



MATERIAL SAFETY DATA SHEET

Modified 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 : Modified Asphalt

Synonym : AC-20P, AC-20R, MB, GTR, PBA, LLP, PG, RAC - MODIFIED ASPHALT GRADES

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 : PAVING AND ROAD-COATING; ROOFING; SEALING AND JOINT FILLING; SPECIAL PAINTS; ADHESIVE IN ELECTRICAL LAMINATES AND HOT-MELT COMPOSITIONS; DILUENT IN LOW-GRADE RUBBER PRODUCTS; FLUID LOSS CONTROL IN HYDRAULIC FRACTURING OF OIL WELLS; MEDIUM FOR RADIOACTIVE WASTE DISPOSAL; PIPELINE AND UNDERGROUND CABLE COATING; RUST-PREVENTIVE HOT-DIP COATINGS; BASE FOR SYNTHETIC TURF; WATER-RETAINING BARRIER FOR SANDY SOIL.

MSDS# : 212

CAS # : 8052-42-4

Section 2. 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
Ground Tire Rubber	139497-04-4	0 - 20
Maleic Anhydride Modified Polypropylene	NA	0 - 10
Copolymer of Ethylene and Octane	26221-73-8	0 - 10
Polymer	6868-29-4	0 - 10
Styrene Butadiene Copolymer	9003-55-8	0 - 10
Sulfur	7704-34-9	0 - 10
Calcium Oxide	1305-78-8	0 - 5
Di (2-Ethylhexyl) Phthalate (DEHP)	117-81-7	<0.1
Polycyclic Aromatic Hydrocarbons	130498-29-2	<0.1
Hydrogen Sulfide	7783-06-4	<0.1

Continued on next page

Section 3. Hazards Identification

Danger! Product May Contain or Release Hydrogen Sulfide. H₂S 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!
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 and shipped 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 and shipped 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 overexposure: : 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 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 followed for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be followed 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.

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: >176.6°C (349.9°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 fighting media and instructions** : 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.

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 may 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	: No additional remark.
Special remarks on explosion hazards	: No additional remark.

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	: If emergency personnel are unavailable, contain spilled material. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container for disposal. For large spills dike spilled material or otherwise contain material 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.
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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 controls : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station 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 or gauntlets 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. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Component

Asphalt

Exposure limits

ACGIH TLV (United States, 3/2004). Notes: Substance identified by other sources as a suspected or confirmed human carcinogen. Inhalable fraction. See Appendix C, paragraph A. Inhalable Particulate Mass TLVs (IPM-TLVs) for those materials that are hazardous when deposited anywhere in the respiratory tract. 2000 Adoption. Refers to Appendix A -- Carcinogens.

TWA: 0.5 mg/m³ 8 hour(s). Form: Fume

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

CEIL: 5 mg/m³ 15 minute(s). Form: Fume

ACGIH TLV (United States, 9/2004).

TWA: 2 mg/m³ 8 hour(s). Form: All forms

Calcium Oxide

	NIOSH REL (United States, 6/2001). TWA: 2 mg/m ³ 10 hour(s). Form: All forms
	OSHA PEL (United States, 6/1993). TWA: 5 mg/m ³ 8 hour(s). Form: All forms
Polycyclic Aromatic Hydrocarbons	OSHA PEL (United States, 6/1993). TWA: 0.2 mg/m ³ 8 hour(s). Form: Benzene soluble
	ACGIH TLV (United States, 3/2004). TWA: 0.2 mg/m ³ 8 hour(s). Form: Benzene soluble
Di (2-Ethylhexyl) Phthalate (DEHP)	ACGIH TLV (United States, 3/2004). Notes: 1999 Adoption. TWA: 5 mg/m ³ 8 hour(s). Form: All forms
	NIOSH REL (United States, 6/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen STEL: 10 mg/m ³ 15 minute(s). Form: All forms TWA: 5 mg/m ³ 10 hour(s). Form: All forms
	OSHA PEL (United States, 6/1993). TWA: 5 mg/m ³ 8 hour(s). Form: All forms
Hydrogen Sulfide	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, 6/2001). CEIL: 10 ppm 10 minute(s). Form: All forms
	OSHA PEL Z2 (United States, 6/2002). CEIL: 20 ppm Form: All forms AMP: 50 ppm 10 minute(s). Form: All forms
Maleic anhydride	ACGIH TLV (United States, 3/2004). Notes: 2000 Adoption. TWA: 0.1 ppm 8 hour(s). Form: All forms
	NIOSH REL (United States, 6/2001). TWA: 0.25 ppm 10 hour(s). Form: All forms
	OSHA PEL (United States, 6/1993). TWA: 0.25 ppm 8 hour(s). Form: All forms

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	: Insoluble in cold water.

Section 10. Stability and Reactivity Data

Stability and reactivity	: The product is stable.
Incompatibility with various substances	: Reactive with oxidizing agents, acids, alkalis. halogens
Hazardous decomposition products	: Combustion may produce carbon monoxide, carbon dioxide and reactive hydrocarbons (aldehydes, aromatics, etc.) compounds, nitrogen oxides, sulfur oxides, particulate matter, and hydrogen sulfide.
Hazardous polymerization	: Will not occur.

Section 11. Toxicological Information

Toxicity data

ASPHALT contains polycyclic aromatic hydrocarbons, which are potentially carcinogenic. Skin painting studies in laboratory animals with petroleum residua 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.

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 H₂S 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.

DI(2-ETHYLHEXYL)PHTHALATE (DEHP) very low levels of DEHP to which humans are normally exposed have not been shown to cause adverse health effects. But DEHP causes cancer in rats and mice. It is also shown to cause liver damage and male reproductive system damage, affect reproduction, and produce birth defects in laboratory animals. However, none of these effects have been documented in humans.

<u>Ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Sulfur	LDLo	175 mg/kg	Oral	Rabbit
Di (2-Ethylhexyl) Phthalate (DEHP)	LD50	1500 mg/kg	Oral	Mouse

Chronic effects on humans : **CARCINOGENIC EFFECTS:** Classified + (Possible.) by NIOSH [Asphalt]. Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Asphalt]. Classified 3 (Not classifiable for human.) by IARC [Asphalt (oxidized)]. Classified 2 (Suspected for human.) by European Union [Solvent Deasphalted Bottoms Petroleum Asphalt]. Classified 2 (Suspected for human.) by European Union [Distillates, petroleum residues vacuum]. Classified 3 (Not classifiable for human.) by IARC [Styrene Butadiene Copolymer]. Classified 2B (Possible for human.) by IARC [Naphthalene]. Classified A4 (Not classifiable for human or animal.) by ACGIH [Naphthalene]. Classified A2 (Suspected for human.) 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, eyes, 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 for 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

<u>Ingredient name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
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Sulfur	Daphnia magna (EC50)	48 hour(s)	>5000 mg/l
	Lepomis macrochirus (LC50)	96 hour(s)	>180 mg/l
	Oncorhynchus mykiss (LC50)	96 hour(s)	>180 mg/l
Polycyclic Aromatic Hydrocarbons Di (2-Ethylhexyl) Phthalate (DEHP)	Daphnia pulex (LC50)	96 hour(s)	0.005 mg/l
	Daphnia pulex (EC50)	48 hour(s)	0.133 mg/l
	Daphnia magna (EC50)	48 hour(s)	>0.16 mg/l
	Daphnia magna (EC50)	48 hour(s)	2 mg/l
	Pimephales promelas (LC50)	96 hour(s)	>0.16 mg/l
Lepomis macrochirus (LC50)	96 hour(s)	>0.2 mg/l	
Oncorhynchus mykiss (LC50)	96 hour(s)	>0.32 mg/l	


BOD and COD : N/A
 Biodegradable/OECD : N/A
 Mobility : N/A
 Products of degradation : N/A
 Toxicity of the products of biodegradation : N/A

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
DOT Classification	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>Limited quantity Yes.</p> <p>Packaging instruction Passenger Aircraft Quantity limitation: Forbidden. Cargo Aircraft Quantity limitation: Forbidden.</p> <p>Special provisions IB1, T3, TP3, TP29</p>
TDG Classification	Not available.	Not available.	Not available	Not available.		Not available.

Section 15. Regulatory Information

United States

U.S. Federal regulations : TSCA 8(b) inventory: Asphalt
 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; Styrene Butadiene Copolymer; Sulfur; Calcium Oxide
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Asphalt: Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; Styrene Butadiene Copolymer: Immediate (Acute) Health Hazard; Sulfur: Fire hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; Calcium Oxide: Immediate (Acute) 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.

State regulations

: Connecticut carcinogen reporting list.: 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 RTK hazardous substances: Distillates, petroleum residues vacuum; Benzene; Toluene; Naphthalene
 Pennsylvania RTK: Asphalt: (generic environmental hazard)
 Florida: Distillates, petroleum residues vacuum; Benzene; Toluene; Naphthalene
 Minnesota: Asphalt; Distillates, petroleum residues vacuum
 Michigan critical material: Benzene; Toluene
 Massachusetts RTK: Asphalt
 New Jersey: Asphalt
 Louisiana RTK reporting list: Distillates, petroleum residues vacuum
WARNING: This product contains chemical(s) known to the state of California to cause cancer, birth defects or other reproductive harm: Di (2-Ethylhexyl) Phthalate (DEHP); Benzene; Toluene; Naphthalene; Polycyclic Aromatic Hydrocarbons
WARNING: This product contains chemical(s) known to the state of California to cause reproductive harm (male): Di (2-Ethylhexyl) Phthalate (DEHP); Benzene
 California prop. 65 (no significant risk level): Di (2-Ethylhexyl) Phthalate (DEHP); Benzene; Polycyclic Aromatic Hydrocarbons
 California prop. 65 (acceptable daily intake level): Benzene; Toluene
WARNING: This product contains chemical(s) known to the state of California to cause birth defects or other reproductive harm.: Di (2-Ethylhexyl) Phthalate (DEHP); Benzene; Toluene
WARNING: This product contains chemical(s) known to the state of California to cause cancer.: Di (2-Ethylhexyl) Phthalate (DEHP); Benzene; Naphthalene; Polycyclic Aromatic Hydrocarbons

Canada

WHMIS (Canada) : Not controlled under WHMIS (Canada).
 CEPA DSL: Asphalt

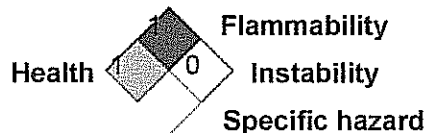
Section 16. Other Information

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.) :



Date of printing : 9/23/2005.
Date of issue : 9/23/2005.
Date of previous issue : No Previous Validation.
Version : 1

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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.

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mg/m³ - 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.

LD₅₀ - 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.

LC₅₀ - 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.