# BREEDONLower Temperature Asphalt (LTA)

**TECHNICAL DATASHEET — ASPHALT**

## BREEDONLower Temperature Asphalt (LTA) IS PRODUCED AT SIGNIFICANTLY LOWER TEMPERATURES THAN HOT MIX ASPHALT (TRADITIONALLY USED BITUMINOUS MATERIALS).

Typical production temperatures are 100 – 140°C, categorising Breedon LTA as 'warm-mix asphalt'. This temperature reduction decreases both fossil fuel use and emissions, without compromising durability when compared with hot mix asphalt. Lower temperatures also facilitate earlier opening to traffic or overlaying, expediting construction times.

### APPLICATIONS

- Trunk roads
- Private roads
- Housing developments
- Parking areas
- Airfields
- Farmyards
- Industrial units

### TECHNICAL DATA

Test data has demonstrated that BREEDON LTA versions of mixes are substantially easier to compact than the hot mix equivalents, with lower in situ air void and refusal void contents. Stiffness values and resistance to permanent deformation results are comparable. Water sensitivity is significantly improved with BREEDON LTA variants, which is a result of improved binder and aggregate adhesion and less binder ageing. A summary of results is as follows:

| | Specification Requirements | AC 20 dense bin 40/60 Limestone Design | | AC 32 dense base 40/60 Limestone Design | |
|---|---|---|---|---|---|
| | | Hot Mix Version | BREEDON LTA Equivalent | Hot Mix Version | BREEDON LTA Equivalent |
| Mean In Situ Air Void Content (BS EN 12697-8) | ≤7.0% | 6.2% | 2.8% | 6.9% | 5.8% |
| Mean Refusal Void Content (BS EN 12697-8) | ≥0.5% | 4.7% | 1.7% | 4.1% | 2.1% |
| ITSM Stiffness at 20°C (BS EN 12697-26) | ≥1800MPa | 3270MPa | 4721MPa | 7333MPa | 5673MPa |
| Mean Wheel Tracking Slope at 60°C (BS EN 12697-22) | <1.0mm | 0.18mm/ 1,000 cycles | 0.10mm/ 1,000 cycles | 0.10mm/ 1,000 cycles | 0.15mm/ 1,000 cycles |
| Mean Wheel Tracking Rut Depth at 60°C (BS EN 12697-22) | NR | 4.0mm at 10,000 cycles | 3.1mm at 10,000 cycles | 2.6mm at 10,000 cycles | 3.6mm at 10,000 cycles |
| Mean Wheel Tracking Proportional Rut Depth at 60°C (BS EN 12697-22) | NR | 6.2mm at 10,000 cycles | 6.2mm at 10,000 cycles | 3.6mm at 10,000 cycles | 4.8mm at 10,000 cycles |
| Water Sensitivity ITSR (BS EN 12697-12) | NR | 59.6% | >70% | 62.3% | >70% |

### CONSTRUCTION

Cationic tack or bond coats should be used between layers and allowed to fully 'break' (i.e. turn from brown to black). Installation is completed in accordance with the general requirements of BS 594987 and any applicable installation procedures (e.g. Thin Surface Course Systems).

### BENEFITS

- Uses proven technology, in use for many years.
- No specialist equipment required (installed using the same conventional paving equipment as hot mix asphalt).
- Process does not involve water, so all bituminous hot mix materials can be produced at lower temperatures, from roadbases to Thin Surface Course Systems.
- No changes to bitumen, and reduced production temperatures reduces binder ageing (oxidisation and hardening).
- Key mechanical properties are equivalent to hot mix versions, with improved compactability and water sensitivity results.
- Faster construction programmes and less disruption as material(s) can be opened to traffic or overlaid much sooner.
- Increased compaction period extends haul distances.
- Fuel and energy savings. Up to 50% reduction in heavy oil fuel use has been reported.
- Reduction in emissions. Volatile organic compounds (VOCs), sulphur oxides (SOx), nitrogen oxides (NOx) and particulate matter (PM) emissions are significantly reduced. Overall carbon dioxide ($CO_2$) footprints are up to 50% lower for Asphalt Concretes and up to 40% lower for Stone Mastic Asphalts.
- Reduction in temperature and fumes produces a safer, healthier environment for employees and the public.
- Surface appearances are identical to that of equivalent hot mix products.
- Staining of equipment is reduced, providing the added environmental benefit of less cleaning products required.
- Can be recycled as reclaimed asphalt pavement (R.A.P.).
- Surface courses available as coloured materials.

### MAINTENANCE AND REPAIR

- The surface should not be trafficked until the surface has cooled to ≤40°C.
- If applicable, and wherever possible, vehicles shall be moving when the wheels are turned.
- If practicable, vehicles shall be parked in different positions.
- Heavy vehicles, trailers, caravans and ladders with small footprints should be parked on wooden boards to disperse the loading.

*Continues overleaf*

- Fuel spillages should be removed immediately (sand, sorbents such as cat litter, oil absorbent pads and spill kits can be useful for this task).
- Any loose aggregate particles should be removed from the surface to prevent abrasion.

**Major repairs**
Any damaged areas shall 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.

**Minor repairs**
- Minor repairs can be carried out by cutting out the damaged section and replacing it with a material of suitable specification.
- 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 asphalts in specific applications. Our Proprietary Materials often include additives to achieve these 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 surface has cooled to ≤40°C. 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

BREEDON LTA may be laid all year round (depending on climatic conditions). Installation of this product can be completed by Breedon or experienced Contractors using conventional paving equipment.

**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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