SPRAY GRIP ANTI-SKID SURFACING MATERIALS

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• THE use of spray grip anti-skid surfacing materials is a new form of surface treatment that has proved extremely successful on accident-prone spot locations, such as intersections, where there has been a high frequency of wet-road skidding accidents. In London, where 41 sites were treated, rear-end collisions were reduced by 73 percent during a 2-year period.

The key factors contributing to the performance of spray grip materials are binder, aggregate, and application process.

The binder is a bitumen or asphalt extended epoxy that has a tensile strength averaging 2,000 psi. This provides the adhesive qualities necessary to hold the aggregate in place on the road and in the same attitude; that is, it prevents the particles from rotating and offering a smooth face to the tire. A necessary feature is the percentage of elongation that the material can offer.

Volume of Part A Resin to Part B (percent)	Tensile Strength (psi)	Elongation (percent)
47½	1,500	70
50	2,000	50
52½	2,500	30

The tensile strength can be varied depending on the ratio of parts A and B of the two-part resin. The optimum reading with a 50:50 ratio, which gives a tensile strength of 2,000 psi, is 50 percent elongation. These results are obtained when testing in accordance with ASTM D 638 at ¼ in./min to 250 lb. The elongation factor allows the necessary flexibility in the aggregate particle, which aids durability and eliminates shock removal.

The aggregate is RASC grade calcined bauxite mined in British Guyana, calcined at 1,600 C. This is the only material we have found to be satisfactory in practice. There is no laboratory test for quick acceptance of any other material. The gradation for the bauxite material is as follows:

U. S. Standard Sieve Size		Percentage	
Passing	Retained	Minimum	Maximum
—	6	0	3
6	7	5	15
7	16	80	90
16	30	5	15
30	50	0	5

This is the minimum size needed to give satisfactory texture depth over a reasonable life.

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The application equipment was designed and built by Prismo engineers and provides the necessary controlled flow conditions to ensure the correct ratio of part A to part B. One of the essential prerequisites is that the binder be preheated to accelerate the curing time. Cure time is dependent on road temperatures and varies from 2 to 5 hours. The road must be kept free from traffic until the curing is complete. Excess bauxite is swept up after curing to ensure that the site is skid resistant immediately and to enable all surplus to be reused because the aggregate is a very expensive part of the total cost.

Some sites have been treated in the United States including the toll plaza northbound on the Delaware Memorial Bridge, and initial reaction from engineers has been most enthusiastic. The process was first applied in the United Kingdom in 1967, and these first applications are still performing well.

Skid test readings of more than 70 after 1 year have been obtained on the British portable tester; initial readings on the tester at a site in North Carolina were 97. The main advantage of the process is that high readings are obtained throughout the life of the installation.

If the sites are carefully selected and the area to be treated is kept to the effective minimum (i.e., 200 ft up to the stop line on approaches to intersections with a 30-mph speed limit should receive a surface dressing), the reduction in accidents will more than justify the cost of spray grip materials.