drinking Water System Component-Health Effects”
NSF International, Ann Arbor, USA

Exposure testing of potable water in contact with Xypex-
treated samples indicated no harmful effects.

RADIATION RESISTANCE

U.S.A. Standard No. N69 “Protective Coatings for the Nuclear
Industry” Pacific Testing Labs, Seattle, USA

After exposure to 5.76 x 108 rads of gamma radiation, the
Xypex treatment revealed no ill effects or damages.

APPLICATION PROCEDURES

1. SURFACE PREPARATION Concrete surfaces to be treat-
ed must be clean and free of laitance, dirt, film, paint,
coating or other foreign matter. Surfaces must also have an
open capillary system to provide “tooth and suction” for
the Xypex treatment. If surface is too smooth (e.g. where
steel forms are used) or covered with excess form oil or
other foreign matter, the concrete should be lightly sand-
blasted, waterblasted, or etched with muriatic (HCl) acid.

2. STRUCTURAL REPAIR Rout out cracks, faulty construc-
tion joints and other structural defects to a depth of
1.5 inches (37 mm) and a width of one inch (25 mm).
Apply a brush coat of Xypex Concentrate as described in
steps 5 & 6 and allow to dry for 10 minutes. Fill cavity by
tightly compressing Dry-Pac into the groove with pneumatic
packing tool or with hammer and wood block. Dry-Pac
is prepared by mixing six parts Xypex Concentrate powder
with one part water to a dry, lumpy consistency.

Note: 1. Against a direct flow of water (leakage) or where there
is excess moisture due to seepage, use Xypex Patch’n Plug
then Xypex Dry-Pac followed by a brush coat of Xypex

XYPEX CONCENTRATE PRODUCT DATA
Concentrate. (Refer to Xypex Specifications and Applications Manual for full details.)

2. For expansion joints or chronic moving cracks, flexible materials such as expansion joint sealants should be used.

3. WETTING CONCRETE Xypex requires a saturated substrate and a damp surface. Concrete surfaces must be thoroughly saturated with clean water prior to the application so as to aid the proper curing of the concrete and to ensure the growth of the crystalline formation deep within the pores of the concrete. Remove excess surface water before the application. If concrete surface dries out before application, it must be re-wetted.

4. MIXING FOR SLURRY COAT Mix Xypex powder with clean water to a creamy consistency in the following proportions:

   **For Brush Application**
   - 1.25 - 1.5 lb./sq. yd. (0.65 - 0.8 kg/m²)
   - 5 parts powder to 2 parts water
   - 2.0 lb./sq. yd. (1.0 kg/m²)
   - 3 parts powder to 1 part water

   **For Spray Application**
   - 1.25 - 1.5 lb./sq. yd. (0.65 - 0.8 kg/m²)
   - 5 parts powder to 3 parts water
   - (ratio may vary with equipment type)

   Do not mix more Xypex material than can be applied in 20 minutes. Do not add water once mix starts to harden. Protect hands with rubber gloves.

5. APPLYING XYPEX Apply Xypex with a semi-stiff nylon bristle brush, push broom (for large horizontal surfaces) or specialized spray equipment. The coating must be uniformly applied and should be just under 1/16 in. (1.25 mm). When a second coat (Xypex Concentrate or Xypex Modified) is required, it should be applied after the first coat has reached an initial set but while it is still “green” (less than 48 hours). Light pre-watering between coats may be required due to drying. The Xypex treatment must not be applied under rainy conditions or when ambient temperature is below 40°F (4°C). For recommended equipment, contact Xypex Chemical Corporation or your nearest Xypex distributor.

6. CURING A misty fog spray of clean water must be used for curing the Xypex treatment. Curing should begin as soon as the Xypex has set to the point where it will not be damaged by a fine spray of water. Under normal conditions, it is sufficient to spray Xypex-treated surfaces three times per day for two to three days. In hot or arid climates, spraying may be required more frequently. During the curing period, the coating must be protected from rainfall, frost, wind, the puddling of water and temperatures below 36°F (2°C) for a period of not less than 48 hours after application. If plastic sheeting is used as protection, it must be raised off the Xypex to allow the coating to breathe. Xypex Gamma Cure may be used in lieu of water curing for certain applications (consult with Xypex Chemical Corporation or your nearest Xypex distributor).

Note: For concrete structures that hold liquids (e.g., reservoirs, swimming pools, tanks, etc.), Xypex should be cured for three days and allowed to set for 12 days before filling the structure with liquid.

**TECHNICAL SERVICES**

For more instructions, alternative application methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Department of Xypex Chemical Corporation or your local Xypex representative.

**SAFE HANDLING INFORMATION**

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex labels and packaging. The Manufacturer also maintains comprehensive and up-to-date Material Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of workers and customers. The Manufacturer recommends you contact Xypex Chemical Corporation or your local Xypex representative to obtain copies of Material Safety Data Sheets prior to product storage or use.

**WARRANTY**

The Manufacturer warrants that the products manufactured by it shall be free from material defects and will be consistent with its normal high quality. Should any of the products be proven defective, the liability to the Manufacturer shall be limited to replacement of the product ex factory. The Manufacturer makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied. The user shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith.
D.5 DegaDeck® Crack Sealer Plus

DEGADECK® CRACK SEALER PLUS
Reactive methacrylate resin for sealing cracks and concrete decks

PRODUCT DATA

**Description**

-DegaDeck® Crack Sealer Plus is a very low viscosity, low surface tension, solvent free, rapid curing reactive methacrylate resin formulated to penetrate, repair and seal cracks in concrete substrates.
-POWDER HARDENER is 50% dibenzyl peroxide (BPO) in granulated powder form to initiate the cure of the DegaDeck® resin.

**Yield**

100 ft/gallon (2.5 m/L), depending on number and volume of cracks as well as porosity of concrete.

-Powder Hardener:
See mixing charts for the appropriate products.

**Packaging**

-DegaDeck® Crack Sealer Plus is sold by weight and packaged in 38 lb (17.3 kg) pails and 395 lb (180 kg) drums. This is equivalent to 4.7 gallons (17.8 L) and 49 gallons (185.5 L) respectively.
-Powder Hardener:
2.5 lb bottle
50 lb box

**Color**

-Clear liquid

**Shelf Life**

1 year when properly stored

**Storage**

-Store in cool, clean, dry area. Keep out of direct sunlight. Maximum storage temperature is 96°F (36°C).
-Store in original and unopened container.

**Features**

- Fast curing (1 hour)
- UV resistance
- Weather and aging resistant
- 2 component
- Compatible with other DegaDeck® methacrylate systems
- Protects against water and chloride ion ingress
- Can be used at temperatures ranging from 41 to 104°F (5 to 40°C)

**Benefits**

-On highway and bridge projects, allows fast return of traffic flow, contributing directly to worker and driver safety
-Exposure to sunlight does not affect product performance
-Provides long-lasting service life
-User friendly; ease of installation; shelf life stable
-Provides complete systems approach to concrete protection
-Pretends premature deterioration
-Extended application season

**Where to Use**

**APPLICATION**

- Bridge decks
- Parking structures
- Civil engineering applications
- Penetrating flood coat sealer to prevent moisture and ion ingress into substrate

**LOCATION**

- Exterior
- Horizontal

**SUBSTRATE**

- Concrete

**How to Apply**

**Surface Preparation**

1. Inspect the concrete substrate before preparation. Note the location of surface cracks and the presence of contaminants. Concrete surfaces must be dry and free of dust, dirt, oil, wax, curing compounds, efflorescence, laitance, and all other bondbreaking materials.
2. Inspect the underside of the deck for signs of leakage due to full depth cracks.
3. Check weather forecast to ensure dry conditions. Wet substrates must be allowed to dry prior to beginning work.
4. Using a dust-free, mobile shotblaster or gritblaster, brush-blast the substrate to expose surface cracking.
5. Do not use wet preparation methods.
6. Perform a second inspection, noting newly-found surface cracks. Mark these for pre-treatment. Clean out cracks and the deck surface with oil-free compressed air.
Technical Data

Composition
Degadeck® Crack Sealer Plus is a reactive methacrylate resin.

Compliance
- Degadeck Crack Sealer Plus is classified under DOT regulations as Resin Solution, UN 1966, Class 3, PG II.

Test Data

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>RESULTS</th>
<th>TEST METHODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
<td></td>
</tr>
<tr>
<td>Specific gravity</td>
<td>0.97</td>
<td>DIN 51757</td>
</tr>
<tr>
<td>Viscosity, Dp (mPa·sec), at 73° F (23° C)</td>
<td>5-15</td>
<td>ASTM D 2369</td>
</tr>
<tr>
<td>Flash point, ° F (° C)</td>
<td>48 (8)</td>
<td>DIN 51755</td>
</tr>
<tr>
<td>Tensile strength, psi (MPa)</td>
<td>4,500 (31)</td>
<td>ASTM D 638</td>
</tr>
<tr>
<td>Elongation at break, %</td>
<td>5.5</td>
<td>ASTM D 638</td>
</tr>
<tr>
<td>Hardness, Shore D</td>
<td>&gt; 80</td>
<td>ASTM D 2240</td>
</tr>
<tr>
<td>Water absorption, % / 24 hrs</td>
<td>0.60</td>
<td>ASTM D 570</td>
</tr>
</tbody>
</table>

Mixing

Degadeck® Crack Sealer Plus must be mixed with the appropriate amount of Powder Hardener just prior to application. Air/substrate temperature determines the amount as follows:

**DEGADECK CRACK SEALER (1 GALLON)**

<table>
<thead>
<tr>
<th>TEMPERATURE ° F ° C</th>
<th>WEIGHT %</th>
<th>VOLUME OUNCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>41 (5)</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>50 (15)</td>
<td>4</td>
<td>8.5</td>
</tr>
<tr>
<td>59 (15)</td>
<td>3</td>
<td>6.5</td>
</tr>
<tr>
<td>68 (28)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>86 (38)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

* Please consult BASF Technical Services for applications outside this temperature range.

Using clean, dry plastic buckets, add Powder Hardener to Degadeck® Crack Sealer Plus and mix until dissolved (approximately 1 minute). Mixture must be used immediately. Do not exceed 5-gallon (20 L) batch sizes.

Application
1. Degadeck® Crack Sealer Plus is applied as a flood coat in a gravity-fed process by broom or roller.
2. The contents of the mixed batch should be immediately poured onto the substrate and worked into cracks by distributing with 1/2" to 3/4" (13 – 20 mm) nap solvent grade rollers or broom. Do not allow material to pond. Application rate is 100 ft²/gal (2.5 m²/L).
3. Do not allow the mixed batch to remain in the mixing vessel. It is advisable to randomly broadcast a 30 mesh (600 µm) dry aggregate into the wet, uncurled resin at the rate of approximately 4 lb/100 ft² (200 g/m²).
4. Working time for Degadeck® Crack Sealer Plus is 10 to 15 minutes once it has been applied to the substrate. Full cure to specification will be between 45 minutes and 1 hour.

Pre-Treat Wide Cracks
Cracks over 1/8" (3 mm) should be treated individually prior to crack application. Full depth cracks may require alternative treatment to prevent runoff of resin. Fill wider cracks with dry, 30 mesh silica sand. Mix a small amount of Degadeck® Crack Sealer Plus, pour into cracks and distribute with a paintbrush. Squeeze bottles can also be used.

Drying Time
Allow one hour for Degadeck® Crack Sealer Plus to gain full mechanical properties. Check for dry-to-touch condition. End result should be a darker-colored, matte finish with a minimal surface film and some loose broadcast aggregate. Open to traffic.

Clean Up
Clean tools as needed with MMA, acetone, ethyl acetate or similar solvents.

For Best Performance
- Application temperature range of substrate is between 41 and 104° F (5 and 40° C).
- Degadeck® Crack Sealer Plus is NOT A high molecular weight methacrylate (HMMA).
- DO NOT use for vertical surface treatments.
- Degadeck® Crack Sealer Plus is a sacrificial film that will wear out over time, however the cracks will continue to be protected.
- Periodically inspect the applied material and repair localized areas as needed. Consult a BASF representative for additional information.
- Make certain the most current versions of product data sheet and MSDS are being used. Call Customer Service (1-800-433-9517) to verify the most current version.
- Proper application is the responsibility of the user. Field visits by BASF personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the job sites.
Health and Safety

Degadorck Crack Sealer Plus contains methyl methacrylate, acrylic polymer; and methylacrylic acid ester.

Risks

FLAMMABLE LIQUID AND VAPOR: May cause skin and eye irritation. Inhalation may cause irritation. Ingestion may cause irritation. Inhalation of vapors may cause irritation and sensitization. May cause dermatitis and allergic response. Repeated or prolonged contact with skin may cause sensitization. May cause central nervous system damage. May cause dermatitis and allergic response. Repeated or prolonged contact with skin may cause sensitization.

Precautions

KEEP AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. Heat, aging, or contamination may lead to violent rupture of sealed containers. Vapors are heavier than air. Keep container closed. Check periodically for warm or bulging containers. Use only with adequate ventilation. DO NOT get in eyes, on skin or on clothing. Wash thoroughly after handling. DO NOT breathe vapors. DO NOT take internally. Use impermeable gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations. Empty container may contain hazardous residues. All label warnings must be observed until container is commercially disposed of or reconditioned.

First Aid

FIRST AID MEASURES: In case of eye contact, flush thoroughly with water for at least 15 minutes. SEEK IMMEDIATE MEDICAL ATTENTION. In case of skin contact, wash affected areas with soap and water. If irritation persists, SEEK MEDICAL ATTENTION. Remove and wash contaminated clothing. If irritation effects occur, remove to fresh air. If discomfort persists or any breathing difficulty occurs, or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION. Refer to Material Safety Data Sheet (MSDS) for further information.

VOC Content

< 250 g/L or 0 lb/gal, less water and exempt solvents when components are mixed and applied per manufacturer’s instructions.

POWDER HARDENER

Danger - Organic Peroxide

Powder hardener contains dibenzyl peroxide, and dicyclohexyl phthalate.

Risks

May cause skin, eye and respiratory irritation. May cause dermatitis and allergic response. Repeated or prolonged contact with skin may cause sensitization. May cause dermatitis and allergic response. Ingestion may cause irritation.

Precautions

KEEP AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. Use only with adequate ventilation. Avoid contact with skin, eyes and clothing. Keep container closed when not in use. Wash thoroughly after handling. Do not take internally. Prevent inhalation of dust. Use impermeable, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations. Empty container may contain hazardous residues. All label warnings must be observed until container is commercially cleaned or reconditioned.

First Aid

In case of eye contact, flush thoroughly with water for at least 15 minutes. In case of skin contact, wash affected areas with soap and water. If irritation persists, SEEK MEDICAL ATTENTION. Remove and wash contaminated clothing. If irritation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs, or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION. Refer to Material Safety Data Sheet (MSDS) for further information.

Call ChemTrec (1-800-624-0500).
SIL-ACT® ATS-42

VOC Compliant Alkytrialkoxyasilane

**HIGH PERFORMANCE**

SIL-ACT™ ATS-42 is a clear, penetrating silane treatment which causes concrete, masonry and many natural stones to become repellent to water, chloride and other waterborne contaminants and weathering elements. Due to its high performance in long term field and laboratory evaluations by many independent agencies, SIL-ACT™ ATS-42 has become an industry standard for high performance clear water repellents.

**DURABLE**

SIL-ACT™ ATS-42 can be applied to the surface by low-pressure spray, brush, roller or squeegee. It can be stored on the jobsite at temperature extremes, eliminating storage problems associated with emulsified silane products that can deteriorate on the jobsite, prior to use, if not properly stored. SIL-ACT™ ATS-42 chemically bonds with the substrate forming a penetrated layer below the surface that acts as a one-way filter. Water, chloride and other waterborne contaminants are repelled without restricting the substrates natural vapor permeability.

**FLEXIBLE**

SIL-ACT™ ATS-42 is an effective treatment for new and existing cast-in-place concrete, precast concrete, prestressed concrete, architectural concrete, brick, masonry, cementious mortars, stucco and many natural stones. Structures that can be treated include parking decks, bridges, commercial buildings, airport pavements, highways, cooling towers, stadiums and many other types of horizontal and vertical structures.

---

High Performance Economical Easy to Use Deep Penetration
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Test</th>
<th>ATS-42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Ingredient</td>
<td>Method 24, ASTM D-5095</td>
<td>Alkyltrialkoxysilane</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td></td>
<td>0.81</td>
</tr>
<tr>
<td>Density</td>
<td></td>
<td>6.76 lb/gal</td>
</tr>
<tr>
<td>Solids Content</td>
<td></td>
<td>&gt; 40% by weight</td>
</tr>
<tr>
<td>VOC Content</td>
<td></td>
<td>&lt; 600 g/L</td>
</tr>
<tr>
<td>Surface Appearance</td>
<td></td>
<td>no change</td>
</tr>
<tr>
<td>Drying Time @ 70 F</td>
<td></td>
<td>½ hour</td>
</tr>
<tr>
<td>Moisture Absorption resistance</td>
<td>ASTM C-642-82</td>
<td>0.3% 48 hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9% 50 days</td>
</tr>
<tr>
<td>Moisture Vapor Permeability</td>
<td>OHD L-35, ASTM E-96, D-1653</td>
<td>100%</td>
</tr>
<tr>
<td>Waterproofing</td>
<td>Alberta Transportation and Utilities (1b)</td>
<td>85.6%</td>
</tr>
<tr>
<td>Waterproofing after Abrasion</td>
<td>Alberta Transportation and Utilities (1b)</td>
<td>82.7%</td>
</tr>
<tr>
<td>Alkali Resistance</td>
<td>Alberta Transportation and Utilities (1b)</td>
<td>76.1%</td>
</tr>
<tr>
<td>Depth of Penetration</td>
<td>OHD L-34/ NCHRP 244 Series II</td>
<td>0.30 in, 7.5 mm</td>
</tr>
<tr>
<td>Reduction in Water Weight Gain</td>
<td>NCHRP 244 Series II</td>
<td>88%</td>
</tr>
<tr>
<td>Reduction in Absorbed Chloride</td>
<td>NCHRP 244 Series II</td>
<td>82%</td>
</tr>
<tr>
<td>Reduction in Absorbed Chloride</td>
<td>NCHRP 244 Series IV</td>
<td>99%</td>
</tr>
<tr>
<td>Moisture Vapor Permeability</td>
<td>NCHRP 244 Series II</td>
<td>100%</td>
</tr>
<tr>
<td>Resistance of Chloride Ion</td>
<td>ASTM E-955, D-1650</td>
<td>0.5” Depth &lt;0.2 lb per cubic yard</td>
</tr>
<tr>
<td>Penetration</td>
<td>AASHTO T-259/T-260</td>
<td>1.0” Depth &lt;0.0 lb per cubic yard</td>
</tr>
<tr>
<td>Freeze-Theta Scaling Resistance</td>
<td>ASTM C-672-84</td>
<td>0 @ 50 cycles</td>
</tr>
<tr>
<td>Surface Absorption Test</td>
<td>RILEM II.4</td>
<td>0 inches (10 minutes)</td>
</tr>
</tbody>
</table>

## INSTALLATION

1. Test a small area prior to general application to ensure compatibility, desired results and coverage rates.
2. Treatment is most effective when the surface to be treated is clean and dry. Remove dirt, dust, oil, grease, curing compounds, coatings, and other surface contaminants. Water blasting, sandblasting, or shotblasting may be required.
3. Do not proceed unless surface and air temperature is between 40 F and 110 F. Do not apply if frost, ice, or standing water are visible on the surface to be treated.
4. Protect windows, metals, etc., from overspray. If necessary, immediately clean overspray with a clean dry cloth, soap and water or alcohol. Protect plants and vegetation from overspray.
5. Spray, brush or roll SIL-ACT™ ATS-42 treatment on surface to be treated at the recommended application rate. Contact your SIL-ACT™ representative for details.
6. Apply to saturation. Allow spraying dispersion at low pressure, if necessary follow with broom or squeegee for even distribution.
7. Normal coverage rate is approximately 125 to 200 square feet per gallon.
8. Clean equipment with alcohol or suitable solvent.
9. Partially used containers should be properly sealed and protected from contamination by water or other foreign substances.

## WARRANTY

Limited warranties are available for all SIL-ACT™ products. Contact ACT or your local SIL-ACT™ representative for details. SIL-ACT™ ATS-42 is covered by several patents including U.S. 4,931,319.

Advanced Chemical Technologies, Inc.
100 West Wilshire Blvd., Suite C-1
Oklahoma City, OK 73116
(800) 535-8433 (405) 843-2565 (405) 843-2596
www.advchemtech.com

NOTICE This brochure was prepared as an introduction to a product manufactured by Advanced Chemical Technologies, Inc. The information provided herein is based upon typical installation conditions and is believed to be reliable. However, due to the wide variety of possible intervening factors, Advanced chemical Technologies, Inc. does not warrant the expected results to be obtained. Details concerning product specifications and warranty may be obtained from Advanced Chemical Technologies, Inc. Specifications are subject to change. Sale of subject system is limited to Advanced Chemical Technologies, Inc. and authorized applicator's conditions of sale including those limiting warranties and remedies. © ACT 2002.
D.7  Sikadur® 31, Hi-Mod Gel

Sikadur® 31, Hi-Mod Gel
High-modulus, high-strength, structural epoxy paste adhesive

**Description**
Sikadur 31, Hi-Mod Gel, is a 2-component, 100% solids, moisture-tolerant, high-modulus, high-strength, structural epoxy paste adhesive. It conforms to the current ASTM C-881 and AASHTO M-235 specifications.

**Where to Use**
- Structural bonding of concrete, masonry, metals, wood, etc. to a maximum glue line of 1/8 in. (3 mm).
- Grout bolts, dowels, pins, vertical and overhead, etc.
- Seals cracks and around injection ports prior to pressure injection grouting.
- Interior, vertical, and overhead repair of concrete as an epoxy mortar binder.
- As a pick-proof sealant around windows, doors, lock-ups etc. inside correctional facilities.

**Advantages**
- Tolerant of moisture before, during and after cure.
- High-modulus, high-strength, structural paste adhesive.
- Excellent adhesion to concrete, masonry, metal, wood and most structural materials.
- Paste consistency ideal for vertical and overhead applications.
- Fast-setting and strength-producing adhesive.

---

**Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
<th>Value/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shelf Life</strong></td>
<td>2 years in original, unopened containers.</td>
<td></td>
</tr>
<tr>
<td><strong>Storage Conditions</strong></td>
<td>Store dry at 40°-95°F (4°-35°C). Condition material to 65°-75°F (18°-24°C) before using.</td>
<td></td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Concrete gray</td>
<td></td>
</tr>
<tr>
<td><strong>Mixing Ratio</strong></td>
<td>Component 'A': Component 'B' = 2:1 by volume</td>
<td></td>
</tr>
<tr>
<td><strong>Consistency</strong></td>
<td>Non-sag paste</td>
<td></td>
</tr>
<tr>
<td><strong>VOC Content</strong></td>
<td>0.8%</td>
<td></td>
</tr>
<tr>
<td><strong>Pot Life</strong></td>
<td>Approximately 30 minutes @ 73°F (23°C). (60 gram mass)</td>
<td></td>
</tr>
<tr>
<td><strong>Tack Free Time</strong></td>
<td>2-3 hours</td>
<td></td>
</tr>
<tr>
<td><strong>Tensile Properties (ASTM D-638)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 day</td>
<td>Tensile Strength</td>
<td>3,600 psi (24.8 MPa)</td>
</tr>
<tr>
<td></td>
<td>Elongation at Break</td>
<td>0.4%</td>
</tr>
<tr>
<td></td>
<td>Modulus of Elasticity</td>
<td>7.5 X 10^6 psi (5.200 MPa)</td>
</tr>
<tr>
<td><strong>Flexural Properties (ASTM-D-790)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 day</td>
<td>Flexural Strength (Modulus of Rupture)</td>
<td>6,000 psi (41.4 MPa)</td>
</tr>
<tr>
<td></td>
<td>Tangent Modulus of Elasticity in Bending</td>
<td>1.0 X 10^6 psi (6,000 MPa)</td>
</tr>
<tr>
<td><strong>Shear Strength (ASTM D-732)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 day</td>
<td>Shear Strength</td>
<td>3,400 psi (23.4 MPa)</td>
</tr>
<tr>
<td><strong>Bond Strength (ASTM C-682): Hardened Concrete to Hardened Concrete</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 day (moist cure)</td>
<td>Bond Strength</td>
<td>2,900 psi (20.0 MPa)</td>
</tr>
<tr>
<td>14 day (moist cure)</td>
<td>Bond Strength</td>
<td>2,700 psi (18.6 MPa)</td>
</tr>
<tr>
<td>2 day (dry cure)</td>
<td>Bond Strength</td>
<td>3,300 psi (22.7 MPa)</td>
</tr>
<tr>
<td><strong>Heat Deflection Temperature (ASTM D-648)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 day</td>
<td>[Fiber stress loading = 264 psi (1.8 MPa)]</td>
<td>128°F (53°C)</td>
</tr>
<tr>
<td><strong>Water Absorption (ASTM D-576)</strong></td>
<td>7 day (24 hour immersion)</td>
<td>0.021%</td>
</tr>
<tr>
<td><strong>Compressive Properties (ASTM D-696)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Compressive Strength, psi (MPa)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 hour</td>
<td></td>
<td>900 (6.2)</td>
</tr>
<tr>
<td>4 hour</td>
<td></td>
<td>1,400 (9.9)</td>
</tr>
<tr>
<td>8 hour</td>
<td></td>
<td>5,400 (37.2)</td>
</tr>
<tr>
<td>16 hour</td>
<td></td>
<td>8,600 (60.7)</td>
</tr>
<tr>
<td>1 day</td>
<td></td>
<td>1,100 (75.8)</td>
</tr>
<tr>
<td>3 day</td>
<td></td>
<td>10,000 (68.9)</td>
</tr>
<tr>
<td>7 day</td>
<td></td>
<td>11,000 (75.8)</td>
</tr>
<tr>
<td>14 day</td>
<td></td>
<td>11,000 (75.8)</td>
</tr>
<tr>
<td>28 day</td>
<td></td>
<td>11,000 (75.8)</td>
</tr>
<tr>
<td><strong>Compressive Modulus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 day</td>
<td></td>
<td>3.9 X 10^6 psi (2,700 MPa)</td>
</tr>
</tbody>
</table>
Coverage
1 gal. yields 231 cu. in. of epoxy paste adhesive and grout. 1 gal. mixed with 1 gal. by loose volume of oven-dried aggregate yields approximately 346 cu. in. of epoxy mortar.

Packaging
3-gal. units, 12 fl. oz. units, 12/case.

How to Use
Surface Preparation
Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes and any other contaminants.

Preparation Work: Concrete - Should be cleaned and prepared to achieve a laitance and contaminant free, open textured surface by blast cleaning or equivalent mechanical means.
Steel - Should be cleaned and prepared thoroughly by blast cleaning.

Mixing
Pre-mix each component: Proportion 1 part Component B to 2 parts Component A by volume into a clean pail. Mix thoroughly for 3 minutes with Sika paddle on low-speed (400-600 rpm) drill until uniform in color. Mix only that quantity which can be used within its pot life.

To prepare an epoxy mortar: Slowly add up to 1 part, by loose volume of an oven-dried aggregate, to 1 part of the mixed Sikadur 31, Hi-Mod Gel and mix until uniform in consistency.

Application
As a structural adhesive - Apply the neat mixed Sikadur 31, Hi-Mod Gel to the prepared substrates. Work into the substrate for positive adhesion. Secure the bonded unit firmly in place until the adhesive has cured. Observe line should not exceed 1/8 in. (3 mm)

To seal cracks for injection grouting - Place the neat mixed material over the cracks to be pressure injected and around each injection port. Allow sufficient time to set before pressure injecting.

To anchor bolts, dowels and pins - Annular space around bolt should not exceed 1/8 in. (3 mm); depth of embedment is typically 10-15 times the bolt diameter. Grout with neat Sikadur 31, Hi-Mod Gel.

For interior vertical or overhead patching - Place the prepared mortar in void, working the mortar into the prepared substrate, filling the cavity. Strike off level. Lifts should not exceed 1 in. (25 mm).

As a pick-proofsealant - Use automated or manual method. Apply an appropriate size bead of material around the area being sealed. Seal with neat Sikadur 31, Hi-Mod Gel.

Limitations
- Minimum substrate and ambient temperature 40°F (4°C).
- Do not thin. Addition of solvents will prevent proper cure.
- Use oven-dried aggregate only.
- Maximum epoxy mortar thickness is 1 in. (25 mm) per lift.
- Epoxy mortar is for interior use only. Material is a vapor barrier after cure.
- Minimum age of concrete must be 21-28 days, depending upon curing and drying conditions, for mortar applications.
- Porous substrates must be tested for moisture-vapor transmission prior to mortar applications.
- Not for sealing cracks under hydrostatic pressure at time of application.

Caution
Component 'A' - Irritant; Sensitizer - Contains epoxy resin and crystalline silica (sand). Can cause skin sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. If sanded, crystalline silica dust may be generated and may cause delayed lung injury (silicosis) and is listed as a suspect carcinogen by NTP and IARC (2A). Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing. Consult MSDS for more detailed information.

Component 'B' - Corrosive; Sensitizer - Containsamines and crystalline silica (sand). Contact with eyes or skin may cause severe burns. Can cause skin and/or respiratory sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Overexposure may cause liver, kidney, and/or central nervous system effects. If sanded, crystalline silica dust may be generated and may cause delayed lung injury (silicosis) and is listed as a suspect carcinogen by NTP and IARC (2A). Avoid skin contact. Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing. Consult MSDS for more detailed information.

First Aid
Components ‘A’ and ‘B’; Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist.

Clean Up
In case of spills or leaks, wear suitable protective equipment, contain spill, collect with absorbent material, and transfer to suitable container. Ventilate area. Avoid contact. Dispose of in accordance with current, applicable local, state, and federal regulations.

KEEP CONTAINER TIGHTLY CLOSED
KEEP OUT OF REACH OF CHILDREN
NOT FOR INTERNAL CONSUMPTION
CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION
Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current technical data sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer’s sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.
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1-800-933-Sika (7452)

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NCHRP 18-14, Final Report, Appendix D
D-16
D.8 Sikadur® 33

**Sikadur® 33**

High-modulus, high-strength, structural, very rapid-curing epoxy, smooth-paste adhesive

**Product Data Sheet**
Edition 7.2003
Identification no. 397
Sikadur 33

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**Description**
Sikadur 33 is a 2-component, 100% solids, moisture-tolerant, high-modulus, high-strength, structural, smooth-paste epoxy adhesive. It conforms to the current ASTM C-881 and AASHO M-235 specifications, except for gel time.

**Where to Use**
- Use to seal cracks and to secure injection ports in structural concrete and wood trusses prior to pressure-injection grouting.
- Anchor grouting: bolts, dowels, pins and special fasteners.

**Advantages**
- New smooth-paste consistency for vertical, horizontal and overhead crack sealing.
- Very rapid curing, even in thin film, for faster pressure-injection grouting.
- Injection may proceed as soon as 1 hour after application.

---

**Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shelf Life</strong></td>
<td>2 years in original, unopened containers.</td>
</tr>
<tr>
<td><strong>Storage Conditions</strong></td>
<td>Store dry at 40°-95°F (4°-35°C). Condition material to 65°-75°F (18°-24°C) before using.</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Concrete gray.</td>
</tr>
<tr>
<td><strong>Consistency</strong></td>
<td>Smooth-paste adhesive.</td>
</tr>
<tr>
<td><strong>Tack-Free Time</strong></td>
<td>40°F (4°C) 73°F (23°C) 90°F (32°C): 1.5-1.75 hr 25-30 min 20-25 min</td>
</tr>
<tr>
<td><strong>Tensile Properties (ASTM D-638)</strong></td>
<td>1 day: Tensile Strength 3,300 psi (22.7 MPa) Elongation at Break 0.2% Modulus of Elasticity 8.3 x 10^6 psi (5,700 MPa)</td>
</tr>
<tr>
<td><strong>Flexural Properties (ASTM D-790)</strong></td>
<td>1 day: Flexural Strength (Modulus of Rupture) 4,800 psi (33.1 MPa) Tangent Modulus of Elasticity in Bending 1.2 x 10^6 psi (8,300 MPa)</td>
</tr>
<tr>
<td><strong>Shear Properties (ASTM D-732)</strong></td>
<td>1 day: Shear Strength 2,200 psi (15.2 MPa)</td>
</tr>
<tr>
<td><strong>Heat Deflection Temperature (ASTM D-648)</strong></td>
<td>1 day: 120°F (49°C) [fiber stress loading = 204 psi (1.8 MPa)]</td>
</tr>
<tr>
<td><strong>Bond Strength (ASTM C-882): Hardened Concrete to Hardened Concrete</strong></td>
<td>2 day: (dry cure) 3,000 psi (20.6 MPa)</td>
</tr>
<tr>
<td><strong>Water Absorption (ASTM D-570)</strong></td>
<td>7 day: (24 hour immersion) 0.36 %</td>
</tr>
<tr>
<td><strong>Compressive Properties (ASTM D-696)</strong></td>
<td>1 hour: 30 (0.20) 73°F (23°C): 5,600 (38.6) 90°F (32°C): 4,600 (31.7) 2 hour: 1,800 (12.4) 6,700 (46.2) 5,600 (38.6) 3 hour: 3,500 (24.1) 7,000 (53.7) 5,700 (39.9) 8 hour: 6,300 (43.4) 8,200 (56.5) 6,900 (45.2) 16 hour: 6,900 (47.5) 8,500 (58.6) 7,100 (48.9) 1 day: 7,400 (51) 8,600 (59.3) 7,300 (50.3) 3 day: 7,000 (54.4) 9,000 (62) 7,600 (52.4) 7 day: 8,300 (57.2) 9,200 (63.4) 7,800 (53.7) 14 day: 8,500 (58.6) 9,200 (63.4) 8,100 (55.6) 28 day: 8,000 (59.3) 9,400 (64.8) 8,300 (57.2)</td>
</tr>
<tr>
<td><strong>Compressive Modulus (28 day)</strong></td>
<td>9.6 x 10^6 psi (6,000 MPa)</td>
</tr>
</tbody>
</table>

*Material cured and tested at the temperatures indicated.*
Coverage

- Convenient easy mix ratio A:B = 1:1 by volume.
- Tolerant of moisture before, during and after cure.
- High-modulus, high-strength, rapid curing smooth paste adhesive.
- Excellent adhesion to masonry, concrete, wood, steel and most structural materials.
- Paste consistency ideal for vertical and overhead anchoring applications.

Packaging

- 1 gal. yields 211 cu. in. of paste adhesive.
- 2 gal. unit

How to Use

Surface Preparation

- Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes and any other contaminants.
- Preparation Work: Concrete - Should be cleaned and prepared to achieve a laitance and contaminant free, open textured surface by blast cleaning or equivalent mechanical means.
- Steel - Should be cleaned and prepared thoroughly by blast cleaning.

Mixing

- Pre-mix each component. Proportion equal parts by volume of Component ‘B’ and Component ‘A’ into a clean pail. Mix thoroughly for 3 minutes with Sika paddle on low-speed (400-600 rpm) drill until uniform in color. Mix only that quantity that can used within its pot life.

Application

- To seal injection ports and cracks for injection grouting - Place the neat mixed material over the cracks to be pressure-injected and around each injection port. Allow sufficient time to set before pressure-injecting. Use Sikadur 35, Hi-Mod LV, or Sikadur 52 for the low-viscosity injection adhesive. Consult technical data sheets on these products for more information. Also, contact Technical Service for additional information on pressure-injection grouting.
- To anchor bolts, dowels, pins - Annular space around bolt should not exceed 1/8 in. (3 mm); depth of embedment is typically 10-15 times the bolt diameter. Grout with neat Sikadur 33.
- To anchor bolts, dowels, pins in hollow masonry or concrete block - Consult Technical Service.

Limitations

- Minimum substrate and ambient temperature 40°F (4°C).
- Do not thin. Addition of solvents will prevent proper cure.
- Material is a vapor barrier after cure.
- Not for sealing cracks under hydrostatic pressure at the time of application.

Caution

Component ‘A’ - Irritant; Sensitizer - Contains epoxy resin. Can cause skin sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Avoid skin contact. Use only with adequate ventilation. Use of safety goggles and chemical-resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing. Consult MSDS for more detailed information.

Component ‘B’ - Corrosive; Sensitizer - Contains amine. Contact with eyes or skin may cause severe burns. Can cause skin sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Avoid skin contact. Use only with adequate ventilation. Use of safety goggles and chemical-resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Remove contaminated clothing. Consult MSDS for more detailed information.

First Aid

- Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist.

Clean Up

- Ventilate area. Contain spill. Collect with absorbent material. Dispose of in accordance with current, applicable local, state, and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.
D.9  Sikadur® 35, Hi-Mod LV

Sikadur® 35, Hi-Mod LV
High-modulus, low-viscosity, high-strength epoxy grouting/sealing/binder adhesive

Description
Sikadur 35, Hi-Mod LV is a 2-component, 100% solids, moisture-tolerant, low-viscosity, high-strength, multi-purpose, epoxy resin adhesive. It conforms to the current ASTM C-881 and AASHTO M-235 specifications.

Where to use
- Pressure-injection of cracks in structural concrete, masonry, wood, etc.
- Grouting bolts, dowels, pins, etc.
- Gravity-feed of cracks in horizontal concrete and masonry
- Epoxy resin binder for epoxy mortar patching and overlay of interior, horizontal surfaces.
- Seal interior slabs and exterior above-grade slabs from water, chlorides, and mild chemical attack; also improves wearability.

Advantages
- Super low viscosity.
- Unique, high-strength, structural adhesive for “can’t dry” surfaces.
- Deep penetrating and tenacious bonding of cracks in structural concrete.
- High-early-strength developing adhesive.
- Excellent chemical resistance for flooring systems.

Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)

<table>
<thead>
<tr>
<th>Property</th>
<th>Neat</th>
<th>Mortar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf Life</td>
<td>2 years in original, unopened containers.</td>
<td></td>
</tr>
<tr>
<td>Storage Conditions</td>
<td>Store dry at 40°-95°F (4°-35°C). Condition material to 65°-75°F (18°-24°C) before using.</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Clear, amber</td>
<td></td>
</tr>
<tr>
<td>Viscosity (Mixed)</td>
<td>Approximately 375 cps.</td>
<td></td>
</tr>
<tr>
<td>Pot Life</td>
<td>Approximately 25 minutes (60 gram mass)</td>
<td></td>
</tr>
<tr>
<td>Tack Free Time</td>
<td>14-16 hrs</td>
<td>3-5 hrs</td>
</tr>
<tr>
<td>(3-5 mils Neat)</td>
<td>14 days</td>
<td>14 days</td>
</tr>
<tr>
<td>Elongation at Break</td>
<td>5.4%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Modulus of Elasticity</td>
<td>4.1 X 10⁶ psi (2,600 MPa)</td>
<td>7.6 X 10⁶ psi (5,200 MPa)</td>
</tr>
<tr>
<td>Flexural Properties (ASTM D-790)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 day</td>
<td>Flexural Strength (Modulus of Rupture) 14,000 psi (96.6 MPa)</td>
<td>2,200 psi (15.2 MPa)</td>
</tr>
<tr>
<td></td>
<td>Tangent Modulus of Elasticity in Bending 3.7 x 10⁶ psi (2,000 MPa)</td>
<td>9.5 x 10⁶ psi (65,000 MPa)</td>
</tr>
<tr>
<td>Shear Strength (ASTM D-732)</td>
<td>14 day</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shear Strength</td>
<td>5,100 psi (35.2 MPa)</td>
</tr>
<tr>
<td></td>
<td>2,300 psi (15.9 MPa)</td>
<td></td>
</tr>
<tr>
<td>Heat Deflection Temperature</td>
<td>(ASTM D-648)</td>
<td></td>
</tr>
<tr>
<td>7 day</td>
<td>Fiber stress loading = 264 psi (1.8 MPa)</td>
<td>124°F (51°C)</td>
</tr>
<tr>
<td></td>
<td>129°F (54°C)</td>
<td></td>
</tr>
<tr>
<td>Bond Strength (ASTM C-982):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 day</td>
<td>(moist cure)</td>
<td>Bond Strength 4,000 psi (27.6 MPa)</td>
</tr>
<tr>
<td>14 day</td>
<td>(moist cure)</td>
<td>Bond Strength 2,900 psi (20.0 MPa)</td>
</tr>
<tr>
<td>2 day</td>
<td>(dry cure)</td>
<td>Bond Strength 2,800 psi (19.3 MPa)</td>
</tr>
<tr>
<td>Water Absorption (ASTM D-570)</td>
<td>7 day</td>
<td>24 hour immersion</td>
</tr>
<tr>
<td>Compressive Properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40°F (4°C)</td>
<td>Neat</td>
<td>Mortar (1:5)</td>
</tr>
<tr>
<td>8 hour</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16 hour</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1 day</td>
<td>-</td>
<td>6,000 (41.4)</td>
</tr>
<tr>
<td>3 day</td>
<td>-</td>
<td>4,000 (27.6)</td>
</tr>
<tr>
<td>7 day</td>
<td>-</td>
<td>6,000 (46.9)</td>
</tr>
<tr>
<td>14 day</td>
<td>-</td>
<td>10,300 (71.1)</td>
</tr>
<tr>
<td>28 day</td>
<td>-</td>
<td>12,400 (85.6)</td>
</tr>
<tr>
<td>Compressive Modulus</td>
<td>7 day</td>
<td>3.2 X 10⁶ psi (2,200 MPa)</td>
</tr>
</tbody>
</table>
Coverage
1 gal. yields 231 cu. in. of adhesive and grout. 1 gal. of adhesive, when mixed with 5 gal. by loose volume of oven-dried aggregate, yields approximately 808.5 cu. in. of epoxy mortar.

Packaging
3 gal. units; 1 gal. units, 2/case, 12 fl. oz. units, 12/case.

How to Use
Surface Preparation
Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, lint, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials.

Preparation Work:
Concrete - Blast clean, shot blast or use other approved mechanical means to provide an open roughened texture. Steel - Should be cleaned and prepared thoroughly by blast cleaning.

Mixing
Proportion 1 part Component 'B' to 2 parts Component 'A' by volume into a clean pail. Mix thoroughly for 3 minutes with a paddle on low-speed (400-600 rpm) drill until uniformly blended. Mix only that quantity that can be used within its pot life.

To prepare an epoxy mortar, slowly add 4-5 parts by volume of oven-dried aggregate to 1 part of the mixed Sikadur 35, Hi-Mod LV and mix until uniform in consistency.

Application
To gravity feed cracks - Blow vee-notched crack clean with oil-free compressed air. Pour neat Sikadur 35, Hi-Mod LV into vee-notched crack. Continue placement until completely filled. Seal underside of slab prior to filling if cracks reflect through.

To pressure-inject cracks - Use automated injection equipment or manual method. Set appropriate injection ports based on system used. Seal ports and crack with Sikadur 31, Hi-Mod Gel or Sikadur 33. When the epoxy adhesive seal has cured, inject Sikadur 35, Hi-Mod LV with steady pressure. Consult Technical Service for additional information.

To anchor bolts, dowels and pins - Annular space around bolt should not exceed 1 1/2 in. (3 mm); depth of embedment is typically 10-15 times the bolt diameter. Grout with neat Sikadur 35, Hi-Mod LV.

To seal slabs - Spread neat Sikadur 35, Hi-Mod LV over slab. Allow penetration. Remove excess to prevent surface film. Seal interior slabs and above-grade exterior slabs only.

For an epoxy mortar - Prime prepared surface with neat Sikadur 35, Hi-Mod LV. Place prepared epoxy mortar before primer becomes tack-free. Place the epoxy mortar using trowels. Compact and level with vibrating screed or trowels. Finish with finishing trowel. Sikadur 35, Hi-Mod LV mortar is for interior use only.

Limitations
- Minimum substrate and ambient temperature 40°F (4°C).
- Do not mix with solvents. Consult Technical Service.
- Use oven-dried-aggregate only.
- Maximum epoxy mortar thickness is 1 in. (25 mm) per lift.
- Epoxy mortar is for interior use only.
- Do not use exterior slabs on grade.
- Minimum age of concrete must be 21-28 days, depending on curing and drying conditions, for mortar and to seal slabs.
- Porous substrates must be tested for moisture transmission prior to application.
- Not for injection of cracks under hydrostatic pressure at the time of application.
- Do not inject cracks greater than 1.4 in. (35 mm) thick. Consult Technical Service.

Caution
Component 'A' - Irritant; Sensitizer - Contains epoxy resin. Can cause skin sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Avoid skin contact. Use only with adequate ventilation. Use of safety goggles and chemical-resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Consult Microsafety for more detailed information.

Component 'B' - Corrosive; Sensitizer - Contains amines. Contact with eyes or skin may cause severe burns. Can cause skin and/or respiratory sensitization after prolonged or repeated contact. Skin and eye irritant. High concentrations of vapor may cause respiratory irritation. Avoid skin contact. Use only with adequate ventilation. Use of safety goggles and chemical-resistant gloves is recommended. In case of exceedance of PELs, use an appropriate, properly fitted NIOSH approved respirator. Consult Microsafety for more detailed information.

First Aid
Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist.

Clean Up
Ventilate area. Contain spill. Collect with absorbent material. Dispose of in accordance with current, applicable local, state and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.

KEEP CONTAINER TIGHTLY CLOSED
KEEP OUT OF REACH OF CHILDREN
NOT FOR INTERNAL CONSUMPTION
CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION
Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current technical data sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer’s sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

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Carretera Libre Celaya-Km. 8.5
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Fax: 52-42-25037

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NCHRP 18-14, Final Report, Appendix D
D.10   Sikadur® 35, Hi-Mod LV LPL

Sikadur® 35, Hi-Mod LV LPL
High-modulus, low-viscosity, high-strength, extended pot life, epoxy adhesive

Description
Sikadur 35, Hi-Mod LV LPL is a 2-component, 100% solids, moisture-tolerant, low-viscosity, high-strength, multi-purpose epoxy resin adhesive. It conforms to the current ASTM C-881 and AASHTO M-235 specifications.

Where to use
- Low pressure and high pressure injection of cracks in structural concrete, masonry, wood, etc.
- Gravity-feed of cracks in horizontal concrete and masonry.
- Epoxy resin binder for epoxy mortar patching and grouting.
- Seal interior slabs and exterior above-grade slabs from water, chlorides and mild chemical attack; also improves wearability.
- Epoxy resin binder for epoxy mortar repair for structural pile members.

Advantages
- Extended pot life.
- Low viscosity and excellent penetrating ability.
- Slow reaction rate and low exotherm.
- Convenient, easy mix ratio; A:B = 2:1 by volume.
- Unique, high-strength, structural adhesive for "can’t dry" surfaces.
- Deep, penetrating and tenacious bonding of cracks in structural concrete.
- Excellent chemical resistance.

Coverage
1 gal. yields 231 cu. in. of adhesive and grout. 1 gal. of adhesive, when mixed with 5 gal. by loose volume of oven-dried aggregate, yields approximately 808.5 cu. in. of epoxy mortar.

Packaging
3 gal. units. 165 gal. units.

How to Use
Surface Preparation
Surface must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes and any other contaminants.

Typical Data (Material and curing conditions @ 73°F (23°C) and 50% R.H.)

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelf Life</td>
<td>2 years in original, unopened container.</td>
</tr>
<tr>
<td>Storage Conditions</td>
<td>Store dry at 40°-95°F (4°-35°C). Condition material to 65°-75°F (19°-24°C) before using.</td>
</tr>
<tr>
<td>Color</td>
<td>Clear, amber.</td>
</tr>
<tr>
<td>Mixing Ratio</td>
<td>Component 'A': Component 'B' = 2:1 by volume.</td>
</tr>
<tr>
<td>Viscosity (Mixed)</td>
<td>Approximately 250 cps.</td>
</tr>
<tr>
<td>Pot Life</td>
<td>Approximately 90 minutes (250 grams). Approximately 40 minutes (250 grams) @ 100°F (38°C)</td>
</tr>
<tr>
<td>Tensile Properties (ASTM D-638)</td>
<td>60°F (15°C)</td>
</tr>
<tr>
<td>7 day</td>
<td>Tensile Strength</td>
</tr>
<tr>
<td>14 day</td>
<td>Elongation at Break</td>
</tr>
<tr>
<td>Heat Deflection Temperature (ASTM D-648)</td>
<td>120°F (49°C)</td>
</tr>
<tr>
<td>7 day</td>
<td>(fiber stress loading = 264 psi (1.8 MPa)]</td>
</tr>
<tr>
<td>Bond Strength (ASTM C-882); Hardened concrete to hardened concrete</td>
<td>1,100 psi (7.6 MPa)</td>
</tr>
<tr>
<td>2 day</td>
<td>Bond Strength</td>
</tr>
<tr>
<td>14 day</td>
<td>Bond Strength</td>
</tr>
<tr>
<td>Water Absorption (ASTM D-570)</td>
<td>24 hrs. (24 hr. immersion)</td>
</tr>
<tr>
<td>Compressive Properties (ASTM D-695):</td>
<td>90°F (32°C)</td>
</tr>
<tr>
<td>Compressive Strength @ 73°F (23°C)</td>
<td>1 day</td>
</tr>
<tr>
<td>3 day</td>
<td>Bond Strength</td>
</tr>
<tr>
<td>7 day</td>
<td>Bond Strength</td>
</tr>
<tr>
<td>28 day</td>
<td>Bond Strength</td>
</tr>
<tr>
<td>Compressive Modulus 7 day</td>
<td>270 ksi (1,863 MPa)</td>
</tr>
</tbody>
</table>
Preparation Work: Concrete - Should be cleaned and prepared thoroughly to achieve a laitance and contaminant free, open textured surface by blast cleaning or equivalent mechanical means. Steel - Should be cleaned and prepared thoroughly by blast cleaning.

Mixing
Proportion 1 part Component 'B' to 2 parts Component 'A' by volume into a clean pail. Mix thoroughly for 3 minutes with a low speed (400 - 600 rpm) drill using Sika Paddle until uniformly blended. Mix only that quantity that can be used within its pot life.

To prepare an epoxy mortar slowly add 4-5 parts by volume of an oven-dried aggregate to 1 part of the mixed Sikadur 35, Hi-Mod LV LPL and mix until uniform in consistency.

Application
To gravity feed cracks - Blow wee-notched crack clean with oil-free compressed air. Pour neat Sikadur 35, Hi-Mod LV LPL, into wee-notched crack. Continue placement until completely filled. Seal underside of slab prior to filling if cracks reflect through.

To seal slabs - Spread neat Sikadur 35, Hi-Mod LV LPL over slab. Allow penetration. Remove excess to prevent surface film. Seal interior slabs and above-grade exterior slabs only.

For an epoxy mortar - Prime prepared surface with neat Sikadur 35, Hi-Mod LV LPL. Place prepared epoxy mortar before primer becomes tack-free. Place the epoxy mortar using trowels. Compact and level with vibrating screen or trowels. Finish with finishing trowel. Epoxy mortar is for interior use only.

To pressure inject cracks - Suitable for low or high pressure injection. Use automated injection equipment or manual method. Set appropriate injection ports based on system used. Seal ports and crack with Sikadur 31, Hi-Mod Gel or Sikadur 33. When the epoxy adhesive seal has cured, inject Sikadur 35, Hi Mod LV LPL with steady pressure. Consult Technical Service for additional information.

Limitations
- Minimum application temperature 40°F (4°C).
- Do not thin with solvents.
- Do not use oven-dried aggregate only.
- Maximum epoxy mortar thickness is 1.5 in. (38 mm) per lift.
- Epoxy mortar is for interior use only.
- Do not seal exterior slabs on grade.
- Minimum age of concrete must be 21-28 days, depending on curing and drying conditions, for mortar and seal slabs.
- Porous substrates must be tested for moisture-vapor transmission prior to mortar or sealing slabs.
- Not for injection of cracks under hydrostatic pressure.
- Do not inject cracks greater than 1/4 in. (6 mm) Consult Technical Service.
- Not an aesthetic product. Color may alter due to variations in lighting and/or UV exposure.

Caution
Component 'A' - Irritant; Sensitizer - Contains epoxy resin. Can cause sensitization after prolonged or repeated contact. Skin and eye irritant. Vapors may cause respiratory irritation. Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of high vapor concentrations, use an appropriate NIOSH approved respirator. Remove contaminated clothing.

Component 'B' - Corrosive; Sensitizer - Contains amines. Contact with eyes or skin may cause severe burns. Can cause sensitization after prolonged or repeated contact. Skin and eye irritant. Vapors may cause respiratory irritation. Use only with adequate ventilation. Use of safety goggles and chemical resistant gloves is recommended. In case of high vapor concentrations, use an appropriate NIOSH approved respirator. Remove contaminated clothing.

First Aid
Eyes: Hold eyelids apart and flush thoroughly with water for 15 minutes. Skin: Remove contaminated clothing. Wash skin thoroughly for 15 minutes with soap and water. Inhalation: Remove person to fresh air. Ingestion: Do not induce vomiting. In all cases, contact a physician immediately if symptoms persist.

Clean Up
Ventilate area. Contain spill. Collect with absorbent material. Dispose of in accordance with current, applicable local, state, and federal regulations. Uncured material can be removed with approved solvent. Cured material can only be removed mechanically.

KEEP CONTAINERS TIGHTLY CLOSED - KEEP OUT OF REACH OF CHILDREN - NOT FOR INTERNAL CONSUMPTION - FOR INDUSTRIAL USE ONLY

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika’s current experience and research. Sika reserves the right to change the properties of its products without notice. All references to Sika products are subject to current terms and conditions of sale which are available at www.sikaconstruction.com or by calling 800-933-7452. Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product’s most current Technical Data Sheet, product label and Material Safety Data Sheet which are available online at www.sikaconstruction.com or by calling Sika’s Technical Service Department at 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instructions for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

LIMITED WARRANTY: Sika warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer’s sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES, EXPRESS OR IMPLIED, WILL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Sika will not be liable under any legal theory for special, incidental, consequential damages. Sika shall not be responsible for the use of this product in a manner to infringe or comply with patent or other intellectual property rights held by others.

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Sika Information and Sales Centers, For the location of your nearest Sika sales office, contact your regional center.

Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071 Phone: 866-933-7452 Fax: 201-933-6225 Sika Canada Inc., 601 Delair Avenue, Pointe Claire, Quebec H9R 6A9 Phone: 514-697-2610 Fax: 514-694-2752 Sika Mexico S.A. de C.V., Carretera Libre Calzada km.8.5, Fracc. Industrial Balvanera, Coyoacan, Mexico C.P. 76300 Phone: 52 55 2385890 Fax: 52 55 2230237 Sika and Sikadur are registered trademarks. Made in USA. Printed in Canada.

D-22

NCHRP 18-14, Final Report, Appendix D
STIFEL VC

Single component, water based, silane sealer for vertical concrete, brick and other masonry surfaces.

HOW IT WORKS
STIFEL VC chemically reacts with siliceous materials found in concrete and masonry to form a hydrophobic barrier, preventing the absorption of water and waterborne chloride ions. The small molecular structure of a silane molecule allows it to move through concrete pores and penetrate deeply, up to 1/2" inch or more. Protection is provided long after surface coatings and other "penetrating type" sealers have succumbed to abrasion or oxidation.

APPLICATIONS
- Use on exterior or interior vertical concrete or masonry surfaces, including cast-in-place and precast concrete.
- Use on new or existing substrates.
- Use in applications where conventional silanes containing hydrocarbon solvent carriers cannot safely be used.

ADVANTAGES
- Unique silane chemistry does not evaporate under site application conditions, allowing for deep penetration (up to 1/2 inch) with consistent protection regardless of substrate or application conditions, such as warm or windy weather. Conventional silane sealers contain highly volatile silanes that evaporate during application, requiring a higher solids content to compensate for product lost through evaporation. The unique silane in STIFEL VC goes into the concrete, not into the atmosphere.
- Protects treated surfaces from damage resulting from the absorption of water and chloride ion-containing deicing salts.
- Minimizes concrete freeze/thaw related surface scaling and the corrosion of imbedded reinforcing steel and precast anchors.
- Protects treated concrete from developing delaminations and spalls resulting from corrosion of imbedded reinforcing steel.
- Minimizes the formation of efflorescence staining and mortar leaching of treated masonry surfaces.
- Treated surfaces breathe naturally. Water entering from the unprotected side or via cracks does not become trapped and sweating from non-breathing barrier type sealants and coatings is minimized.
- Substantially extends the serviceable life of concrete structures and significantly reduces maintenance costs.

- Concrete skid resistance and texture are not altered.
- The adhesion bond strength of most sealants and top coats is improved with proper application of STIFEL VC.
- Safe and easy to use - single component, water based formulation is very low odor and has a high flash point (>200°F/100°C).
- Can be applied to concrete surfaces containing cured polyurethane, polysulfide or silicone joint sealants without affecting joint sealant performance.
- Green Engineered™ – better for health and the environment.
- Meets all federal and state VOC requirements.

PRECAUTIONS
- Certain extremely porous substrates may require an alternative STIFEL sealer to provide maximum performance. Contact NOX-CRETE for more information.
- Not recommended for use on horizontal surfaces. STIFEL GC, HC or SC are recommended for these applications.
- Do not apply to concrete less than 28 days old.
- Do not apply to frost covered or permeated surfaces.
- Application to inadequately cleaned or wet substrates could result in less than optimum performance and blotchy or discolored appearance.
- Substrates with highly variable porosities may have color variations after treatment due to the varying and irregular absorption of STIFEL VC.
- Do not apply to or contact with bituminous or other organic solvent soluble joint sealants, membranes, coatings, or toppings or to incompletely cured joint sealants of any composition.
- Do not apply to glass or glazed tile. In case of accidental contact, remove immediately with soap and water.
- Do not apply to decorative surfaces without a test application to determine treated surface appearance acceptability.
- Product may damage vegetation or painted surfaces with contact.
- May not be compatible with certain paints, caulks, sealants or coatings.

nox-crete
chemical solutions to concrete problems
USE INSTRUCTIONS

- Request current (verify) product literature, labels and material safety data sheets from manufacturer in writing and read thoroughly before product use.
- Site environmental conditions, substrate conditions, and construction can have a major affect on product selection, application methods, procedures and rates, appearance and performance. Product literature provides general information applicable to some conditions. However, an adequate test application by the purchaser or installer in advance of field scale use is mandatory (irrespective of any other verbal or written representations) to verify product and quantities purchased can be satisfactorily applied and will achieve desired appearance and performance under intended use conditions.
- New concrete or masonry should be a minimum of 28 days old and free from accumulations of dust, oil, grease, rubber tire residue, concrete curing or bond-breaking membrane or residue, paint, protective sealers or other foreign materials.
- For existing brick and masonry unit construction, rout and tuck-point all unsound or cracked mortar joints. Clean, prime and seal all cracks and unsound soft joints, especially silt and mud areas. Seal all sources of moisture entry at eve, parapet or flashing points. Once repairs are completed, clean walls with a suitable masonry cleaner to remove any efflorescence, mortar residue and lichen.
- Allow cleaned surfaces to dry for 48 hours or more.
- Mix container contents thoroughly immediately prior to use. Pails can be shaken. Use NOX-CRETE'S manual drum agitator for 55 gal. (208 l) containers.
- Typical application rate ranges from approximately 50 sf/sgal (1.25 sl/m²) on porous substrates such as fractured face or fluted concrete blocks and soft bricks to 175 sf/sgal (4.3 sl/m²) on dense, non-absorbent substrates such as precast concrete and hard brick. Proper application rate is achieved at saturation to surface rejection and approximately 8-12 inches of run down.
- Apply using a low pressure, high volume sprayer or hand pump, air pressure-type construction sprayer. For substrates with varied surface elevations, use extra care and necessary application methods to ensure all surfaces receive adequate treatment.
- Apply only to a wet edge and avoid overlaps or respreading of previously treated areas.
- Do not allow material to persist or puddle on recently caulked or sealed joints. Redistribute accumulated product.
- Clean application equipment promptly with soap and water.
- Treated surfaces should be power washed periodically. Inspect all mortar joints annually for soundness. Repair and reseal as necessary. If efflorescence appears, determine the source of water entry and adequately repair. Remove the efflorescence with a suitable acidic material and allow substrate to fully dry. Reseal with STIFEL VC.

TECHNICAL DATA

Color: Milky White
Odor: Mild
Bulk Density: 8.3 lbs/gal (662 g/l)
Freeze Point: 32° F (0° C)
Flash Point, ASTM D92: > 212° F (100° C)
VP: 18 mmHg @20° C
VOC: <280 g/l
ASTM C 642, (Water Absorption of Hardened Concrete) 86.3% Reduction
ASTM D 6489, (Water Absorption of Hardened Concrete) 91.6% Reduction
40 Hours: 90.4% Reduction
240 Minutes: 94% Reduction

PACKAGING

Product is packaged in 5 gal (19 l) / 45 lbs (21 kg) pails and 55 gal (208 l) / 492 lbs (223 kg) drums.

SHELF LIFE

One year from date of manufacture. Use product before date indicated on container.

HANDLING/STORAGE

Store in clean, dry place at room temperatures. Exposure to freezing temperatures can render product unsuitable for use. Containers in storage should be tightly closed and stored in a horizontal position or covered to prevent moisture accumulation on container head.

AVAILABILITY & TECHNICAL SERVICES

In addition to corporate offices in Omaha, Nebraska, NOX-CRETE Products Group maintains regional offices and distribution centers in principal markets throughout the world. For source or technical information, phone (800) 669-2738 or (402) 341-1976.

LIMITED WARRANTY

NOTICE: READ CAREFULLY

CONDITIONS OF SALE

NOX-CRETE offers this product for sale subject to, and Buyer and all users are deemed to have accepted, the following conditions of sale and limited warranty which may only be varied by written agreement of a duly authorized corporate officer of NOX-CRETE.

NO other representative of or for NOX-CRETE is authorized to grant any warranty or to waive limitation of liability set forth below.

WARRANTY LIMITATION

NOX-CRETE warrants this product to be free of manufacturing defects. If the product when purchased was defective and was within use period indicated on container or carton, when used, NOX-CRETE will replace the defective product with new product without charge to the purchaser.

NOX-CRETE makes NO OTHER WARRANTY, either express or implied, concerning this product. There is NO WARRANTY OF MERCHANTABILITY. In no case shall NOX-CRETE be liable for special, indirect or consequential damages resulting from the use or handling of the product, and no claim of any kind shall be greater in amount than the purchase price of the product in respect of which damages are claimed.

INHERENT RISKS

NOX-CRETE MAKES NO WARRANTY TO THE PERFORMANCE OF THE PRODUCT AFTER IT IS APPLIED BY THE PURCHASER, AND PURCHASER ASSUMES ALL RISKS ASSOCIATED WITH THE USE OR APPLICATION OF THE PRODUCT.

Updated 08/05/08. This version supersedes all previous versions.

Stifel VC p. 2

NOX-CRETE PRODUCTS GROUP • 1444 S. 20th St. • P.O. Box 8102 • Omaha, Nebraska 68108 USA
PHONE: (800) NOX-CRETE (669-2738) or (402) 341-1976 • FAX: (800) FAX-ORDER (329-6733)
### 5.3.3 RM 800 PC Cement Repair Mortar

#### Listings, Approvals & Testing Standards

- ASTM C 928

### 5.3.3.2 Material Specifications

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compressive Strength</strong> (ASTM C 109)</td>
<td>28 Days 900 psi</td>
</tr>
<tr>
<td><strong>Percentage Length Change</strong> (ASTM C 157)</td>
<td>-0.082% (\text{Moist-cured})</td>
</tr>
<tr>
<td><strong>Air-entrained</strong></td>
<td>80%</td>
</tr>
<tr>
<td><strong>Splitting Tensile Strength</strong> (ASTM C 490)</td>
<td>28 days 450 psi</td>
</tr>
</tbody>
</table>

**5.3.3.1 Product Description**

RM 800 PC is a fast setting concrete patching material which exhibits high early strength. RM 800 PC is a self-bonding patching compound blended with special cements and additives. No bonding agents are required. RM 800 PC can accept vehicular traffic in three hours and meets the requirements of ASTM C 928 for packaged, dry, rapid-hardening cementitious materials for concrete repairs.

**Product Features**
- DOT approved (Tennessee & Mississippi)
- Self-bonding, requires no bonding agents or primers
- Minimizes downtime
- Pre-blended; just add water
- Suitable for vehicular traffic in 3 hours at 70°F (21°C)
- Initial set time 20 minutes, final set time 30 minutes

**5.3.3.3 Installation Data**

**Basic Use**

RM 800 PC is suitable for repair of damaged concrete on parking structures, airport runways, warehouse floors and loading docks. It can also be used for setting posts, railings and parking meters.

**Coverage**

One 50 lb (22.7 kg) bucket yields 0.42 ft² (0.011 m²) and covers approximately 10 ft² when applied 1/2” (13 mm) thick.

**Limitations**

RM 800 PC is designed for use on horizontal surfaces in thicknesses from 1/2” to 8”.

**5.3.3.4 Installation Instructions**

**Surface Preparation**

The damaged area should be prepared by back-cutting, or sawing of a vertical edge. This preparation should be performed in a manner which prevents damage to the surrounding concrete. Provide a minimum depth of 1/2”. Loose scale or dust must be removed using compressed air or water blasting, leaving only clean, sound concrete. The area to be repaired should be saturated with water, but there should be no puddles present.

**Mixing**

- Do Not add excessive amounts of water
- Do Not mix more than can be used in 10 minutes
- Up to 1 lb of cement colorant may be added to color patch

Working time is approximately 10 minutes at 75°F (24°C), and becomes shorter as the temperature increases. Do Not mix more product than you can place in 10 minutes. Clean mixer or mixing paddle with water between mixes and after last mix, to avoid build-up of product.
RM 800 PC Cement Repair Mortar 5.3.3

Application
Air, mix and substrate temperatures should be between 45°F (7°C) and 90°F (32°C) during repair and for 24 hours afterward. Place RM 800 PC in the area to be repaired, filling flush with surrounding concrete, and consolidate during placement by rodding. Surface is ready for brooming or texturing in 20 to 30 minutes.

- Do Not use in vertical or overhead surfaces

Storage Life
One year from date of manufacture, in original, unopened container.

Maintenance
RM 800 PC may be cleaned with most floor cleaning detergents. Aggressive solvents should be avoided.

Installation Instructions

1. Score concrete around damaged area at a slight backward angle to a minimum depth of 1/8" using Hilti Dry Diamond Blade.

2. Expose fresh concrete surface and chip out edges to a depth of 1/2" using a Hilti Combibeam (Hilti TS 50 suggested) and chisel or bushing head. Remove dust and debris with vacuum or compressed air.

3. Saturate prepared area with water. Add 2 quarts of portable water to an empty 5 gallon pail. Slowly add powdered RM 800PC and mix using a drill (or equivalent) and a mixing paddle (old bowl until free of lumps. Add an additional quart of water, alternating with remaining powder, until entire contents have been thoroughly blended.

4. After removing excess water from prepared area, Using a trowel, place mortar and push into all corners and edges.

5. Finish patch with trowel. Protect patch from traffic until cured.

Estimating Formula
Number of Units Required = (L * W * (D_{ave} / 12)) / Y_{prod}

L = length of void in feet
W = width of void in feet
D_{ave} = ave. depth of void in inches
Y_{prod} = Yield for product

Estimated Yield for Repair Mortars & Grout (Y_{prod}) in ft³

Product | Y_{prod} |
---------|----------|
RM 800 PC | 0.420 |

* Numbers are approximate and assume no waste.

5.3.3.5 Ordering Information
RM 800 PC is packaged in convenient, reclosable plastic pails, containing 50 lb (22.7 kg) of product.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00020270</td>
<td>RM 800 PC 50 lb pail</td>
</tr>
<tr>
<td>00024155</td>
<td>Stainless Steel Paddle Mixer smooth shank</td>
</tr>
</tbody>
</table>

Specially designed for repair mortar. Use with Jacobs style chuck.