



## MATERIAL SAFETY DATA SHEET

# Asphalt

VALERO MARKETING & SUPPLY COMPANY  
and Affiliates  
P.O. Box 696000  
San Antonio, TX 78269-6000

### Emergency Phone Numbers

24 Hour Emergency: 866-565-5220  
Chemtrec Emergency: 800-424-9300

### General Assistance

General Assistance: 210-345-4593

**BRAND NAMES:** Valero, Diamond Shamrock, Shamrock, Ultramar, Beacon, Total

## Section 1. Chemical Product and Company Identification

- Common / Trade name** : Asphalt
- Synonym** : PBA/PG Grade Paving Asphalt, AR/AC Paving Grade Asphalt, AC Grade Petroleum Asphalt, Asphalt Cement, PEN Grade Asphalt, AS20, Emulsion Base Stock (E.B.S.)-Asphalt, Roofing Flux, Roofing Saturant, Solvent Deasphalted Bottoms Petroleum Asphalt, Propane Deasphalted Bottoms Petroleum Asphalt, Vacuum Tower Bottoms Petroleum Asphalt, Steam Refined Asphalt, Oxidized Petroleum Asphalt, Built Up Roofing Asphalt (BURA) - Type I, II, III, & IV; ASTM D-312 Roofing Asphalt - Type I, II, III, & IV; Coating Asphalt, Damp Roofing ASTM D 449-89 - Type I, II, III, & IV

SYNONYMS/Common Names: This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

- Material uses** : Asphalt products are to be used as road and highway paving applications; waterproofing and sealing applications; coatings; or other engineering applications. Use in other applications may result in higher exposures and require additional engineering controls and personal protective equipment.

**MSDS #** : 208

**CAS #** : 8052-42-4

## Section 2. Hazards Identification

Danger! Product May Contain or Release Hydrogen Sulfide. H<sub>2</sub>S is a highly toxic, highly flammable gas which can be fatal if inhaled at certain concentrations.

CAUTION: This product is normally shipped very hot (above 300°F). Contact causes burns and skin irritation. Do not mix hot asphalt with water. May cause irritation to eyes, skin and respiratory system. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard, can enter lungs and cause damage. May cause irritation or be harmful if inhaled or absorbed through the skin. Avoid prolonged or repeated skin contact. Contains polycyclic aromatic compounds which have been shown to cause anemia, disorders of the liver, bone marrow and lymphoid tissues in rats following dermal application. Product is stored and shipped hot so thermal burns are a risk. Vapors may explode at temperatures near flashpoint. AVOID CONTACT WITH SKIN!

**Physical state** : Liquid. DARK BROWN TO BLACK LIQUID WITH A STRONG PETROLEUM ODOR AT NORMAL USE TEMPERATURES ABOVE 350F. SEMI-SOLID A 70F.

**Emergency overview** : Warning!

Continued on next page

CAUSES SKIN IRRITATION.

CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.

POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.

Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

**Routes of entry** : Dermal contact. Eye contact. Inhalation. Ingestion.

#### Potential acute health effects

##### **Eyes**

: This product is normally stored, shipped, or used hot (300 F to 375 F) and thermal burns are a risk. At ambient temperature, may cause severe irritation, redness, tearing, blurred vision and conjunctivitis.

##### **Skin**

: This product is normally stored, shipped, or used hot (300° F to 375° F) and thermal burns are a risk. Prolonged or repeated contact may cause moderate irritation, defatting (cracking), redness, itching, inflammation, dermatitis and possible secondary infection. Possible cancer hazard based on skin painting studies in laboratory animals. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first. Within a few hours, tissues will become swollen, discolored and extremely painful. See Notes to Physician section.

##### **Inhalation**

: Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest and sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.

##### **Ingestion**

: This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

#### **Medical conditions aggravated by over-exposure**

: Preexisting eye, skin, heart and respiratory disorders may be aggravated by exposure to this product. Skin contact may aggravate existing dermatitis.

#### **Over-exposure signs/symptoms**

: Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest or sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.

See toxicological information (section 11)

## **Section 3. Composition, information on ingredients**

<u>Name</u>	<u>CAS number</u>	<u>Concentration ( % )</u>
Asphalt	8052-42-4	0 - 100
Asphalt (oxidized)	64742-93-4	0 - 100
Vacuum Tower Bottoms	64741-56-6	0 - 100
Distillates, petroleum residues vacuum	68955-27-1	0 - 15
Polycyclic Aromatic Hydrocarbons	130498-29-2	<0.1
Hydrogen Sulfide	7783-06-4	<0.1

## **Section 4. First Aid Measures**

**Eye contact** : Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness continues.

- Skin contact** : Immediately contact physician for thermal burns. In case of skin contact with hot product, immediately immerse or drench the affected area in water to assist cooling. Get medical attention. Remove contaminated clothing promptly and launder before reuse. Contaminated leather goods should be discarded. If irritation persists or symptoms described in the MSDS develop, seek medical attention. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention.
- Inhalation** : Remove to fresh air. If breathing is difficult, ensure clear airway and administer oxygen. If not breathing, apply artificial respiration or cardiopulmonary resuscitation. Keep person warm, quiet and get medical attention.
- Ingestion** : Never give anything by mouth to an unconscious person. DO NOT induce vomiting. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis which can be fatal. Give vegetable oil or charcoal slurry to retard absorption. If spontaneous vomiting occurs, keep head below hips to prevent aspiration of liquid into lungs and monitor for breathing difficulty. SEEK IMMEDIATE MEDICAL ATTENTION. Keep person warm and quiet.
- Notes to physician** : In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Irregular heart beat may occur, use of adrenalin is not advisable. Individuals intoxicated by the product should be hospitalized immediately, with acute and continuing attention to neurological and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode, individuals should be monitored for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be monitored for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

## Section 5. Fire Fighting Measures

- Flammability of the product** : May ignite at temperatures near flashpoint.
- Auto-ignition temperature** : >315.6°C (600.1°F)
- Flash point** : Closed cup: >176.7°C (350.1°F).
- Flammable limits** : Lower: 0.9% Upper: 7%
- Products of combustion** : Combustion may produce carbon monoxide, carbon dioxide and reactive hydrocarbons (aldehydes, aromatics, etc.) compounds, nitrogen oxides, sulfur oxides, particulate matter, and hydrogen sulfide.
- Fire hazards in the presence of various substances** :
- Explosion hazards in the presence of various substances** :
- Fire-fighting media and instructions**
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : The use of directly applied water is usually not recommended.
- 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.
- In a fire or if heated, a pressure increase will occur and the container may burst.

**Special protective equipment for fire-fighters**

- : Dangerous when exposed to heat or flame. Vapors may form flammable or explosive mixtures at elevated temperatures. Vapor or gas may spread to distant ignition sources (pilot lights, welding equipment, electrical equipment, etc.) and flash back. Vapors may accumulate in low areas. Vapors may concentrate in confined areas. Flowing product can be ignited by self generated static electricity. Use adequate bonding and grounding to prevent static buildup. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. For fires involving this material, do not enter any enclosed or confined space without proper protective equipment, which should include NIOSH approved self-contained breathing apparatus with full face mask. Clothing, rags or similar organic material contaminated with this product and stored in a closed space may undergo spontaneous combustion. Transfer to and from commonly bonded and grounded containers.

**Special remarks on fire hazards**

- : When heated above its flash point, this material will release flammable vapors which, if exposed to a source of ignition, can burn in the open or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Dry chemical, halon carbon dioxide are the preferred extinguishing media. Foam and water fog are effective but can cause frothing. Big fires, such as tank fires, should be fought with caution. If the burning liquid is 200F or hotter, the use of water, water spray, or foam can cause frothing and even sudden boilover of the tank, endangering the lives of personnel such as firefighters. If possible, pump the contents from the tank and keep adjoining structures cool with water. Water can be used to cool fire-exposed containers, structures and to protect personnel. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers.

**Section 6. Accidental Release Measures****Personal precautions**

- : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

**Environmental precautions**

- : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Fire and Explosion Hazard Data before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

**Methods for cleaning up  
Small spill**

- : For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. Stop leak if without risk. Move containers from spill area. Dispose of via a licensed waste disposal contractor.

- Large spill** : If emergency personnel are unavailable, contain spilled material. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

## Section 7. Handling and Storage

- Handling** : Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Use only in well ventilated locations. Keep away from spark and flames. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire and Explosion Hazard Data section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire.

Keep out of reach of children. Failure to use caution may cause serious injury or illness.

- Storage** : Material is normally stored in closed tanks at 250-375F. Keep away from sources of ignition and incompatible materials. Use non-sparking tools and explosion proof equipment. Ground lines, containers, and other equipment used during product transfer to reduce the possibility of a static induced spark. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking, smoking or using toilet facilities.

## Section 8. Exposure controls, personal protection

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal protection

- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Keep away from eyes. Eye contact can be avoided by wearing safety glasses or chemical splash goggles.

- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Keep away from skin. Skin contact can be minimized by wearing protective gloves such as neoprene, nitrile-butadiene rubber, etc. and, where necessary, impervious clothing and boots. Leather goods contaminated with this product should be discarded. A source of clean water should be available in the work area for flushing eyes and skin. Flame Retardant Clothing is recommended.

- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

- Personal protective equipment (Pictograms)** : Consult your Supervisor or S.O.P. for special handling directions.



**Personal protection in case of a large spill** : Splash goggles. Full suit. Vapor respirator. Boots. Gloves. Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

**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.

**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.

### Component

Asphalt

### Exposure limits

**ACGIH TLV (United States).**

TWA: 0.5 mg/m<sup>3</sup> 8 hour(s). Form: Fume

**NIOSH REL (United States, 6/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen**

CEIL: 5 mg/m<sup>3</sup> 15 minute(s). Form: Fume

**OSHA PEL (United States, 6/1993).**

TWA: 0.2 mg/m<sup>3</sup> 8 hour(s). Form: Benzene soluble

**ACGIH TLV (United States, 3/2004).**

TWA: 0.2 mg/m<sup>3</sup> 8 hour(s). Form: Benzene-soluble

**ACGIH TLV (United States, 9/2004).**

TWA: 10 ppm 8 hour(s). Form: All forms

STEL: 15 ppm 15 minute(s). Form: All forms

**NIOSH REL (United States, 12/2001).**

CEIL: 10 ppm 10 minute(s). Form: All forms

**OSHA PEL Z2 (United States, 8/1997).**

CEIL: 20 ppm Form: All forms

AMP: 50 ppm 10 minute(s). Form: All forms

Polycyclic Aromatic Hydrocarbons

Hydrogen Sulfide

Consult local authorities for acceptable exposure limits.

## Section 9. Physical and Chemical Properties

**Physical state** : Liquid. DARK BROWN TO BLACK LIQUID WITH A STRONG PETROLEUM ODOR AT NORMAL USE TEMPERATURES ABOVE 350F. SEMI-SOLID A 70F.

**Color** : BLACK, BROWN

**Odor** : Strong Petroleum Odor

**Boiling point** : 371.1 to 593.4°C (700 to 1100.1°F)

**Melting/freezing point** : >57.2°C (135°F)

**Specific gravity** : 1 to 1.2 (Water = 1)

**Vapor pressure** : <0.01 kPa (<0.1 mm Hg) (at 20°C)

**Vapor density** : >1.6 (Air = 1)

**Solubility** :

## Section 10. Stability and reactivity data

**Stability** : The product is stable.

**Hazardous polymerization** : Will not occur.

**Conditions to avoid** : Avoid exposure - obtain special instructions before use.

**Materials to avoid** : Oxidizing agent.

**Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced. Combustion may produce carbon monoxide, carbon dioxide and reactive hydrocarbons (aldehydes, aromatics, etc.) compounds, nitrogen oxides, sulfur oxides, particulate matter, and hydrogen sulfide.

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## Section 11. Toxicological Information

### Toxicity data

**ASPHALT** contains polycyclic aromatic hydrocarbons, which are potentially carcinogenic. Skin painting studies in laboratory animals with petroleum residuums have produced severe irritation and systemic toxicity, including cancers. The residuum contains polycyclic aromatic compounds which have been shown to cause anemia, disorders of the liver, bone marrow and lymphoid tissues in rats following dermal application. While rodent studies are exquisitely sensitive to chemical carcinogens of this type, there is no clear evidence that these chemicals are carcinogenic to man. As a minimum, it has been demonstrated in early studies that application of these materials to human skin produces a fairly rapid local reaction and inflammation. Animal inhalation studies have not yielded sufficient evidence of asphalt-induced lung cancer, and only limited investigations of the metabolic changes caused by petroleum asphalt fumes have been done. Fumes from heated petroleum roofing asphalt did not produce cancers in the lungs of rats and guinea pigs inhaling such fumes for two years. Similarly, a roofing petroleum asphalt proved noncarcinogenic to the skin of mice and rabbits.

Evidence for Carcinogenicity:

THERE IS INADEQUATE EVIDENCE THAT BITUMENS ALONE ARE CARCINOGENIC TO HUMANS. THERE IS SUFFICIENT EVIDENCE FOR THE CARCINOGENICITY OF EXTRACTS OF STEAM-REFINED BITUMENS, AIR-REFINED BITUMENS AND POOLED MIXTURES OF STEAM- AND AIR-REFINED BITUMENS IN EXPERIMENTAL ANIMALS. THERE IS INADEQUATE EVIDENCE FOR THE CARCINOGENICITY OF UNDILUTED AIR-REFINED BITUMENS IN EXPERIMENTAL ANIMALS. THERE IS LIMITED EVIDENCE FOR THE CARCINOGENICITY OF UNDILUTED STEAM-REFINED BITUMENS AND FOR CRACKING-RESIDUE BITUMENS IN EXPERIMENTAL ANIMALS. /BITUMENS/

[IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 1972-PRESENT. (Multivolume work)., p. S7 59 (1987)]\*\*PEER REVIEWED\*\*

**HYDROGEN SULFIDE** can affect the body if it is inhaled or if it comes into contact with the eyes, skin, nose or throat. It can also affect the body if it is swallowed. It is colorless and has the odor of rotten eggs. However, its odor cannot be used as an indication of its presence since one of the first effects of H<sub>2</sub>S exposure is the loss of the sense of smell. Inhalation of high concentrations of hydrogen sulfide, 1000 to 2000 ppm, may cause coma after a single breath and may be rapidly fatal, convulsions can also occur. Hydrogen sulfide gas is a rapidly acting systemic poison which causes respiratory paralysis with consequent asphyxia at high concentrations (500 to 1000 ppm). A case of polyneuritis and encephalopathy from one day's exposure to a concentration insufficient to cause loss of consciousness has been reported. It irritates the eyes and respiratory tract at lower concentrations (50 to 500 ppm). Pulmonary edema and bronchial pneumonia may follow prolonged exposure at concentrations exceeding 250 ppm. Exposure to concentrations of hydrogen sulfide around 50 ppm for one hour may produce rhinitis, pharyngitis, bronchitis, pneumonitis, acute conjunctivitis with pain, lacrimation and photophobia, in severe form this may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. In lower concentrations, hydrogen sulfide may cause headache, fatigue, irritability, insomnia, and gastrointestinal disturbances, as well as central nervous system disturbances, causing excitation and dizziness. Repeated exposure to hydrogen sulfide results in increased susceptibility, so that eye irritation, cough and systemic effects may result from concentrations previously tolerated without any effect.

### Acute toxicity

#### Product/ingredient name

#### Result

#### Species

#### Dose

Vacuum Tower Bottoms	LD Dermal	Rabbit	>2 g/kg
	LD Oral	Rat	>5 g/kg
	LD50 Intraperitoneal	Rat	1100 ug/kg
	LD50 Oral	Rat	1800 mg/kg
	LD50 Oral	Rat	930 mg/kg
	LD50 Oral	Rat	1 mL/kg
	LD50 Oral	Rat	6400 mg/kg
	LDLo Subcutaneous	Rat	5 mg/kg
	TDLo Dermal	Rat	0.92 mL/kg
	TDLo Oral	Rat	320 mg/kg
	TDLo Oral	Rat	1280 mg/kg
	LD50 Intraperitoneal	Rat	1332 mg/kg
	LD50 Intravenous	Rat	1960 mg/kg
	LD50 Oral	Rat	636 mg/kg
	LD50 Unreported	Rat	6900 mg/kg
	LDLo Intraperitoneal	Rat	2.5 mL/kg
	TDLo Intraperitoneal	Rat	900 mg/kg
	TDLo Intraperitoneal	Rat	1 g/kg
	TDLo Intraperitoneal	Rat	750 mg/kg
	TDLo Intraperitoneal	Rat	600 mg/kg
TDLo Oral	Rat	400 mg/kg	
TDLo Oral	Rat	800 mg/kg	
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg
	LD50 Dermal	Rat	>2500 mg/kg
	LD50 Oral	Rat	>490 mg/kg
	LD50 Unreported	Rat	1250 mg/kg
Polycyclic Aromatic Hydrocarbons	TDLo Intraperitoneal	Rat	100 mg/kg
	LD50 Subcutaneous	Rat	50 mg/kg
	TDLo Intraperitoneal	Rat	100 mg/kg
	TDLo Intraperitoneal	Rat	50 mg/kg
	TDLo Intraperitoneal	Rat	40 mg/kg
	TDLo Intratracheal	Rat	12 mg/kg
	TDLo Intratracheal	Rat	10.5 mg/kg
	TDLo Oral	Rat	12.5 mg/kg
	TDLo Oral	Rat	25 mg/kg
	TDLo Oral	Rat	100 mg/kg

### Carcinogenicity

#### Classification

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Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Asphalt	A4	3	-	+	-	-
Benzene	A1	1	-	+	Proven.	+
Toluene	A4	3	-	-	-	-
Naphthalene	A4	2B	-	-	Possible	-
Polycyclic Aromatic Hydrocarbons	A2	2A	-	-	Possible	-

**Chronic effects on humans** : **CARCINOGENIC EFFECTS:** Classified + (Proven - Animal) by NIOSH [Asphalt]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Asphalt]. Classified 3 (Not classifiable for humans.) by IARC [Asphalt (oxidized)]. Classified 2 (Suspected for humans.) by European Union [Distillates, petroleum residues vacuum]. Classified 2B (Possible for humans.) by IARC [Naphthalene]. Classified A4 (Not classifiable for humans or animals.) by ACGIH [Naphthalene]. Classified A2 (Suspected for humans.) by ACGIH, 2A (Probable for human.) by IARC, 2 (Reasonably anticipated to be human carcinogens.) by NTP [Polycyclic Aromatic Hydrocarbons]. Causes damage to the following organs: upper respiratory tract, skin, eye, lens or cornea.

**Other toxic effects on humans** : No specific information is available in our database regarding the other toxic effects of this material to humans.

#### Specific effects

**Carcinogenic effects** : Contains material which may cause cancer, based on animal data. Risk of cancer depends on duration and level of exposure.

**Target organs** : Causes damage to the following organs: upper respiratory tract, skin, eyes, eye, lens or cornea.

## Section 12. Ecological Information

### Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Naphthalene	Acute EC50 1.96 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 1600 to 3400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 2550 to 3400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 2194 to 2459 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 6470 to 9140 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute EC50 5960 to 9190 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 32.9802 ppm Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 31.0265 ppm Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 19.7675 ppm Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 17.6998 ppm Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 2.6 to 2.89 ppm Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 2.1 ppm Fresh water	Fish - Coho salmon, silver salmon - Oncorhynchus kisutch	96 hours
	Acute LC50 1600 ug/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 17.4 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 1370 to 1680 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 1240 to 1620 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 1200 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 2920 to 3890 ug/L Fresh water	Daphnia - Water flea - Daphnia pulex	48 hours
	Acute LC50 9.93 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 12500 to 20500 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 2350 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 4.9 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 9820 to 13100 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
Acute LC50 2.25 mg/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss	96 hours	
Polycyclic Aromatic Hydrocarbons	Acute LC50 25.4 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 2160 to 2560 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 4000 ug/L Fresh water	Crustaceans - Shrimp - Macrobrachium kistnensis	48 hours
	Acute LC50 2000 to 4000 ug/L Fresh water	Crustaceans - Shrimp - Macrobrachium kistnensis	48 hours
	Acute LC50 4000 to 6000 ug/L Fresh water	Crustaceans - Shrimp - Macrobrachium kistnensis	48 hours
	Acute LC50 0.25 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours

### Biodegradability

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[Biodegradability](#)**Section 13. Disposal Considerations**

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

Consult your local or regional authorities.

**Section 14. Transport Information**

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
<b>DOT Classification</b>	UN 3257	Elevated Temperature Liquid, n.o.s. Not regulated by DOT if at room temperature and in containers of 119 gallons of less.	9	III		<p><b>Limited quantity</b> Yes.</p> <p><b>Packaging instruction</b> Passenger aircraft Quantity limitation: Forbidden.</p> <p><b>Cargo aircraft</b> Quantity limitation: Forbidden.</p> <p><b>Special provisions</b> IB1, T3, TP3, TP29</p>
<b>TDG Classification</b>	Not available.	Not available.	Not available.	Not available.		Not available.

**Section 15. Regulatory Information****United States**

**HCS Classification** : Irritating material  
Carcinogen  
Target organ effects

**U.S. Federal regulations** : TSCA 8(b) inventory: All components are listed or exempted.  
SARA 302/304/311/312 extremely hazardous substances: No products were found.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: Asphalt  
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Asphalt:  
Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard  
Clean Water Act (CWA) 307: No products were found.  
Clean Water Act (CWA) 311: No products were found.  
Clean Air Act (CAA) 112 accidental release prevention: No products were found.  
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.  
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

**SARA 313**

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	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
<b>Form R - Reporting requirements</b>	: No Products Found		
<b>Supplier notification</b>	: No Products Found		

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

<b>State regulations</b>	: Connecticut Carcinogen Reporting: Benzene Connecticut Hazardous Material Survey: Benzene; Toluene; Naphthalene Illinois Toxic Substances Disclosure to Employee Act: Benzene; Toluene; Naphthalene Illinois Chemical Safety Act: Distillates, petroleum residues vacuum Rhode Island Hazardous Substances: Distillates, petroleum residues vacuum; Benzene; Toluene; Naphthalene Pennsylvania RTK Hazardous Substances: Asphalt: (generic environmental hazard) Florida: Distillates, petroleum residues vacuum; Benzene; Toluene; Naphthalene Minnesota: Asphalt; Distillates, petroleum residues vacuum Michigan Critical Material: Benzene; Toluene Massachusetts Substances: Asphalt New Jersey: Asphalt Louisiana Reporting: Distillates, petroleum residues vacuum
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### California Prop. 65

**WARNING:** This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>	<u>No significant risk level</u>	<u>Maximum acceptable dosage level</u>
Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)
Toluene	No.	Yes.	No.	7000 µg/day (ingestion) 13000 µg/day (inhalation)
Naphthalene	Yes.	No.	Yes.	No.
Polycyclic Aromatic Hydrocarbons	Yes.	No.	Yes.	No.

### Canada

<b>WHMIS (Canada)</b>	: Not controlled under WHMIS (Canada). CEPA DSL & NDSL: All materials are either listed or exempt
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### EU regulations

#### Hazard symbol or symbols



<b>Risk phrases</b>	: R45- May cause cancer. R46- May cause heritable genetic damage. R60- May impair fertility. R61- May cause harm to the unborn child. R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<b>Safety phrases</b>	: S53- Avoid exposure - obtain special instructions before use. S2- Keep out of the reach of children.

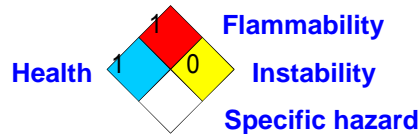
## Section 16. Other Information

**Label requirements** : CAUSES SKIN IRRITATION.  
CAUSES DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.  
POSSIBLE CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER, BASED ON ANIMAL DATA.

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

Health	*	1
Fire hazard		1
Physical Hazard		0
Personal protection		

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



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### Disclaimer

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## Definitions of Material Safety Data Sheet Terminology

### GOVERNMENT AGENCIES AND PRIVATE ASSOCIATIONS

**ACGIH** - American Conference of Governmental Industrial Hygienists, (private association)

**DOT** - United States Department of Transportation

**EPA** - United States Environmental Protection Agency

**IARC** - International Agency for Research on Cancer, (private association)

**NFPA** - National Fire Protection Association, (private association)

**MSHA** - Mine Safety and Health Administration, U.S. Department of Labor

**NIOSH** - National Institute of Occupational Safety and Health, U.S. Department of Health and Human Services

**NTP** - National Toxicology Program, (private association)

**OSHA** - Occupational Safety and Health Administration, U.S. Department of Labor

**WHMIS** - Workplace Hazardous Material Information System

**CSA** - Canadian Standards Association

### HAZARD AND EXPOSURE INFORMATION

**Acute Hazard** - An adverse health effect which occurs rapidly as a result of short term exposure.

**CAS #** - American Chemical Society's Chemical Abstract service registry number which identifies the product and/or ingredients.

**Ceiling** - The concentration that should not be exceeded during any part of the working exposure

**Chronic Hazard** - An adverse health effect which generally occurs as a result of long term exposure or short term exposure with delayed health effects and is of long duration

**Fire Hazard** - A material that poses a physical hazard by being flammable, combustible, pyrophoric or an oxidizer as defined by 29 CFR 1910.1200

**Hazard Class** - DOT hazard classification

**Hazardous Ingredients** - Names of ingredients which have been identified as health hazards

**IDLH**- Immediately Dangerous to Life and Health, the airborne concentration below which a person can escape without respiratory protection and exposure up to 30 minutes, and not suffer debilitating or irreversible health effects. Established by NIOSH.

**mg/m<sup>3</sup>** - Milligrams of contaminant per cubic meter of air, a mass to volume ratio

**N/A** - Not available or no relevant information found

**NA** - Not applicable

**PEL** - OSHA permissible exposure limit; an action level of one half this value may be applicable

**ppm** - Part per million (one volume of vapor or gas in one million volumes of air)

**Pressure Hazard** - A material that poses a physical hazard due to the potential of a sudden release of pressure such as explosive or a compressed gas as defined by 29 CFR 1910.1200

**Reactive Hazard** - A material that poses a physical hazard due to the potential to become unstable reactive, water reactive or that is an organic peroxide as defined by 29 CFR 1910.1200.

**STEL** - The ACGIH Short-Term Exposure Limit, a 15-minute Time-Weighted Average exposure which should not be exceeded at any time during a workday, even if the 8-hour TWA is less than the TLV.

**TLV** - ACGIH Threshold Limit Value, represented herein as an 8-hour TWA concentration.

**8-hour TWA** - The time weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

**LD<sub>50</sub>** - Single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause the death of 50% of the defined animal population.

**LC<sub>50</sub>** - The concentration of a substance in air that, when administered by means of inhalation over a specified length of time in an animal assay, is expected to cause the death of 50% of a defined animal population.