# SAFETY DATA SHEET

## 1. Identification

**Product identifier** **SLOW SET ASPHALT EMULSION**

**Other means of identification**

**SDS number** 9586

**Synonyms** APPLICABLE TO ALL CSS-1 D (DILUTE) PRODUCTS * APPLICABLE TO ALL CSS-1H D (DILUTE) PRODUCTS * APPLICABLE TO ALL SS-1 D (DILUTE) PRODUCTS * APPLICABLE TO ALL SS-1H D (DILUTE) PRODUCTS * CQS-1 * CQS-1H * CSS-1 * CSS-1 SPECIAL * CSS-1H * CSS-1H Slurry * CSS-1HP * CSS-1P * SS-1 * SS-1H * CIR-EE(S) * CIR-EE(H) * SB-EE(S) * SB-EE(H)

**Recommended use** Road construction and maintenance

**Recommended restrictions** Other uses are not recommended unless an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled.

**Manufacturer/Importer/Supplier/Distributor information**

**Manufacturer**

**Manufacturer** Flint Hills Resources Pine Bend, LLC
P.O. Box 2917
Wichita, KS
67201-2917
United States

**Telephone numbers – 24 hour emergency assistance**

**Chemtrec** 800-424-9300

**Telephone numbers – general assistance**

**8-5 (M-F, CST) MSDS Assistance** 316-828-7988

**Email:** msdsrequest@fhr.com

## 2. Hazard(s) identification

**Physical hazards** Not classified.

| **Health hazards** | | |
|---|---|---|
| | Skin corrosion/irritation | Category 1B |
| | Serious eye damage/eye irritation | Category 1 |
| | Sensitization, skin | Category 1 |
| | Carcinogenicity | Category 1B |
| | Specific target organ toxicity, single exposure | Category 3 narcotic effects |
| | Specific target organ toxicity, repeated exposure | Category 2 (liver, thymus, bone marrow) |
| | Aspiration hazard | Category 1 |
| **Environmental hazards** | Hazardous to the aquatic environment, acute hazard | Category 2 |
| | Hazardous to the aquatic environment, long-term hazard | Category 2 |

**OSHA defined hazards** Not classified.

**Label elements**

**Signal word** Danger

**Hazard statement** Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause cancer. May cause drowsiness or dizziness. May cause damage to organs (liver, thymus, bone marrow) through prolonged or repeated exposure. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

**Precautionary statement**

**Prevention** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Do not breathe mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.

**Response** If swallowed: Rinse mouth. Do NOT induce vomiting.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. Collect spillage.

Specific treatment (see first aid instructions on this label).

**Storage** Store in a well-ventilated place. Keep container tightly closed. Store locked up.

**Disposal** Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazard(s) not otherwise classified (HNOC)** Not classified.

**Supplemental information**

**Precautionary statement(s)**

**Hazard statement** Contains or releases hydrogen sulfide, an extremely flammable and toxic gas. Gas may evolve from this material and accumulate in confined spaces.

When it is heated, this material may cause thermal burns.

**Prevention** Use personal protective equipment as required. Wear protective gloves/eye protection/face protection.

## 3. Composition/information on ingredients

**Mixtures**

| Chemical name | Common name and synonyms | CAS number | % |
|---|---|---|---|
| WATER | | 7732-18-5 | 25 - 93 |
| ASPHALT BINDER | | Mixture | 7 - 75 |
| CATIONIC EMULSIFIER SALT | | Proprietary | ≤ 5 |
| OIL DISTILLATES | | Proprietary | ≤ 5 |

| Additional components<br>Chemical name | Common name and synonyms | CAS number | % |
|---|---|---|---|
| PETROLEUM ASPHALT | | 8052-42-4 | ≤ 75 |
| POLYMER MODIFIER | | Proprietary | ≤ 7 |
| HYDROGEN SULFIDE | | 7783-06-4 | ≤ 0.1 |
| POLYCYCLIC AROMATIC COMPOUNDS | | 130498-29-2 | < 0.1 |

**Composition comments**

Values do not reflect absolute minimums and maximums; these values are typical which may vary from time to time.

Asphalt component may contain antistrip, vulcanizing agent, and polymer modifier. Asphalt materials can contain hydrogen sulfide, because it is naturally occurring in crude oil from which asphalt is derived. Hydrogen sulfide can also be present as a byproduct of asphalt processing.

The specific identities of some of the components of this product are being withheld as trade secrets. However, all pertinent hazards are addressed in this SDS.

This Safety Data Sheet is intended to communicate potential health hazards and potential physical hazards associated with the product(s) covered by this sheet, and is not intended to communicate product specification information. For product specification information, contact your Flint Hills Resources, LP representative.

## 4. First-aid measures

**Inhalation**

Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear and give oxygen. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR).

Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

**Skin contact**

If hot material gets on skin, immediately flush affected area with large amounts of cool water. Do not attempt to remove the material from the skin, or to remove contaminated clothing. Get immediate medical attention.

For cold material, immediately wash skin with plenty of soap and water after removing contaminated clothing and shoes. Get medical attention if irritation persists.

Place contaminated clothing in closed container for storage until laundered or discarded. If clothing is to be laundered, inform person performing operation of contaminant's hazardous properties. Discard contaminated leather goods.

**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. GET IMMEDIATE MEDICAL ATTENTION.

**Ingestion**

If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty.

Never give anything by mouth to an unconscious person.

Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

**Most important symptoms/effects, acute and delayed**

INHALATION:
Fumes, mists, or vapors from the heated material may be irritating to the respiratory tract. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Contains hydrogen sulfide gas. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since odor fatigue rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions.

SKIN:
CORROSIVE. Contact can cause skin burns and permanent skin damage. Skin contact may cause harmful effects in other parts of the body.

Contains a component(s) that may cause allergic skin reactions in some individuals.

EYES:
CORROSIVE. Contact can cause burns and permanent damage to eye tissue. Can cause blindness.

Vapors may cause eye irritation and sensitivity to light.

INGESTION:
CORROSIVE. Swallowing this material may be harmful or cause death. Harmful effects include burns and permanent damage to the digestive tract, including the mouth, throat, stomach and intestines. Symptoms may include severe abdominal pain and vomiting of blood. Blood loss through damaged tissue can lead to low blood pressure and shock.

Aspiration into lungs may cause chemical pneumonia and lung damage.

**Indication of immediate medical attention and special treatment needed**

INHALATION: Inhalation exposure can produce toxic effects. Treat intoxications as hydrogen sulfide exposures. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis.

Treat as corrosive material. Monitor for possible pharyngeal and pulmonary edema. Onset may be delayed up to 24 hours from the time of exposure. Administer supplemental oxygen with assisted ventilation, as required.

Signs and symptoms of CNS depression, confusion and convulsions should be considered in the assessment and treatment of victims of exposures.

INGESTION: This material is primarily an irritant and corrosive. As a corrosive, give attention to potential complication of esophagus or stomach perforations if ingested. Use of emetics and lavage are contraindicated. Necrosis and associated inflammatory processes peak at about 48 hours, but may extend up to four days. Initial healing processes occur during the period 4 to 14 days, but the esophageal wall is weakest during this period.

SKIN: Hot material may cause skin burns. Immerse skin covered with hot material in cool water to limit tissue damage and prevent spread of liquid material. Consider leaving cooled material on skin unless contraindicated by contamination or potential for tattooing. If removal is necessary, mineral oil may be of assistance in minimizing skin loss when removing cool, hardened asphalt.

EYES: Hot material may cause burns to the eyes. Early ophthalmologic evaluation is recommended.

## 5. Fire-fighting measures

**Suitable extinguishing media**

Use water spray, dry chemical, carbon dioxide or fire-fighting foam for Class B fires to extinguish fire.

**Unsuitable extinguishing media**

Do not use a solid water stream as it may scatter and spread fire.

**Specific hazards arising from the chemical**

Combustion may produce COx, SOx, NOx, reactive hydrocarbons, irritating vapors, and other decomposition products in the case of incomplete combustion. Fires involving this product may release hydrogen sulfide.

Material will burn in a fire.

Hydrogen sulfide can react with the iron in an asphalt storage tank to form iron sulfide. Iron sulfide is pyrophoric. When exposed to air, iron sulfide is capable of igniting spontaneously.

**Special protective equipment and precautions for firefighters**

Evacuate area and fight fire from a safe distance.

Use water spray to cool adjacent structures and to protect personnel. Shut off source of flow, if possible. Stay away from storage tank ends. Withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire. Always stay away from tanks engulfed in flame.

Exercise extreme care when using water spray on asphalt tank fires. When water is mixed with hot asphalt, steam may rapidly develop resulting in violent asphalt foaming and possible tank eruptions from increased pressure.

Firefighters must wear NIOSH approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.

## 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Keep unnecessary people away; isolate hazard area and deny entry. For spills in confined areas, ensure adequate ventilation. For spills outdoors, stay upwind. IF TANK, RAILCAR OR TANK TRUCK IS INVOLVED IN A FIRE, isolate for 800 meters (1/2 mile) in all directions. Evacuate area endangered by release as required. Wear appropriate personal protective equipment. See Exposure Controls/Personal Protection (Section 8).

**Methods and materials for containment and cleaning up**

Keep unnecessary people away. Isolate area for at least 50 meters (164 feet) in all directions to preserve public safety. For large spills, if downwind consider initial evacuation for at least 300 meters (1000 feet).

For spills on land, scrape up spilled material for disposal. For large spills, dike ahead of spill to contain. For spills on water, contain as much as possible with booms and begin recovery as soon as possible. If material sinks or becomes dispersed, consult with local, state and regional authorities for approved clean up procedures.

Use a vapor suppressing foam to reduce vapors. Do not touch or walk through spilled material. Stop leak when safe to do so.

See Exposure Controls/Personal Protection (Section 8).

**Environmental precautions**

Prevent entry into water ways, sewers, basements or confined areas. Notify local authorities and National Response Center, if required.

## 7. Handling and storage

**Precautions for safe handling**

Avoid contact with strong oxidizing agents. Prevent small spills to minimize slip hazard or release to the environment. Do not cut, grind, drill, weld (or introduce any other ignition source) on empty containers or reuse containers unless adequate precautions are taken. Avoid extreme temperatures to minimize product degradation.

Avoid personal contact with this material. Always observe good personal hygiene measures, such as removing contaminated clothing and protective equipment, washing after handling the material and before entering public areas. Restrict eating, drinking and smoking to designated areas to prevent personal chemical contamination. Routinely wash work clothing and protective equipment to remove contaminants. Do not breathe fumes, vapor or gas. See Section 8 of the SDS for Personal Protective Equipment.

**Conditions for safe storage, including any incompatibilities**

Store in tightly closed containers in a cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Avoid contact with strong oxidizing agents. Empty containers may contain material residue. Do not reuse without adequate precautions.

Hydrogen sulfide can build up in the head space of storage vessels containing this material. Use appropriate respiratory protection to prevent exposure. See Exposure Controls/Personal Protection (Section 8).

When entering a storage vessel that has previously contained this material it is recommended that the atmosphere be monitored for the presence of hydrogen sulfide. See Occupational exposure limits (Section 8) for exposure limits.

## 8. Exposure controls/personal protection

**Occupational exposure limits**

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

| Additional components | Type | Value |
|---|---|---|
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | PEL | 0.2 mg/m3 |

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

| Additional components | Type | Value | Form |
|---|---|---|---|
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | TWA | 0.2 mg/m3 | Coal tar pitch volatiles (benzene soluble fraction) |
| HYDROGEN SULFIDE (CAS 7783-06-4) | Ceiling | 20 ppm | |

**US. ACGIH Threshold Limit Values**

| Additional components | Type | Value | Form |
|---|---|---|---|
| PETROLEUM ASPHALT (CAS 8052-42-4) | TWA | 0.5 mg/m3 | Inhalable fraction (as benzene-soluble aerosol) |
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | TWA | 0.2 mg/m3 | Coal tar pitch volatiles (benzene soluble fraction) |
| | | 0.2 mg/m3 | Aerosol. |
| HYDROGEN SULFIDE (CAS 7783-06-4) | STEL | 5 ppm | |
| | TWA | 1 ppm | |

**US. NIOSH: Pocket Guide to Chemical Hazards**

| Additional components | Type | Value | Form |
|---|---|---|---|
| PETROLEUM ASPHALT (CAS 8052-42-4) | Ceiling | 5 mg/m3 | Fume. |
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | TWA | 0.1 mg/m3 | Cyclohexane-extractable fraction. |
| HYDROGEN SULFIDE (CAS 7783-06-4) | Ceiling | 10 ppm | |

**Biological limit values**

**ACGIH Biological Exposure Indices**

| Additional components | Value | Specimen | Sampling Time |
|---|---|---|---|
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | 2.5 µg/l | 1-Hydroxypyrene in urine | * |

* - For sampling details, please see the source document.

**Exposure guidelines**

**US OSHA Specifically Regulated Substances: Action level and Reference**

| | |
|---|---|
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | 29 CFR 1910.1002 |

**Appropriate engineering controls**

Consider the following when employing engineering controls and selecting personal protective equipment: potential hazards of the material, applicable exposure limits, job activities, and other substances in the work place.

Ventilation and other forms of engineering controls are the preferred means for controlling exposures below occupational exposure limits and guidelines.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**

Keep away from eyes. Eye contact can be avoided by using chemical safety glasses, goggles and/or face shield. Have eye washing facilities readily available where eye contact can occur.

**Skin protection**

| | |
|---|---|
| **Hand protection** | Prevent any skin contact with this material. Use appropriate chemical resistant gloves. Glove suitability for a job must be determined by the user for specific use conditions. Contact the glove manufacturer for specific advice on glove selection regarding permeability and breakthrough times for your use conditions. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.<br><br>When handling hot material, use heat resistant gloves. |
| **Other** | Prevent any skin contact with this material. Additional protective clothing may be necessary. |
| **Respiratory protection** | The use of air purifying respirators is not recommended where hydrogen sulfide levels may exceed exposure limits. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. See OSHA 29 CFR 1910.134 for more information regarding respiratory protection and Assigned Protection Factors (APFs). |
| **Thermal hazards** | Contact with hot material can cause thermal burns which may result in permanent damage. Wear appropriate thermal protective clothing. Additional protection may be necessary to prevent skin contact including use of apron, arm covers, face shield, or boots. |

## 9. Physical and chemical properties

| | |
|---|---|
| **Appearance** | |
| **Physical state** | Liquid. |
| **Form** | Not applicable |
| **Color** | Dark brown |
| **Odor** | Musty |
| **Odor threshold** | Not available. |
| **pH** | 2 - 10.5 |
| **Melting point/freezing point** | < 32 °F (< 0 °C) |
| **Initial boiling point and boiling range** | 212 °F (100 °C) |
| **Flash point** | >212 °F (>100 °C) |
| **Evaporation rate** | Not available |
| **Flammability (solid, gas)** | Not applicable. |
| **Upper/lower flammability or explosive limits** | |
| **Explosive limit - lower (%)** | Not available. |
| **Explosive limit - upper (%)** | Not available. |
| **Vapor pressure** | 23.76 mmHg at 77 °F (25 °C) (similar to water) |
| **Vapor density** | Not available |
| **Relative density** | 0.9 - 1.1 at 60/60 °F (15.6/15.6 °C) |
| **Solubility(ies)** | |
| **Solubility (water)** | Dispersible |
| **Partition coefficient (n-octanol/water)** | Not available |
| **Auto-ignition temperature** | Not available |
| **Decomposition temperature** | Not available. |
| **Viscosity** | 10 - 700 SFS at 77 °F (25 °C) |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity** | See statements below. |
| **Chemical stability** | Material is stable under normal conditions. |
| **Possibility of hazardous reactions** | Not anticipated under normal conditions. |
| **Conditions to avoid** | Avoid overheating, emissions generation, unventilated areas, heat, open flames. |
| **Incompatible materials** | Incompatible with strong oxidizing agents. See precautions under Handling & Storage (Section 7). |
| **Hazardous decomposition products** | Not anticipated under normal conditions. |

## 11. Toxicological information

**Information on likely routes of exposure**

| | |
|---|---|
| **Inhalation** | Likely route of exposure |
| **Skin contact** | Likely route of exposure |
| **Eye contact** | Likely route of exposure |
| **Ingestion** | Likely route of exposure |

**Symptoms related to the physical, chemical and toxicological characteristics**

INHALATION:
Fumes, mists, or vapors from the heated material may be irritating to the respiratory tract. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Contains hydrogen sulfide gas. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since odor fatigue rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions.

SKIN:
CORROSIVE. Contact can cause skin burns and permanent skin damage. Skin contact may cause harmful effects in other parts of the body.

Contains a component(s) that may cause allergic skin reactions in some individuals.

EYES:
CORROSIVE. Contact can cause burns and permanent damage to eye tissue. Can cause blindness.

Vapors may cause eye irritation and sensitivity to light.

INGESTION:
CORROSIVE. Swallowing this material may be harmful or cause death. Harmful effects include burns and permanent damage to the digestive tract, including the mouth, throat, stomach and intestines. Symptoms may include severe abdominal pain and vomiting of blood. Blood loss through damaged tissue can lead to low blood pressure and shock.

Aspiration into lungs may cause chemical pneumonia and lung damage.

**Information on toxicological effects**

**Acute toxicity** Not classified.

| Components | Species | Test Results |
|---|---|---|
| OIL DISTILLATES | | |
| **Acute** | | |
| **Dermal** | | |
| LD50 | Rat | > 4300 mg/kg |
| **Inhalation** | | |
| *Mist* | | |
| LC50 | | 4.1 mg/l |
| **Oral** | | |
| LD50 | Rat | > 7600 mg/kg |
| WATER (CAS 7732-18-5) | | |
| **Acute** | | |
| **Oral** | | |
| LD50 | Rat | > 89800 mg/kg |

**Skin corrosion/irritation** Causes severe skin burns and eye damage.

**Serious eye damage/eye irritation** Causes serious eye damage.

**Respiratory or skin sensitization**

**Respiratory sensitization** Not classified.

**Skin sensitization** May cause an allergic skin reaction.

**Germ cell mutagenicity** Not classified.

**Carcinogenicity** May cause cancer.

**ACGIH Carcinogens**

| | |
|---|---|
| ASPHALT (BITUMEN) FUME, AS BENZENE-SOLUBLE AEROSOL, INHALABLE FRACTION (CAS 8052-42-4) | A4 Not classifiable as a human carcinogen. |
| COAL TAR PITCH VOLATILES, AS BENZENE SOLUBLE AEROSOL (CAS 130498-29-2) | A1 Confirmed human carcinogen. |

**IARC Monographs. Overall Evaluation of Carcinogenicity**

| | |
|---|---|
| PETROLEUM ASPHALT (CAS 8052-42-4) | 2B Possibly carcinogenic to humans. |
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | 1 Carcinogenic to humans. |

**US. National Toxicology Program (NTP) Report on Carcinogens**

| | |
|---|---|
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | Reasonably Anticipated to be a Human Carcinogen. |

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

Not regulated.

**Reproductive toxicity** Not classified.

**Specific target organ toxicity - single exposure** May cause drowsiness or dizziness.

**Specific target organ toxicity - repeated exposure** May cause damage to organs (liver, thymus, bone marrow) through prolonged or repeated exposure.

**Aspiration hazard** May be fatal if swallowed and enters airways.

**Toxicological data**

HYDROGEN SULFIDE: Hydrogen sulfide causes rapid death due to metabolic asphyxiation. It has an unpleasant "rotten egg" odor that diminishes with increased exposure and is not a reliable indicator for warning of exposure. Eye irritation may occur at levels above 4 ppm. Olfactory fatigue occurs rapidly at levels of 50 ppm or higher. Respiratory effects include irritation with possible pulmonary edema at levels above 50 ppm. At 500 ppm immediate loss of consciousness and death can occur. NIOSH has determined that 100 ppm hydrogen sulfide is immediately dangerous to life and health (IDLH).

PROPRIETARY PROCESS OILS: Long-term repeated (lifetime) skin exposure also has been reported to result in an increase in skin tumors in laboratory rodents. The International Agency for Research on Cancer (IARC) has concluded that there is sufficient evidence of carcinogenicity in experimental animals for these types of oils (Group 1B).

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs): Cancer is the most significant endpoint for PAHs. Certain PAHs are weak carcinogens which become carcinogenic after undergoing metabolism. Chronic or repeated exposure increases the likelihood of tumor initiation. Increased incidence of tumors of the skin, bladder, lung and gastrointestinal tract have been described in individuals overexposed to certain PAHs. Overexposure to PAHs has also been associated with photosensitivity and eye irritation. Inhalation overexposure of PAHs has been associated with respiratory tract irritation, cough, and bronchitis. Dermal overexposure has been associated with precancerous lesions, erythema, dermal burns, photosensitivity, acneiform lesions and irritation. Oral overexposure to PAHs has been associated with precancerous growths of the mouth (leukoplakia). Mild nephrotoxicity, congestion and renal cortical hemorrhages and elevated liver function tests, changes in the immune system and other effects have been observed in rats exposed to high levels of PAHs by ingestion.

ASPHALT/ASPHALT LIKE PRODUCTS: Asphalt fumes from heated material have been reported to cause eye, respiratory tract and skin irritation, as well as nausea and headaches. Symptoms may include coughing, wheezing and shortness of breath. An adverse effect on pulmonary function has not been conclusively demonstrated. Studies in humans to determine the potential long-term health effects of asphalt also have had inconsistent results. Epidemiological studies in European paving asphalt worker populations indicated a slight positive association between lung cancer mortality and exposure to asphalt fumes. A case-control examination of these data found no consistent evidence of an association between bitumen and lung cancer risk, possibly due to the confounding effects of potential exposure to coal tar cigarette smoking, and other substances. Additional studies of workers exposed to asphalt emissions during paving with straight-run asphalt showed mutagenic and genotoxic/cytogenetic effects in these workers.

Studies in experimental animals have not established a link between lung cancer and asphalt fume exposure. However, an increase in skin tumors was observed in lifetime studies of laboratory rodents exposed to extracts of asphalt (bitumen) as well as “cutbacks” of asphalt (asphalts that are diluted, dissolved or liquefied in hydrocarbon solvents).

An increased incidence of skin tumors was also observed in lifetime dermal bioassays of laboratory rodents exposed to distillates of fumes generated from roofing flux, an asphalt that is further processed or oxidized. These condensed fumes were collected from an oxidized roofing asphalt at high temperatures (>450 degrees F). Follow up studies suggest that the roofing asphalt distillates act as tumor initiators, involving a genotoxic mechanism. No increases in skin tumors were found in a lifetime study of rodents dermally exposed to distillates of fumes generated from paving asphalt.

The International Agency for Research on Cancer (IARC) recently determined that occupational exposures to oxidized asphalt and their emissions during roofing applications are “probably carcinogenic to humans” (Group 2A). They also determined that occupation exposures to hard asphalts and their emissions during mastic asphalt work and occupational exposures to straight-run asphalts and their emissions during paving operations are “possibly carcinogenic to humans” (Group 2B).

## 12. Ecological information

**Ecotoxicity** Toxic to aquatic life with long lasting effects.

| Components | | Species | Test Results |
|---|---|---|---|
| OIL DISTILLATES | | | |
| **Aquatic** | | | |
| *Acute* | | | |
| Algae | EC50 | Pseudokirchnerella subcapitata | 10 mg/l, 72 hr |
| Crustacea | EC50 | Daphnia magna | 68 mg/l, 48 hr |
| Fish | LC50 | Oncorhynchus mykiss | 21 mg/l, 96 hr |
| *Chronic* | | | |
| Crustacea | NOEC | Daphnia magna | 0.2 mg/l, 21 d |
| Fish | NOEC | Oncorhynchus mykiss | 0.08 mg/l, 14 d |

**Persistence and degradability** Not readily biodegradable.

**Bioaccumulative potential** May bioaccumulate in aquatic organisms.

**Mobility in soil** May partition into soil and water.

**Other adverse effects** No other adverse effects expected.

## 13. Disposal considerations

**Disposal instructions** This material, as supplied, when discarded or disposed of, is not a hazardous waste according to Federal Regulations (40 CFR 261).

The transportation, storage, treatment and disposal of waste material must be conducted in compliance with federal, state, and local regulations. Under RCRA it is the responsibility of the user of the material to determine, at the time of disposal, whether this material meets RCRA criteria for hazardous waste. For additional handling information and protection of employees, see Section 7 (Handling and Storage) and Section 8 (Exposure Controls/Personal Protection).

**Hazardous waste code** The proper waste code must be evaluated at the time of disposal and should be determined by the user and waste disposal company.

**Waste from residues / unused products** Dispose of this material in accordance with all applicable local and national regulations.

**Contaminated packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal in accordance with government regulations. Packaging may contain residue that can be hazardous.

## 14. Transport information

**General information** In accordance with US DOT, bulk and non-bulk shipments of this product, which are offered for transportation:
*below 212 °F (100 °C), are not regulated.
*above 212 °F (100 °C), are UN3257, Elevated Temperature Liquid, Flammable, NOS (Petroleum Distillates) 9, III
*greater than the flash point, are UN3256, Elevated Temperature Liquid, Flammable, NOS (Petroleum Distillates) 3, III

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not classified for MARPOL. Please contact the Transportation Compliance CSO if transportation mode is ship or vessel to determine the need for a MARPOL classification.

## 15. Regulatory information

**US federal regulations** All ingredients are on the TSCA inventory, or are not required to be listed on the TSCA inventory.

This material does not contain toxic chemicals (in excess of the applicable de minimis concentration) that are subject to the annual toxic chemical release reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 (40 CFR 372).

Check local, regional or state/provincial regulations for any additional requirements as these may be more restrictive than federal laws and regulations. Failure to comply may result in substantial civil and criminal penalties.

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

| | |
|---|---|
| HYDROGEN SULFIDE (CAS 7783-06-4) | 1.0 % |
| POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2) | 0.1 % |

**US CERCLA Hazardous Substances: Reportable quantity**

| | |
|---|---|
| HYDROGEN SULFIDE (CAS 7783-06-4) | 100 LBS |

**US EPCRA (SARA Title III) Section 312 - Extremely Hazardous: Listed substance**

| | |
|---|---|
| HYDROGEN SULFIDE (CAS 7783-06-4) | Listed. |

**US EPCRA (SARA Title III) Section 304 - Extremely Hazardous Spill: Reportable quantity**

| | |
|---|---|
| HYDROGEN SULFIDE (CAS 7783-06-4) | 100 LBS |

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

Not regulated.

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

**Hazard categories** Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

**Other federal regulations** Please see Section 2 for OSHA hazard classification(s) for EPCRA Tier I/Tier II reporting.

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

POLYCYCLIC AROMATIC COMPOUNDS (CAS 130498-29-2)

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

HYDROGEN SULFIDE (CAS 7783-06-4)

**US state regulations**

**US. California Proposition 65**

WARNING: This product contains a chemical known to the State of California to cause cancer. Proposition 65, CAL. HSC. §25249.5.

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

| | |
|---|---|
| PETROLEUM ASPHALT (CAS 8052-42-4) | Listed: January 1, 1990 |

## 16. Other information, including date of preparation or last revision

**Issue date** 04-01-2015

**Revision date** 02-17-2017

| | |
|---|---|
| **Version #** | 04 |
| **HMIS® ratings** | Health: 2*<br>Flammability: 0<br>Physical hazard: 0<br>* Indicates chronic health hazard |
| **NFPA ratings** | Health: 2<br>Flammability: 1<br>Instability: 0 |
| **Disclaimer** | THIS SDS HAS BEEN PREPARED TO COMPLY WITH FEDERAL REGULATIONS THAT ARE INTENDED TO QUICKLY PROVIDE USEFUL INFORMATION TO THE USER(S) OF THIS MATERIAL OR PRODUCT - IT IS NOT INTENDED TO SERVE AS A COMPREHENSIVE DISCUSSION OF ALL POSSIBLE RISKS OF HAZARDS, BUT RATHER PROVIDES INFORMATION GENERALLY ACCEPTED IN THE SCIENTIFIC COMMUNITY AS RELEVANT REGARDING THE POTENTIAL HAZARDS OF THIS PRODUCT. ADEQUATE TRAINING, INSTRUCTION, WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS. USERS SHOULD REVIEW THE INFORMATION IN THE SDS, AND SATISFY THEMSELVES AS TO ITS SUITABILITY AND COMPLETENESS, INCLUDING ENSURING THAT THIS IS THE MOST CURRENT SDS. |
| **Revision information** | Physical & Chemical Properties: Multiple Properties<br>Regulatory Information: United States |
| **Completed by** | Flint Hills Resources, LP - Operations EH&S |