SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Name of Substance: Paving Bitumen: grades B 20/30, 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

REACH Registration No.: 01-2119498270-36-0007

CAS No.: 64742-93-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Established use: paving bitumen

1.3 Details of the supplier of the safety data sheet

Manufacturer:

Public Company *ORLEN Lietuva*
Juodeikiai, LT-89467 Mažeikiai District, Lithuania
Tel.: +370 443 92121
Telefax: +370 443 92525
E-mail address: info@orlenlietuva.lt

1.4. Emergency telephone number

Public Company ORLEN Lietuva (24 hours a day): +370 443 92510
Poison Information Bureau. In case of poisoning (24 hours a day): +370 52362052

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of Substance or mixture

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

Not classified as hazardous substance.

2.2 Label elements

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.

2.3 Other hazards

Paving bitumen is generally stored and handled at and above 100 ^{o}C temperatures. Exposure of hot bitumen of above 100 ^{o}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.

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.

SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances

Chemical composition:

Bitumen is a complex mixture of heavy hydrocarbons.

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

Description	CAS No.	EC No.	Concentration, % m/m
Bitumen	64742–93–4	265–196–4	100

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General Information

Contact with hot bitumen may cause severe thermal burns. Hydrogen sulphide (H_2S) can accumulate in the headspace of storage tanks and reach potentially hazardous concentrations.

Inhalation

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 H_2S:
- 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. Obtain medical advice for further treatment.

Skin Contact

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.
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. Never use gasoline, kerosene or other solvents for washing of contaminated skin.
Seek medical attention in all cases of serious burns.

Eye Contact

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

4.2 Most important symptoms and effects, both acute and delayed
Inhalation of vapours or fumes of bitumen may cause of the respiratory tract due to excess fume, mists or vapour exposure. Skin contact at ambient temperature – no effect. Contact with hot/molten product will cause severe burns. Eye contact with product at ambient temperature – minimal redness and irritation (unspecific). Contact with hot/molten product will cause severe burns. Ingestion – few or no symptoms are expected. If any, slight nausea might occur.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Flammability
Flammable.

5.1 Extinguishing Media
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.

5.2 Special hazards arising from the substance or mixture
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 (H_2S), 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.

5.3 Advice for firefighters

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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

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/H_2S, 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.

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 H_2S 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.

6.2 Environmental precautions

Spillages onto Land

Stop or contain leak at the source, if safe to do so. 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.

Spillages on Water or at Sea

Stop or contain leak at the source, if safe to do so. 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.

6.3 Methods and material for containment and cleaning up

Spillages on to Land

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

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.

Additional Information
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 H_2S 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 H_2S 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.

6.4. Reference to other sections
See section 8 for Exposure controls/personal protection. See section 13 for Disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid release to the environment. 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 ^{o}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 H_2S 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.

7.2 Conditions for safe storage, including any incompatibilities
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 (H_2S) 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 oxidizing 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.

Container Advice lf the Product is Supplied in Tanks, Containers

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.

7.3 Specific end use(s)

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

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure Limits

National occupational exposure limits allowed should be observed. Where not established, the following long-term exposure limit of H_2S, which may be evolved from hot bitumen, is recommended – 14 mg/m^3.

8.2 Exposure controls

8.2.1 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.

8.2.2 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.

Special Hygienic Recommendations
Wash hands before breaks and after work.

8.2.3 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 checkups. Bitumen vapour concentrations in the air of working environment should be controlled to the minimum allowed limit.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	black, solid substance at ambient temperature, black liquid at typical storage temperature (above 100 ^{o}C).
b) Odour	black liquid of specific odor at storage temperature (above 100 ^{o}C).
c) Odour threshold	no data.
d) pH	insignificant information.
e) Melting point/freezing point	30 – 63 ^{o}C.
f) Initial boiling point and boiling range	> 200 ^{o}C.
g) Flash point	>180 ^{o}C.
h) Evaporation rate	no data.
i) Flammability (solid, gas)	no data.
j) Upper/lower flammability or explosive limits	Not applicable
k) Vapour pressure	< 0,1 kPa. at 20 ^{o}C
l) Vapour density	no data.
m) Relative density	> 1000 kg/m^{3}.
n) Solubility(ies)	insoluble.
o) Partition coefficient: n-octanol/water	no data.
p) Auto-ignition temperature	> 400 ^{o}C.
q) Decomposition temperature	no data.
r) Viscosity	100 – 1000 mm^{2}/s at 200 ^{o}C
s) Explosive properties	no data.
t) Oxidising properties	non-oxidising
u) Penetration at 25 ^{o}C	20 – 500 x 0,1 mm.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
No hazardous reaction when handled and stored according to provisions.

10.2 Chemical stability
Stable at ambient temperature.

10.3 Possibility of hazardous reactions
No known hazardous reactions.

10.4 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 ^{o}C.

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

10.6 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.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
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.

Chronic Health Effects
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.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
Bitumen does not cause any adverse effects 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.

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

12.3 Bioaccumulative Potential
Unlikely due to low solubility in water.

12.4 Mobility in Soil
According to its physical properties bitumen in 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.

12.5 Results of PBT and vPvB assessment
This substance no contains representative hydrocarbons structure were found to meet the PBT or vPvB.

12.6. Other adverse effects
Avoid release to the environment.
No significant toxicity.

SECTION 13: WASTE MANAGEMENT

13.1 Waste Treatment 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.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number	UN 3257
14.2 UN proper shipping name	ELEVATED TEMPERATURE LIQUID, N.O.S. (Paving Bitumen)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental hazard	–
14.6 Special precautions for users	Not applicable.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
No data.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture Lithuanian:
Commission Regulation (EU) No. 2015/830; Commission Regulation (EU) No. 453/2010; Regulation (EC) No. 1907/2006 of the European Parliament and of the Council; 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; 2010, Nr. 145-7434; 2010, Nr. 157-7967; 2012, Nr. 132-6648; Teisės aktų registras, Nr. 2015-11085); Law of the Republic of Lithuania on Packing and Packing Wastes Management (*Official Gazette*, 2001, No. 85-2968; 2005, No.86-3206; 2008, No.71-2699; 2011, Nr. 138-6526; 2012, Nr. 6-191; 2013, Nr. 110-5429; 2013, Teisės aktų registras, Nr. 2014-00038; Nr. 2014-05579; Nr. 2016-00088); Lithuanian Hygienic Norm HN 23:2011 „Concentration Limit Values of Hazardous Chemicals in Working Environment Air. General Requirements“ (*Official Gazette*, 2011, Nr. 38-1804) approved by Order No. V-824/A1-389 of the Minister of Health Care and the Minister of Social Security and Labour of the Republic of Lithuania on 1 September 2011.

15.2 Chemical Safety Assessment
Bitumen chemical safety assessment has been conducted.

SECTION 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. 2015/830.

Abbreviations and acronyms

CAS	Chemical Abstracts Service
EC No	EINECS and ELINCS Number
EN	European Standard
EU	European Union
PBT	Persistent, Bioaccumulative and Toxic substance
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation
UN	United Nations
vPvB	Very Persistent and Very Bioaccumulative

According to Regulation (EC) No.1272/2008 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.
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