SAFETY DATA SHEET
According to EC No 1907/2006 as amended as at the date of this SDS

Shell Bitumen 70/100

Version	Revision Date:	SDS Number:	Date of last issue: 05.04.2023
4.7	19.03.2024	800001004146	Print Date 05.10.2026

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : Shell Bitumen 70/100
Product code : 003E1624

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

Use of the Sub-stance/Mixture : Paving grade bitumen for road paving.
Please refer to section 16 and/or the annexes for the registered uses under REACH.

Uses advised against :

This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier : **Shell UK Oil Products Limited**
Shell Centre
London
SE1 7NA
United Kingdom
Telephone : (+44) 08007318888
Telefax :
Contact for Safety Data Sheet : If you have any enquiries about the content of this SDS please email bitumenSDS@shell.com

1.4 Emergency telephone number
: +44 (0) 20 7934 7778 (This telephone number is available 24 hours per day, 7 days per week)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Based on available data this substance / mixture does not meet the classification criteria.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms : No Hazard Symbol required
Signal word : No signal word

Hazard statements : PHYSICAL HAZARDS:
Not classified as a physical hazard according to CLP criteria.
HEALTH HAZARDS:
Not classified as a health hazard under CLP criteria.
ENVIRONMENTAL HAZARDS:
Not classified as environmental hazard according to CLP criteria.

Precautionary statements : **Prevention:**
No precautionary phrases.

Response:
No precautionary phrases.

Storage:
No precautionary phrases.

Disposal:
No precautionary phrases.

2.3 Other hazards

This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Not classified as flammable but will burn.
Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material.
These deposits, (carbonaceous materials and iron sulphides), may be pyrophoric and self-ignite when brought into contact with air (opening of tank).
Hydrogen sulphide is highly toxic and may be fatal if inhaled.
Hydrogen sulphide (H2S), an extremely flammable and toxic gas, and other hazardous vapours may evolve and collect in the headspace of storage tanks, transport vessels and other enclosed containers.
May dull the sense of smell and has a high odour threshold, so do not rely on odour as an indication of hazard.
Contact with hot material can cause thermal burns which may result in permanent skin damage.
Hot product may cause severe eye burns and/or blindness.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : A blend of components derived from crude petroleum oil.

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
Asphalt	8052-42-4 232-490-9 01-2119480172-44, UK-01-5407980276-2		0 - 100
Residues (petroleum) thermal cracked vacuum	92062-05-0 295-518-9 01-2119498290-34, UK-01-5240987567-2		0 - 100
Residues (Petroleum), Vacuum	64741-56-6 265-057-8 01-2119498291-32, UK-01-7422901088-4		0 - 100

Remarks : Contains hydrogen sulphide, CAS # 7783-06-4.
Hydrogen sulphide may be present both in the liquid and the vapour. Composition is complex and varies with the source of the crude oil and the contributing process plants at that time.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : DO NOT DELAY.
Keep victim calm. Obtain medical treatment immediately. Vapourisation of H2S that has been trapped in clothing can be dangerous to rescuers. Maintain respiratory protection to avoid contamination from the victim to rescuer. Mechanical ventilation should be used to resuscitate if at all possible.

Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

If inhaled : If inhalation of mists, fumes or vapour causes irritation to the nose or throat, remove to fresh air.
If rapid recovery does not occur, obtain medical attention. Casualties suffering ill effects as a result of exposure to hydrogen sulphide should be removed to fresh air.
Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardiopulmonary Resuscitation (CPR) as required and transport to the nearest

medical facility.

In case of skin contact : If contact with hot product, immediately cool the burn area by flushing or immersing the affected area with water for at least 15 to 20 minutes. Do not attempt to remove anything from the burn area or apply burn creams or ointments. During transport do not cover the wound with dressing or sheet since these may adhere to the product.
It should be noted this product contracts on cooling.
Where a limb is encased, care should be taken to avoid the development of a tourniquet effect. In the event of this occurring, the adhering product must be softened and/or split to prevent restriction of blood flow.
All burns should receive medical attention.

In case of eye contact : Hot product -
If contact with hot product, immediately cool the burn area by flushing with large amounts of water.
Do not attempt to remove anything from the burn area.
Do not apply burn creams or ointments.
Transport to the nearest medical facility for additional treatment.
During transport do not cover the wound with dressing or sheet since these may adhere to the product.
All burns should receive medical attention.

Cold product -
Flush eye with copious quantities of water.
Remove contact lenses, if present and easy to do. Continue rinsing.
If persistent irritation occurs, obtain medical attention.

If swallowed : Under normal conditions of use, this is not expected to be a primary route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.
Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.

Risks : H2S has a broad range of effects dependent on the airborne concentration and length of exposure: 0.02 ppm odour threshold, smell of rotten eggs; 10 ppm eye and respiratory tract irritation; 100 ppm coughing, headache, dizziness, nausea, eye irritation, loss of sense of smell in minutes; 200 ppm potential for pulmonary oedema after >20-30 minutes; 500 ppm loss of consciousness after short exposures, potential for respiratory arrest; >1000ppm immediate loss of consciousness, may lead rapidly to death, prompt cardiopulmonary resuscitation may be required. Do not depend on sense of smell for

warning. H2S causes rapid olfactory fatigue (deadens sense of smell). There is no evidence that H2S will accumulate in the body tissue after repeated exposure.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Do not attempt to remove the product from the skin as it provides an airtight sterile covering, which will eventually fall away with the scab as the burn heals.
If removal is attempted, mineral oil (not mineral spirits) or a mineral oil based ointment may be applied to help soften the product to facilitate removal.
Hydrogen sulphide (H2S) - CNS asphyxiant. May cause rhinitis, bronchitis and occasionally pulmonary oedema after severe exposure. CONSIDER: Oxygen therapy. Consult a Poison Control Center for guidance.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : Do not use water in a jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide.
Unidentified organic and inorganic compounds.
Boil-over of tanks and violent eruptions may occur in the presence of water.
Hydrogen sulphide (H2S) and toxic sulphur oxides may be given off when this material is heated. Do not depend on sense of smell for warning.

5.3 Advice for firefighters

Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : 6.1.1 For non emergency personnel:
Avoid contact with skin, eyes and clothing.
Hot product should be handled so that there is no risk of burns. Use compressed air or fresh air respiratory equipment in confined spaces.
6.1.2 For emergency responders:
Avoid contact with skin, eyes and clothing.
Hot product should be handled so that there is no risk of burns. Use compressed air or fresh air respiratory equipment in confined spaces.

6.2 Environmental precautions

Environmental precautions : Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Small spillage:
Allow product to cool and solidify.
Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.

Large spillage:
Prevent from spreading by making a barrier with sand, earth or other containment material.
Treat residues as for small spillage.

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet., Local authorities should be advised if significant spillages cannot be contained., For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures : Avoid contact with hot liquid to prevent thermal burns.

Advice on safe handling : The inherent toxic and olfactory (sense of smell) fatiguing properties of hydrogen sulphide require that air monitoring alarms be used if concentrations are expected to reach harmful levels such as in enclosed spaces, heated transport vessels and spill or leak situations. If the air concentration exceeds 10 ppm, the area should be evacuated unless respiratory protection is in use.
Vapours containing hydrogen sulphide will accumulate during storage or transport and will also be vented during filling of tanks. Stay upwind and away from newly opened hatches and

allow to vent thoroughly before handling material. Steam may be used to vent hatches. Keep all sources of ignition away from loading area.
For quality, health and safety reasons do not exceed the recommended storage and handling temperature.
Clean, dry and heat resistant hoses (free of twists, etc.) should be used.
Do not use steam to empty pipelines and hoses.
Use compressed air to blow product from the system or apply a vacuum to suck the product from the system.
Do not use solvents to clear obstructions of pipelines.
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Bulk storage tanks should be diked (bunded).

Hygiene measures : Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication "COSHH Essentials".

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage stability : Keep dry.
Keep container in a well-ventilated place.
Prevent all contact with water and with moist atmosphere.
In case of long-term storage, deposits may develop on walls and roofs of storage tanks.
These deposits, (carbonaceous materials and iron sulphides), may be pyrophoric and self-ignite when brought into contact with air (opening of tank).
Vapours containing hydrogen sulphide will accumulate during storage or transport and will also be vented during filling of tanks. Stay upwind and away from newly opened hatches and allow to vent thoroughly before handling material. Steam may be used to vent hatches. Keep all sources of ignition away from loading area.
Storage Temperature:
Temperature should be kept at least 30°C below flash point and should never exceed the industry recommended maximum safe working temperature of 200°C.

Packaging material : Suitable material: For containers or container linings, use stainless steel.
Unsuitable material: For containers or container linings avoid PVC, polyethylene or high density polyethylene.

7.3 Specific end use(s)

Specific use(s) : Tanks may be heated by hot oil, steam, electricity or flame tubes.
When pumping product from a storage or road tank, care should be taken to avoid the risk of fire or explosion as a result of exposing hot heater tubes.
The tubes should be covered by a minimum of 150mm of hot product, unless the heat has been switched off for a period of sufficient cooling.
Bulk temperature should be kept as low as possible, to enable efficient discharge.

A check should be made to ensure that the receiving tank has sufficient ullage space to accommodate the load.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Asphalt	8052-42-4	TWA (Fumes)	5 mg/m3	GB EH40
Asphalt		STEL (Fumes)	10 mg/m3	GB EH40
Asphalt		TWA (Fume, inhalable fraction)	0.5 mg/m3 (benzene soluble aerosol)	ACGIH
Hydrogen sulfide	7783-06-4	TWA	5 ppm 7 mg/m3	GB EH40
Hydrogen sulfide		STEL	10 ppm 14 mg/m3	GB EH40
Hydrogen sulfide		TWA	5 ppm 7 mg/m3	2009/161/EU
	Further information: Indicative			
Hydrogen sulfide		STEL	10 ppm 14 mg/m3	2009/161/EU
	Further information: Indicative			
Hydrogen sulfide		TWA	5 ppm 7 mg/m3	Shell Internal Standard (SIS) for 8 hour TWA.
Hydrogen sulfide		STEL	10 ppm 14 mg/m3	Shell Internal Standard (SIS) for 15 min (STEL)
Hydrogen sulfide		TWA	1 ppm	ACGIH
Hydrogen sulfide		STEL	5 ppm	ACGIH

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Asphalt	Workers	Inhalation	Long-term local effects	2.88 mg/m3
Asphalt	Consumers	Inhalation	Long-term local effects	0.61 mg/m3
Residues (petroleum) thermal cracked vacuum	Workers	Inhalation	Long-term local effects	2.88 mg/m3
Residues (petroleum)	Consumers	Inhalation	Long-term local ef-	0.61 mg/m3

thermal cracked vacuum			fects	
Residues (Petroleum), Vacuum	Workers	Inhalation	Long-term local effects	2.88 mg/m3
Residues (Petroleum), Vacuum	Consumers	Inhalation	Long-term local effects	0.61 mg/m3

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Remarks:	Exposure assessments have not been presented for the environment therefore PNEC values not required.	

8.2 Exposure controls

Engineering measures

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
Adequate ventilation to control airborne concentrations.

General Information:
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.

Personal protective equipment

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Eye protection : Wear safety glasses and face shield (preferably with a chin guard) if splashes are likely to occur.
Approved to EU Standard EN166.

Hand protection

Remarks : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide

		suitable chemical protection. Heat resistant gloves and PVC or nitrile rubber gloves. When handling heated product wear heat resistant gloves. For continuous contact we recommend gloves with break-through time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.
Skin and body protection	:	For normal operations with hot material wear chemical and heat resistant boots and overalls (with cuffs over gloves and legs over boots). The use of a neck apron is recommended.
Respiratory protection	:	If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for the combination of organic gases and vapours and particles meeting EN14387 and EN143 [Filter type A/P for use against certain organic gases and vapours with a boiling point >65°C (149°F) and for use against particles]. In areas where hydrogen sulphide vapours may accumulate, a positive-pressure air-supplied respirator is advised.
Thermal hazards	:	When handling heated product, wear heat resistant gloves, safety hat with chin strap, face shield (preferably with a chin guard), safety glasses, heat resistant coveralls (with cuffs over gloves and legs over boots), neck protection and heavy duty boots, e.g. leather for heat resistance.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	Solid at room temperature. Liquid at high temperatures.
Colour	:	Brown to black
Odour	:	characteristic
Odour Threshold	:	Data not available
Melting point/range	:	100 - 150 °C
Initial boiling point and boiling range	:	>= 500 °CMethod: ASTM D1160
Flammability		
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Not classified as flammable but will burn.
Lower explosion limit and upper explosion limit / flammability limit		
Upper explosion limit / upper flammability limit	:	Data not available
Lower explosion limit / Lower flammability limit	:	Data not available
Flash point	:	> 230 °C Method: ASTM D92 (COC)
Auto-ignition temperature	:	> 300 °C
Decomposition temperature		
Decomposition temperature	:	Data not available
pH	:	Not applicable
Viscosity		
Viscosity, dynamic	:	Data not available
Viscosity, kinematic	:	Data not available
Solubility(ies)		
Water solubility	:	negligible
Solubility in other solvents	:	soluble
Partition coefficient: n-octanol/water	:	Data not available
Vapour pressure	:	Data not available Method: Unspecified

Relative density	:	Data not available
Density	:	>= 942 kg/m3 (70 °C) Method: ISO 12185 900 - 1,300 kg/m3 (15.0 °C) Method: ASTM D4052
Relative vapour density	:	Not applicable
Particle characteristics		
Particle size	:	Data not available Data not available

9.2 Other information

Explosive properties	:	Classification Code: Not classified.
Oxidizing properties	:	Not applicable
Flammability (liquids)	:	Not classified as flammable but will burn.
Evaporation rate	:	Not applicable
Conductivity	:	This material is not expected to be a static accumulator.

SECTION 10: Stability and reactivity

10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Data not available

10.4 Conditions to avoid

Conditions to avoid	:	Heating above the maximum recommended storage and handling temperature, will cause degradation and evolution of flammable vapours.

10.5 Incompatible materials

Materials to avoid	:	Do not allow molten material to contact water or liquids as this can cause violent eruptions, splatter hot material, or ignite flammable material. Reacts with strong oxidising agents. Avoid contamination of thermal insulation near hot surfaces by

oil and bitumen and replace lagging where necessary, with a non-absorbent type of insulation.
Self-heating, leading to auto-ignition at the surfaces of porous or fibrous materials impregnated with bitumen or condensates from bituminous fumes, can occur at temperatures below 100°C.

10.6 Hazardous decomposition products

Hydrogen sulphide.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of exposure : Skin and eye contact are the primary routes of exposure although exposure may occur through inhalation or following accidental ingestion.
Inhalation is not expected to be a relevant route of exposure except under conditions where exposure to vapours, aerosols or mists is possible.

Acute toxicity

Product:

Acute oral toxicity : (rat): Remarks: Low toxicity
LD50 > 5000 mg/kg

Acute inhalation toxicity : Remarks: Low toxicity by inhalation.
Avoid vapours from heated materials to prevent exposure to potentially toxic/irritating fumes.

Acute dermal toxicity : (Rabbit): Remarks: LD50 >2000 mg/kg
Low toxicity
Based on available data, the classification criteria are not met.

Acute toxicity (other routes of administration) : Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system.

Skin corrosion/irritation

Product:

Remarks : Contact with hot material can cause thermal burns which may result in permanent skin damage.
Slightly irritating to skin.
Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Product:

Remarks : Hot product may cause severe eye burns and/or blindness.
Irritating to eyes. (Hydrogen Sulfide)
Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:

Test Type : Respiratory sensitisation
Remarks : Not a sensitiser.
Based on available data, the classification criteria are not met.

Test Type : Skin sensitisation
Remarks : Not a skin sensitiser.
Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:

Genotoxicity in vivo : Remarks: Non mutagenic
Based on available data, the classification criteria are not met.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Product:

Remarks : Bitumens contain low concentrations of Polycyclic Aromatic Compounds (PACs).
At ambient temperatures and in undiluted bitumens these PACs are not considered to be bio-available. However, if bitumens are mixed with diluents to obtain a low viscosity at ambient temperatures, or heated it is believed that such materials may become bio-available.
A two-year inhalation study that exposed rats to fumes collected from an air-rectified asphalt was negative.

Carcinogenicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Material	GHS/CLP Carcinogenicity Classification
Asphalt	No carcinogenicity classification.
Hydrogen sulfide	No carcinogenicity classification.
Residues (petroleum) thermal cracked vacuum	No carcinogenicity classification.

Residues (Petroleum), Vacuum	No carcinogenicity classification.

Material	Other Carcinogenicity Classification
Asphalt	IARC: Group 2B: Possibly carcinogenic to humans
Residues (Petroleum), Vacuum	IARC: Group 2B: Possibly carcinogenic to humans

IARC	
Asphalt	Occupational exposures to hard bitumens and their emissions during mastic asphalt work are 'possibly carcinogenic to humans' (IARC Group 2B). Occupational exposures to straight-run bitumens and their fume condensates during road paving are 'possibly carcinogenic to humans' (IARC Group 2B).
Residues (petroleum) thermal cracked vacuum	Occupational exposures to hard bitumens and their emissions during mastic asphalt work are 'possibly carcinogenic to humans' (IARC Group 2B). Occupational exposures to straight-run bitumens and their fume condensates during road paving are 'possibly carcinogenic to humans' (IARC Group 2B).
Residues (Petroleum), Vacuum	Occupational exposures to hard bitumens and their emissions during mastic asphalt work are 'possibly carcinogenic to humans' (IARC Group 2B). Occupational exposures to straight-run bitumens and their fume condensates during road paving are 'possibly carcinogenic to humans' (IARC Group 2B).

Reproductive toxicity

Product:

Effects on fertility : Remarks: Not a developmental toxicant., Based on available data, the classification criteria are not met., Does not impair fertility.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

STOT - single exposure

Product:

Remarks : Inhalation of vapours or mists cause irritation to the respiratory system. (Hydrogen Sulfide)

The value is given in analogy to the following substances: Hydrogen sulfide

STOT - repeated exposure

Product:

Remarks : Based on available data, the classification criteria are not met.

Aspiration toxicity

Product:

Not an aspiration hazard., Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : Classifications by other authorities under varying regulatory frameworks may exist.
H2S has a broad range of effects dependent on the airborne concentration and length of exposure: 0.02 ppm odour threshold, smell of rotten eggs; 10 ppm eye and respiratory tract irritation; 100 ppm coughing, headache, dizziness, nausea, eye irritation, loss of sense of smell in minutes; 200 ppm potential for pulmonary oedema after >20-30 minutes; 500 ppm loss of consciousness after short exposures, potential for respiratory arrest; >1000ppm immediate loss of consciousness, may lead rapidly to death, prompt cardiopulmonary resuscitation may be required. Do not depend on sense of smell for warning. H2S causes rapid olfactory fatigue (deadens sense of smell). There is no evidence that H2S will accumulate in the body tissue after repeated exposure.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: LL/EL/IL50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to daphnia and other : Remarks: LL/EL/IL50 > 100 mg/l

aquatic invertebrates		Practically non toxic: Based on available data, the classification criteria are not met.
Toxicity to algae/aquatic plants	:	Remarks: LL/EL/IL50 > 100 mg/l Practically non toxic: Based on available data, the classification criteria are not met.
Toxicity to fish (Chronic toxicity)	:	Remarks: NOEC/NOEL > 100 mg/l
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	Remarks: NOEC/NOEL > 100 mg/l
Toxicity to microorganisms	:	Remarks: LL/EL/IL50 > 100 mg/l Practically non toxic: Based on available data, the classification criteria are not met.

12.2 Persistence and degradability

Product:

Biodegradability	:	Remarks: Not readily biodegradable. Persistent per IMO criteria. International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340ºC (645ºF) and (b) at least 95% of which, by volume, distils at a temperature of 370ºC (700ºF) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

12.3 Bioaccumulative potential

Product:

Bioaccumulation	:	Remarks: Has the potential to bioaccumulate.

12.4 Mobility in soil

Product:

Mobility	:	Remarks: If it enters soil, it will adsorb to soil particles and will not be mobile., In water will either float or sink, showing little tendency to disperse.

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : Causes physical fouling of aquatic organisms.
Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Recover or recycle if possible.
Waste product should not be allowed to contaminate soil or water.
Waste, spills or used product is dangerous waste.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
Do not dispose into the environment, in drains or in water courses.
Do not dispose of tank water bottoms by allowing them to drain into the ground.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging : Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

Local legislation
Remarks : EU Waste Disposal Code (EWC):

05 01 17 bitumen
Classification of waste is always the responsibility of the end user.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : 3257

RID : 3257

IMDG : 3257

IATA : 3257
(Not permitted for transport)

14.2 UN proper shipping name

ADR : ELEVATED TEMPERATURE LIQUID, N.O.S. (Bitumen)

RID : ELEVATED TEMPERATURE LIQUID, N.O.S. (Bitumen)

IMDG : ELEVATED TEMPERATURE LIQUID, N.O.S. (Bitumen)

IATA : ELEVATED TEMPERATURE LIQUID, N.O.S.

14.3 Transport hazard class(es)

ADR : 9

RID : 9

IMDG : 9

IATA : 9
Not permitted for transport

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M9
Hazard Identification Number	:	99
Labels	:	9

RID

Packing group	:	III
Classification Code	:	M9
Hazard Identification Number	:	99
Labels	:	9

IMDG

Packing group	:	III
Labels	:	9

IATA

Packing group	:	Not Assigned
Remarks	:	IATA - Forbidden for transport on passenger and cargo aircraft in molten state.

14.5 Environmental hazards

ADR

Environmentally hazardous	:	no

RID

Environmentally hazardous	:	no

IMDG

Marine pollutant	:	no

14.6 Special precautions for user

Remarks	:	Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category	:	Not applicable
Ship type	:	Not applicable
Product name	:	Not applicable

Additional Information **:** Not dangerous for conveyance under UN, IMO, ADR/RID, IATA codes if transported at ambient temperature.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	:	Product is not subject to Authorisation under REACH.

Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Environmental Protection Act 1990 (as amended). Health and Safety at Work etc. Act 1974. Consumers Protection Act 1987. Pollution Prevention and Control Act 1999. Environment Act 1995. Factories Act 1961. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011. Chemicals (Hazard Information and Packaging for Supply) Regulations 2009. Control of Substances Hazardous to Health Regulations 2002 (as amended). Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (as amended). Personal Protective Equipment Regulations 2002. Personal Protective Equipment

at Work Regulations 1992. Hazardous Waste (England and Wales) Regulations 2005(as amended). Control of Major Accident Hazards Regulations 1999 (as amended). Renewable Transport Fuel Obligations Order 2007 (as amended). Energy Act 2011. Environmental Permitting (England and Wales) Regulations 2010 (as amended). Waste (England and Wales) Regulations 2011 (as amended). Planning (Hazardous Substances) Act 1990 and associated regulations. The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2011.

The components of this product are reported in the following inventories:

EINECS : All components listed or polymer exempt.

15.2 Chemical safety assessment

A Chemical Safety Assessment was performed for all substances of this product.

SECTION 16: Other information

Full text of other abbreviations

2009/161/EU	:	Europe. COMMISSION DIRECTIVE 2009/161/EU establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
GB EH40	:	UK. EH40 WEL - Workplace Exposure Limits
2009/161/EU / TWA	:	Limit Value - eight hours
2009/161/EU / STEL	:	Short term exposure limit
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	:	Short-term exposure limit (15-minute reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of

Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Training advice	:	Provide adequate information, instruction and training for operators.
Other information	:	A vertical bar (|) in the left margin indicates an amendment from the previous version. This mixture does not contain any REACH registered substances that are assessed to be a PBT or a vPvB. This product is not classified for human health or environmental hazards. An exposure scenario is not required. Under Article 31 of REACH, a SDS is not required for this product. Therefore, this SDS has been created on a voluntary basis to pass on potentially relevant information required under Article 32.
Sources of key data used to compile the Safety Data Sheet	:	The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

Identified Uses according to the Use Descriptor System
Uses - Worker

Title	:	- Industrial Manufacture of substance Distribution of substance Use as an intermediate Formulation & (re)packing of substances and mixtures Use in coatings

Uses - Worker

Title	:	- Professional Use in coatings

Uses - Consumer

Title	:	- Consumer Use in coatings

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guid-

ance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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