

Substance **PAVING BITUMEN**
B 35/50 ÷ B 650/900

1 NAME OF SUBSTANCE AND COMPANY

1.1 Product Identification

Name of Substance: Paving Bitumen: grades B 35/50, B 40/60, B 50/70, B 70/100, B 100/150, B 160/220, B 250/330, B 330/430, B 500/650, B 650/900

EC No. 265–196–4

CAS No. 64742–93–4

REACH Registration No. 01-2119498291-32-0018

1.2 Product Use

Established use: paving bitumen

1.3 Detailed Information on MSDS Supplier

Manufacturer:

Public Company *ORLEN Lietuva*

Juodeikiai, LT-89467 Mazeikiai distr., Lithuania

Tel.: (370) 443 92121

Telefax: (370) 443 92525

E-mail address: info@orlenlietuva.lt

1.4 Emergency telephone

Public Company *ORLEN Lietuva* (24 hours a day): 370 443 92510

Poison Center (24 hours a day): +370 52362052, mob. +370 687 53378

2 POSSIBLE HAZARDS

2.1 Classification of Substance

2.1.1 Classification according to Regulation (EC) No. 1272/2008: Not classified as hazardous substance.

2.1.1 Classification according to Council Directive 67/548/EEC: Not classified as hazardous substance.

2.2 Labelling

Labelling and classification according to Regulation (EC) No. 1272/2008

Signal word:

N/A.

Hazard pictograms

N/A.

Hazard statements:

N/A.

Precautionary statements:

N/A.

Other hazards

Paving bitumen is generally stored and handled at and above 100 °C temperatures. Exposure of hot bitumen of above 100 °C to water results in spontaneous boiling of water and abrupt ejection of water-and-bitumen emulsion from storage tank. Bitumen is a substance of hydrocarbon origin and therefore burns, especially at elevated temperature.

Paving bitumen at ambient temperature presents no hazards to human health. Bitumen is normally handled at elevated temperature and therefore may cause the risk of thermal burns.

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When heated bitumen evolves vapours. Although it is considered that vapour is non-hazardous to human health, for precautionary purposes exposure to the vapour should be minimal, good working practice should be observed and adequate ventilation of working area should be ensured. Paving bitumen is not classified as hazardous material in general environment category.

3 COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical composition:

Bitumen is a complex mixture of heavy hydrocarbons.

Components according to Regulation (EC) No. 1272/2008:

Description	CAS No.	EC No.	Identification Number	Concentration, % m/m
Bitumen	64742-93-4	265-196-4	N/A	100

4 FIRST-AID MEASURES

General Information

Contact with hot bitumen may cause severe thermal burns.

Hydrogen sulphide (H₂S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

Inhalation

Symptoms: irritation of the respiratory tract due to excess fume, mists or vapour exposure.

In case of symptoms arising from inhalation of fumes from oxidized bitumen, mists or vapour: remove casualty to a quiet and well ventilated place if safe to do so.

If casualty is unconscious and:

- Not breathing – ensure that there is no obstruction to breathing and give artificial respiration by trained personnel. If necessary, give external cardiac massage and obtain medical assistance.
- Breathing – place in the recovery position. Administer oxygen if necessary.

Obtain medical assistance if breathing remains difficult.

If there is any suspicion of inhalation of H₂S:

- Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures.
- Remove casualty to fresh air as quickly as possible.
- Immediately begin artificial respiration if breathing has ceased.
- Provision of oxygen may help.
- Provision of oxygen may help.
- Obtain medical advice for further treatment.

Skin Contact

Symptoms: Symptoms (product at ambient temperature): no effect. Contact with hot/molten product will cause severe burns. In the event of accidental skin contact with hot oxidized bitumen, the injured part should be immediately plunged under cold running water for at least 10 minutes. No attempt must be made to remove the bitumen adherent to the skin at the worksite because it makes a sterile air-free layer over the injured area. In the case of a circumferential burn with adhesion of the oxidized bitumen, the adhering material should be split to prevent a tourniquet effect as it cools. Send patient for specialist care.

For minor thermal burns: Cool the burn. Hold the burned area under cold running water for at least five minutes, or until the pain subsides. However, body hypothermia must be avoided.

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Do not put ice on the burn. Remove non-sticking garments carefully. DO NOT attempt to remove portions of clothing glued to burnt skin but cut round them. Seek medical attention in all cases of serious burns. Never use gasoline, kerosene or other solvents for washing of contaminated skin.

Eye Contact

Symptoms: (product at ambient temperature): minimal redness and irritation (unspecific). Contact with hot/molten product will cause severe burns. If hot oxidized bitumen is splashed into the eye, it should be cooled immediately to dissipate heat, under cold running water for at least five minutes. Immediately obtain specialist medical assessment and treatment for the casualty. In the event of eye contact with cold oxidized bitumen, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.

If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist.

Ingestion

Except for deliberate acts, not considered a likely route of exposure – burns of lips and mouth in contact with hot molten bitumen.

Symptoms: few or no symptoms are expected. If any, slight nausea might occur.

DO NOT induce vomiting. Get medical assistance. Aspiration: not applicable due to the physical state of bitumen.

Information to doctor or other competent person providing first aid.

Treat symptomatically.

5 FIRE-FIGHTING MEASURES

Flammability

Flammable.

Suitable Extinguishing Media

- Foam (specifically trained personnel only);
- Water fog (specifically trained personnel only);
- Dry chemical powder;
- Carbon dioxide;
- Other inert gases (subject to regulations);
- Sand or earth;
- Steam.

Unsuitable Extinguishing Media

Does not use direct water jets on the burning product; they could cause splattering and spread the fire. Avoid the contact of hot bitumen in tank with water as it will result in a violent expansion as the water turns to steam. This may cause splashing of hot product, or damage to, or complete loss of the tank roof. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Combustion Products

Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide, hydrogen sulphide (H₂S), sulfur oxides (SO_x) or sulfuric acid and unidentified organic and inorganic compounds.

Specific Hazards

Contact of hot bitumen with water will result in a violent expansion as the water turns to steam. Contact of hot bitumen in tank with water may cause spontaneous boil, ejection from tank and splashing. This may also result in the damage to the tank, rupture of the tank, or complete loss of the tank roof.

Respiratory problems or nausea by excessive exposure to hot product fumes.

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In case of a large fire or in confined or poorly ventilated spaces wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 ACCIDENTAL RELEASE MEASURES**General Information**

Stop or contain leak at the source, if safe to do so. Avoid direct contact with released material. Stay upwind. In case of large spillages, alert residents in downwind areas.

Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency.

It is recommended to eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares).

When the presence of dangerous amounts of H₂S around the spilled product is suspected or proved, additional or special actions may be warranted, including access restrictions, use of special protection equipment, procedures and personnel training.

If required, notify relevant authorities according to applicable regulations.

Personal Protective Equipment

Small spillages: normal working coveralls are usually adequate. Large spillages: full body suit of chemically resistant and thermal resistant material should be used.

Work gloves (preferably gauntlets) providing adequate chemical resistance. If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated.

NOTE: Gloves made of PVA are not water-resistant, and are not suitable for emergency use.

Work helmet with neck cloth. Antistatic non-skid safety shoes or boots, heat resistant.

Goggles and/or face shield, if contact with eyes or splashes are anticipated.

Respiratory protection: a half or full-face respirator with filter(s) for organic vapours/H₂S, or a Self-contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

Environmental Measures and Cleaning Methods**Spillages onto Land**

Leaks and spillages will consist of molten hot material. Risk of severe burns

Prevent product from entering sewers, rivers or other bodies of water.

NOTE: Solidified product may clog drains and sewers.

If necessary dike the product with earth, sand or similar non-combustible materials.

Let hot material cool naturally. If necessary, cautiously use water fog to help the cooling. Do not play direct jets of foam or water on the spilled molten product, as this may cause splattering.

When inside buildings or confined spaces, ensure adequate ventilation.

Collect solidified product with suitable mechanical means (e.g. shovels).

Transfer collected product to suitable containers for recycle, recovery or safe disposal.

Spillages on Water or at Sea

In case of spillages in the water, the product will cool down rapidly and become solid. The solid product is denser than water and will slowly sink to the bottom, and usually no intervention will be feasible.

If possible, contain the product. Collect the product and contaminated materials with mechanical means.

Transfer recovered product and other materials to suitable tanks or containers and store/dispose of according to relevant regulations.

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NOTE: Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. For this reason, local experts should be consulted when necessary. Local regulations may also prescribe or limit actions to be taken.

Concentration of H₂S in tank headspaces may reach hazardous values, especially in case of prolonged storage. This situation is especially relevant for those operations which involve direct exposure to the vapours in the tank. Spillages of limited amounts of products, especially in the open air when vapours will be usually quickly dispersed, are dynamic situations, which are unlikely to entail exposure to dangerous concentrations. As H₂S has a density greater than ambient air, a possible exception may regard the build-up of dangerous concentrations in specific spots, like trenches, depressions or confined spaces. In all these circumstances, however, the correct actions should be assessed on a case-by-case basis.

7 HANDLING AND STORAGE**General Information**

Ensure that all relevant regulations regarding handling and storage facilities of bitumen are followed.

Bitumen must be handled and stored as viscous liquid, i.e. at elevated temperature of above 100 °C.

Avoid contact of hot bitumen products with water. Risk of splashing of hot material.

Avoid contact with hot product.

A specific assessment of inhalation risks from the presence of H₂S in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases must be made to help determine controls appropriate to local circumstances.

Handling

Ground/bond containers, tanks and transfer/receiving equipment.

Do not breathe fumes from hot product.

Use adequate personal protective equipment as required.

Storage

Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation.

Storage installations should be designed with adequate bunds in case of leaks or spills.

Cleaning, inspection and maintenance of internal structure of storage equipment must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.

Before entering storage tanks and commencing any operation in a confined area check the atmosphere for oxygen content, hydrogen sulphide (H₂S) and flammability. Use adequate personal protective equipment as required.

Self-heating leading to auto ignition at the surfaces of porous or fibrous materials impregnated with oils or bitumens, can occur at temperatures as low as 100 °C. Oil and bitumen contamination of thermal insulation materials and the accumulation of oily rags or similar material near hot surfaces, should therefore be avoided, and lagging should be replaced where necessary by a nonabsorbent type of insulation.

Deposits (coke and pyrophoric compounds - iron sulphides) can develop on the internal walls and roofs of tanks in case of long term storage. These deposits may self-ignite in contact with the air.

Store separately from oxidising agents.

Recommended and Unsuitable Materials for Storage

Recommended materials: For containers (tanks), or container linings use mild steel, stainless steel.

Unsuitable materials: Most synthetic materials are unsuitable for containers or container linings, due to low heat resistance.

Substance **PAVING BITUMEN**
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Keep only in the original container or in a suitable container for this kind of product.

Hot bitumen must never be filled into containers without first checking that the container is completely dry.

Empty containers may contain flammable product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.

Precautionary measures when discharging bitumen from storage tanks, containers

When hot bitumen is pumped from storage tanks or road and railway tanks, care should be taken to avoid hot bitumen strewing on hot heating tubes because this may cause the ignition of the spattered product.

Bitumen tanks may be heated by hot oil, electricity or heating tubes. When bitumen is being pumped from tanks equipped with heating tubes, the level of product must not drop below 150 mm above the tubes. In order to pump out the remaining quantity of bitumen the heating of the tank must be cut off. Bulk bitumen temperature during handling must be maintained as low as possible consistent with discharge temperature.

When operating various heating systems, it is important to avoid local overheating of bitumen whereas it may be the cause of local thermal cracking of bitumen followed by the emission of flammable, explosive hydrocarbon gas and its potential ignition.

Application:

Paving bitumen is used as a component of asphalt or asphalt concrete used for the paving of roads, airports and other asphalt paving.

8 EXPOSURE CONTROL AND PERSONAL PROTECTION**Exposure Limits**

National occupational exposure limits allowed should be observed. Where not established, the following long-term exposure limit of H₂S which may be evolved from hot bitumen is recommended:

- 14 mg/m³.

Technical Measures

Volatility of bitumen is low therefore it gives off small quantities of vapour. Exposure to vapour and gas must be minimized. Ensure good ventilation of workplaces.

Personal Protective Equipment:**Respiratory Protection**

Respiratory protection is not required at proper ventilation of working area. Use appropriate respiratory protection equipment in the areas potential for hydrogen sulphide accumulation, e.g. filtering mask with filter acc. to EN 141.

Eye Protection

Wear safety goggles if eye contact may occur (e.g. acc. to EN 166).

Skin and Body Protection**Hand Protection**

Wear petroleum product resistant gloves (e.g. acc. to EN 420, EN 388, EN 374-2, EN 374-3).

Other Protective Measures

During normal operations with product, wear protective clothing (e.g. acc. to EN 465) and other protection equipment. During operations with hot product, wear heat resistant coverall, heat resistant gloves and boots. Cover your face, head and neck. Protective clothing should be regularly inspected and maintained.

Substance **PAVING BITUMEN
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Wash hands before breaks and after work.

Environmental Impact Control

To ensure the compliance of ventilation and process equipment with requirements of environmental legal acts, emissions of such equipment are subject to check ups. Bitumen vapour concentrations in the air of working environment should be controlled to the minimum allowed limit.

9 PHYSICAL AND CHEMICAL PROPERTIES**Appearance, colour, odour**

Black, solid at ambient temperature. Black liquid of specific odor at typical storage temperature (above 100 °C).

Important Safety Information

Flash point	>180 °C
Penetration at 25 °C	35 ÷ 900 x 0,1 mm
Density at 15°C	> 1000 kg/m ³
Solubility in water	insoluble

10 STABILITY AND REACTIVITY**Stability**

Stable at ambient temperature.

Materials to Avoid

Do not allow hot liquid product to contact with water or other liquids. Avoid product contact with strong oxidizing agents.

Conditions to Avoid

Prevent the contamination of equipment, apparatus and piping thermal insulation near hot surfaces with bitumen. Where necessary, thermal insulation should be replaced by non-absorbent type of insulation. Due to potential spontaneous coking or oxidation processes, the surface layer of porous and fibrous materials impregnated with bitumen or bitumen condensates may self-heat or self-ignite at temperature below 100 °C.

Hazardous Decomposition Products

In confined storage tank area toxic gas (hydrogen sulfide) may accumulate above hot bitumen. Burning bitumen evolves fume, carbon dioxide, carbon monoxide and other harmful gases.

11 TOXICOLOGICAL INFORMATION**Sources of Exposure**

Human body may be affected by the material by inhalation of gas (vapour) evolved from hot product.

Toxicity

All reviewed information and extrapolation from other information about other oil products indicate that acute toxicity is not characteristic to bitumen.

Acute Health Effects

Vapour evolved from hot bitumen may lead to slight irritation of the upper respiratory tract and eyes.

Hot liquid bitumen contact with eyes or skin causes thermal burns.

Solid bitumen does not cause skin irritation, whilst condensed bitumen vapour may cause skin irritation.

Substance **PAVING BITUMEN**
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Paving bitumen presents no chronic hazards at ambient temperature. However, it does contain low concentrations of polycyclic aromatic compounds. It is deemed that undiluted bitumen practically does not contain any of these compounds having biological activity characteristics. However, mixing paving bitumen with diluting agents may produce such compounds. Despite the known presence of these compounds in bitumen, there is no evidence that exposure to undiluted bitumen or its fume is harmful. However, it is recommended to minimize exposure to such environment. Safety measures most frequently limit any long-term skin hazard.

12 ECOLOGICAL INFORMATION**Ecotoxicity**

Bitumen does not cause any adverse affects in the aquatic and other environment.

Hot liquid bitumen spilled on soil or water quickly cools down and becomes solid. In this case, it produces only surface contamination hazard.

Durability and Degradability

Hydrocarbons of bitumen are not biodegradable. At normal conditions, the product is not mobile and therefore remains in the same location.

Bio-accumulative Potential

Unlikely due to low solubility in water.

Mobility

According to its physical properties bitumen is not volatile, therefore it stays on the surface of soil. In water it settles on the surface of organic sediments. Some grades of bitumen may float on water surface.

13 WASTE MANAGEMENT**Waste Disposal Methods**

Bitumen is not classified as hazardous waste. Recycling and utilization of unused product are recommended. Disposal of waste is subject to state and regional requirements. Contaminated containers must be disposed of by authorized agents. Personal protective equipment is necessary for personnel involved in waste disposal.

14 TRANSPORT INFORMATION

UN number - 3257

Shipping name - Paving Bitumen

Land Transport**ADR**

Hazard class - 9

Packing group - III

RID

Hazard class - 9

Packing group - III

Substance **PAVING BITUMEN**
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Commission Regulation (EU) No. 453/2010; Regulation (EC) No. 1272/2008 of the European Parliament and of the Council; Law on Chemical Substances and Preparations of the Republic of Lithuania (*Official Gazette (Valstybės Žinios)*, 2000, No. 36-987; 2004, No. 116-4329; 2005, No. 79-2846; 2006, No. 65-2381; 2008, No. 76-3000); Order No. 532 /742 „Regarding Procedure of Classification and Labeling of Hazardous Chemicals and Preparations“ issued by the Minister of Environment and Minister of Health Care of the Republic of Lithuania on 19 December 2000 (*Official Gazette*, 2001, No. 16-509; 2002, No. 81-3501; 2003, No. 81(1)-3703, No. 81(2)-3703, No. 81(3)-3703; 2005, No. 115-4196, No. 141-5095; 2008, No. 66-2517); Law of the Republic of Lithuania on Packing and Packing Wastes Management (*Official Gazette*, 2001, No. 85-2968); Lithuanian Hygienic Norm HN 23:2007 „Concentration Limit Values of Hazardous Chemicals in Working Environment Air. General Requirements“ (*Official Gazette*, 2007, Nr.108-4434) approved by Order No. V-827/A1-287 of the Minister of Health Care and the Minister of Social Security and Labor of the Republic of Lithuania on 15 October 2007.

Chemical Safety Assessment

Bitumen chemical safety assessment has been conducted.

16 OTHER INFORMATION

The Material Safety Data Sheet has been reviewed and the data therein were revised and laid out according the requirements of the Commission Regulation (EU) No. 453/2010.

According to Regulation (EC) No.1272/2008 and Council Directive 67/548/EEC this material is not classified as hazardous, therefore precautionary and risk phrases are not applicable.

Do not use bitumen for any purposes other than indicated in the manufacturer's information. During such use the user may be exposed to unforeseen hazards.

Should you have any questions or doubts regarding the MSDS, its contents or other issues related to the material safety, please contact us at the address: info@orlenlietuva.lt

NOTE: Information in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. Information provided herein serves only as guidelines for safe work, use, processing, storage, and waste management. It cannot be considered as a warranty or quality certificate. This information applies only to specific material designated and may not be suitable for such material used in combination with any other materials or in any other manner not described in this document.