GUIDE FOR APPROVED CONTRACTORS

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INTRODUCTION

The **ULTIPHALT** range of asphalt solutions are approved under the Highways Authority Product Approval Scheme (HAPAS). Compliance with certificate requirements is subject to audit by the British Board of Agrément (BBA). A range of products are available in 14mm, 10mm and 6mm nominal sizes as described below to meet the requirements of Clause 942 of the Specification for Highway Works. 20mm Single Layer products are also available for installation in thicker layers.

**Products with BBA HAPAS Certificates**

- **ULTIPHALT - M** principally consists of graded aggregate, filler, and a polymer modified binder designed to give resistance to binder drainage and provide effective overall performance. It is available as 10mm and 14mm surface course products.

- **ULTIPHALT - P** is similar to ULTIPHALT-M, but contains a higher polymer content binder, designed to give enhanced flexibility. It is available as 6mm, 10mm and 14mm surface course products. A 20mm single layer product is also available.

- **ULTIPHALT** principally consists of graded aggregate, filler, cellulose fibre and 40/60 pen bitumen designed to provide effective overall performance. It is available as 6mm, 10mm and 14mm surface course products. A 20mm single layer product is also available.

- **ULTIPHALT - D 10** is a 10mm surface course product similar to ULTIPHALT 10, but is designed for sites requiring lower surface texture.

**The following products have not yet completed BBA Assessment:**

- **ULTIPHALT - HD 10** is similar to **ULTIPHALT - D 10**, but contains a modified binder for use in highly stressed areas such as roundabouts and distribution centres with very high levels of heavy vehicle traffic.

- **ULTISHIELD** is a 10mm surface course product containing a modified binder which combines the toughness of **ULTIPHALT - HD**, with enhanced fuel resistance for use in areas subject to spillage of fuel and oils such as HGV parking areas, taxi ranks and bus stops.

The systems use a bond coat to impart greater adhesion to the receiving layer. Bond coats can be either applied using dedicated spray equipment or through integral pavers. The products are laid and compacted using traditional paving equipment. Customers have expectations of the highest levels of both finished appearance and performance of **ULTIPHALT** solutions. The requirements of this guide are aimed at ensuring that laying and compaction can be achieved along with the high levels of surface finish expected by customers.
1. APPROVAL OF LAYING CONTRACTORS

ULTIPHALT products are only supplied to approved laying contractors and their use is subject to ongoing surveillance. The approval process is explained below.

1.1 Preparation for Approval
Applications for approval will be considered from experienced surfacing contractors who are established customers of Tarmac. A meeting will be held between the management of the contractor and a Tarmac Technical Department representative where the specific laying techniques shall be explained, along with the requirements detailed in this document. A presentation is available to assist with the accreditation meeting. During the presentation, an Approved Contractor Application Form will be completed and signed by the representative of the contractor applying for approval. The application form shall be countersigned by the representative of Tarmac. Following the presentation, the contractor is given provisional approval, subject to the successful completion of their initial contract.

1.2 Initial Contract
The initial contract will be monitored by Tarmac personnel to ensure that satisfactory performance is achieved. Where requested, assistance will be given in the planning of this contract.

1.3 Approval
Subject to the successful completion of the initial contract, the contractor will be added to the list of Approved Contractors. Where issues are identified during the initial contract, a certificate will not be issued until the issues have been resolved. Contractors will be audited and approval is reviewed on an annual basis. Approval may be withdrawn at any time at the discretion of Tarmac.

1.4 Surveillance
Any contract may be subject to surveillance by Tarmac personnel. If ongoing performance is unsatisfactory, approval may be suspended or withdrawn.

1.5 Certificate Review
Certificates are valid for a period of one year and will be reissued subject to satisfactory performance.

2. COMPLAINTS

Complaints should be processed in accordance with the requirements of ISO 9001 and notified to Tarmac.
3. CONTRACT REVIEW

The Contractor shall review the enquiry to establish the following requirements:

a) Use/type of application
b) Surface texture requirements
c) PSV and any associated aggregate properties
d) Nominal layer thickness and aggregate size
e) Nature of the receiving course
f) Tonnage
g) Location of contract
h) Period of supply/start date
i) Estimate/tender return date
j) Any performance guarantee required by the client
k) Any additional requirements

Details of this review shall be recorded.

4. MATERIAL SELECTION

It is important that the correct material is chosen to suit the site conditions and contract requirements.

4.1 Layer Thickness

The permitted range of layer thickness for each product is given in Section 8.4.

4.2 Texture Depth

Texture depth requirements for highway works will normally be found within the contract documents. Limits for texture depth are given within Interim Advice Note 154/12. Different values may apply to Local Authority Roads.

<table>
<thead>
<tr>
<th>Texture Depth Specification</th>
<th>14mm</th>
<th>10mm</th>
<th>6mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3-1.8mm</td>
<td>ULTIHALT - M 14</td>
<td></td>
<td>not applicable</td>
</tr>
<tr>
<td></td>
<td>ULTIHALT - P 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ULTIHALT 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1-1.6mm</td>
<td>not applicable</td>
<td>ULTIHALT - M 10</td>
<td>not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ULTIHALT - P 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ULTIHALT 10</td>
<td></td>
</tr>
<tr>
<td>1.0-1.5mm</td>
<td>not applicable</td>
<td>not applicable</td>
<td>ULTIHALT - P 6</td>
</tr>
<tr>
<td>0.8-1.3mm</td>
<td>not applicable</td>
<td>not applicable</td>
<td>ULTIHALT - D 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ULTIHALT - HD 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ULTISHIELD 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ULTIHALT - 6</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Warm Mix
Warm Mix is available as an option for all products except ULTIPHALT HD and ULTISHIELD. Warm mix asphalts do not require as long to cool, thus allowing earlier trafficking which may be of benefit during restricted working periods.

4.4 Colour
ULTIPHALT solutions are also available with red pigment. To give good colour durability, red aggregate should also be specified. Colour samples are available on request. Additional colours are available within the ULTICOLOUR range of solutions.

5. SITE ASSESSMENT
The Contractor shall ensure that a condition survey is carried out on each site prior to contract commencement. Particular attention should be paid to surface preparation and planning of the laying operation.

a) Exact areas involved, and required thickness (see section 8.4).
b) Suitability and regularity of the receiving course - are there any cracks? If evidence of cracking is evident, then an ULTIMAT solution may be more appropriate to the site.
c) Will planing be required?
d) Bond Coat requirements? (see section 7).
e) Will the material be machine laid, hand laid, or a combination of both?
f) Accessibility for delivery vehicles, and for plant.
g) Will re-handling be necessary and, if so, over what distance?
h) Laying, rolling and compaction patterns.
i) Roller type (see section 8.5) and any other plant required.

6. SURFACE PREPARATION
Preparatory works shall be in accordance with BS 594987 sections 5 and 6.9. Planing, where required, may not be necessary over the full width of the mat and care should be taken not to increase the camber to such an extent as may adversely affect the surfacing process. The receiving surface should be sound and of suitable regularity to ensure satisfactory surface drainage and layer thickness. Existing surfaces should be cleaned and all loose material, mud, dirt and other debris must be removed. Upstanding faces including joints, kerbs and ironwork shall be painted with hot bitumen or a cold thixotropic bitumen emulsion joint paint.
7. TACK AND BOND COATS

Tack coats are conventional bitumen emulsions used to enhance the adhesion between layers of asphalt. Bond coats are proprietary emulsions containing polymer modified bitumen and are generally formulated to provide greater adhesion. Tack and bond coats shall be purchased from an ISO 9000 3rd party accredited supplier.

Only approved Bond Coats may be used as detailed below:

<table>
<thead>
<tr>
<th>Approved Bond Coats</th>
<th>Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colas</td>
<td>Colbond 50, Colbond 65</td>
</tr>
<tr>
<td>Nynas</td>
<td>Enduramuls 100, Nyspec Masterbond</td>
</tr>
<tr>
<td>Total</td>
<td>Emulsis NBC50, Emulsis NBC65, Emulsis NTC</td>
</tr>
<tr>
<td>Jobling-Purser</td>
<td>Sprayco Armabond</td>
</tr>
<tr>
<td>Ayton Products</td>
<td>Aquagrip 60</td>
</tr>
<tr>
<td>Bituchem</td>
<td>Polybond 50</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>EN 13808: 2013</td>
</tr>
<tr>
<td></td>
<td>C40, C60 and C70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application</th>
<th>Type</th>
<th>Spread Rate * (residual bitumen, kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>General default</td>
<td>Tack or Bond</td>
<td>0.15 – 0.35</td>
</tr>
<tr>
<td>All materials onto concrete</td>
<td>Bond</td>
<td>Min. 0.3</td>
</tr>
<tr>
<td>&lt;30mm nominal thickness</td>
<td>Bond</td>
<td>0.15 – 0.35</td>
</tr>
</tbody>
</table>

* Note: The application rate selected shall reflect the nature and condition of the receiving course i.e. fresh asphalt or planed surface.

Tack / bond coat is required on freshly laid receiving course.

- **Storage in Drums**
  
  Bond coat shall be protected from frost (preferably above 5°C). Insulated covers are recommended for this purpose. Drums containing PMB shall be agitated immediately prior to use and it is recommended that a heated duvet or equivalent be used to raise the emulsion temperature to permit easier spraying.

- **Spraying**

  Application may be either by equipment separate from the paver, in which case it shall be allowed to break before paving, or alternatively using a suitable integrated spray bar paver in which break occurs on contact with the hot material. The rate of spread and accuracy of bond coat application of spray tankers shall be calibrated in accordance with BS EN 12272-1:2002. When applied by hand spraying, the contractor shall devise a suitable method for determining the spread rate (a daily reconciliation is recommended) records of which shall be maintained.
8. LAYING OPERATION

Laying and compaction shall be carried out in accordance with the general requirements of BS 594987 and the specific requirements of this section. Joints, kerbs and ironwork shall be painted with hot bitumen or an approved cold emulsion joint paint.

8.1 Material Receipt
The delivery ticket of each load of asphalt should be checked to confirm the correct material has been supplied. Vehicle discharge and rolling temperatures shall be in accordance with the following;

<table>
<thead>
<tr>
<th>Material</th>
<th>Minimum Vehicle Discharge Temperature (˚C)</th>
<th>Minimum Initial Rolling Temperature (˚C)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hot Mix*</td>
<td>Warm Mix</td>
</tr>
<tr>
<td>UltiPhalt - M</td>
<td>150</td>
<td>130</td>
</tr>
<tr>
<td>UltiPhalt - P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UltiPhalt - D</td>
<td>160</td>
<td>115</td>
</tr>
<tr>
<td>UltiPhalt - HD</td>
<td>160</td>
<td>N/A</td>
</tr>
<tr>
<td>Ultishield</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where material has exceeded 4 hours from despatch from the supplying unit to laying then each load shall have its discharge temperature taken and a visual assessment made of its suitability to lay.

8.2 Laying Records
The asphalt when laid should be identifiable and traceable with regards to the material production data, which can be referenced from information on the delivery ticket.

Detailed laying records shall be completed for all material laid to include the following:

- location, chainage, lane, etc
- layer thickness
- condition of substrate
- material type
- delivery ticket numbers
- material temperature
- material visual inspection
- weather
- location of joints
- stoppages

A calibrated temperature probe shall be available with each paving machine for this purpose. All laying records shall be maintained.
8.3 Placement
Acceptable conditions for placement shall be generally in accordance with BS594987 except as
indicated for thin layers:

<table>
<thead>
<tr>
<th>Surfacing</th>
<th>Air Temperature</th>
<th>Receiving Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>Falling temperature</td>
<td>Shall be free from standing water, ice or snow.</td>
</tr>
<tr>
<td></td>
<td>Stop at 0°C unless the conditions are calm and dry in which case stop at -3°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rising temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Start at 0°C unless the receiving course is dry in which case start at -1°C</td>
<td></td>
</tr>
<tr>
<td>Layers &lt;25mm nominal thickness</td>
<td>Placement shall only proceed at a minimum air temperature of 5°C.</td>
<td></td>
</tr>
</tbody>
</table>

Material placement should be operated at such a speed as to permit continuous laying as far as supply
and site conditions allow. Care should be taken when reversing lorries onto the paver hopper to avoid
disturbing the finished material.

8.4 Thickness
The nominal compacted layer thickness selected shall fall in the range shown below:

<table>
<thead>
<tr>
<th>Nominal Layer Thickness Range (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
</tr>
<tr>
<td>6mm</td>
</tr>
<tr>
<td>10mm</td>
</tr>
<tr>
<td>14mm</td>
</tr>
<tr>
<td>20mm</td>
</tr>
</tbody>
</table>

The minimum thickness at any point shall be 5mm less than the corresponding minimum nominal layer
thickness from the table. * BBA HAPAS certification only valid to 75mm nominal thickness.

8.5 Compaction
Compaction of the laid material shall commence without unnecessary delay. The use of tandem rollers
operated in vibrating mode shall only be permitted for a single pass over the mat width or as required on
hand lay areas. A vibratory steel wheeled roller with a minimum dead weight of 6 tonnes (e.g. Bomag
161) or a 3 point dead weight roller shall be used as the lead roller. A second smaller tandem roller may
be required to remove roller marks and for work in constricted areas. A sufficient number of rollers shall
be provided on site to ensure that the compaction can be commenced and completed without undue
delay. A minimum of 10 passes of the roller should be used. Water sprays on the roller must be fully operational.

8.6 Joints
Longitudinal joints shall be made in one of the following ways:
Cold - Shall be cut to a full depth vertical face and painted prior to matching
OR Shall be formed into a chamfer during the laying process and subsequently painted prior to matching. Chamfers shall be at an angle of 70-80 degrees.
Hot - Joints may be hot matched so long as the temperature of the earlier laid mat is at least 120°C. Where warm mix technology is used, the minimum temperature for hot matching may be reduced to 100°C. Transverse joints shall be cut or sawn to a vertical face at least 300mm from the day joint and painted, prior to matching. Joints shall be painted with either hot bitumen or an approved cold emulsion joint paint prior to matching. Care shall be taken to ensure coverage of the vertical face with a uniform coating.

8.7 Gritting
Gritting of ULTIPHALT products is not recommended and shall only be undertaken as specified in the Contract. When gritting is to be carried out then the following shall apply:
a) Grit shall be applied by a tandem roller fitted with a rear mounted grit box. Alternatively if front mounted the roller shall be operated in reverse.
b) The rate of application of grit shall be automatically adjusted to the roller speed and shall stop automatically when the roller stops or reverses.
c) The grit box shall have blanking plates to prevent grit application as required in specific areas.
d) The rate of spread of grit shall be contract specific (750g/m² is recommended). The target application rate shall be achieved with an accuracy of ±50g/m².
e) Grit shall be hardstone or steel slag in accordance with the contract requirements.
When gritting is required the Customer must be informed that the BBA HAPAS guarantee for texture depth performance will not apply to the surfacing.

8.8 Release to Traffic
To avoid deformation or damage, the surface must not be trafficked until it has been allowed to cool to ambient temperature

9. INSPECTION AND TEST OF LAID MATERIAL
The contractor shall ensure that the final laid material is visually inspected to check for defects. Where required, the laid material shall be sampled and tested in accordance with individual contract requirements.
10. TRANSPORT
Vehicles used for the transport of **ULTIPHALT** products must be adequately cleaned prior to loading so that there is no risk of contamination. Water, or an approved release agent may be used in the vehicle body. Diesel must not be used as this causes binder softening and affects durability. Excess liquid shall be drained out by raising the vehicle body and allowing it to drain through the tailgate prior to loading. Only fully insulated vehicles should be used for transport. The insulation should include the vehicle floor to prevent excessive cooling of the material. The vehicle should be double sheeted, unless a mechanical sheeting system is used.

11. REPAIR AND MAINTENANCE

11.1 Material Selection
The selection of the repair material shall be made on the basis of site requirements including PSV and texture depth. In every case first consideration shall be given to using like for like materials. The use of a smaller nominal size aggregate may be considered subject to Specifier approval. 6mm **ULTIPATCH POTHOLE** may be considered for Minor repairs.

11.2 Reinstatement Requirements
Reinstatements are divided into:

- Motorway and trunk road maintenance
  - Subject to HE requirements.
  - Area to be full width of the existing mat (joint to joint) and at least 15m long.

- Other repairs:
  - Openings > 700mm width
  - Openings < 700mm width.
  - Minor.

Unless otherwise agreed with the Client all reinstatements shall be carried out in accordance with the following requirements.

![Diagram of repair methods and materials](image-url)
11.3 Surface Preparation
Where only the existing surface course is to be replaced care shall be taken to remove it to its full depth. The receiving course shall be clean. All loose material and other debris shall be removed prior to the bond coat application. The existing surface may be moist but shall be free from areas of standing water.

- Edges
All transverse joints shall be saw cut to a vertical face. Longitudinal joints shall be either cut by planer or saw cut. Joints, kerbs and ironwork shall be painted with hot bitumen or an approved cold emulsion joint paint.

- Bond Coat
Bond coat selection and application shall be in accordance with Section 7.

11.4 Placement
Placement shall be in accordance with the following:

<table>
<thead>
<tr>
<th></th>
<th>Motorway and trunk road maintenance</th>
<th>Conventional paver</th>
</tr>
</thead>
</table>
| Patches              | Conventional paver                 | Mini paver (preferred) or handlay *
| Trenches and Minor repairs | Handlay*                           |                     |

* Laying directly from vehicles fitted with chutes should be considered when hand laying

11.5 Compaction
Compaction shall be in accordance with the following:

<table>
<thead>
<tr>
<th></th>
<th>Motorway and trunk road maintenance</th>
<th>See Section 8.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 700mm width</td>
<td>Conventional paver</td>
<td>Single &amp; twin drum rollers †</td>
</tr>
<tr>
<td>≤ 700mm width</td>
<td>Conventional paver</td>
<td>Single &amp; twin drum rollers or vibrating plate †</td>
</tr>
<tr>
<td>Minor</td>
<td>Conventional paver</td>
<td>Vibrating tamper, vibrating plate or roller †</td>
</tr>
</tbody>
</table>

Note - † In accordance with the ‘Specification for the Reinstatement of Openings in Highways’

Where possible the drum / plate width shall be less than the opening.

*ULTIPATCH* POTHOLE shall be compacted by hand/vibrating tamper, vibrating plate or roller.

Vibration on rollers shall be kept to a minimum to avoid subsequent texture loss.

11.6 Completion
Overbanding of joints is not permitted.

Gritting is not recommended and shall only be undertaken as specified in the contract.