



GLOBAL ROAD BINDERS

THE BITUMEN PROFESSIONALS

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AC-E2

Elastomer Modified Micro surfacing Emulsion

DESCRIPTION

AC-E2 is a specially formulated quick set cationic microsurfacing bitumen emulsion modified with SBR latex for mixing with selected coarse graded crushed aggregate, cement and water. These raw materials are mixed and applied with a purpose designed machine and augured rut filling box.

APPLICATIONS

AC-E2 Rut filling is a cost effective remedial treatment for improving the road profile by filling wheel ruts .20 mm, 50 mm, thus helping to reduce water spray and aquaplaning in wet weather conditions. Filled wheel ruts can be overlaid with microsurfacing, prepared with microsurfacing bitumen emulsion, to provide a uniform appearance.

PROPERTIES

Due to its fluid nature, the microsurfacing has the ability to fill surface irregularities, such as wheel ruts, to restore the road profile and improve the skid resistance of an existing surface. The specially designed augured rut filling box ensures that the coarser aggregate is concentrated in the centre of the rut, whilst the finer fractions are moved towards the edge of the box, ensuring a thin feathered edge.

SPECIFICATIONS

AC-E2 bitumen emulsion is manufactured from 50/70 penetration grade bitumen and conforms to the AC-E2 specification for Polymer Modified Emulsions:

Emulsion Properties		REQUIREMENTS		TEST METHOD
		MIN	MAX	
Binder content, % m/m		63	65	MB – 22
Residue on sieving, g/ 100ml	710µm	-	0.1	MB - 23
	150µm	-	0.5	
Particle charge		Positive		MB - 24
Sedimentation after 60 rotations		Nil		SANS 309
RECOVERED BINDER PROPERTIES				
Softening point, °C		≥55	-	MB - 17
Elastic recovery @ 15°C		≥55	-	MB - 4

DIRECTIONS FOR USE

1. Localised cracks must be sealed and fatigue cracks repaired prior to placing of micro surfacing prepared with AC-E2
2. Micro surfacing will not prevent cracks from reappearing and neither does it add structural strength to the pavement.
3. No tack coat is needed and neither is pneumatic rolling required.
4. The rut filling box width can be varied between 1.5 – 1.8metres.
5. Microsurfacing prepared with AC-E2 is designed to be opened to traffic within 90 minutes of placing during normal weather conditions with ambient temperatures not exceeding 35°C, provided that the reactivity of the aggregate is favourable.
6. Suitability of the crusher dust must be determined by a BSS Laboratory

AE1

Elastomer Modified Bitumen

DESCRIPTION

AE1 is penetration grade bitumen modified with a Tur polymer.

APPLICATIONS

AE1 is used mainly as a rut resistant binder for asphalt mixes, particularly on pavements with high deflections. It is suitable for use in open graded mixes such as porous asphalt that requires high binder film thickness.

PROPERTIES

AE1 is a high softening point binder, which imparts rut resistance to asphalt mixes at high in-service road temperatures. It has high elastic recovery properties that imparts fatigue resistance to asphalt mixes at low in-service temperatures.

SPECIFICATIONS

Depending on the customer's requirements, the polymer content of AE1 can be adjusted in order for the binder to conform to the AE1 specification for polymer modified binders for use in hot mix asphalt applications.

BINDER PROPERTIES	REQUIREMENT		TEST METHOD
	MIN	MAX	
Before Ageing			
Softening point, °C	55	65	MB - 17
Dynamic viscosity @ 165°C, Pa·s	-	0.6	MB - 18
Elastic recovery @ 15°C, %	50	-	MB - 4
Stability (R&B dif @ 160°C), °C	-	5	MB - 6
Flash point, °C	230	-	ASTM D93
PROPERTIES AFTER RTFOT			
Elastic recovery @ 15°C	50	-	MB - 4
Mass change, %	-	1.0	MB - 3

DIRECTIONS FOR USE

Recommended storage and handling criteria for A1 are as follows:

Asphalt mixing temperature	160 - 170°C	
Asphalt compaction temperature	140 - 150°C	
Maximum storage temperature	180°C	150°C
	3 days	12 days

Note: it is important to circulate binder during heating as prolonged intense heating will cause localised overheating that may result in carbonisation of the binder on the flues. The aforementioned can result in polymer degradation which could lead to a reduction in the binder softening point. Every attempt should be made to reduce the binder temperature during transportation and storage.

AE2 Elastomer Modified Bitumen

DESCRIPTION

AE2 is a penetration grade bitumen modified with Tur polymer.

APPLICATIONS

AE2 is used mainly as a rut resistant binder for asphalt mixes, particularly on pavements with high deflections. It is suitable for use in open graded mixes such as porous asphalt that requires high binder film thickness.

PROPERTIES

AE2 is a high softening point binder, which imparts rut resistance to asphalt mixes at high in-service road temperatures. It has high elastic recovery properties that imparts fatigue resistance to asphalt mixes at low in-service temperatures.

SPECIFICATIONS

Depending on the customer's requirements, the polymer content of AE2 can be adjusted in order for the binder to conform to the AE2 specification for polymer modified binders for use in hot mix asphalt applications.

BINDER PROPERTIES	REQUIREMENT		TEST METHOD
	MIN	MAX	
Before Ageing			
Softening point, °C	65	85	MB - 17
Dynamic viscosity @ 165°C, Pa·s	-	0.6	MB - 18
Elastic recovery @ 15°C, %	60	-	MB - 4
Stability (R&B dif @ 160°C), °C	-	5	MB - 6
Flash point, °C	230	-	ASTM D93
PROPERTIES AFTER RTFOT			
Elastic recovery @ 15°C	60	-	MB - 4
Mass change, %	-	1.0	MB - 3

DIRECTIONS FOR USE

Recommended storage and handling criteria for A2 are as follows:

Asphalt mixing temperature	160 - 170°C	
Asphalt compaction temperature	140 - 150°C	
Maximum storage temperature	180°C	150°C
	<24 hours	24 – 240 hours

Note: it is important to circulate binder during heating as prolonged intense heating will cause localised overheating that may result in carbonisation of the binder on the flues. The aforementioned can result in polymer degradation which could lead to a reduction in the binder softening point. Every attempt should be made to reduce the binder temperature during transportation and storage.

AP1

Plastomer Modified Binder

DESCRIPTION

AP1 is a penetration grade bitumen modified with Ter polymer.

APPLICATIONS

AP1 is used mainly as a rut resistant binder for asphalt mixes. It is suitable for use in heavy trafficked areas where there is the risk of fuel spillage, such as:

- Intersections and climbing lanes.
- Bus depots and aircraft runways.

PROPERTIES

AP1 is a high softening point binder which imparts deformation resistance to asphalt mixes at high in-service road temperatures. It is resistant to normal fuel spillage. Typical properties of a continuously graded asphalt after a briquette soaked in diesel for 24 hours.

PROPERTY	CONVENTIONAL ASPHALT	AP1 ASPHALT
Mass loss, %	11.0	0.6
% Retained Marshall stability	50	80

SPECIFICATIONS

AP1 conforms to the A – P 1 specification for polymer modified binders for hot-mix asphalt.

EMULSION PROPERTIES	REQUIREMENT		TEST METHOD
	MIN	MAX	
Softening point, °C	63	73	ASTM D36
Dynamic viscosity @ 165°C, Pa·s	-	0.55	ASTM D4402
Elastic recovery @ 15°C, %	30	-	MB - 4
Stability (R&B dif @ 160°C), °C	-	5	MB – 6
Flash point, °C	230	-	ASTM D93
PROPERTIES AFTER RTFOT			MB - 3
Difference in softening point, °C	-2	+8	ASTM D6
Mass change, %	-	1.0	MB - 3

DIRECTIONS FOR USE

Recommended storage and handling criteria for AP1 are as follows:

Asphalt mixing temperature	160 - 170°C	
Asphalt compaction temperature	140 - 150°C	
Maximum storage temperature	<24 hours	> One day
	170°C	150°C

Storage stable at recommended temperatures without risk of polymer degradation. Every attempt should be made to minimise the binder temperature during transportation and storage

SE-1

DESCRIPTION

S-E1 is a 70/100 penetration grade bitumen modified with SBS Polymer.

APPLICATIONS

S-E1 has uses mainly:

- For resealing roads with active surface cracks <5mm,
- As a Stress Absorbing Membrane Interlayer (SAMI) to prevent cracks from reflecting through the overlaying asphalt layers,
- In chip seals for new construction in highly stressed areas.

PROPERTIES

S-E1 is a high softening point binder with high elastic recovery. This makes the seal less susceptible to bleeding under heavy traffic at high in-service road temperatures. **S-E1** can also be applied at higher application rates than conventional hot binders without the risk of bleeding.

SPECIFICATIONS

Depending on the customer's requirements, the polymer content of **S-E1** can be adjusted in order for the binder to conform either to the **S-E1** specification for polymer modified binders for use in seal applications.

BINDER PROPERTIES	REQUIREMENT		TEST METHOD
	MIN	MAX	
Before Ageing			
Softening point, °C	50	60	MB - 17
Dynamic viscosity @ 165°C, Pa-s	-	0.55	MB - 18
Elastic recovery @ 15°C, %	50	-	MB - 4
Stability (R&B dif @ 160°C), °C	-	5	MB - 6
Flash point, °C	230	-	ASTM D93
Stability (R&B dif @ 160°C), °C	-	5	MB - 6
After ageing RTFOT			
Elastic recovery @ 15°C	50	-	MB - 4
Difference in Softening point, °C	-2	+8	MB - 17
Mass change, %	-	1.0	MB - 3

1. Precoating of stone is necessary. Chip spreader to follow closely behind sprayer.
2. Apply with a conventional distributor at a minimum road surface temperature of 25°C and rising.

3. The seal can be opened to traffic immediately after rolling and sweeping without risk of chip loss.
4. Recommended storage and handling criteria for **S-E1** are as follows:

SE-2

DESCRIPTION

S-E2 is a 70/100 penetration grade bitumen modified with SBS Polymer.

APPLICATIONS

S-E2 is used mainly:

- For resealing roads with active surface cracks <5mm,
- As a Stress Absorbing Membrane Interlayer (SAMI) to prevent cracks from reflecting through the overlaying asphalt layers,
- In chip seals for new construction in highly stressed areas.

PROPERTIES

S-E2 is a high softening point binder with high elastic recovery. This makes the seal less susceptible to bleeding under heavy traffic at high in-service road temperatures. **S-E2** can also be applied at higher application rates than conventional hot binders without the risk of bleeding.

SPECIFICATIONS

Depending on the customer's requirements, the polymer content of **S-E2** can be adjusted in order for the binder to conform either to the **S-E2** specification for polymer modified binders for use in seal applications.

BINDER PROPERTIES	REQUIREMENT		TEST METHOD
	MIN	MAX	
Before Ageing			
Softening point, °C	60	80	MB - 17
Dynamic viscosity @ 165°C, Pa·s	-	0.60	MB - 18
Elastic recovery @ 15°C, %	70	-	MB - 4
Stability (R&B dif @ 160°C), °C	-	5	MB - 6
Flash point, °C	230	-	ASTM D93
Stability (R&B dif @ 160°C), °C	-	5	MB - 6
After ageing RTFOT			
Elastic recovery @ 15°C	70	-	MB - 4
Difference in Softening point, °C	-2	+8	MB - 17
Mass change, %	-	1.0	MB - 3

DIRECTIONS FOR USE:

Pre-coating of stone is necessary. Chip spreader to follow closely behind sprayer. Apply with a conventional distributor at a minimum road surface temperature of

25°C and rising. The seal can be opened to traffic immediately after rolling and sweeping without risk of chip loss. Recommended storage and handling criteria for **S-E2** are as follows:

Spray temperature	180 -190°C	
Maximum Storage temperature	< 24 hours*	>One day
	180° C	150°C