

SECTION 1 – PRODUCT INFORMATION

Product Name(s): Hot mix asphalt (HMA)

Producer's Name: Granite Rock Company

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SECTION 2 – HAZARDOUS INGREDIENT(S)

Chemical Names	CAS Number	Quantity (Percent)	Formula	Exposure Limits in Air		
				ACGIH TLV TWA ⁽¹⁾	OSHA PEL ⁽²⁾	NIOSH REL ⁽³⁾
Petroleum distillate (asphalt)	8052-42-4	4-7	various	0.5 mg/m ³ (as fumes)	5 mg/m ³ (as fumes)	--
Hydrogen sulfide	7783-06-4	< 1	H ₂ S	10 ppm	20 ppm	--
Crystalline silica (aggregate)	14808-60-7	13.5*	SiO ₂	0.025 mg/m ³	$\frac{10 \text{ mg/m}^3}{\% \text{SiO}_2 + 2}$	0.05 mg/m ³

(1) ACGIH TLV: Conference of Industrial Hygienist Threshold Limit Value (TLV) time-weighted average (TWA).

(2) OSHA PEL: Occupational Safety and Health Administration Permissible Exposure Limit for an 8-hour time weighted average.

(3) NIOSH REL: National Institute for Occupational Safety & Health, Recommended Exposure Limit

* Measured by NIOSH Method 7500, DCM Science Labs, Wheat Ridge, Colorado

SECTION 3 – HAZARD IDENTIFICATION

Overview: Hot mix asphalt (HMA) is a mixture of 93-97% aggregates and 4-7% asphalt binder. When hot, it may burn skin and/or emits fumes containing hydrogen sulfide. This product may also include shredded rubber (tires), performance enhancers such as Pavabond, and/or antistripping agents. For information on these products, consult with Graniterock or the manufacturer.

Hot Asphalt: Contact with hot asphalt can cause severe burns and vapors can irritate the eyes and skin. Inhalation of fumes may cause nausea and irritation of nose and throat.

Hardened Asphalt: Cutting or drilling hardened asphalt may generate crystalline silica containing dust.

Potential Health Effects

Eye Contact: Exposure to hot asphalt fumes may cause irritation, redness or pain and/or possible conjunctivitis. Direct contact with asphalt dust may cause irritation to eyes by abrasion.

Skin Contact: Direct skin contact with hot asphalt can cause serious and painful thermal burns. Hot asphalt sticks to the skin and may cause skin loss. Direct contact with asphalt dust may also cause skin irritation.

Skin Absorption: Not expected to be a significant exposure route.

Ingestion: Ingestion of hot asphalt produces a direct thermal burn to the mouth and throat. Small amounts (a tablespoonful) of hardened asphalt/asphalt dust swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts of hardened asphalt/asphalt dust may cause gastrointestinal irritation and blockage.

Inhalation: Inhalation of hot asphalt fumes can cause headache, nausea, respiratory tract irritation, and nervousness due to the formation of hydrogen sulfide gas. Inhalation of hydrogen sulfide gas can cause upper respiratory tract irritation and, if exposure is prolonged at levels greater than the OSHA PEL of 20 ppm, pulmonary edema and even coma or death. Asphalt dusts containing crystalline silica may irritate the nose, throat, and respiratory tract. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects including lung cancer.

SECTION 4 – FIRST-AID MEASURES

Eye contact: Immediately flush with plenty of water for at least 15 minutes. Do not attempt to remove asphalt particles from eyes. GET IMMEDIATE MEDICAL ATTENTION.

Skin contact: Immediately FLUSH WITH COOL WATER for at least 15 minutes. Clean skin with waterless hand cleaner.

Seek medical aid if irritation persists or develops.

Inhalation: Remove from exposure. Seek medical aid if respiratory difficulty persists or develops.

Swallowed: SEEK MEDICAL AID. Do not induce vomiting.

SECTION 5 – FIRE AND EXPLOSION

Flash point: >390°F

Flash point method: COC

Extinguishing media: Agents approved for Class B fires (e.g., CO₂, dry chemical, or foam, water fog).

Special Fire Fighting Procedures: Use NIOSH/MSHA approved SCBA and full protective equipment.

Unusual Fire/Explosion Hazard: If hydrogen sulfide is present in sufficient quantities, flammable limits can increase to 4-45% by volume and pyrophoric iron compounds can be formed. In this case, use self-contained breathing apparatus (SCBA) in the pressure demand mode.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Spill Response Procedures: Remove all heat and ignition sources and increase ventilation. Use water vapor to reduce airborne vapors. For small spills, use sand or absorbent to capture. Place in sealed containers for disposal.

Preparing Waste for Disposal: Disposal must be in accordance with applicable federal, state, and local regulations. Enclosed-controlled incineration recommended, depending on jurisdiction.

SECTION 7 – EXPOSURE CONTROL AND PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: NIOSH/MSHA approved dust respirators with a N95 rating or better should be used where dust levels exceed or are likely to exceed exposure levels defined in Section 2. Respirator use must comply with applicable MSHA or OSHA standards which include a provision for fit testing, cleaning, training in correct usage and a fitness test for respirator use. See NIOSH Publication 2008-140 and www.cdc.gov/niosh/npptl/topics/respirators/ for more information.

Eye Protection: Safety glasses with side shields should be worn at all times.

Gloves: Nitrobutyl rubber or neoprene.

Other Clothing: Long sleeves.

Work Practices: Do not smoke.

Hygiene Practices: Wash exposed skin with soap and water.

SECTION 8 – STORAGE AND HANDLING

Protective Measures During Maintenance of Contaminated Equipment: No special measures required

Storage: Keep adequate ventilation in outside storage. Hydrogen sulfide gas may accumulate in storage tanks and bulk transport compartments containing asphalts.

Other Handling Requirements: No special measures required.

SECTION 9 – PHYSICAL PROPERTIES

Vapor density (air=1):	>5	Melting point:	N/A
Specific gravity:	1.0 - 2.5	Boiling point:	Approx. 900°F
Solubility in water:	Negligible, < 0.1%	Evaporation rate:	Negligible
Vapor pressure:	<0.1		
Appearance and odor:	Black semi-solid mixture		

SECTION 10 – STABILITY AND REACTIVITY

Reactivity: Material is stable and will not polymerize. May react with strong oxidizing agents such as chlorates, nitrates and peroxides. At room temperature, hydrogen sulfide may be given off.

Materials/Conditions to Avoid: High temperature heating.

Hazardous Decomposition Products: Heating this material may produce hydrogen sulfide.

SECTION 11 – TOXICOLOGICAL INFORMATION

Hot mix asphalt is a mixture of aggregates and liquid asphalt oil. The aggregates may contain crystalline silica which is a naturally occurring substance found in soil and rock formations. Should the mixture release dust (by cutting, for example), it is possible that the dust may contain a small content of crystalline silica. The IARC, NTP and OSHA do not list asphalt binder as a carcinogen. The oxidation of polycyclic aromatic hydrocarbons in the asphalt removes the carcinogenic potential.

Crystalline silica is a naturally occurring substance found in soil and rock formations. Crystalline silica is present in trace amounts in the atmosphere air as particulate. Crystalline silica is one of several crystalline polymorphs (including trydimite, cristobalite) of silicon dioxide. When heated to 870°C, crystalline silica transforms to trydimite, and when heated to 1,470°C it can transform to cristobalite. Chronic or ordinary silicosis is the most common form of silicosis which can occur after many years of exposure to relatively low levels of airborne respirable dust.

Crystalline silica is listed by the National Toxicology Program in a category which may reasonably be anticipated to be a carcinogen, and by the International Agency for Research on Cancer (IARC) as a Group I carcinogenic. After years of study, the non-governing IARC concluded in 1997 that there was "sufficient evidence in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupation sources." The IARC noted that carcinogenicity was not detected in all industries, and that toxicity may depend on "external factors affecting its biological activity or distribution of its polymorphs."

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