MATERIAL SAFETY DATA SHEET
FOR
BITUMEN PENETRATION GRADE
TO BS EN 12591:1999

<table>
<thead>
<tr>
<th>ISSUED BY</th>
<th>REVIEWED BY</th>
<th>APPROVED BY</th>
<th>DATE</th>
<th>VERSION</th>
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</thead>
<tbody>
<tr>
<td>Quality Management</td>
<td>Director Bitumen</td>
<td>Risk Management</td>
<td>JAN 01, 2012</td>
<td>3.0</td>
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</tbody>
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MATERIAL SAFETY DATA SHEET

BITUMEN

Road Construction
1. Identification of substance and supplier
Substance/preparation: Bitumen
Supplier/manufacturer: BITUMINA HI-TECH PAVEMENT BINDERS
Off M-05 Al Joud Bldg., Sheykh Zayed Road
P.O. Box 213444 Dubai, United Arab Emirates
(UAE) 04 328 4040
(ABROAD) +971 4 328 4040
Date of revision: MAR 2012

Hazard Information
2. Composition/information on ingredients
The product contains no dangerous substances according to EC Directive 67/548/EEC and further modifications and adaptations pointed out in this publication.

3. Hazardous identification
Inhalation of vapour or mist can cause headache, nausea, irritation of nose and lungs. Eye Contact with material can cause slight irritation. Prolonged or repeated skin contact can cause slight skin irritation.

Emergency Action
4. First aid measures
Eye contact: If the substance has entered the eyes then irrigate with emergency eye wash solution (if available) or clean water for up to 15 minutes. Seek medical attention.

Skin contact: Remove contamination with proprietary skin cleaner, followed by washing with soap and water. If irritation persists seek medical attention.

Ingestion: If swallowed seek medical advice immediately. Do not induce vomiting.

Inhalation: If inhalation occurs, remove the patient into fresh air. Keep warm and at rest.

5. Fire fighting measures
There are no risks of fire or explosion as the products identified are non combustible. The product is non-flammable but it can cause dangerous fumes if there is a fire. If necessary wear breathing apparatus.

6. Accidental release measures
Avoid skin contact, wear suitable protective equipment (see 8.1).
Cleaning up: Extinguish sources of heat and fire. Cover leaks with absorbent material such as sand. Disperse left-over material with water or foam spray, do not use vacuum.

Environmental measures: Prevent from entering drains, sewers or water courses.

Precautions
7. Storage & handling
Storage: Store in unopened containers. Storage temperature limits are 1 deg c to 50 deg c.
Handling: Avoid prolonged skin contact, avoid contact with eyes. Take usual hygiene measures. Ensure adequate ventilation.

8. Exposure controls/personal protection
Personal protective equipment:
\[ a. \] Respiratory protection: Use breathing apparatus in case of inhaling vapours for a long-time.
\[ b. \] Hand & skin protection: Avoid skin contact by wearing protective clothing, for example waterproof gloves, overalls and boots. Change heavily contaminated clothing as soon as possible and launder before re-use.
\[ c. \] Eye protection: Wear waterproof protective glasses.

Product Information
9. Physical & chemical properties

<table>
<thead>
<tr>
<th>FORM</th>
<th>Solid</th>
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<tbody>
<tr>
<td>COLOUR</td>
<td>Black</td>
</tr>
<tr>
<td>ODOUR</td>
<td>Characteristic</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY</td>
<td>1.00</td>
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<tr>
<td>SOLUBILITY IN WATER</td>
<td>Dilutable</td>
</tr>
<tr>
<td>ALKALINITY-PH</td>
<td>N/A</td>
</tr>
<tr>
<td>BOILING POINT/BOILING RANGE</td>
<td>&gt; 250°C</td>
</tr>
<tr>
<td>MELTING POINT/MELTING RANGE</td>
<td>&gt; 100°C</td>
</tr>
<tr>
<td>FLASH POINT</td>
<td>N/A</td>
</tr>
<tr>
<td>FLAMMABILITY &amp; AUTO FLAMMABILITY</td>
<td>N/A</td>
</tr>
<tr>
<td>OXIDISING PROPERTIES</td>
<td>N/A</td>
</tr>
<tr>
<td>VAPOUR PRESSURE</td>
<td>N/A</td>
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10. Stability & reactivity
The product is stable in normal usage & storage conditions at environmental temperatures. Thermal decomposition or burning may release oxides of carbon and other toxic gases or vapours.
11. Toxicological information
See 10.

12. Ecological information
There are no known Eco Toxic effects in the existing patterns of production, handling, storage and use.

13. Disposal considerations
Coagulate the dispersion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant and flush to a chemical sewer. Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations.

Additional Information

14. Transport information
Not hazardous. Classification for conveyance – not required. Goods are None DG as per IATA regulations.

15. Regulatory information

Data Sheet prepared in accordance with the Safety Data Sheets Directive (91/155/EEC, as amended by Directives 93/122/EC and 2001/58/EC).

Important Notes
All information is based on results gained from experience and test and is believed to be accurate, but is given without acceptance of liability for loss or damage attributable to reliance thereon, as conditions of use lie outside our control. Users should always carry tests to establish the suitability of any products for their intended application. No statements shall be incorporated in any contract unless expressively agreed in writing or construed as recommending the use of any product in conflict of any patent. All goods are supplied subject to OPENGATE Energy LLC’s Standard Conditions of Sale, copies of which are available upon request.