



**BITULASTIC POLYMER MODIFIED BINDERS**

*Bitumen Binders compliant with Austroads T190 framework*

**DESCRIPTION:**

Road Grade Bitumens ( C170, C240, C320 and AR450 ) are highly thermoplastic binders for the road-wearing surface ( aggregate ) in spray seals or binder in asphaltic concrete. This means that the physical characteristics of road bitumen changes enormously with relatively small changes in temperature, giving rise to a binder that is both brittle in cold weather and fluid in hot weather and non elastic under stress. To overcome these drawbacks, the bitumen binder is modified with various types of rubber additives. The majority of modified binders are polymer based. Polymer Modified Binders ( PMB's ) have been found to prolong the service life of road pavements and improve the performance of pavements. PMB's may be used in crack affected areas, or to increase aggregate retention, rut resistance, low temperature performance and fatigue resistance.

Generally all of these things lead to a pavement which slows the ingress of water and allows for a more stable and durable sub pavement. Thus the overall life of the road is greatly extended.

**ASPHALT GRADES SPRAY**

- Bitulastic A35P
- Bitulastic A25E
- Bitulastic A20E
- Bitulastic A15E
- Bitulastic A10E
- Bitulastic Multi 1000/320

**SEALING GRADES**

- Bitulastic S10E
- Bitulastic S20E
- Bitulastic S25E
- Bitulastic S35E
- Bitulastic S45R
- Bitulastic Multi 600/170

BITULASTIC PMB'S are based Austroads Specification Framework T190 for Polymer Modified Binders. Refer to T190 for properties of each grade.

The prefixes A and S refer to Asphalt and Spray Seal. The suffixes are:

- E for elastomeric polymer types which could include SBS (styrenebutadiene-styrene), SIS (styrene-isoprene-styrene), SBR (styrenebutadiene-rubber), natural rubber, PBD (polybutadiene), chloroprene and other similar types.
- P for plastomeric polymer types which could include EVA (ethylene vinyl acetate), EMA (ethylene methacrylate), APP (atactic polypropylene), various forms of PE (polyethylene) and other similar types.
- R for materials predominantly based on comminuted scrap rubber (granulated crumb rubber from vehicle tyres)

## Classes of PMB and their General Application

The following is a general guide to the three most common applications of PMB's. This is generally based on the level of modification of the PMB. For more details refer to AP-TO4 'Austroads Specification Framework for Polymer Modified Binders'.

Classes of PMB and their General Application	Comments
<p><b>High Stress Seals – (HSS)</b></p> <p>a) <b>High traffic stress</b> areas such as turning slots, rural intersections, entry/exits from light industrial complexes  <b>BITULASTIC S45R, S10E and S35E</b></p> <p>b) <b>Aggregate Retention</b> – areas with lower stress than in (a) above. To assist with retention of aggregate on high speed high traffic volume roads such as rural freeways and highways, residential streets and courts to cope with vehicles entering/leaving driveways and parking areas  <b>BITULASTIC S10E, S45R, S35E</b></p> <p>c) <b>Holding Treatments</b> – generally used on low traffic roads where surfacing and/or pavement are in poor condition and require to be held for several years until rehabilitation or reconstruction. Most effective where traffic is &lt; 200 v/l/d  <b>BITULASTIC S10E, S35E</b></p> <p>d) <b>Waterproofing Weak Pavements</b> – generally relatively thin pavements that experience high deflections under heavy vehicles. Pavement, and particularly the subgrade, usually sensitive to moisture.  <b>BITULASTIC S20E, S35E, S45R</b></p>	<p>Medium modification.            May be used with all aggregate sizes, but most benefit with size 10 and 14 mm aggregate</p> <p>Low modification. Binders with minor increase in binder viscosity and good adhesion properties.             Use with all aggregate sizes, but most benefit with size 10 and 14 mm aggregate</p> <p>Light modification. Generally used with size 10 and 14mm aggregates, applied at relatively high rates of application</p> <p>Medium modification but may use higher modification depending on traffic and prevailing weather. Similar class of PMB as a SAM, but applied at lower rates of application             Use size 10 and 14 aggregate</p>
<p><b>Strain Alleviating Membranes (SAM)</b>  <b>BITULASTIC S20E, S35E, S45R,</b></p>	<p>Medium to High modification.            Use with only size 10 or larger aggregates, or double/double seals</p>

<p align="center"><b>Strain Alleviating Membrane Interlayer (SAMI) BITULASTIC S25E,</b></p>	<p>Higher modification than a PMB for a SAM. Designed to be covered with asphalt within a few days. If this is not possible, reduce rates of application to minimise potential risk of binder bleeding and pick-up</p>
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**BITULASTIC PMB 's**

**BITULASTIC S45R**

Crumb modified bitumen is produced by mixing hot bitumen, oil, and finely milled tyre crumb for a prolonged period. The formulation, temperature, quality of dispersion in mixing is critical in producing an effective elastomer.

The high viscosity spray characteristics of Crumb Rubber PMB allows for a heavier spray application of binder, this permits up to a 75% increase over the original road bitumen/binder spray rate.

Crumb PMB provides a THICK adhesive membrane seal to the road ensuring a WATERPROOF seal that will not crack in low temperature conditions nor flow in high temperature range conditions. Crumb PMB has the ability to reseal itself in high temperature conditions and retains the tack or stickiness of the road grade used in its manufacturing.

As Crumb PMB has a softening point of excess of 20°C over the original bitumen, crumb PMB will achieve a higher aggregate adhesion in high temperature conditions.

<b>BITUMINOUS PRODUCTS</b>				
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