MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**SC Cutback Asphalt**
Version #	04
Issue date	10-03-2011
Revision date	01-10-2013
Supersedes date	11-13-2012
CAS #	Mixture
MSDS Number	210
Product use	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.
Synonym(s)	SC-45, SC-70, SC-250, SC-600, SC-800, SC-3000, Slow Cure Asphalt, Cutback Asphalt, Road Asphalt, Road Oil See section 16 for complete information.
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates P.O. Box 696000 San Antonio, TX 78269-6000
General Assistance	210-345-4593
Emergency	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazards Identification

Physical state	Liquid.
Appearance	Dark brown to black liquid.
Emergency overview	WARNING Combustible liquid and vapor. Heat may cause the containers to explode. Contact with product at elevated temperatures can result in thermal burns. Harmful if inhaled or swallowed. May be harmful if absorbed through skin. Aspiration may cause lung damage. Irritating to eyes, respiratory system and skin. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Prolonged exposure may cause chronic effects. Contains polycyclic aromatic hydrocarbons (PAHs). Some PAHs are recognized carinogens and may cause skin, lung and bladder cancer. Hydrogen sulfide, a highly toxic gas, may be present or released. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere. Static accumulating flammable materials can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite material and vapor may cause flash fire (or explosion).
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	This product is normally stored, shipped or used hot (200 to 400 F). Hot, molten material can cause thermal burns. Contact may irritate or burn eyes. Eye contact may result in corneal injury.
Skin	This product is normally stored, shipped or used hot (200 to 400 F). Contact with hot product may cause severe burns. May be harmful if absorbed through skin. Contains a substance which has been shown to cause cancer in laboratory animals. Irritating to skin. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injuries may not appear serious at first. Within a few hours, tissues will become swollen, discolored and extremely painful.
Inhalation	Harmful if inhaled. Irritating to respiratory system. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. May cause breathing disorders and lung damage. Prolonged inhalation may be harmful.

Ingestion	Harmful if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Irritating to mouth, throat, and stomach.
Target organs	Eyes. Respiratory system. Skin. Central nervous system. Lungs.
Chronic effects	May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Signs and symptoms	Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.
Potential environmental effects	The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Asphalt	8052-42-4	0 - 100
Gas oil	64741-44-2	20 - 60
Kerosine (Petroleum)	8008-20-6	2 - 10
Naphthalene	91-20-3	0 - 3
Nonane	111-84-2	0 - 3
Heptane	142-82-5	0 - 2
Hexane (Other Isomers)	Mixture	0 - 2
Octane	111-65-9	0 - 2
n-Hexane	110-54-3	0 - 2
Ethylbenzene	100-41-4	<0.5
Hydrogen sulfide	7783-06-4	<0.5
Toluene	108-88-3	<0.5
Xylene	1330-20-7	<0.5
Benzene	71-43-2	<0.3
Polycyclic Aromatic Hydrocarbons	130498-29-2	<0.1

Composition comments Dangerous amounts of hydrogen sulfide, a highly toxic gas, may be present, especially in the headspace of containers.

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
Skin contact	In case of contact with hot or molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily. Remove contaminated clothing and shoes. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Get medical attention immediately.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General advice	If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire Fighting Measures

Flammable properties	Combustible by OSHA criteria. Containers may explode when heated.
Extinguishing media	
Suitable extinguishing media	Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Protection of firefighters	
Specific hazards arising from the chemical	Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.
Protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire fighting equipment/instructions	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.
Specific methods	In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers.
Hazardous combustion products	Carbon oxides. Sulfur oxides. Nitrogen oxides. Hydrocarbons. Hydrogen sulfide.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.
Environmental precautions	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. Flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames , smoking, flares, etc.) and hot surfaces 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 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. This material is a water pollutant. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Use non-sparking tools and explosion-proof equipment. Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Wear personal protective equipment. Do not breathe gas/fumes/vapor/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke.

Storage

Flammable liquid storage. Do not handle or store near an open flame or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	0.5 mg/m3	Inhalable fraction.
Benzene (CAS 71-43-2)	STEL	2.5 ppm	
	TWA	0.5 ppm	
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm	
Heptane (CAS 142-82-5)	STEL	500 ppm	
	TWA	400 ppm	
Hexane (Other Isomers) (CAS Mixture)	STEL	1000 ppm	
	TWA	500 ppm	
Hydrogen sulfide (CAS 7783-06-4)	STEL	5 ppm	
	TWA	1 ppm	
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.
Naphthalene (CAS 91-20-3)	STEL	15 ppm	
	TWA	10 ppm	
n-Hexane (CAS 110-54-3)	TWA	50 ppm	
Nonane (CAS 111-84-2)	TWA	200 ppm	
Octane (CAS 111-65-9)	TWA	300 ppm	

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m3
		100 ppm
Heptane (CAS 142-82-5)	PEL	2000 mg/m3
		500 ppm
Naphthalene (CAS 91-20-3)	PEL	50 mg/m3
		10 ppm
n-Hexane (CAS 110-54-3)	PEL	1800 mg/m3
		500 ppm
Octane (CAS 111-65-9)	PEL	2350 mg/m3
		500 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Benzene (CAS 71-43-2)	Ceiling	25 ppm
	TWA	10 ppm
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	20 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	5 mg/m3	Fume.
Benzene (CAS 71-43-2)	STEL	8 mg/m3	
		2.5 ppm	
	TWA	1.6 mg/m3	
		0.5 ppm	
Ethylbenzene (CAS 100-41-4)	STEL	543 mg/m3	
		125 ppm	
	TWA	434 mg/m3	
		100 ppm	
Heptane (CAS 142-82-5)	STEL	2050 mg/m3	
		500 ppm	
	TWA	1640 mg/m3	
		400 ppm	
Hexane (Other Isomers) (CAS Mixture)	STEL	3500 mg/m3	
		1000 ppm	
	TWA	1760 mg/m3	
		500 ppm	
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	21 mg/m3	
		15 ppm	
	TWA	14 mg/m3	
		10 ppm	
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Vapor.
Naphthalene (CAS 91-20-3)	STEL	79 mg/m3	
		15 ppm	
	TWA	52 mg/m3	
		10 ppm	
n-Hexane (CAS 110-54-3)	TWA	176 mg/m3	
		50 ppm	
Nonane (CAS 111-84-2)	TWA	1050 mg/m3	
		200 ppm	
Octane (CAS 111-65-9)	TWA	1400 mg/m3	
		300 ppm	

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	0.5 mg/m3	Aerosol, inhalable.
Benzene (CAS 71-43-2)	STEL	2.5 ppm	
	TWA	0.5 ppm	
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm	
Heptane (CAS 142-82-5)	STEL	500 ppm	
	TWA	400 ppm	
Hexane (Other Isomers) (CAS Mixture)	TWA	200 ppm	
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	10 ppm	

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.
Naphthalene (CAS 91-20-3)	STEL	15 ppm	
	TWA	10 ppm	
n-Hexane (CAS 110-54-3)	TWA	20 ppm	
Nonane (CAS 111-84-2)	TWA	200 ppm	
Octane (CAS 111-65-9)	TWA	300 ppm	

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	0.5 mg/m3	Inhalable fraction.
Benzene (CAS 71-43-2)	STEL	2.5 ppm	
	TWA	0.5 ppm	
Ethylbenzene (CAS 100-41-4)	STEL	125 ppm	
	TWA	100 ppm	
Heptane (CAS 142-82-5)	STEL	500 ppm	
	TWA	400 ppm	
Hexane (Other Isomers) (CAS Mixture)	STEL	1000 ppm	
	TWA	500 ppm	
Hydrogen sulfide (CAS 7783-06-4)	STEL	15 ppm	
	TWA	10 ppm	
Kerosine (Petroleum) (CAS 8008-20-6)	TWA	200 mg/m3	Non-aerosol.
Naphthalene (CAS 91-20-3)	STEL	15 ppm	
	TWA	10 ppm	
n-Hexane (CAS 110-54-3)	TWA	50 ppm	
Nonane (CAS 111-84-2)	TWA	200 ppm	
Octane (CAS 111-65-9)	TWA	300 ppm	

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	TWA	5 mg/m3	Fume.
Benzene (CAS 71-43-2)	STEL	15.5 mg/m3	
		5 ppm	
	TWA	3 mg/m3	
		1 ppm	
Ethylbenzene (CAS 100-41-4)	STEL	543 mg/m3	
		125 ppm	
	TWA	434 mg/m3	
		100 ppm	
Heptane (CAS 142-82-5)	STEL	2050 mg/m3	
		500 ppm	
	TWA	1640 mg/m3	
		400 ppm	
Hexane (Other Isomers) (CAS Mixture)	STEL	3500 mg/m3	
		1000 ppm	
	TWA	1760 mg/m3	
		500 ppm	
Hydrogen sulfide (CAS 7783-06-4)	STEL	21 mg/m3	
		15 ppm	
	TWA	14 mg/m3	
		10 ppm	

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Naphthalene (CAS 91-20-3)	STEL	79 mg/m3	
		15 ppm	
	TWA	52 mg/m3	
		10 ppm	
n-Hexane (CAS 110-54-3)	TWA	176 mg/m3	
		50 ppm	
Nonane (CAS 111-84-2)	TWA	1050 mg/m3	
		200 ppm	
Octane (CAS 111-65-9)	STEL	1750 mg/m3	
		375 ppm	
	TWA	1400 mg/m3	
		300 ppm	

Mexico. Occupational Exposure Limit Values

Components	Type	Value	Form
Asphalt (CAS 8052-42-4)	STEL	10 mg/m3	Fume.
	TWA	5 mg/m3	Fume.
Benzene (CAS 71-43-2)	STEL	16 mg/m3	
		5 ppm	
	TWA	3.2 mg/m3	
		1 ppm	
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3	
		125 ppm	
	TWA	435 mg/m3	
		100 ppm	
Heptane (CAS 142-82-5)	STEL	2000 mg/m3	
		500 ppm	
	TWA	1600 mg/m3	
		400 ppm	
Hexane (Other Isomers) (CAS Mixture)	STEL	3500 mg/m3	
		1000 ppm	
	TWA	1760 mg/m3	
		500 ppm	
Hydrogen sulfide (CAS 7783-06-4)	STEL	21 mg/m3	
		15 ppm	
	TWA	14 mg/m3	
		10 ppm	
Naphthalene (CAS 91-20-3)	STEL	75 mg/m3	
		15 ppm	
	TWA	50 mg/m3	
		10 ppm	
n-Hexane (CAS 110-54-3)	TWA	176 mg/m3	
		50 ppm	
Nonane (CAS 111-84-2)	STEL	1300 mg/m3	
		250 ppm	
	TWA	1050 mg/m3	
		200 ppm	
Octane (CAS 111-65-9)	STEL	1800 mg/m3	
		375 ppm	
	TWA	1450 mg/m3	
		300 ppm	

Engineering controls Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Personal protective equipment

Eye / face protection	Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.
Skin protection	Wear chemical-resistant, impervious gloves. Flame retardant protective clothing is recommended.
Respiratory protection	Wear a NIOSH-approved (or equivalent) respirator as needed.
General hygiene considerations	Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance	Dark brown to black liquid.
Physical state	Liquid.
Form	Viscous liquid at ambient temperatures.
Color	Brown/black.
Odor	Strong petroleum.
Odor threshold	Not available.
pH	Not available.
Vapor pressure	Not available.
Vapor density	> 1.6 (Air = 1)
Boiling point	500 - 600.1 °F (260 - 315.6 °C)
Melting point/Freezing point	Not available.
Solubility (water)	Not available.
Specific gravity	0.96 - 1.01 (Water=1)
Flash point	119.8 - 300 °F (48.8 - 148.9 °C) Closed Cup
Flammability limits in air, upper, % by volume	< 7
Flammability limits in air, lower, % by volume	> 1
Auto-ignition temperature	399.99 - 700 °F (204.44 - 371.11 °C)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions and recommended use.
Conditions to avoid	Flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides. Sulfur oxides. Nitrogen oxides. Hydrocarbons. Hydrogen sulfide.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Components	Species	Test Results
Benzene (CAS 71-43-2)		
Acute		
Oral		
LD50	Rat	930 mg/kg
Hydrogen sulfide (CAS 7783-06-4)		
Acute		
Inhalation		
LC50	Monkey	0.7 mg/l, 35 Minutes
	Mouse	> 0.024 mg/l, 960 Minutes
	Rat	> 0.38 mg/l, 960 Minutes

Components	Species	Test Results
Naphthalene (CAS 91-20-3)		
Acute		
Dermal		
LD50	Rabbit	> 2 g/kg
Oral		
LD50	Rat	490 mg/kg

Sensitization

This substance may have a potential for sensitization which may provoke an allergic reaction among sensitive individuals.

Acute effects

Harmful if inhaled, absorbed through skin, or swallowed. Harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Hydrogen sulfide, a highly toxic gas, may be present. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere.

Local effects

US. ACGIH Threshold Limit Values

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
Kerosine (Petroleum) (CAS 8008-20-6)	Can be absorbed through the skin.
Naphthalene (CAS 91-20-3)	Can be absorbed through the skin.
n-Hexane (CAS 110-54-3)	Can be absorbed through the skin.

Chronic effects

Prolonged and repeated exposure to benzene may cause serious injury to blood forming organs and is associated with anemia and to the later development of acute myelogenous leukemia (AML).

Subchronic effects

Subchronic inhalation of benzene by rats produced decreased white blood cell counts, decreased bone marrow cell activity, increased red blood cell activity and cataracts. Blood disorders may occur after prolonged inhalation, prolonged skin contact and/or ingestion. Liver and kidney damage may occur after prolonged and repeated exposure.

Carcinogenicity

Contains polycyclic aromatic compounds (PACs). Prolonged and/or repeated skin contact with certain PACs has been shown to cause skin cancer. Prolonged and/or repeated exposures by inhalation of certain PACs may also cause cancer of the lung and of other sites of the body. The Working Group has classified occupational exposures to straight-run bitumens/asphalts and their fume condensates during road paving as “possibly carcinogenic to humans” (Group 2B).

ACGIH Carcinogens

Asphalt (CAS 8052-42-4)	A4 Not classifiable as a human carcinogen.
Benzene (CAS 71-43-2)	A1 Confirmed human carcinogen.
Ethylbenzene (CAS 100-41-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Kerosine (Petroleum) (CAS 8008-20-6)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Naphthalene (CAS 91-20-3)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Asphalt (CAS 8052-42-4)	2B Possibly carcinogenic to humans.
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.
Gas oil (CAS 64741-44-2)	3 Not classifiable as to carcinogenicity to humans.
Naphthalene (CAS 91-20-3)	2B Possibly carcinogenic to humans.

US NTP Report on Carcinogens: Anticipated carcinogen

Naphthalene (CAS 91-20-3)	Reasonably Anticipated to be a Human Carcinogen.

US NTP Report on Carcinogens: Known carcinogen

Benzene (CAS 71-43-2)	Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer hazard.

Epidemiology	Contains benzene. Human epidemiology studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-producing system and serious blood disorders, including leukemia. Animal tests suggest that prolonged and/or repeated overexposure to benzene may damage the embryo/fetus. The relevance of these animal studies to humans has not been fully established. Studies have shown a risk of spontaneous abortions in women exposed to high concentrations of organic solvents during pregnancy.
Mutagenicity	Mutagenic for bacteria and/or yeast.
Neurological effects	May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue) and/or damage.
Reproductive effects	This product is not expected to cause reproductive or developmental effects.
Teratogenicity	Rats exposed to benzene and xylene vapor during pregnancy showed embryo/fetotoxic effects.
Further information	Symptoms may be delayed.

12. Ecological Information

Ecotoxicological data

Components		Species	Test Results
Benzene (CAS 71-43-2)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	8.76 - 15.6 mg/l, 48 Hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	5 mg/l, 96 Hours
Ethylbenzene (CAS 100-41-4)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1 - 4 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4 mg/l, 96 hours
Hydrogen sulfide (CAS 7783-06-4)			
Aquatic			
Fish	LC50	Lake whitefish (Coregonus clupeaformis)	0.002 mg/l, 96 hours
Naphthalene (CAS 91-20-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1.09 - 3.4 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.91 - 2.82 mg/l, 96 hours

Ecotoxicity	The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.
Persistence and degradability	Not available.
Bioaccumulation / Accumulation	Not available.

Partition coefficient

Benzene (CAS 71-43-2)	2.13
Ethylbenzene (CAS 100-41-4)	3.15
Octane (CAS 111-65-9)	5.18
Nonane (CAS 111-84-2)	5.46

13. Disposal Considerations

Disposal instructions	Dispose in accordance with all applicable regulations.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN1999
Proper shipping name	Asphalt, cutback
Hazard class	Combustible Liquid
Packing group	III

Additional information:

Special provisions	149, B13, IB2, T3, TP3, TP29
Packaging exceptions	173, 150
Packaging non bulk	173, 202
Packaging bulk	176, 242

IATA

UN number	UN1999
UN proper shipping name	Asphalt, cutback
Transport hazard class(es)	3
Packing group	III
ERG code	3L

IMDG

UN number	UN1999
UN proper shipping name	ASPHALT, CUTBACK
Transport hazard class(es)	3
Packing group	III
EmS	F-E, S-E

TDG

Proper shipping name	ASPHALT, CUTBACK
Hazard class	3
UN number	UN1999
Packing group	III

15. Regulatory Information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Nonane (CAS 111-84-2)	1.0 % One-Time Export Notification only.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Naphthalene (CAS 91-20-3)
n-Hexane (CAS 110-54-3)
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity

Hydrogen sulfide (CAS 7783-06-4)	100 LBS

US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity

Hydrogen sulfide (CAS 7783-06-4)	500 LBS

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Benzene (CAS 71-43-2)	0.1 %
Ethylbenzene (CAS 100-41-4)	0.1 %
Naphthalene (CAS 91-20-3)	0.1 %
n-Hexane (CAS 110-54-3)	1.0 %
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	0.1 % N590 Substance is not eligible for the de minimis exemption except for the purposes of supplier notification requirements.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Reportable threshold

Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	100 LBS N590

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	N590 Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Asphalt: 100
Naphthalene: 100
Nonane: 100
Hexane (Other Isomers): 100
Octane: 100
n-Hexane: 5000
Ethylbenzene: 1000
Hydrogen sulfide: 100
Benzene: 10

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	No
Section 311/312 (40 CFR 370)	Yes
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
WHMIS status	Controlled
WHMIS classification	B3 - Combustible Liquids D1A - Immediate/Serious-VERY TOXIC D2A - Other Toxic Effects-VERY TOXIC D2B - Other Toxic Effects-TOXIC

WHMIS labeling

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

State regulations

US - California Hazardous Substances (Director's): Listed substance

Asphalt (CAS 8052-42-4)	Listed.
Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Heptane (CAS 142-82-5)	Listed.
Hexane (Other Isomers) (CAS Mixture)	Listed.
Hydrogen sulfide (CAS 7783-06-4)	Listed.
Naphthalene (CAS 91-20-3)	Listed.

n-Hexane (CAS 110-54-3)	Listed.
Nonane (CAS 111-84-2)	Listed.
Octane (CAS 111-65-9)	Listed.
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Asphalt (CAS 8052-42-4)	Listed.
Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
Toluene (CAS 108-88-3)	Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Asphalt (CAS 8052-42-4)	Listed: January 1, 1990 Carcinogenic.
Benzene (CAS 71-43-2)	Listed: February 27, 1987 Carcinogenic.
Ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004 Carcinogenic.
Naphthalene (CAS 91-20-3)	Listed: April 19, 2002 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997 Developmental toxin.
Toluene (CAS 108-88-3)	Listed: January 1, 1991 Developmental toxin.

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Toluene (CAS 108-88-3)	Listed: August 7, 2009 Female reproductive toxin.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997 Male reproductive toxin.

US - New Jersey RTK - Substances: Listed substance

Asphalt (CAS 8052-42-4)	Listed.
Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Heptane (CAS 142-82-5)	Listed.
Hydrogen sulfide (CAS 7783-06-4)	Listed.
Kerosine (Petroleum) (CAS 8008-20-6)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Nonane (CAS 111-84-2)	Listed.
Octane (CAS 111-65-9)	Listed.
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	Listed.

US - Pennsylvania RTK - Hazardous Substances: Special hazard

Asphalt (CAS 8052-42-4)	Special hazard.
Benzene (CAS 71-43-2)	Special hazard.

US. Massachusetts RTK - Substance List

Asphalt (CAS 8052-42-4)	Listed.
Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Heptane (CAS 142-82-5)	Listed.
Hexane (Other Isomers) (CAS Mixture)	Listed.
Hydrogen sulfide (CAS 7783-06-4)	Listed.
Kerosine (Petroleum) (CAS 8008-20-6)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Nonane (CAS 111-84-2)	Listed.
Octane (CAS 111-65-9)	Listed.

US. New Jersey Worker and Community Right-to-Know Act

Benzene (CAS 71-43-2)	500 LBS
Ethylbenzene (CAS 100-41-4)	500 LBS
Hydrogen sulfide (CAS 7783-06-4)	500 LBS
Kerosine (Petroleum) (CAS 8008-20-6)	10000 LBS
Naphthalene (CAS 91-20-3)	500 LBS
n-Hexane (CAS 110-54-3)	500 LBS
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	500 LBS

US. Pennsylvania RTK - Hazardous Substances

Asphalt (CAS 8052-42-4)	Listed.
Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Heptane (CAS 142-82-5)	Listed.
Hexane (Other Isomers) (CAS Mixture)	Listed.

Hydrogen sulfide (CAS 7783-06-4)	Listed.
Kerosine (Petroleum) (CAS 8008-20-6)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
n-Hexane (CAS 110-54-3)	Listed.
Nonane (CAS 111-84-2)	Listed.
Octane (CAS 111-65-9)	Listed.
Polycyclic Aromatic Hydrocarbons (CAS 130498-29-2)	Listed.

16. Other Information

Other information

Note: 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 products and are not reflected in this document. Consult specification sheets for technical information.

HMIS® ratings

Health: 2*
Flammability: 2
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 2
Instability: 0

Disclaimer

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