



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

**Material name** Bitumen  
**Version #** 01  
**Revision date** 06-02-2010  
**Product use** Feed Stock.  
**Manufacturer/Supplier** Devon US Operations  
20 North Broadway  
Oklahoma City, OK 73102-8260  
Telephone: (405) 235-3611  
-  
Devon Canadian Operations  
Calgary, AB. T2P 4H2  
2000, 400 – 3rd Avenue SW.  
Telephone: (403) 232-7100

**Emergency** Emergency Chemtrec:  
Within the USA (800) 424-9300  
Outside the USA (703) 527-3887  
Devon Canada Emergency Phone:  
(403) 232-7100

## 2. Hazards Identification

**Physical state** Solid.  
**Appearance** Tarry texture.  
**Emergency overview** CAUTION

At elevated temperatures may cause irritation of the eyes and respiratory tract. Hydrogen sulfide, a highly toxic gas, is 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.

**OSHA regulatory status** This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

### Potential health effects

**Eyes** At elevated temperatures, vapor may cause irritation of eyes. Contact with hot material can cause thermal burns which may result in permanent damage.

**Skin** Contact with hot material can cause thermal burns which may result in permanent damage.

**Inhalation** Inhalation of vapors/fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or difficulty breathing.

**Ingestion** Direct contact with hot material can cause thermal burns. Asphalt has low systemic toxicity when ingested. However, chewing asphalt has caused gastrointestinal effects. Gastric masses (Bezoars) and stomach (pyloric) obstructions have been reported in individuals who have chewed and swallowed asphalt.

**Chronic effects** Exposure to Asphalt fumes can cause severe irritation of the skin and may cause dermatitis and acne-like lesions. Prolonged contact may cause skin pigment change which may be aggravated by sunlight exposure.

**Signs and symptoms** Symptoms of exposure to fumes from heated material may include: Irritation of nose and throat. Coughing. Shortness of breath. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

**Potential environmental effects** The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

## 3. Composition / Information on Ingredients

Components	CAS #	Percent
A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium	8052-42-4	95-100

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

#### 4. First Aid Measures

##### First aid procedures

**Eye contact** If hot product contacts eye, flush with water for at least 15 minutes and seek medical attention immediately.

**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.

**Inhalation** If fumes from heated product are inhaled: Move into fresh air and keep at rest. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

**Ingestion** Not likely, due to the form of the product.

**Notes to physician** Skin exposure to asphalts can cause workers to experience photosensitization, a condition where the exposed area of skin becomes very sensitive to sunlight, and other sources of ultraviolet (UV) light. Without exposure to UV, sensitive skin may appear to be sunburned. With exposure to UV, the skin may blister and develop sores. Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

**General advice** Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

#### 5. Fire Fighting Measures

**Flammable properties** The product is non-combustible. If heated, toxic vapors may be formed.

##### Extinguishing media

**Suitable extinguishing media** Extinguish with foam, carbon dioxide, dry powder or water fog.

**Unsuitable extinguishing media** Do not use water jet as an extinguisher, as this will spread the fire.

##### Protection of firefighters

**Protective equipment and precautions for firefighters** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

**Specific methods** Water spray should be used to cool containers.

**Hazardous combustion products** Carbon oxides. Calcium oxides. Hydrogen sulfide.

#### 6. Accidental Release Measures

**Personal precautions** Avoid inhalation of fumes from molten product. Avoid contact with hot material. Keep unnecessary personnel away. Ventilate closed spaces before entering. Wear suitable protective clothing, gloves and eye/face protection. For personal protection, see section 8 of the MSDS.

**Environmental precautions** Stop leak if possible without any risk. Contact local authorities in case of spillage to drain/aquatic environment.

**Methods for containment** Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up** Sweep up or gather material and place in appropriate container for disposal. Heated material: Let it solidify. Contain spillage with sand or earth and remove to a safe place after it has solidified. Containers with collected spillage must be properly labeled with correct contents and hazard symbol. Collect and dispose of spillage as indicated in section 13 of the MSDS.

**Other information** Clean up in accordance with all applicable regulations.

#### 7. Handling and Storage

**Handling** The intended use of this product does not include its cutting, grinding and crushing. Use only with adequate ventilation. Avoid inhalation of fumes from molten product. Avoid contact with molten material. Wear personal protective equipment. Observe good industrial hygiene practices.

**Storage** Keep container tightly closed. Keep container in a well-ventilated place. Outside or detached storage preferred. Vapors containing hydrogen sulfide may accumulate during storage or transport of asphaltic materials. Store away from incompatible materials.

## 8. Exposure Controls / Personal Protection

### Occupational exposure limits

#### ACGIH

Components	Type	Value	Form
A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (8052-42-4)	TWA	0.5 mg/m <sup>3</sup>	Inhalable fraction.
Hydrogen sulfide (7783-06-4)	STEL TWA	15 ppm 10 ppm	

#### U.S. - OSHA

Components	Type	Value
Hydrogen sulfide (7783-06-4)	Ceiling	20 ppm

#### Canada - Alberta

Components	Type	Value	Form
A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (8052-42-4)	TWA	5 mg/m <sup>3</sup>	Fume.
Hydrogen sulfide (7783-06-4)	Ceiling TWA	15 ppm 21 mg/m <sup>3</sup> 10 ppm 14 mg/m <sup>3</sup>	

#### Canada - British Columbia

Components	Type	Value	Form
A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (8052-42-4)	TWA	0.5 mg/m <sup>3</sup>	Aerosol, inhalable.
Hydrogen sulfide (7783-06-4)	Ceiling	10 ppm	

**Engineering controls** Adequate ventilation should be provided whenever the material is heated or mists are generated. Observe Occupational Exposure Limits and minimize the risk of inhalation.

### Personal protective equipment

**Eye / face protection** Heated material: Wear safety glasses with side shields (or goggles). Cold material: Wear approved safety goggles.

**Skin protection** When material is heated, wear gloves to protect against thermal burns. Thermally protective, chemical resistant full body suit is recommended when volume of material is significant.

**Respiratory protection** Wear approved respiratory protection when working with this material unless ventilation or other engineering controls are adequate to keep airborne concentrations below recommended exposure standards. Follow respirator protection program requirements (OSHA 1910.134 or CSA-Z94.4-02(R2008), and ANSI / AIHA Z88.6) for all respirator use. Note: If any of the applicable hydrogen sulfide standards are likely to be exceeded, positive pressure supplied-air respiratory protection must be used.

**General hygiene considerations** Avoid contact with eyes. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical & Chemical Properties

<b>Appearance</b>	Tarry texture.
<b>Color</b>	Brown/black.
<b>Odor</b>	Solvent -like.
<b>Odor threshold</b>	Not available.
<b>Physical state</b>	Solid.
<b>Form</b>	Viscous liquid.
<b>pH</b>	Not available.
<b>Melting point</b>	Not available.

<b>Freezing point</b>	Not available.
<b>Boiling point</b>	> 334.4 °F (> 168 °C)
<b>Flash point</b>	> 212 °F (> 100 °C)
<b>Evaporation rate</b>	Not available.
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.
<b>Specific gravity</b>	1.024 (20°C/ 68°F)
<b>Solubility (water)</b>	Insoluble in water.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.

## 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Incompatible materials.
<b>Incompatible materials</b>	Oxidizing agents. Reducing agents. Halogenated compounds. Acids.
<b>Hazardous decomposition products</b>	Carbon oxides. Calcium oxides. Hydrogen sulfide.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

## 11. Toxicological Information

### Toxicological data

#### Components

Hydrogen sulfide (7783-06-4)

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to-hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (8052-42-4)

#### Test Results

Acute Inhalation LC50 Mouse: > 0.024 mg/l 960 Minutes

Acute Inhalation LC50 Rat: > 0.38 mg/l 960 Minutes

Acute Dermal LD50 Rabbit: >= 2000 mg/kg

Acute Oral LD50 Rat: >= 5000 mg/kg

#### Acute effects

At elevated temperatures, vapor may cause irritation of eyes and respiratory tract. 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

Contact with hot material can cause thermal burns which may result in permanent damage. Inhalation of vapors/fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or difficulty breathing. Dust from grinding of asphalt or fumes from the heating of this material caused transitory inflammation and irritation of the surface of the eyes and of the respiratory passages, as well as limbal pigmentation of cornea.

#### Sensitization

Not a skin sensitizer.

#### Chronic effects

Exposure to Asphalt fumes can cause severe irritation of the skin and may cause dermatitis and acne-like lesions. Prolonged contact may cause skin pigment change which may be aggravated by sunlight exposure.

## Carcinogenicity

### ACGIH Carcinogens

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to-hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (CAS 8052-42-4) A4 Not classifiable as a human carcinogen.

**Epidemiology** Not available.

**Mutagenicity** Not available.

**Neurological effects** Not available.

**Reproductive effects** Not available.

**Teratogenicity** Not available.

**Further information** Asphalt has low systemic toxicity when ingested. However, chewing asphalt has caused gastrointestinal effects. Gastric masses (Bezoars) and stomach (pyloric) obstructions have been reported in individuals who have chewed and swallowed asphalt. Effects on the tracheobronchial tree and lungs of mice inhaling an aerosol of petroleum asphalt & another group inhaling smoke from heated petroleum asphalt incl. congestion, acute bronchitis, pneumonitis, bronchial dilation, some perbronchiolar round cell infiltration, abscess formation, loss of cilia, epithelial atrophy & necrosis.

## 12. Ecological Information

### Ecotoxicological data

#### Components

#### Test Results

Components	Test Results
Hydrogen sulfide (7783-06-4)	LC50 Lake whitefish ( <i>Coregonus clupeaformis</i> ): 0.002 mg/l 96 hours

**Ecotoxicity** The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Environmental effects** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

**Persistence and degradability** No data available.

**Bioaccumulation / Accumulation** No data available.

**Partition coefficient (n-octanol/water)** Not available.

**Mobility in environmental media** The product is insoluble in water.

## 13. Disposal Considerations

**Waste codes** Not regulated.

**Disposal instructions** Do not allow this material to drain into sewers/water supplies. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

## 14. Transport Information

### DOT

#### Basic shipping requirements:

<b>UN number</b>	UN3257
<b>Proper shipping name</b>	Elevated temperature liquid, n.o.s.
<b>Hazard class</b>	9
<b>Packing group</b>	III
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	No
<b>Labels required</b>	9
<b>Additional information:</b>	
<b>Special provisions</b>	IB1, T3, TP3, TP29
<b>Packaging exceptions</b>	None
<b>Packaging non bulk</b>	None
<b>Packaging bulk</b>	247

ERG number 128

**IATA**

**Basic shipping requirements:**

UN number 3257  
Proper shipping name Elevated temperature liquid, n.o.s.  
Hazard class 9

**IMDG**

**Basic shipping requirements:**

UN number 3257  
Proper shipping name ELEVATED TEMPERATURE LIQUID, N.O.S.  
Hazard class 9  
Packing group III  
Environmental hazards  
Marine pollutant No  
EmS No. F-A, S-P\*

**TDG**

**Basic shipping requirements:**

Proper shipping name ELEVATED TEMPERATURE LIQUID, N.O.S.  
Hazard class 9  
UN number UN3257  
Packing group III  
Marine pollutant Marine pollutant only when containing 10% or more substances identified as marine pollutants or severe marine pollutant when containing 1% or more substances identified as severe marine pollutants



DOT



IATA



IMDG



TDG

**15. Regulatory Information**

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**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

**CERCLA (Superfund) reportable quantity (lbs)**

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium 100  
Hydrogen sulfide 100

## Superfund Amendments and Reauthorization Act of 1986 (SARA)

<b>Hazard categories</b>	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
<b>Section 302 extremely hazardous substance</b>	No
<b>Section 311 hazardous chemical</b>	No
<b>Drug Enforcement Agency (DEA)</b>	Not controlled
<b>WHMIS status</b>	Non-controlled

### State regulations

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

Hydrogen sulfide (CAS 7783-06-4) Listed.

#### US - Massachusetts RTK - Substance: Listed substance

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (CAS 8052-42-4) Listed.

Hydrogen sulfide (CAS 7783-06-4) Listed.

#### US - New Jersey Community RTK (EHS Survey): Reportable threshold

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

#### US - New Jersey RTK - Substances: Listed substance

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (CAS 8052-42-4) Listed.

Hydrogen sulfide (CAS 7783-06-4) Listed.

#### US - Pennsylvania RTK - Hazardous Substances: Listed substance

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (CAS 8052-42-4) Listed.

Hydrogen sulfide (CAS 7783-06-4) Listed.

#### US - Pennsylvania RTK - Hazardous Substances: Special hazard

A complex of high molecular weight organic compounds with carbon numbers greater than C16, with a high carbon-to hydrogen ratios. It also contains small amount of various metals such as nickel, iron, and vanadium (CAS 8052-42-4) Special hazard.

## 16. Other Information

<b>Further information</b>	HMIS® is a registered trade and service mark of the NPCA. G - Safety Glasses, Gloves, Vapor Respirator
<b>HMIS® ratings</b>	Health: 1 Flammability: 0 Physical hazard: 0 Personal protection: G
<b>NFPA ratings</b>	Health: 1 Flammability: 0 Instability: 0
<b>Disclaimer</b>	This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.
<b>Issue date</b>	06-02-2010