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## TECHNICAL BULLETIN #17

## SAMI Bitumen Technologies

2, 3-5 Gibbon Road  
Winston Hills, NSW 2153

PO Box 164,  
Winston Hills, NSW 2153

Telephone: +61 2 9624 0101

Facsimile: +61 2 9624 0191

### SAMlseal PBD

### QLD Department of Main Roads S0.3B Specification

#### Description

SAMlseal PBD is a polymer modified bitumen used as the binder in spray sealing applications where a High Stress Seal (HSS) or Strain Alleviating Membrane (SAM) is required.

SAMlseal PBD is manufactured by blending Class 170 bitumen with polybutadiene polymer, specifically for but not exclusively, to meet the Queensland Department of Main Roads specification for S0.3B sealing binder. SAMlseal PBD also meets the AustRoads and NSW Roads and Traffic Authority's S35E sealing binder specification.

#### Features

SAMlseal PBD is a binder which exhibits superior aggregate retention and is tough, with elastomeric properties.

- Greater toughness
- High softening point
- Superior aggregate retention
- Crack retardation
- Compatibility with a broad range of bitumens
- Early sweeping capability
- Sprayed at a lower temperature than crumb rubber and SBS binders
- No transportation limitations

#### Applications

Used for most sprayseal applications including a SAM where minor cracking is to be covered.

- For quick aggregate adhesion
- Situations where minimal loose aggregate is paramount
- High stress sites
- Intersections

#### Technical Data

##### Comparison of Typical Binder Properties

Test Method	Test Property	15% Crumb (S15R)	20% Crumb (S20R)	3% SBS (S10E)	5% SBS (S20E)	PolySeal (S35E)	SAMlseal PBD
MBT 22	Torsional Recovery (25°C, %)	30	35	25	60	29	20
MBT 31	Softening Point (°C)	57.5	61.5	57.0	80.0	52.0	51.0
MBT 11	Viscosity (165°C, Pa.S)	1.10	1.90	0.28	0.43	0.27	0.23
MBT 21	Elastic Recovery (60°C, %)	25	34	38	99		
MBT 21	Elastic Recovery (45°C, %)			25		24	22
MBT 21	Consistency (60°C, Pa.s)	1440	1920	622	10,205	500	
MBT 21	Consistency (45°C, Pa.S)			2727		3760	3699
MBT 21	Stiffness (15°C, Kpa)	92	168	73	57	155	154
MBT 24	Toughness (4°C, Nm)	2.6	3.3	1.9	1.7	3.8	3.8
RTA T238	Adhesion (% Stripping)	< 5	< 5	< 5	5	< 5	< 5

## **Manufacture**

SAMlseal PBD is manufactured and supplied from our Pinkenba production facility at Brisbane.

## **Use and Handling**

### Design

The AustRoads Technical Report AP-T68/06 titled "Update of AustRoads Sprayed Seal Design Guide Method" (Table 4.1), suggests a Polymer Factor (PF) factor of 1.3 be used in the design of a seal using S35E product. The New South Wales Roads and Traffic Authority seal design guide suggests a factor of 1.15. SAMI suggests that a figure of 1.15 is appropriate for 7mm aggregate seals and 1.3-1.4 for 14mm aggregate seals, however this factor may need to be increased where traffic volumes are low.

### Storage/Heating

Never heat SAMlseal PBD above 200°C. The binder may be stored for up to 7 days at 175 – 185°C. For periods exceeding 7 days the temperature must be reduced to 120-160°C and can be kept at this temperature for up to 30 days without deterioration of binder properties. When re-heating, heat at a maximum of 10°C per hour.

### Preparation

Pre-coated aggregate is recommended as well as the use of anti-stripping agent. Wet aggregate must not be used.

### Application

SAMlseal PBD can be sprayed using conventional spray nozzles to a road surface temperature applicable to C170 bitumen seals, generally at least 15°C and rising. Up to 3% cutter may be added to the binder when the pavement temperature is below 25°C at the time of spraying.

### Sweeping

The seal may be swept after about 1- 1.5 hours after rolling has been completed.

*NOTE: Whilst every care is taken in the preparation of this bulletin, 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.*