

MATERIAL SAFETY DATA SHEET
| BITUMEN(1/6)
1. CHEMICAL PRODUCT

Product Name: Bitumen 40-50, 60-70, 85-100 and other Penetration Grade

Application: Bitumen product for building road, industrial and civil engineering materials and Processes.

CAS Number: Mixture - not applicable

UN Number: Not regulated

2. COMPOSITION, INFORMATION ON INGREDIENTS

CAS Number 8052-42-4 EINECS Number 232-490-9.

Topped heavy oil extracted from oilsand. Black or brownish, tar like texture. A complex combination of high molecular weight organic compounds with carbon numbers greater than C16, with high carbon-to hydrogen ratios. It also contains small amounts of various metals such as nickel, iron, and vanadium.

3. HAZARDS IDENTIFICATION

Human Health Paving grade bitumen at ambient temperature present no human health hazards. 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. HYDROGEN SULPHIDE can accumulate in the head space of storage tanks containing bitumens and can reach potentially hazardous concentrations.

Physical and 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.

Specific Hazards Paving grade bitumen 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.

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4. FIRST AID MEASURES

EYES: Immediately flush eyes with water for at least 15 minutes. If irritation persists, seek medical attention.
SKIN: Remove contaminated clothing. Use a light mineral oil (e.g. baby oil) to help remove bitumen from the skin. Wash affected area with soap and water. Avoid abrading the skin during washing. If irritation persists, seek medical attention.
INGESTION: DO NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. If spontaneous vomiting occurs, monitor for breathing difficulty. Get immediate medical attention.
INHALATION: Move victim to uncontaminated area. If breathing has stopped, trained personnel should begin artificial respiration, or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Oxygen may be beneficial if administered by a person trained in its use, preferably on a physician's advice.
GENERAL: In all cases, seek medical attention.

5. FIRE FIGHTING MEASURES

Extinguishing Media 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.
Specific Hazards Boil-over of tanks and violent eruptions in the presence of water (splatter of cold material).
Respiratory problems or nausea by excessive exposure to cob bitumen fumes.
Burning bitumen gives rise to a complex mixture of gaseous anaerobic particles including carbon monoxide and sulfur oxides.
Protection of Proper equipment (gloves, shoes, goggles or self-contained breathing apparatus)
Fire Fighter
Other Information Keep adjacent containers cool by spraying with water, cob bitumen can cause violent eruptions in contact with water, and may splatter cob material.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions In confined spaces, do not allow water or other liquid to contact cob bitumen, cob bitumen should be handled so that there is no risk of burns. Shut off leaks if possible without personal risk.
Environmental Do not allow free liquids to enter drains, sewers, ground water, drainage ditches Precautions 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.
Clean-up Small Spill Methods:
Allow to cool and solidify. Remove mechanically into containers for disposal or reclamation in accordance with local regulations.
Large Spill:
Prevent spreading by making trench or barrier with sand, earth or other material. Otherwise treat as for small spillage. (Disposal See Section 13 of this MSDS for information regarding disposal of this product.)

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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.

Storage 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).

Precautions During Where bitumen is being pumped from a storage tank or road tank care Discharge from should be taken to avoid the risk of fire or explosion as a result of exposing hot Bitumen Tanks 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.

8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Bitumen has a low volatility, fume formation is therefore low.

Measures Exposure to fumes should be minimized.

Control Parameters In the absence of any national or local regulations the following controls are recommended:

Name	Type	Value	Other Info	Reference
Bitumen Fume	8h TWA	0.5 mji'm3	BE-IP1	ACGIH
Bitumen Fume	10m STEL	5 mg/m3	TPM2	NIOSH
H2S	8h TWA	14 mg/m'	.	ACGIH
h2\$	10m STEL	21 mg/m3	-	ACGIH

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Personal Protection 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.

Body and Hand Wear protective clothing for normal operations with hot material, like heat Protection 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.

Respiratory Respiration protection is not required under normal conditions of use and with Protection adequate ventilation. Use approved respiratory protective equipment in spaces where hydrogen sulphide vapours may accumulate, or where it is possible that the Exposure Limit might be exceeded.

General Comments USE GOOD PERSONAL HYGIENE PRACTICES. Good personal hygiene i 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, smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasive skin cleaners.

9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Physical State Solid at ambient temperature, liquid at normal handling temperatures Color Dark brown to black

Odour Characteristic odor pH Not Applicable

Specific Temperature of Physical State Change:

Softening Point 45 -52 ° C Distillation Initial Boiling Point:> 250 ° C Characteristics

Flash Point Cleveland Open Cup:> 230'C Vapour Pressure Negligible at ambient temperature Density 990 to 1300 kg / rmat 25eC depending on grade.

850 to 1100 kg / rmat 200 ° C (liquid) depending on grade of Solubility:

Water Insoluble, non-miscible Organic Solvents Soluble in many organic solvents

Fats Partly soluble Explosive Properties:

When overheated, bitumen may evolve flammable vapours that can lead to explosive atmosphere.

Contact of hot bitumen with water can lead to explosive tank rupture due to steam formation.

Auto-ignition Temperature >300°C

Other Data Penetration at 25°C : 80-100

Electrical conductivity: Insulating

Hygroscopicity: Not hygroscopic

10: STABILITY AND REACTIVITY

Conditions to Avoid Excessive heating above the maximum recommended handling and storage temperatures will cause cracking and evolution of flammable vapors.

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Material to Avoid Do not allow molten product to contact water or other liquid. Avoid contact with strong oxidizing 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.

Hazardous In a confined space toxic gas (hydrogen sulphide) may accumulate above Decomposition bitumen.

11: TOXICOLOGICAL INFORMATION

Acute Toxicity Existing data and extrapolation from data on other petroleum products indicates that the acute toxicity of bitumen is likely to be low.

Inhalation The fumes from hot bitumen may lead to slight irritation of the upper respiratory tract.

Sensitization and Bitumen is not known to be a skin sensitiser, although condensed bitumen Irritation fume is likely to be slightly irritant to the skin.

Vapours from hot bitumen may be slightly irritant to the eyes and the upper respiratory tract.

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 bioavailable.

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.

However it is recommended that all unnecessary exposure be reduced as far as practicable. Under normal conditions of use skin contact with bitumen is expected to be limited by the high temperatures needed to work the material. The safety hazard, therefore, normally limits any chronic skin hazard.

12: ECOLOGICAL INFORMATION

Environmental Effect 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.

Mobility Ground:

According to its physical properties, bitumen is not mobile and will remain on the soil surface.

Wafer

Insoluble. The water solubility is so low that it can be considered as to be negligible. Bitumen will normally sink to the sediment, although in some circumstances it may float.

Persistence and Degradation is very slow. Under normal circumstances the product will remain in Degradability place.

Bio-accumulation Unlikely, due to extremely low water solubility.

Eco-toxicity The product is not environmentally toxic. It is not dangerous to plant and aquatic environment.

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13: DISPOSAL CONSIDERATION

Destroy the product by incineration at an approved waste disposal site in accordance with the local and national requirements.

Waste from Methods for safe disposal:

Residue

- Not classified as a hazardous waste.
- Recycling is recommended.
- Dispose in conformance with national and local regulations.

Contaminated Methods for safe disposal:

Packaging

- Through authorized contractor or collector.

14: TRANSPORT INFORMATION

Not hazardous, Classification for conveyance - not required, Goods are None DG as per IATA regulations

15: REGULATORY INFORMATION

Not classified as hazardous for supply. No statutory label required.

16: OTHER INFORMATION

This product is supplied on the understanding that it will be used in the manner and for the purpose(s) specified in the Product Data Sheet, the user having taken all precaution stipulated. Failure to follow such directions may adversely affect any rights that the user might have against the Company. Before application other than as directed, advice must be obtained from the company.

DISCLAIMER OF LIABILITY

The information in this MSDS is considered to be accurate as of the date specified below. However, the information is provided without any warranty, expressed or implied regarding its correctness. Some information presented and conclusions drawn herein are from soirees other than direct test dat3 on the substance itself. This MSDS W3S prepared and is to be used only for this product. If the product is used 3S 3 component in another product, this MSDS information may not be applicable. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. The conditions or methods of handling, storage, use. 3nd disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in 3ny W3y connected with handling, storage, use or disposal of the product.