



ASPHALT CONSTRUCTION AND ASPHALT MANUFACTURING

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## MATERIAL SAFETY DATA SHEET

### A. SUBSTANCE IDENTIFICATION

**SUBSTANCE:** Asphalt, Hot Mix

**TRADE NAMES/SYNONYMS:** Bituminous Concrete, Asphalt Concrete, Blacktop, ID2 - Wearing, ID2 - Binder, BCBC, Black Base, Top, FJ-1, FB-2 Wearing, FB-2 Binder, ID9, Curb Mix, Hot Patch, Topeaka, Modified Top, Amlesite.

**MOLECULAR FORMULA:** Mixture

**CERCLA RATINGS (SCALE 0-3):** Health = U Fire = 1 Reactivity = 0 Persistence = 3

**NFPA RATINGS (SCALE 0-4):** Health = U Fire = 1 Reactivity = 0

### B. COMPONENTS AND EXPOSURE LIMITS

**COMPONENT:** Asphalt, Petroleum Percent: 3.0 - 12.0

CAS#8052-42-4

May contain sulfur.

**COMPONENT:** Aggregate (Stone, Slag, Gravel, Sand) Percent: 88.0 - 97.0

May contain quartz.

**EXPOSURE LIMITS:** Asphalt (Petroleum fumes):

5 MG/M<sup>3</sup> ACGIH TWA;

5 MG/M<sup>3</sup> NIOSH Recommended 15 minute ceiling.

**HYDROGEN SULFIDE:**

20 PPM OSHA acceptable ceiling concentration; 50 PPM for 10 minutes once, only if no other measurable exposure occurs OSHA acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift.

10 PPM MSHA (Mine Safety and Health Administration) TWA;

10 PPM ACGIH TWA; 15 PPM ACGIH STEL;

10 PPM NIOSH recommended 10 minute ceiling.

**AGGREGATE:** None established.

**QUARTZ:** 0.1 MG/M<sup>3</sup> OSHA TWA respirable dust;

0.3 MG/M<sup>3</sup> OSHA TWA total dust;

0.1 MG/M<sup>3</sup> ACGIH TWA respirable dust;

0.3 MG/M<sup>3</sup> ACGIH TWA total dust;

50 µG/M<sup>3</sup> NIOSH recommended 10 hour TWA.

### C. PHYSICAL DATA

**DESCRIPTION:** Black solid when cold; semi-plastic when hot with a tarry odor.

**BOILING POINT:** >750°F (>399°C) (Asphalt)

**MELTING POINT:** 115°- 199°F (46° - 93°C) (Asphalt) Specific Gravity: 0.95 - 1.13

**VAPOR PRESSURE:** Negligible @ 77°F **SOLUBILITY IN WATER:** Negligible

**SOLVENT SOLUBILITY:** 99.0% in Trichloroethylene (Asphalt)

**VISCOSITY:** 250 Centistokes at 275°F (135°C)

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**J. PROTECTIVE EQUIPMENT**

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**VENTILATION:**

Provide local exhaust ventilation and/or general dilution ventilation to meet published exposure limits.

**RESPIRATOR:**

The specific respirator selected must be based on the contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration.

The following respirators are recommended based on the data found in the physical data, health effects and toxicity sections. They are ranked in order from minimum to maximum respiratory protection;

Chemical Cartridge Respirator with an organic vapor cartridge(s) with a full gas mask with organic vapor canister (chin-style or front- or back-mounted canister) with a full facepiece.

Type "C" supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure mode or with a full facepiece, helmet or hood operated in continuous-flow mode.

Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

For firefighting and other immediately dangerous to life or health conditions:

Self-contained breathing apparatus with full facepiece operated in pressure-demand or positive pressure mode.

Supplied-air respirator with full facepiece and operated in pressure-demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive pressure mode.

**CLOTHING:**

Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

**GLOVES:**

Employee must wear appropriate protective gloves to prevent contact with this substance.

**EYE PROTECTION:**

Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

Where there is any possibility that an employee's eyes may be exposed to this substance, the employer shall provide an eye-wash fountain within the immediate work area for emergency use.

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All hazard warnings stated in this data sheet are to be applied to any empty container because product residues may still be present in those containers.

The information presented in this data sheet is believed to be accurate and reliable as of the date issued, but is not warranted or guaranteed by Marsh. The recipient is advised to confirm that the information is current, applicable and suitable for their particular use.

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### D. FIRE AND EXPLOSION DATA

**FIRE AND EXPLOSION HAZARD:** Slight fire hazard when exposed to heat or flame.

**FLASH POINT:** 425°F (218° C) (COC) (Asphalt)

**UPPER EXPLOSIVE LIMIT:** 6.0% (Asphalt) **LOWER EXPLOSIVE LIMIT:** 1.0% (Asphalt)

**AUTOIGNITION TEMP.:** 900°F (482° C) (Asphalt) **FLAMMABILITY CLASS (OSHA):** 111B

**FIREFIGHTING MEDIA:** Dry chemical, Carbon Dioxide, Water spray or foam.

(1984 Emergency Response Guidebook, Dot P 5800.3)

For larger fires, use water spray, fog or alcohol foam.

(1984 Emergency Response Guidebook, Dot P 5800.3).

**FIREFIGHTING:** Move container from fire area if possible. Cool fire-exposed containers with water from side until well after fire is out. For massive fire in storage area, use unmanned hose holder or monitor nozzles, else withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire (1984 Emergency Response Guidebook, Dot P 5800.3, Guide Page 27).

Extinguish only if flow can be stopped; use flooding amounts of water as a fog, solid streams may be ineffective. Cool containers with flooding amounts of water, apply from as far a distance as possible.

Avoid breathing vapors, keep upwind (Bureau of Explosives, Emergency Handling Of Hazardous Materials In Surface Transportation, 1981).

### E. TOXICITY

**ASPHALT:**

**CARCINOGEN STATUS:** None. Asphalt does not produce clinical responses or x-ray changes. Animal studies have shown no sufficient evidence of lung cancer. No significant difference in the health of asphalt workers and controls has been shown.

**HYDROGEN SULFIDE:** 500 PPM/30 minutes Inhalation-human LCLO; 5700 µG/KG Inhalation-man LDLO; 800 PPM/5 minutes Inhalation-human LCLO; 444 PPM Inhalation - rat LC50; 673 PPM/1 hour Inhalation-mouse LC50; 1 MG/M<sup>3</sup>/8 hours Inhalation-guinea pig LCLO; 800 PPM/5 minutes Inhalation-mammal LCLO;

Carcinogen status: None. Hydrogen sulfide is toxic and is a severe eye and mucous membrane irritant. Poisoning may rapidly affect the central nervous system.

**AGGREGATE:** Carcinogen status: None.

**QUARTZ:** 16 million particles/FT<sup>3</sup>/17.9 years Intermittent Inhalation-human TCLO; 300 µG/M<sup>3</sup>/10 years Intermittent Inhalation-human LCLO; 90 MG/KG Intravenous-rat LDLO; 200 MG/KG Intratracheal-rat LDLO; 40 MG/KG Intravenous-mouse LDLO; 20 MG/KG Intravenous-dog LDLO; tumorigenic data (RTEC); Carcinogen Status: None. Quartz is a skin, eye and mucous membrane irritant.

### F. REACTIVITY

**REACTIVITY:** Stable under normal temperatures and pressures.

**INCOMPATIBILITIES:**

**ASPHALT:** Asphalt and fluorine: burns with spattering and small flames.

Naphtha: readily ignites.

Volatile solvents: readily ignites.

**HYDROGEN SULFIDE:**

Acetaldehyde: violent reaction.

Barium oxide, mercurous oxide and air: Incandescent reaction or explosion.

Barium oxide, nickel oxide and air: Incandescent reaction or explosion.

Barium peroxide: Ignition reaction.

Chlorine monoxide: Ignition reaction.

Chromic anhydride: Incandescent reaction on heating.

Copper: Intense exothermic reaction.

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Metal Oxides: Combustion, Incandescent reaction or explosion.  
 Lead Dioxide: Combustion reaction.  
 Nitric Acid: Incandescent reaction.  
 Nitric Acid (Fuming or Concentrated): Violent Reaction.  
 Nitrogen Trichloride: Explosive reaction.  
 Nitrogen Trifluoride: Formation of explosive mixture.  
 Nitrogen Triiodide and Ammonia: Explosive reaction.  
 Oxidants: Violent reaction.  
 Perchloryl Fluoride: Ignition or explosion at 100-300°C.  
 Phenyl Diazonium Chloride: Formation of explosive substance.  
 Rust: Hydrogen sulfide may ignite is passed through rusty iron pipes.  
 Silver Fulminate: Violent reaction at ambient temperatures.  
 Sodamine and Air: Incandescent reaction.  
 Sodium Peroxide: Violent reaction or ignition.

**AGGREGATE:** No data available.

**QUARTZ:** Hydrogen Fluoride; Etches.  
 Hydrofluoric Acid: Etches.

**DECOMPOSITION:** Thermal Decomposition may release toxic oxides of carbon and sulfur and corrosive and toxic hydrogen sulfide.

**POLYMERIZATION:** Hazardous polymerization has not been reported to occur.

## G. HEALTH EFFECTS AND FIRST AID

### INHALATION:

**ASPHALT:** Acute exposure - no data available. May be irritating to mucous membranes.  
 Chronic exposure - no data available.

### NITROGEN SULFIDE:

Corrosive/toxic. 300 PPM immediately dangerous to life or health.

Acute exposure - Low concentrations may produce nasal and respiratory tract irritation. At 50 PPM, anosmia, headache, nausea, dizziness, vomiting, confusion, weakness, ataxia, irritability and insomnia may occur. Rhinitis, pharyngitis, coughing, bronchitis, and pneumonitis are also possible. Prolonged inhalation of 250 PPM has lead to pulmonary edema. At 500-1000 PPM coma, convulsions, and death may occur within 30 minutes. At extremely high concentrations, respiratory paralysis and death from asphyxia may be immediate. Non-fatal exposures may result in sequelae including residual cough, cardiac dilation, slow pulse, peripheral neuritis, albuminuria, amnesia and psychic disturbances.  
 Chronic exposure - prolonged or repeated exposure to low concentrations may cause hypotension, nausea, anorexia, weight loss, incoordination and chronic cough. Prolonged exposure to 250 PPM has lead to pulmonary edema.

**AGGREGATE:** Acute exposure - No data available. The dust may cause irritation.  
 Chronic exposure - No data available. The dust may be irritating.

### QUARTZ: Irritant.

Acute exposure - Inhalation may produce irritation, coughing and acute pneumoconiosis from overwhelming exposure to silica dust.

Chronic exposure - prolonged or repeated inhalation, exposure ranging from 8-18 months, may cause a rapidly developing pulmonary insufficiency, dyspnea, tachypnea and cyanosis followed by cor pulmonale and a short survival time. More frequently, after 10-25 years exposure, dyspnea, dry cough, chest pain, decreased vital capacity and diminished chest expansion may occur and progress to marked fatigue, extreme dyspnea and cyanosis, anorexia, cough with stringy mucous, pleuratic pain and incapacity to work. If tuberculosis does not supervene, death may result from cardiac failure or destruction of lung tissue with resultant emphysema.

**FIRST AID** - Remove from exposure area to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep person warm and at rest. Get medical attention immediately.

### SKIN CONTACT:

**HOT MIX (MIXTURE):** Acute exposure - no data available. Contact with hot material (over 100°F.) may cause thermal burns.

Chronic exposure - no data available.

**ASPHALT:** Acute exposure - no data available. May be irritating to the skin.  
 Chronic exposure - no data available. May cause dermatitis.

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**AGGREGATE:** Acute exposure - no data available.  
Chronic exposure - no data available.

**QUARTZ:** Irritant.

Acute exposure - contact may cause irritation.

Chronic exposure - repeated or prolonged contact may cause dermatitis.

**FIRST AID** - Flush affected area with large volumes of cool water. Do not attempt to remove clothing or asphaltic material. Get medical attention immediately. Continue to flush affected area with water until medical help arrives.

**EYE CONTACT:**

**ASPHALT:** Acute exposure - No data available. May be irritating.

Chronic exposure - No data available.

**HYDROGEN SULFIDE:** Irritant.

Acute exposure - 50 PPM for one hour has caused conjunctivitis, pain, lacrimation, photophobia, and appearance of haloes around lights. Within a few hours or days, symptoms may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. Direct contact with the liquified gas may cause frostbite.

Chronic exposure - Prolonged or repeated exposure may cause conjunctivitis.

**AGGREGATE:** Acute exposure - No data available. The dust may be irritating.

Chronic exposure - No data available. The dust may be irritating.

**QUARTZ:** Irritant.

Acute exposure - Direct contact may cause redness and irritation.

Chronic exposure - Prolonged or repeated exposure may cause conjunctivitis.

**FIRST AID** - Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). In case of burns, apply sterile bandages loosely without medication. Get medical attention immediately.

**INGESTION:**

**ASPHALT:** Acute exposure - May cause nausea and irritation of the gastrointestinal tract.

Chronic exposure - No data available.

**HYDROGEN SULFIDE:** Not applicable.

**AGGREGATE:** Acute exposure - No data available.

Chronic exposure - No data available.

**QUARTZ:** Acute exposure - Ingestion is not known to occur in humans.

Chronic exposure - Ingestion is not known to occur in humans.

**FIRST AID** - Treat symptomatically and supportively. Get medical attention immediately.

**ANTIDOTE:** No specific antidote. Treat symptomatically and supportively.

**PRIMARY ROUTES OF ENTRY:** Inhalation.

Skin contact.

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## H. CONDITIONS TO AVOID

May be ignited by heat, sparks or flames. Vapors may travel to a source of ignition and flash back. Container may explode in heat of fire. Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard.

Hot asphalt may emit toxic hydrogen sulfide gas (H<sub>2</sub>S).

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## I. SPILL AND LEAK PROCEDURES

### OCCUPATIONAL SPILL:

Shut off ignition sources. Stop leak if you can do it without risk. Use water spray to reduce vapors. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For larger spills, dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area. Keep unnecessary people away; isolate hazard area and restrict entry.