



TECHNICAL BULLETIN #4

SAMI Bitumen Technologies

FricSeal

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A Superthin Asphalt

Description

FricSeal is a superthin wearing course asphalt. It contains a high proportion of carefully selected coarse aggregate, which forms a stone skeleton to produce a mix that has strong structural stability, durability, and resists deformation. FricSeal combines the high-performance polymer modified "FricSeal Binder", manufactured by SAMI Bitumen Technologies, and cellulose fibre which together produce a wearing course which resists cracking, and greatly increase the adhesion and cohesion properties of the bitumen into a superior binder that meets the heavy duty requirements of today's pavement surfaces.

FricSeal provides a uniform textured surface suited to all classes of roads which require a durable and economical treatment to restore texture and ride quality. The textured surface provides high initial skid resistance, a reduction in tyre noise compared to traditional surfacing materials, and reduces tyre spray in wet conditions.

FricSeal eliminates the need for large areas of profiling, reducing disruption to traffic during construction.

Features

FricSeal offers the engineer the advantage of a superthin mix which has excellent performance qualities. These include:

- resistance to permanent deformation (shoving and rutting);
- excellent fatigue behaviour (relationship between tensile strain and number of load applications to failure) ie. improved crack resistance;
- high tensile strength and elastic modulus;
- resistance to crack propagation (reflective cracking);
- low temperature susceptibility (improved performance in higher and lower temperature regions/extremes);
- greater stripping resistance;
- optional use of Rhyolite aggregates at intersections where superior skid resistance is required.

Other features of FricSeal are:

- 30% cost saving over traditional 40 - 60mm depth profile and pave;
- minimal change to existing surface levels;
- large areas of profiling eliminated compared to conventional profile and pave;
- early trafficking;
- reduced inconvenience to motorists;
- no change required to utility and service manholes or boxes;
- minimal patching to existing pavement required.

Benefits

The benefits of using FricSeal is that a conventional profile and pave project can be replaced by using FricSeal with less traffic flow interruption, reduced amounts of profiling waste and less cost. At the same time FricSeal provides skid resistance due to its textured surface as well and having structural strength and durability.

Being lightweight and highly durable, FricSeal has major benefits for bridge decks, tunnels, airport runways and flyovers.

The high "FricSeal Binder" content together with cellulose fibre as the stabilising agent, provides excellent Ultraviolet protection and reduces the risk of any potential bleeding throughout service life.

FricSeal provides excellent value as a high-performance superthin wearing course.

Uses

FricSeal can be used in any situation whether the existing surface is open grade, dense grade, stone mastic asphalt or a spray sealed surface. It is extremely durable under high stress situations such as intersections and where heavy braking is experienced and can also be used as a levelling layer to smooth out existing surface irregularities.

Typical Test Results

Resilient Modulus (Stiffness)	6,900 Mpa	(Rhyolite)
	2,900 Mpa	(Basalt)
Dynamic Creep (Rutting resistance)	0.02 $\mu\epsilon$ /pulse	
Wheel Tracking (Rutting resistance)	1.5mm rut depth	
Fatigue Life	10,000,000 cycles to 50% Initial Flexural Stiffness at 400 $\mu\epsilon$	

Surface Preparation

Any patching and large cracks which require crack sealing should be completed prior to the laying of FricSeal.

The road surface should be cleaned to remove all loose material, dust, and water, and a tack coat of approx. 0.2 litres /m² of residual bitumen applied.

Temperatures

Production temperature of the mix should not exceed 180°C.

Laying

The minimum temperature of the mix in the paver should be 135°C. Conventional laying techniques, limitations and conditions apply.

Rolling

Use a steel roller (capable of vibration) with a minimum capacity of 5 tonnes. Vibrators should only be used when pinching the joints. Compaction with the steel roller should be completed before the mat temperature falls below 125°C.

A pneumatic or rubber tyre roller can be used to complete the rolling once the temperature of the mat falls to 80°C. This will ensure the mix has cooled down sufficiently, so that no "pick up" occurs.

NOTE: *Whilst every care is taken in the preparation of this data, no responsibility is accepted for the interpretation of the information contained herein, nor is any warranty expressed or implied for the suitability of the material for a particular application.*