

BREEDONOnecoat IS AN EXPERTLY DESIGNED, SINGLE-LAYER APPLICATION PRODUCT WHICH HARNESSSES THE POSITIVE PROPERTIES OF STONE MASTIC ASPHALT.

APPLICATIONS

- Farm roads
- Housing developments
- Private roads
- Car parks
- Deep patching work

OVERVIEW

Historically in road design, the lower layers have been regarded as load distributing and therefore required large aggregate sizes ($\geq 20\text{mm}$). This enabled a thick layer to be installed without the material becoming unstable and to maximise dispersion of the loading. However, the material had to be continuously graded as large aggregate sizes could easily segregate during the production, delivery or installation. Any gap grading that occurred would lead to major segregation problems on site. In addition, large aggregate bituminous materials have a lower surface area and therefore are unable to accept high binder contents without binder drainage.

Relatively low binder contents lead to low durability if exposed to traffic and weather, and continuous gradings result in low surface textures. Therefore, load spreading large aggregate layers could not be used as a surface course. However, BREEDONOnecoat is a single-layer application product that works in a different way. Harnessing the positive properties of Stone Mastic Asphalt, the product is expertly designed with a significant proportion of coarse aggregate so segregation is unlikely to occur. The aggregate is coated in a thick layer of mastic (comprising bitumen, filler and additive), resulting in a durable, robust material. Careful attention to voids in the mix and voids filled with bitumen has enabled good retained textures to be achieved.

When laid at 60mm or above, BREEDONOnecoat has both a real structural contribution and good surface texture. It is strong enough to take site traffic and is also suitable as a running surface for vehicles. BREEDONOnecoat has the potential to alleviate many of the problems faced when new residential sites are being constructed. It is an ideal mix for single track roads such as farm

roads, taking low volumes of traffic but also heavy axle loads. Alternatively, it can be used for deep patching works when replacement of more than just the surface course is necessary. Laying BREEDONOnecoat in a single layer compared with multi-layer installations reduces construction times and enables sites to be opened to traffic sooner.

The product is available using paving grade (40/60 Pen) or polymer modified binders, which can be selected for the particular application. In addition, a variety of different polished stone value (PSV) aggregates can be supplied.



TECHNICAL DATA

BREEDONOnecoat meets the requirements of the Specification for Highway Works dense base and binder course Asphalt Concrete design mixtures, whilst also complying with initial texture depth requirements for trunk roads, including motorways. The binder content and gradings are comparable with German specifications (although different sized aggregates are used), with low in situ air voids and excellent deformation resistance. A dense grading provides significant aggregate interlock, providing exceptional resistance to fretting and raveling. The high binder contents enable the material to be worked and compacted more easily than conventional stone mastic asphalts, and joint formation is also less problematic. BREEDONOnecoat has been found to have the following performance characteristics:

	Specification Requirements (SHW Clause 929 Dense Base and Binder Course Asphalt Concrete Design Mixtures)	BREEDONOnecoat 20 surf 40/60 60PSV	BREEDONOnecoat 20 surf 40/60 68PSV
Mean In Situ Air Void Content (BS EN 12697-8)	$\leq 7.0\%$	2.8%	3.2%
Mean Refusal Void Content (BS EN 12697-8)	$\geq 0.5\%$	1.0%	0.8%
ITSM Stiffness at 20°C (BS EN 12697-26)	$\geq 1800\text{MPa}$	2193MPa	2453MPa
Mean Wheel Tracking Slope at 60°C (BS EN 12697-22)	$< 1.0\text{mm}$	0.10mm/1,000 cycles	0.10mm/1,000 cycles
Water Sensitivity ITSR (BS EN 12697-12)	NR	$\geq 70\%$	$\geq 70\%$

CONSTRUCTION

BREEDONOnecoat is available in one size, and the nominal and minimum compacted layer thicknesses and typical initial macrotexture depths are as follows:

Largest Nominal Aggregate Size (mm)	Nominal Layer Thickness (mm)	Minimum Thickness at Any Point (mm)	Typical Initial Texture Depth (mm)
20	60 - 150	50	≥ 1.3

New constructions require good quality, non-plastic, well compacted sub-base (e.g. Type 1). Wherever possible, tanker applied bond coats should be used beneath BREEDONOnecoat when installed onto bituminous materials or concrete and allowed to fully 'break' (i.e. turn from brown to black). Installation should be carried out in accordance with the general requirements of BS 594987, using a tandem roller with a minimum deadweight of 6 tonnes (preferably a 10 tonne deadweight roller) as the lead roller. Smaller machines should only be used in areas of restricted access, and to remove any marks left by the lead roller.

BENEFITS

- Time and cost saving single course application.
- Exceptional durability.
- Superior deformation, fretting and raveling resistance.
- Good surface textures.
- Very good climate (water and ageing) resistance.
- Low traffic noise.
- Easier to work and compact than 'standard' Stone Mastic Asphalts.
- Joint construction less problematic than with alternative materials.
- Polymer modified version supplied to suit end use application.
- Polymer modified option can be trafficked sooner than conventional bituminous materials.
- Polymer modified variant has a high softening point, reducing the risk of damage.

MAINTENANCE AND REPAIR

BREEDONOnecoat is not subject to any specialised routine maintenance processes, and should be maintained in accordance with the Design Manual for Roads and Bridges HD 31/94 "Maintenance of Bituminous Roads".

Motorways, trunk roads and other major repairs

Any damaged areas are to be removed by planing to the appropriate depth to provide a minimum length of 15m for paver resurfacing. The planed area will be resurfaced using material to the same specification, in accordance with Breedon's Installation Procedures.

Minor repairs

- Minor repairs can be carried out by cutting out the damaged section and replacing it with a material of suitable specification agreed between Breedon and the Client.
- A K1-40 (C40 B 4) or K1-60 (C60 B 4) tack coat, or an acceptable proprietary bond coat, will be used on the receiving substrate.
- Wherever possible, a diamond patch reinstatement shall be used, extending a minimum of 0.25m beyond the damaged section.
- Joints must be saw cut vertical, cleaned and painted with a thick uniform coating of hot bitumen, hot elastomeric polymer modified bituminous binder, or cold applied thixotropic bituminous compound prior to laying.

WHY CHOOSE BREEDON PROPRIETARY MATERIALS?

The Proprietary Materials offered by Breedon are extensively designed and rigorously tested to exceed the performances of traditionally used bituminous materials in specific applications. Our Proprietary Materials often include specialised additives to achieve high levels of operation.

PRECAUTIONS AND LIMITATIONS

Asphalt remains relatively soft for up to one year after laying; until it has time to oxidise and harden (i.e. elasticity is reduced). It is recommended that the surface is not trafficked until the centre of the layer has cooled to $\leq 40^{\circ}\text{C}$, when it is most susceptible to damage. When trafficked by vehicles, it is recommended that they are moving when the wheels are turned. If a vehicle is stationary when tyres are turned (particularly with modern power steering), the asphalt can be displaced and marked by stresses applied at that particular point. It is also recommended that (wherever possible) vehicles are parked in different positions to avoid marking the asphalt, and heavy vehicles, trailers, plant, machinery and ladders with small footprints are parked on wooden boards to disperse the loading. Fuel spillages should also be contained and cleaned up as soon as possible as these will compromise durability. Recommended procedure for removing diesel spillages is as follows:

- Stem the leak.
- If necessary, contain the spillage by deploying booms around the source and block any drains.
- Apply absorbent granules (e.g. cat litter) or sand to the spillage area.
- Sweep up the absorbent granules and dispose of in accordance with environmental regulations.
- Scrub the surface using a mild detergent. Any effluent resulting from the clean-up activity must not be washed into surface water drains as it is an offence under the Water Resources Act 1991.

QUANTITY REQUIRED

As a guide, please refer to the Material Calculator on our website (www.breedongroup.com).

AVAILABILITY

BREEDONOnecoat can be laid all year round (depending on climatic conditions) due to its improved workability, and may be installed by Breedon or experienced Contractors.

TO DISCUSS YOUR PROJECT REQUIREMENTS, AND FOR MORE INFORMATION ABOUT OUR PRODUCTS CONTACT:

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The information given in this technical datasheet is based on our current knowledge and is intended to provide general notes on our products and their uses. Breedon Group plc endeavours to ensure that the information given is accurate but accept no liability for its use or its suitability for a particular application because of the product being used by the third party without our supervision.

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