



## MATERIAL SAFETY DATA SHEET

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## PRODUCT IDENTIFICATION

<b>Product Name</b>	Bitumen
<b>Product Type</b>	Paving Grade Bitumen
<b>Grades</b>	40/50, 50/70, 60/70, 60/80, 70/100, 80/100, 85/100, 150/200, 180/200, 200/300
<b>Application</b>	Bitumen product for building road, industrial and civil engineering materials and processes.

## HAZARDS IDENTIFICATION

<b>Human Health Hazards</b>	<p>Paving grade Bitumen at ambient temperature present no human health hazards. Bitumens are normally handled at elevated temperature which may cause thermal burns. In the heated state Bitumens give off fumes. Although these are not thought to produce a significant health hazard, prudence would dictate that exposure to these fumes should be kept to a minimum by observing good work practice and ensuring good ventilation around work areas.</p> <p><b>HYDROGEN SULPHIDE</b> can accumulate in the head space of storage tanks containing Bitumens and can reach potentially hazardous concentrations.</p>
<b>Physical and Chemical Hazards</b>	<p>Paving grade Bitumen are typically stored and handled at temperatures significantly above 150°C and contact with water will result in a violent expansion and a danger of splashing or “boil-over”. Although not classified as flammable, Bitumens are hydrocarbon materials and can burn.</p>
<b>Specific Hazards</b>	<p>Paving grade Bitumens are not classified as dangerous under EC criteria but they do contain very low concentrations of Polycyclic Aromatic Compounds (PAC's). In undiluted Bitumen these PAC's are not considered to be bio-available. However, if paving grade Bitumens are mixed with diluents it is believed that such materials may become bio-available if the product has a low viscosity at ambient temperatures. Despite the known presence of PAC's there is no evidence that exposure to undiluted Bitumen or their fume is harmful.</p>



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### FIRST-AID MEASURES

**Take proper precautions to ensure your own health and safety before attempting rescue or providing first aid**

#### **Inhalation**

If inhalation of mists, fume or vapor causes irritation to the nose or throat, or coughing, remove to fresh air. If symptoms persist obtain medical advice. Casualties suffering ill effects as a result of exposure to hydrogen sulphide should be immediately removed to fresh air and medical assistance obtained without delay. Unconscious casualties must be placed in the recovery position. Monitor breathing and pulse rate and if breathing has failed, or is deemed inadequate, respiration must be assisted, preferably by the mouth to mouth method. Administer external cardiac massage if necessary. Seek medical attention immediately.

#### **Eye Contact**

**Cold Product:** Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.

**Hot Product:** Flood with water for at least 5 minutes to dissipate heat. In the event of any product remaining, do not try to remove it other than by continued irrigation with water. Obtain medical attention immediately.

#### **Skin Contact**

Where skin burns occur, the area should be immersed in cold water until the Bitumen is thoroughly cooled. Do not attempt to remove the Bitumen from the skin as it provides an airtight, sterile covering over the burn which will eventually fall away with the scab as the burn heals. All burns should receive medical attention, it should be noted that Bitumen stiffens on cooling and, where a limb is encircled, tissue swelling may cause a tourniquet effect. In the event of this occurring, the adhering Bitumen must be softened and/or split to prevent restriction of blood flow. Treatment should in general be symptomatic and directed to relieving any effects. If for any reason the binder must be removed, this can be done using slightly warmed medicinal liquid paraffin.

#### **Ingestion**

Do not induce vomiting unless directed to by a physician. Do not give anything to drink unless directed to by a physician. Never give anything by mouth to a person who is not fully conscious. If significant amounts are swallowed or irritation or discomfort occurs, seek medical attention immediately.



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### FIRE-FIGHTING MEASURES

<b>Extinguishing Media</b>	Dry chemical powder, foam, inert gas, carbon dioxide, water spray (fog), sand or earth. Water jets must never be used. The use of Halon® extinguishers should be avoided for environmental reasons.
<b>Specific Hazards</b>	Boil-over of tanks and violent eruptions in the presence of water (splatter of hot material). Respiratory problems or nausea by excessive exposure to hot Bitumen fumes. Burning Bitumen gives rise to a complex mixture of gases and airborne particles including Carbon monoxide and Sulphur oxides.
<b>Protection of Fire Fighter</b>	Proper equipment (Gloves, shoes, goggles or self-contained breathing apparatus).
<b>Other Information</b>	Keep adjacent containers cool by spraying with water. Hot Bitumen can cause violent eruptions in contact with water, and may splatter hot material.

### ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	In confined spaces, do not allow water or other liquid to contact hot bitumen. Hot bitumen should be handled so that there is no risk of burns. Shut off leaks if possible without personal risk.
<b>Environmental Precautions</b>	Do not allow free liquids to enter drains, sewers, ground water, drainage ditches or surface waters. This material is heavier than water. Releases to surface waters will sink. Report releases in accordance with local, state and federal requirements.
<b>Clean-up Methods</b>	<i>Small Spill:</i> Allow to cool and solidify. Remove mechanically into containers for disposal or reclamation in accordance with local regulations. <i>Large Spill:</i> Prevent from spreading by making trench or barrier with sand, earth or other material. Otherwise treat as for small spillage.

### SECTION 7: HANDLING AND STORAGE

**Maximum safe handling and storage temperature at least 30°C below the flash point. Avoid overheating to minimize fuming.**

**Handling** Paving bitumen is typically handled and stored as a liquid, which means elevated temperatures (>150°C). Paving bitumen is also transported as a solid and reheated for application. Avoid contact (skin burns) and breathing fumes (irritation of respiratory tract). Do not use solvents in case of obstructions. Clean, dry and heat resistant hoses (free of twists, etc.) should be used. Do not use steam to empty pipelines and hoses.



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<b>Storage</b>	Prevent ingress of water. Carbonaceous deposits may develop on walls and roofs of bitumen storage tanks which may be pyrophoric or self-heating and may self-ignite. Hydrogen Sulphide may accumulate in tanks during long term storage at high temperatures. Proper ventilation is required (vents should not terminate near windows or air inlet).
<b>Precautions During Discharge from Bitumen Tanks</b>	Where bitumen is being pumped from a storage tank or road tank care should be taken to avoid the risk of fire or explosion as a result of exposing hot heater tubes. Bitumen tanks may be heated by hot oil, steam, electricity or flame tubes. Under circumstances where bitumen is being pumped from a tank containing heater tubes precautions should be taken to prevent the level dropping below 150 mm above the tubes unless the heat has been switched off for a period of sufficient cooling. The bulk temperature of the bitumen during handling should be kept as low as possible, consistent with efficient discharge and at no time should it exceed the maximum temperature recommended by the supplier. A check should be made to ensure that the receiving tank has sufficient ullage space to accommodate the load.

## PERSONAL PROTECTION

<b>Engineering Measures</b>	Bitumen has a low volatility, fume formation is therefore low. Exposure to fumes should be minimized.
<b>Personal Protection</b>	Personal Protective Equipment (PPE) should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for the PPE requirements should be conducted by qualified professional pursuant to OSHA regulations.
<b>Body and Hand Protection</b>	Wear protective clothing for normal operations with hot material, like heat resistant coveralls (with legs over boots and cuffs over gloves), heat resistant gloves, and heavy duty boots. Coveralls should be cleaned as necessary to avoid permeation of the product to under clothing. If splashing is likely then additional requirements are: Full head and face protection (protective screen and / or safety goggles) and neck cloth.
<b>Respiratory Protection</b>	Respiration protection is not required under normal conditions of use and with adequate ventilation. Use approved respiratory protective equipment in spaces where hydrogen Sulphide vapors may accumulate, or where it is possible that the Exposure Limit might be exceeded.
<b>General Comments</b>	USE GOOD PERSONAL HYGIENE PRACTICES. Good personal hygiene in respect of hands and under clothing should always be maintained in the course of work. Wash hands and other exposed skin areas with plenty of mild soap and water before eating, drinking and smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasive skin cleaners.



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### TOXICOLOGICAL INFORMATION

- Acute Toxicity** Existing data and extrapolation from data on other petroleum products indicates that the acute toxicity of Bitumen likely to be low.
- Chronic Toxicity** Paving grade Bitumens present no chronic hazards at ambient temperature, but they do contain very low concentrations of Polycyclic Aromatic Compounds (PAC's). In undiluted Bitumen these PAC's are not considered to be bio-available.
- Inhalation** The fumes from hot Bitumen may lead to slight irritation of upper respiratory tract.

### PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance

- Physical State** Solid at ambient temperature, liquid at normal handling temperatures
- Odour** Characteristic odour
- Colour** Dark brown to black
- PH** Not Applicable



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### Specific Temperature of Change of Physical State:

<b>Softening Point</b>	45 - 56°C	<b>Distillation Characteristics</b>	Initial Boiling Point: >200°C
<b>Flash Point</b>	Cleveland Open Cup: >225°C		
<b>Vapour Pressure</b>	Negligible at ambient temperature		
<b>Density</b>	990 to 1300 kg/m <sup>3</sup> at 25°C depending upon grade. 850 to 1100 kg/m <sup>3</sup> at 200°C (liquid) depending upon grade		

### Solubility:

<b>Water</b>	Insoluble, non miscible
<b>Organic Solvents</b>	Soluble in many organic solvents
<b>Fats</b>	Partly soluble

## STABILITY AND REACTIVITY

<b>Conditions to Avoid</b>	Excessive heating above the maximum recommended handling and storage temperatures will cause cracking and evolution of flammable vapours.
<b>Material to Avoid</b>	Do not allow molten product to contact water or other liquid. Avoid contact with strong oxidising agents. Self heating, leading to auto-ignition at the surfaces of porous or fibrous materials impregnated with bitumen or condensates from bitumen fumes can occur at temperatures below 100°C. Oil and bitumen contamination of thermal insulation near hot surfaces should therefore be avoided and lagging should be replaced where necessary by a non-absorbent type of insulation.
<b>Hazardous Decomposition Products</b>	In a confined space toxic gas (hydrogen sulphide) may accumulate above bitumen.



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### ECOLOGICAL INFORMATION

<b>Environmental Effect</b>	Paving grade bitumens are not thought to present any significant environmental hazard. If hot bitumen is spilled onto soil or water it quickly cools and becomes solid and only a physical fouling hazard then exists. Bitumen is not inherently biodegradable.
<b>Mobility</b>	<i>Ground:</i> According to its physical properties, bitumen is not mobile and will remain on the soil surface.  <i>Water:</i> Insoluble. <i>The water solubility is so low that it can be considered as to be negligible.</i> Bitumen will normally sink to the sediment, although in some circumstances it may float.
<b>Persistence and Degradability</b>	Degradation is very slow. Under normal circumstances the product will remain in place.
<b>Bio-accumulation</b>	Unlikely, due to extremely low water solubility.
<b>Eco-toxicity</b>	The product is not environmentally toxic. It is not dangerous to plant and aquatic environment.

### DISCLAIMER OF LIABILITY

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