



Jey Oil Refining Company

MATERIAL SAFETY DATA SHEET



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SECTION 1: PRODUCT IDENTIFICATION

Product Name Bitumen

Product Type Paving Grade Bitumen

Product Number

Grades 60-70, 80-100

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

SECTION 2: COMPOSITION/ INFORMATION OF INGREDIENTS

Paving Grade Bitumen is a substance produced from crude oil and is intended for use in asphalt mixtures.

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

SECTION 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.



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Physical and Chemical Hazards 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.

SECTION 4: 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, fumes or vapour 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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SECTION 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 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.

Protection of Proper equipment (gloves, shoes, goggles or self contained breathing apparatus)

Fire Fighter

Other Information Keep adjacent containers cool by spraying with water. Hot bitumen can cause violent eruptions in contact with water, and may splatter hot material.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions 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.

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 Methods *Small Spill:*

Allow to cool and solidify. Remove mechanically into containers for disposal or reclamation in accordance with local regulations.

Large Spill:

Prevent from 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 concerning the disposal of this product.



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SECTION 7: HANDLING AND STORAGE

Maximum safe handling and storage temperature at least 30°C below the flash point.

Avoid overheating to minimise 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 Discharge from Bitumen Tanks 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.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

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

Measures Exposure to fumes should be minimised.

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 mg/m ³	BE-IP ¹	ACGIH
Bitumen Fume	10m STEL	5 mg/m ³	TPM ²	NIOSH
H ₂ S	8h TWA	14 mg/m ³	-	ACGIH
H ₂ S	10m STEL	21 mg/m ³	-	ACGIH

¹ Benzene Extractable - Inhalable Particulate ² Total Particulate Matter



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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 Protection 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.

Respiratory Protection Respiration protection is not required under normal conditions of use and with 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 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, smoking, use of toilet facilities or leaving work. DO NOT use gasoline, kerosene, solvents or harsh abrasive skin cleaners.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Physical State Solid at ambient temperature, liquid at normal handling temperatures

Colour Dark brown to black **Odour** Characteristic odour

pH Not Applicable

Specific Temperature of Change of Physical State:

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/m³ at 25°C depending upon grade.

850 to 1100 kg/m³ at 200°C (liquid) depending upon grade

Solubility:

Water Insoluble, non miscible

Organic Solvents Soluble in many organic solvents



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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

SECTION 10: STABILITY AND REACTIVITY

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

Material to Avoid 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.

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

Decomposition bitumen.

Products

SECTION 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.

Sensitisation 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



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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.

SECTION 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.

Water:

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

SECTION 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 authorised contractor or collector.

SECTION 14: TRANSPORT INFORMATION

Cold Not classified as hazardous for transport (ADR, RID, UN, IATA/ICAO).



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Hot Conform to local requirements, if none exists recommend:

UN Number : 3257

UN Class/Packing Group : 9, III

UN Proper Shipping Name : Elevated temperature liquid n.o.s. (at or above 100°C and below its flash point)

ADR/RID Class/Item : 9, -

ADR/RID Symbol : Miscellaneous

ADR/RID Proper : Elevated temperature liquid n.o.s. (at or above 100°C and below its flash point)

IATA/ICAO : Forbidden for transport on passenger and cargo aircraft in molten state.

IMO : Elevated temperature liquid n.o.s., Class 9, Packing Group III

EMERGENCY ACTION CODE : 2W

Note:

Under ADR emptied uncleaned tankers are classified as follows:

Emptied container class 9, item 71 ADR latest cargo 3257 Liquid elevated temperature n.o.s., item 20 [c].

SECTION 15: REGULATORY INFORMATION

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

SECTION 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

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