SAFETY DATA SHEET

Section 1. Identification

Product name	Asphalt
Other means of identification	Covers all Paving, Emulsion Base and Modifed Binders and Olexobit branded Modifed Binders. This SDS is suitable for asphalts to be used in paving applications only. Refer to SDS 0000002908 for Industrial Asphalt applications.
SDS #	0000002913
Historic SDS #:	0472501(BP); 11158 (Amoco); 11159 (Amoco); 11661 (Amoco); 11662 (Amoco); 11773 (Amoco); 11774 (Amoco); 12260 (Amoco); 12261 (Amoco);
Code	0000002913

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

Product use	Paving applications
Supplier	BP Products North America Inc. 150 West Warrenville Road Naperville, Illinois 60563-8460 USA
EMERGENCY HEALTH INFORMATION:	1 (800) 447-8735 Outside the US: +1 703-527-3887 (CHEMTREC)
EMERGENCY SPILL INFORMATION:	1 (800) 424-9300 CHEMTREC (USA)
OTHER PRODUCT INFORMATION	1 (866) 4 BP - MSDS (866-427-6737 Toll Free - North America) email: bpcares@bp.com

Section 2. Hazards identification

OSHA/HCS status	This material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	Not classified.

GHS label elements

Signal word	No signal word.
Hazard statements	No known significant effects or critical hazards.

Precautionary statements

Prevention	Not applicable.
Response	Not applicable.
Storage	Not applicable.
Disposal	Not applicable.
Hazards not otherwise classified	This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas. This product can be delivered, stored and used at temperatures above 100°C. Will cause burns if hot material contacts eyes. Will cause burns if hot material contacts skin. Mild irritation of the respiratory tract and eyes at high exposure concentrations

Section 2. Hazards identification

Section 3. Composition/information on ingredients

Substance/mixture Mixture

Ingredient name	CAS number	%
Asphalt	8052-42-4	100
Contains:		
Hydrogen Sulfide	7783-06-4	<1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	Hot product - Flood with water to dissipate heat. In the event of any product remaining, do not try to remove it other than by continued irrigation with water. Obtain medical attention immediately. Cold product - Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.
Skin contact	Hot Product - Flood skin with cold water to dissipate heat, cover with clean cotton or gauze, obtain medical advice immediately. Cold Product - Wash contaminated skin with soap and water. Remove contaminated clothing and wash underlying skin as soon as reasonably practicable.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms occur. EXPOSURE TO HYDROGEN SULFIDE (H2S): Casualties suffering ill effects as a result of exposure to hydrogen sulfide should be immediately removed to fresh air and medical assistance obtained without delay. Unconscious casualties must be placed in the recovery position. Monitor breathing and pulse rate and if breathing has failed, or is deemed inadequate, respiration must be assisted, preferably by the mouth to mouth method. Administer external cardiac massage if necessary. Seek medical attention immediately.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training.

Most important symptoms/effects, acute and delayed

See Section 11 for more detailed information on health effects and symptoms.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treatment should in general be symptomatic and directed to relieving any effects. Inhalation of hydrogen sulfide may cause central respiratory depression leading to coma and death. It is irritant to the respiratory tract causing chemical pneumonitis and pulmonary edema. The onset of pulmonary edema may be delayed for 24 to 48 hours. Treat with oxygen and ventilate as appropriate. Administer broncho-dilators if indicated and consider administration of corticosteroids. Keep casualty under surveillance for 48 hours in case pulmonary edema develops. Where skin burns occur the area should be immediately immersed in cold water until the bitumen is thoroughly cooled. Do not attempt to remove the bitumen from the skin as it provides an airtight sterile covering over the burn which will eventually fall away with the scab as the burn heals. If for any reason the bitumen must be removed, this can be done using a slightly warmed medicinal liquid paraffin. Kerosine and other solvents should never be used. All burns should receive medical attention. It should be noted that bitumen contracts on cooling and where a limb is encased care should be taken to avoid the development of a tourniquet effect.
Specific treatments	No specific treatment.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	In case of fire, use water fog, foam, dry chemicals, or carbon dioxide.
Unsuitable extinguishing media	Do not use water jet.

Specific hazards arising from the chemical	Avoid spraying directly into storage containers because of the danger of boil-over. Do not allow hot molten product to come into contact with water or other liquids. Boil-over is the rapid increase in volume caused by the presence of water in hot product and the subsequent overflow from a tank.
Hazardous combustion products	Combustion products may include the following: carbon oxides (CO, CO_2) (carbon monoxide, carbon dioxide) sulfur oxides (SO, SO_2 etc.) other hazardous substances.
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Immediately contact emergency personnel. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Put on appropriate personal protective equipment. Floors may be slippery; use care to avoid falling. This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas. Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without the correct respiratory protective equipment and a safe system of work. Wear self-contained positive pressure breathing apparatus (SCBA).
For emergency responders	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions	Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately. 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.

Methods and materials for containment and cleaning up

Small spill	Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

Large spill Eliminate all ignition sources. Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Dike spill area and do not allow product to reach sewage system and surface or ground water. Depending upon its temperature the product may be liquid, semi-solid or solid. Protect drains from spills and prevent entry of product, since this may result in blockage on cooling. Should blockage occur, notify the appropriate authority immediately. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures Contact with hot product may cause burns. Put on appropriate personal protective equipment. Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate. Do not spray onto wet road surfaces or when rain is forecast as any resultant run-off could contaminate ditches and drains.

Advice on general occupational hygiene Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

When product is heated to high temperatures, vapor, mists or fumes will be given off and may condense, contaminating the skin or clothing of operatives. Prolonged or repeated contact with this condensate may give rise to dermatitis. Regular periodic self inspection of the skin is recommended, especially those areas subject to contamination. In the event of any localised changes in appearance or texture of the skin being noticed, medical advice should be sought without delay.

Conditions for safe storage, including any incompatibilities Do not use steam or compressed air to empty pipelines and hoses. Clean, dry and heat resistant hoses should be used. Do not use solvents to clear obstructions from pipelines. Gentle heat can be used to clear obstructions. This product can be delivered, stored and used at temperatures above 100°C. For quality, technical, and health, safety and environmental reasons, asphalt should not be overheated during handling and storage. Our company representative will provide advice on storage and application temperatures, which are grade specific. Operating temperatures should be kept as low as possible to minimise fume generation.

We recommend however that, as a general rule, asphalt temperature should be kept in the range 130°C to 200°C and never exceed the industry recommended maximum safe working temperature of 200°C.

At higher temperatures significant decomposition can occur, with an increased risk of generating flammable/hazardous atmospheres. Under such aberrant circumstances, measures must be taken to ensure skin and inhalation exposure is minimised through adequate workplace ventilation and the use of appropriate personal protective equipment.

When product is stored for a long period of time, deposits may form on the walls and roofs of storage tanks. These deposits (carbonaceous materials, iron sulphide) may be pyrophoric and auto-ignite when they come into contact with oxygen in the air, for example, when product is removed from the tank. The control of oxygen concentration in the vapour space of the tank will help to prevent the formation of pyrophoric deposits. Tanks containing product can be heated by heater tubes. Care should be taken when product is being pumped from a tank to avoid the risk of fire or explosion caused by exposing hot heater tubes. Unless the heat has been switched off for a period of time to allow sufficient cooling to occur, precautions should be taken to prevent the level of product above the heater tubes dropping below 150 mm.

This material can contain hydrogen sulfide (H_2S), a very toxic and extremely flammable gas. Vapors containing hydrogen sulfide may accumulate during storage or transport and may also be vented during filling of tanks. Hydrogen sulfide has a typical "bad egg" smell but at high concentrations the sense of smell is rapidly lost, therefore do not rely on sense of smell for detecting hydrogen sulfide. Use specially designed measuring instruments for determining its concentration. Entry into a confined space or poorly ventilated area contaminated with vapor, mist or fume is extremely hazardous without

Section 7. Handling and storage

the correct respiratory protective equipment and a safe system of work. Wear self-contained breathing apparatus.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Asphalt (Bitumen) fume as benzene-soluble aerosol	**NIOSH REL (United States).** CEIL: 5 mg/m^3 15 minutes. Issued/Revised: 6/1994 Form: Fume **ACGIH TLV (United States).** TWA: 0.5 mg/m^3, (as benzene soluble aerosol) 8 hours. Issued/Revised: 3/2000 Form: Inhalable fraction
Contains:	
Hydrogen Sulfide	**ACGIH TLV (United States).** STEL: 5 ppm 15 minutes. Issued/Revised: 11/2009 TWA: 1 ppm 8 hours. Issued/Revised: 11/2009 **OSHA PEL Z2 (United States).** AMP: 50 ppm 10 minutes. Issued/Revised: 6/1993 CEIL: 20 ppm Issued/Revised: 6/1993 **NIOSH REL (United States).** CEIL: 10 ppm 10 minutes. Issued/Revised: 6/1994 CEIL: 15 mg/m^3 10 minutes. Issued/Revised: 6/1994

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Appropriate engineering controls

All activities involving chemicals should be assessed for their risks to health, to ensure exposures are adequately controlled. Personal protective equipment should only be considered after other forms of control measures (e.g. engineering controls) have been suitably evaluated. Personal protective equipment should conform to appropriate standards, be suitable for use, be kept in good condition and properly maintained. Your supplier of personal protective equipment should be consulted for advice on selection and appropriate standards. For further information contact your national organisation for standards.
Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits.
The final choice of protective equipment will depend upon a risk assessment. It is important to ensure that all items of personal protective equipment are compatible.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

Eye/face protection

Hot material: to prevent thermal burns wear a helmet, full face visor and heat resistant neck flap / apron.
Cold material: wear safety glasses with side shields. Chemical splash goggles.

Skin protection

Hand protection

Hot material: to prevent thermal burns wear heat resistant and impervious gauntlets/ gloves.
Cold material: Wear chemical resistant gloves. Recommended: nitrile gloves.

Protective gloves must give suitable protection against mechanical risks (i.e. abrasion, blade cut and puncture). Do not re-use gloves. Protective gloves will deteriorate over time due to physical and chemical damage. Inspect and replace gloves on a regular basis. The frequency of replacement will depend upon the circumstances of use.

Consult your supervisor or Standard Operating Procedure (S.O.P) for special handling instructions.

Body protection

Cold material: Wear impervious coveralls covering the full body and limbs.
Cotton or polyester/cotton overalls will only provide protection against light superficial contamination.
Chemical resistant boots.
When the risk of skin exposure is high (from experience this could apply to the following tasks: cleaning work, maintenance and service, filling and transfer, taking samples and cleaning up spillages) then a chemical protective suit and boots will be required.
Work clothing / overalls should be laundered on a regular basis. Laundering of contaminated work clothing should only be done by professional cleaners who have been told about the hazards of the contamination. Always keep contaminated work clothing away from uncontaminated work clothing and uncontaminated personal clothes.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Use only with adequate ventilation. Avoid breathing vapor or mist. Air supplied respiratory protection approved by NIOSH should be worn whenever it is required for the worker's face to be within 3 feet of an open hatch.In case of insufficient ventilation, wear suitable respiratory equipment.
Suitable breathing apparatus (independent of ambient atmosphere) must be worn where there is a risk of hydrogen sulfide exposure limits being exceeded.
If there is a requirement for the use of a respiratory protective device, but the use of breathing apparatus (independent of ambient atmosphere) is not required, then a suitable filtering device must be worn.
The filter class must be suitable for the maximum contaminant concentration (gas/vapor/ aerosol/particulates) that may arise when handling the product.
The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Thermal hazards

Hot material: Wear impervious and heat resistant coveralls covering the full body and limbs. Wear suitable protective clothing to protect against heat and brief contact with flame. Precautions are required to prevent protective clothing from accidentally trapping product against the skin. Trouser legs should be worn over protective boots. The sleeve cuffs of protective clothing should be worn over protective gloves / gauntlets.

Protection should be provided for exposed areas of the neck and head. As appropriate, a heat resistant and impervious hood, a neck cover / apron or a neck flap can be used to protect from burns. Hard hat. Heat resistant boots. Footwear highly resistant to chemicals.

Section 9. Physical and chemical properties

Appearance	
Physical state	Viscous liquid.
Color	Brown. and Black. (Dark.)
Odor	Amine. Characteristic. Petroleum
Odor threshold	Not available.
pH	Not available.
Melting point	(Softening Point)
Boiling point	Not available.
Flash point	Open cup: >230°C (>446°F) [ASTM D-92 Cleveland]
Evaporation rate	Not available.
Flammability (solid, gas)	
Lower and upper explosive (flammable) limits	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Density	1020 to 1040 kg/m^3 (1.02 to 1.04 g/cm^3) at Ambient temperature
Relative density	<1 at Handling temperature; (>1 Ambient temperature)
Solubility	Very slightly soluble in water
Solubility	Very slightly soluble in the following materials: cold water.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Dynamic: 0.1 to 500 Pa·s (100 to 500000 cP) at 60°C

Section 10. Stability and reactivity

Reactivity	No specific test data available for this product. Refer to Conditions to avoid and Incompatible materials for additional information.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	Avoid excessive heat.
Incompatible materials	Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Species	Result	Exposure	Remarks

Section 11. Toxicological information

Asphalt	LC50 Inhalation Dusts and mists	Rat	>94.4 mg/m³	4 hours	Based on Oxidized Bitumen
	LD50 Dermal	Rabbit	>2000 mg/kg	-	Based on Vacuum residue
	LD50 Oral	Rat	>5000 mg/kg	-	Based on Vacuum residue

Conclusion/Summary Not classified. Based on available data, the classification criteria are not met.

Irritation/Corrosion

Product/ingredient name	Species	Result	Score	Exposure	Observation	Conc.	Remarks
Asphalt	Rabbit	Skin - Non-irritant to skin.	-	-	-	-	Based on Vacuum residue
	Rabbit	Eyes - Non-irritating to the eyes.	-	-	-	-	Based on Vacuum residue

Skin Not classified. Based on available data, the classification criteria are not met.

Eyes Not classified. Based on available data, the classification criteria are not met.

Sensitizer

Product/ingredient name	Route of exposure	Species	Result	Remarks
Asphalt	skin	Guinea pig	Not sensitizing	Based on Vacuum residue

Skin Not classified. Based on available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result	Remarks
Asphalt	Equivalent to OECD 474	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Positive	Based on Asphalt, oxidized
	OECD 471	Experiment: In vitro Subject: Non-mammalian species	Positive	Based on Asphalt
	Equivalent to OECD 474	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Asphalt, oxidized
	not guideline	Experiment: In vivo Subject: Unspecified Cell: Germ	Negative	Based on Asphalt

Conclusion/Summary Not classified. Based on available data, the classification criteria are not met. Assessment was by using a weight of evidence approach.

Carcinogenicity

Product/ingredient name							
Asphalt	OECD	451	Rat	Inhalation	2 years	Negative - Inhalation - Unspecified	Based on Asphalt, oxidized
	not guideline	-	Mouse	Dermal	2 years	Negative - Dermal - Unspecified	Based on Asphalt

Conclusion/Summary Not classified. Based on available data, the classification criteria are not met.

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Result	Exposure
Asphalt	-	-	Negative	Rat	Inhalation	50 days
	-	Negative	-	Rat	Inhalation	50 days

Conclusion/Summary Development: Not classified. Based on available data, the classification criteria are not met.
Fertility: Not classified. Based on available data, the classification criteria are not met.
Effects on or via lactation: Not classified. Based on available data, the classification criteria are not met.

Information on the likely routes of exposure	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact	Will cause burns if hot material contacts eyes.
Skin contact	Will cause burns if hot material contacts skin.
Inhalation	No known significant effects or critical hazards.
Ingestion	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	No specific data.
Skin contact	No specific data.
Inhalation	No specific data.
Ingestion	No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	May be harmful by inhalation if exposure to vapor, mists or fumes resulting from thermal decomposition products occurs. Vapor, mist or fume may irritate the nose, mouth and respiratory tract. Vapor, mist or fume may cause eye irritation. Exposure to vapor, mist or fume may cause stinging, redness and watering of the eyes.
Potential delayed effects	Not available.

Long term exposure

Potential immediate effects	When product is heated to high temperatures, vapor, mists or fumes will be given off and may condense, contaminating the skin or clothing of operatives. Prolonged or repeated contact with this condensate may give rise to dermatitis.
Potential delayed effects	Vapor, mists or fumes may contain polycyclic aromatic hydrocarbons some of which are known to produce skin cancer.

Potential chronic health effects

General	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Additional information

Hydrogen sulfide (H2S) gas may accumulate in storage tanks of bulk transport compartments containing this material. Contact with eyes causes painful conjunctivitis, sensitivity to light, tearing and clouding of vision. Inhalation of low concentrations causes a runny nose with a loss of sense of smell, labored breathing and shortness of breath. Direct contact with skin causes pain and redness. Other symptoms of exposure include profuse salivation, nausea, vomiting, diarrhea, giddiness, headache, dizziness, confusion, rapid breathing, rapid heart rate, sweating, weakness, sudden collapse, unconsciousness and death due to respiratory paralysis.Cardiac neurological effects have also been reported. Prolonged breathing (greater than one hour) of concentrations of H2S around 50 ppm can produce eye and respiratory tract irritation. Levels of 250 to 600 ppm will result in fluid in the lungs, and concentrations around 1,000 ppm will cause unconsciousness and death in a short period of time. Since the sense of smell rapidly becomes insensitive to this toxic, colorless gas, odor cannot be relied upon as an indicator of concentrations of the gas. Always exercise caution when working around closed containers.

Asphalt fume condensate generated under laboratory conditions has produced positive results in the Ames mutagenicity test. However, asphalt fume condensate collected in the field under actual field conditions has tested negative.

Laboratory-generated asphalt fume condensate has been shown to produce skin tumors in mice when applied to their skin repeatedly for prolonged periods of time over the entire course of their lifetime. The fume condensate used in these studies was generated using unrealistically high temperatures and vacuum conditions.

A similar study in mice using fume condensate generated from paving grade asphalt under actual workplace conditions produced no skin tumors.

Further studies have shown that the chemical composition and physical properties of laboratory-generated fume differ markedly from the composition and properties of fume generated in the field under actual workplace conditions. These differences indicate that the health hazards attributed to laboratory-generated fume are not representative of actual workplace hazards.

There is no evidence that neat asphalt is carcinogenic. Therefore, intermittent or occasional skin contact with petroleum asphalt is not expected to have serious health effects as long as good personal hygiene measures, such as those outlined in this material safety data sheet, are followed.

No carcinogenic effects have been observed in laboratory animals during lifetime inhalation studies with asphalt aerosol or fume. Chronic inflammatory changes to the respiratory tract have been observed in exposed animals. These changes include bronchitis, pneumonitis, and pulmonary congestion, which are similar to the inflammatory effects seen following chronic inhalation exposure to other types of non-specific respiratory irritants.

Health monitoring studies of lung cancer among asphalt workers have yielded contradictory results. While some studies are negative, others are positive but confounded by worker co-exposure to other potential lung carcinogens such as cigarette smoke and coal tar.

The International Agency for Research on Cancer (IARC) has conducted its own large health monitoring study on workers. No evidence of an association between workplace exposure to asphalt fume and lung cancer was found.

The IARC has concluded that there is inadequate evidence to classify asphalt as carcinogenic to humans.

Section 12. Ecological information

Toxicity

No testing has been performed by the manufacturer.

Product/ingredient name	Species	Test/Result	Exposure	Effects	Remarks
Asphalt	Micro-organism	LL50 >1000 mg/l Nominal Fresh water	40 hours	growth inhibition	Based on Asphalt, oxidized
	Micro-organism	NOEL >1000 mg/l Nominal Fresh water	40 hours	growth inhibition	Based on Asphalt, oxidized
	Algae	Acute EL50 >1000 mg/l Nominal Fresh water	72 hours	(growth rate)	Based on Asphalt, oxidized
	Daphnia	Acute LL50 >1000 mg/l Nominal Fresh water	48 hours	Mobility	Based on Asphalt, oxidized
	Fish	Acute LL50 >1000 mg/l Nominal Fresh water	96 hours	Mortality	Based on Asphalt, oxidized
	Fish	Chronic LL50 >1000 mg/l Nominal Fresh water	28 days	Mortality	Based on Asphalt, oxidized
	Daphnia	Chronic NOEL >1000 mg/l Nominal Fresh water	21 days	Reproduction	Based on Asphalt, oxidized
	Fish	Chronic NOEL >1000 mg/l Nominal Fresh water	28 days	Mortality	Based on Asphalt, oxidized

Conclusion/Summary	Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Soil/water partition coefficient (K_{OC})	Not available.
Mobility	Spillages are unlikely to penetrate the soil.

Other ecological information

Density (g/cm3): ~ 1
This product has a density close to that of water. Spills are unlikely to form a distinct film on the water surface, and may become dispersed as globules if mixed or agitated.

Density (g/cm3): > 1
If released to water the product will sink.

Density (g/cm3): < 1

Section 12. Ecological information

Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Hydrogen sulfide; Hydrogen sulfide H2S	7783-06-4	Listed	U135

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3257	Not regulated.	UN3257	UN3257
UN proper shipping name	Elevated temperature liquid, n.o.s. (Asphalt)	-	Elevated temperature liquid, n.o.s. (Asphalt)	Elevated temperature liquid, n.o.s. (Asphalt)
Transport hazard class(es)	9 	-	9 	9 
Packing group	III	-	III	III
Environmental hazards	No.	No.	No.	No.
Additional information	**Reportable quantity** 10000 lbs / 4540 kg [1164.4 gal / 4407.8 L] The classification of the product is due solely to the presence of one or more US DOT-listed 'Hazardous substances' that are subject to reportable quantity requirements and only	**Remarks** Forbidden: Passenger and Cargo Aircraft	**Remarks** IMDG page: 9027-1	**Remarks** Forbidden: Passenger and Cargo Aircraft Note: Not regulated temperature < 100 C (212 F)

Section 14. Transport information

	applies to shipments of packages greater than, or equal to, the product reportable quantity. Package sizes less than the product reportable quantity are not regulated as hazardous materials. **Remarks** Forbidden for transport on passenger and cargo aircraft in molten state.			

Special precautions for user Not available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

Section 15. Regulatory information

U.S. Federal regulations

United States inventory (TSCA 8b) **United States inventory (TSCA 8b):** All components are listed or exempted.

SARA 302/304

Composition/information on ingredients

			SARA 302 TPQ		SARA 304 RQ	
Name	%	EHS	(lbs)	(gallons)	(lbs)	(gallons)
Hydrogen Sulfide	0 - 1	Yes.	500	-	100	-

SARA 304 RQ 10000 lbs / 4540 kg [1164.4 gal / 4407.8 L]

SARA 311/312

Classification Immediate (acute) health hazard

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements	Hydrogen Sulfide	7783-06-4	0 - 1
Supplier notification	Hydrogen Sulfide	7783-06-4	0 - 1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts **Massachusetts Substances**: The following components are listed: ASPHALT FUMES; HYDROGEN SULFIDE

Section 15. Regulatory information

New Jersey	**New Jersey Hazardous Substances**: The following components are listed: ASPHALT FUMES; HYDROGEN SULFIDE
Pennsylvania	**Pennsylvania RTK Hazardous Substances**: The following components are listed: ASPHALT; HYDROGEN SULFIDE (H2S)
California Prop. 65	**WARNING:** This product contains a chemical known to the State of California to cause cancer. naphthalene

Other regulations

Australia inventory (AICS)	At least one component is not listed.
Canada inventory	At least one component is not listed.
China inventory (IECSC)	At least one component is not listed.
Japan inventory (ENCS)	At least one component is not listed.
Korea inventory (KECI)	At least one component is not listed.
Philippines inventory (PICCS)	At least one component is not listed.
Taiwan inventory (CSNN)	
REACH Status	For the REACH status of this product please consult your company contact, as identified in Section 1.

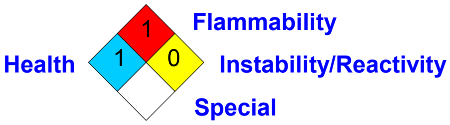
Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	1
Flammability	1
Physical hazards	0
Personal protection	X

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

National Fire Protection Association (U.S.A.)



History

Date of issue/Date of revision	01/12/2015.
Date of previous issue	10/17/2014.

Key to abbreviations

ACGIH = American Conference of Industrial Hygienists
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
CAS Number = Chemical Abstracts Service Registry Number
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OEL = Occupational Exposure Limit
SDS = Safety Data Sheet
STEL = Short term exposure limit
TWA = Time weighted average

Section 16. Other information

UN = United Nations
UN Number = United Nations Number, a four digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods.

◤ **Indicates information that has changed from previously issued version.**

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.