

Cutback Bitumens

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Road Construction & Maintenance Applications

Description

Bitumen is 'cutback' by adding controlled amounts of petroleum distillates such as kerosene. This is done to reduce the viscosity of the bitumen temporarily so it can penetrate pavements more effectively or to allow spraying at temperatures that are too cold for successful sprayed sealing with neat bitumen. The materials used to cutback bitumen will evaporate after application to leave the remaining material similar in hardness to the original bitumen.

Application

Priming and Tack Coating

The process of priming involves applying a low viscosity binder to a prepared but usually unbound aggregate base. It is intended to be absorbed by the top layers of the base and provide a surface more easily 'wetted' by a subsequent bituminous covering. The primer will be able to carry traffic for a short time (although this practice is uncommon) and help control dust. Generally, primers are applied at rates between 0.5 and 1.4 L/m².

Cutback bitumens suitable for priming are also used for tack coats, which are applied to an underlying surface to help with the adhesion of subsequent asphalt layer. A typical application rate is between 0.2 and 0.4 L/m².

Primer Sealing

Where temperatures are too cool for an effective priming operation, or where traffic is likely to upset a primed surface before the final seal can be sprayed, a primer seal can be used to give adequate protection of the pavement for periods of up to 6 to 12 months. Cutback bitumens suitable for primer sealing can also be used in the manufacture of pre-mix asphalt, which is used in patch repairs.

Sprayed Sealing

Cutback bitumens are used extensively in sprayed sealing applications, particularly in cooler weather where they provide improved initial stone retention due to their lower viscosity. Typically, a single application of the appropriate cutback bitumen is sprayed onto the primed pavement onto which aggregate is spread.

Specifications

Puma Bitumen cutbacks are manufactured to comply with the requirements of Australian Standard AS 2157 Cutback bitumen.

Applicaton	Puma Cutback Products	Australian Standard Guide	Pavement Surface Type Suitability
Priming & Tack Coating	Puma Bitumen AMC00	AMC00	Low Porosity Surfaces
	Puma Bitumen AMC0	AMC0	Medium Porosity Surfaces
	Puma Bitumen AMC1	AMC1	High Porosity Surfaces
Primer Sealing & Pre-mixing	Puma Bitumen AMC2	AMC2	Low Porosity Surfaces
	Puma Bitumen AMC3	AMC3	Medium Porosity Surfaces
	Puma Bitumen AMC4	AMC4	High Porosity Surfaces
	Puma Bitumen AMC5	AMC5	
Sealing	Puma Bitumen AMC6	AMC6	
	Puma Bitumen AMC7	AMC7	

Typical Characteristics

Grade	Viscosity at 60°C, Pa.s	Flashpoint, °C	Maximum Storage Temperatures, °C*	Application Temperature, °C**
Puma Bitumen Cutback AMC00	0.008 - 0.016	> 38	100	10 - 30
Puma Bitumen Cutback AMC0	0.025 - 0.05	> 38	110	35 - 55
Puma Bitumen Cutback AMC1	0.06 - 0.12	> 38	120	60 - 80
Puma Bitumen Cutback AMC2	0.22 - 0.44	> 38	140	75 - 110
Puma Bitumen Cutback AMC3	0.55 - 1.1	> 38	160	95 - 115
Puma Bitumen Cutback AMC4	2.0 - 4.0	> 38	170	110 - 135
Puma Bitumen Cutback AMC5	5.5 - 11.0	> 50	175	120 - 150
Puma Bitumen Cutback AMC6	13.0 - 26.0	> 50	180	135 - 160
Puma Bitumen Cutback AMC7	43.0 - 86.0	> 50	185	150 - 175

*Maximum temperatures for storage periods of up to 24 hours.

**The application temperatures shown in the above table follow standards which have been generally accepted by the industry. They should be followed when the product needs to be reheated. In some field situations cutbacks are sprayed at temperatures above these recommendations with good results, however adequate safety measures must be in place.

Health and Safety

To ensure hot bitumen is used in a safe and efficient manner the following safety precautions must be followed:

- ❗ **Wear suitable personal protective equipment (PPE) at all times.** Full skin protection is required to avoid accidental burns when transferring or handling hot bitumen.
- ❗ **Always prevent contact between water and hot bitumen** by checking the contents of the previous load before loading bituminous products into tankers and by following procedures to avoid violent boil-over of tanks.
- ❗ **Avoid exposure to fumes** by standing back on the gantry or upwind until the vapours have dispersed.
- ❗ **Minimise bitumen fume** by heating bitumen and asphalt products to the recommended temperatures.
- ❗ **Minimise the use of diesel** when cleaning equipment as this contributes to the bitumen fume.

Cutbacks are sometimes used at a temperature above their flashpoint, so care must be taken regarding the product's flammability. Ensure personnel are well trained in the correct handling procedures.

For further information on product health and safety information, please refer to the appropriate material safety data sheet (MSDS) available on the Puma Bitumen website.

Quality Assurance

Puma Bitumen is recognised nationally for its proven track record in delivering products of consistently high quality. Every day our products perform under the most diverse and demanding road conditions in Australia. This is attributable to a combination of our unique product technology, comprehensive quality assurance programs, operational efficiency and sophisticated production processes – all supported by our highly skilled and experienced staff.

We maintain an in-house national technical centre in Melbourne which focuses on R&D, as well as providing technical expertise and support to our customers throughout Australia. Our team of technical specialists is dedicated

to ensuring our products are thoroughly tested at every stage – from the selection of crude oil at the start of the production process, right through to delivery.

Our product stewardship and rigorous quality management practices reflect our commitment to delivering the highest quality products that perform on the road. Our commitment to quality is recognised by our accreditation to Australian Standard AS/NZS 9001.

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