



Material Safety Data Sheet

MSDS No. MZ-HMA-010408

Section 1: PRODUCT AND COMPANY INFORMATION

Product Name(s): Hot Mix Asphalt (HMA)

Product Identifiers: Hot Mix Asphalt; HMA; Hot Mix Asphalt Concrete (HMAC); Blacktop; Asphalt; Asphalt Cement; Bituminous Concrete; Asphalt Concrete Base; Asphalt Concrete Pavement; Asphalt Treated Free Draining Base; Dense Friction Course (DFC); Heavy Duty Binder Course (HDBC); Medium Duty Binder Course (MDBC); Open Friction Course (OFC); Stone Matrix Asphalt (SMA); Hot-Laid Bituminous Treated Aggregates; Hot-Laid Bituminous Concrete Base, Wearing, Patching, Leveling, and Skid; Road mix Bituminous Pavement.

Manufacturer:
Mar-Zane Materials
Corporate Offices
3570 S. River Rd.
P.O. Box 1585
Zanesville, Ohio 43702-1585

Information Telephone Number:
1-740-453-0127 (8am to 4:30pm EST)

For Chemical Emergency ONLY:
(spill, leak, fire, exposure or accident)

CHEMTREC
1-800-424-9300 24 HOURS / 7 Days

Product Use: HMA is used for paving roads, driveways, parking lots, school yards, and other surface, base, or sub-base applications.

Note: This MSDS covers many types of HMA. Individual composition of hazardous constituents will vary between HMA mix designs.

Section 2: COMPOSITION / INFORMATION ON INGREDIENTS

Component	Percent (% wt)	CAS Number	ACGIH-TLV-TWA	OSHA PEL
Limestone Aggregates (Calcium Carbonate)	0-100	1317-65-3	15 mg/m ³	10 mg/m ³
Gravel Aggregates	0-100	Mixture	N/A	N/A
Liquid Asphalt Cement	0-10	8052-42-4	0.5 mg/m ³	N/A
Crystalline Silica	0-10	14808-60-7	0.1 mg/m ³	30 mg/m ³

Note: HMA is a mixture of gravel and/or limestone aggregates, and liquid asphalt cement. It may also contain small amounts of asphalt modifiers (e.g. anti-stripping agents, hydrated lime), RAP, fly ash, slag aggregates, fibers (synthetic or organic), color pigment and other recycled materials (e.g. ceramics, plastics, glass, etc.).

Section 3: HAZARD IDENTIFICATION

	WARNING!!!	
	<p>Hot product can cause Severe Burns!!!</p> <p>Toxic – Harmful by inhalation Hot Product can release Hydrogen Sulfide gas; Product contains crystalline silica.</p> <p>Irritant: Causes eye, skin, and inhalation irritation.</p> <p>Use proper engineering controls, work practices, and personal protective equipment.</p> <p>Read the MSDS for details</p>	

Emergency Overview: HMA is a black or dark brown granular, solid or semi-solid material with a petroleum odor. Hot product will cause severe thermal burns. If burned by hot product, cool affected area immediately with cool water. Do not attempt to remove solidified material from skin. Seek medical attention. When heated, this product may release toxic hydrogen sulfide (H₂S). Prolonged or repeated skin contact can cause drying of the skin which may produce irritation and/or dermatitis.

OSHA Warning Label:

WARNING !!
HOT ASPHALT MATERIAL
MAY PRODUCE SEVERE BURNS
MAY VENT HARMFUL CONCENTRATIONS OF HYDROGEN SULFIDE (H₂S) GAS
WHICH CAN CAUSE RESPIRATORY IRRITATION AND ASPHYXIATION.

Potential Health Effects:

Eye Contact: Hot product will cause severe thermal burns. Eye contact with HMA fumes can cause moderate eye irritation, redness, and itching. Airborne dust may cause immediate or delayed irritation or inflammation. Eye exposures require immediate first aid to prevent damage to the eye.

Skin Contact: Direct contact with HMA will cause severe thermal burns. Repeated or prolonged contact to HMA may cause dry skin, discomfort, irritation, and dermatitis.

Inhalation (acute): Hot HMA releases irritating fumes or vapors such as smoke, carbon dioxide, carbon monoxide, unburned hydrocarbons. Hydrogen sulfide and other sulfur-containing gases can evolve from this product at elevated temperatures. Exposure to fumes or vapors may cause irritation of the nose and throat, and symptoms such as headache, dizziness, loss of coordination, and drowsiness. Cutting, crushing, or grinding hardened asphalt will release dust. Breathing dust may cause nose, throat, or lung irritation, including choking, depending on the degree of exposure.

Inhalation (chronic): Risk of injury depends on duration and level of exposure.

Silicosis: This product contains trace amounts of crystalline silica. Under normal use and application, HMA does not release crystalline silica. However; cutting, crushing, or grinding hardened asphalt or other crystalline silica-bearing materials will release respirable crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a serious disabling and fatal lung disease.

Carcinogenicity: HMA is not listed as a carcinogen by IARC or NTP; however, HMA contain trace amounts of crystalline silica that is classified by IARC and NTP as a known human carcinogen.

Ingestion: Do not chew or ingest HMA. Hot product will cause thermal burns. Ingestion may result in nausea, vomiting, diarrhea, and restlessness. Chewing asphalt has caused gastrointestinal effects. Stomach obstructions have been reported in individuals who have chewed and swallowed asphalt.

Medical Conditions:

Aggravated by Exposure: Individuals with preexisting skin conditions can be aggravated by exposure.

Section 4: FIRST AID MEASURES

Eye Contact: For contact with hot material, flush with large amounts of cool water for at least 15 minutes. Immediately call a physician. For contact with cold material or dust, rinse eyes thoroughly with water for at least 15 minutes, including under the lids, to remove all particles. Seek medical attention for abrasions.

Section 4: FIRST AID MEASURES (CONTINUED)

Skin Contact: Wash with cool water and a pH neutral soap or a mild skin detergent. Do not use solvents or thinners to remove material from skin. Seek medical attention for burns, rash, irritation, and dermatitis.

For contact with hot material, immerse or flush skin with cold water for at least 15 minutes. Call a physician. Do not attempt to remove solidified material, since removal may cause further tissue injury.

Inhalation: Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

Section 5: FIREFIGHTING MEASURES

Flashpoint: 500-660 F

Auto-Ignition Temp. 905 F

Specific Hazards: This product is not a combustible solid per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

Extinguishing Media: For small fires, Class B fire extinguishing media such as CO₂, dry chemical, foam (AFFF/ATC) can be used. For larger fires, water spray, fog or foam (AFFF/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment

Firefighting Equipment: A SCBA is recommended to limit exposure to combustion products when fighting any fire.

Combustion Products: Toxic gases produced in a fire include by not limited to CO, CO₂, and H₂S.

Flammable Lower Limit: 1.0 % in air

Flammable Upper Limit: 6.0% in air

NFPA Rating: Health: 1 Flammability: 1 Reactivity: 1 Other: ---

Section 6: ACCIDENTAL RELEASE MEASURES

General: Use a shovel to scrape up material and place material into suitable containers for recovery or disposal. Do not wash HMA down sewage and drainage systems or into bodies of water (e.g. streams). Wear appropriate protective equipment as described in Section 8.

Waste Disposal Method: Dispose of HMA according to Federal, State, Provincial, and Local regulations.

Section 7: HANDLING AND STORAGE

General: Handle with care and use appropriate control measures. Avoid contact with skin, eyes, and clothing. Use additional precautions when handling hot material. Maintain employee exposure levels below established regulatory limits. Do not allow hot material to contact skin. Use all appropriate Personal Protective Equipment (PPE) described in Section 8.

Usage: Cutting, crushing, or grinding hardened asphalt or other crystalline silica bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8.

Concentrations of hydrogen sulfide (H₂S) can be generated and accumulated in storage tanks and bulk transport compartments which may require additional precautions and procedures during loading and unloading.

Section 7: HANDLING AND STORAGE (continued)

Storage:	Do not expose open flames, strong oxidizers or other source of ignition.
Clothing:	Remove and launder clothing that is soiled with asphalt. Thoroughly wash hands and exposed skin after exposure to HMA.

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls:	Use local exhaust or general dilution ventilation when using at elevated temperatures or during activities that generate dust or fumes, to maintain levels below exposure limits.
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Personal Protective Equipment (PPE):

<u>Respiratory Protection:</u>	Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and is in good condition when exposed to dust or fumes above exposure limits.
<u>Eye Protection:</u>	Wear ANSI approved glasses, safety goggles, or face shield when handling HMA to prevent contact with eyes.
<u>Skin Protection:</u>	Wear leather or cloth work gloves to prevent skin contact and insulated gloves when handling hot material. Thoroughly wash hands and exposed skin after exposure to HMA.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Granular Solid.
Appearance:	Black-Dark Brown Solid Color
Odor:	Slight Petroleum / Tar Odor
Vapor Pressure:	No Data Available
Vapor Density:	No Data Available
Specific Gravity:	2.0 – 2.5
Evaporation Rate:	No Data Available
pH (In Water):	No Data Available
Boiling Point:	No Data Available
Freezing Point:	No Data Available
Viscosity:	No Data Available
Solubility in Water:	Insoluble

Section 10: STABILITY AND REACTIVITY

Stability:	Stable. Avoid contact with incompatible materials, excessive heat, sources of ignition and open flames.
Incompatibility:	HMA is incompatible with strong acids or bases, and oxidizing agents such as nitrates, chlorates, and peroxides.
Hazardous Polymerization:	None
Hazardous Decomposition:	When heated, may release hydrogen sulfide and various hydrocarbons.

Sections 11: TOXICOLOGICAL INFORMATION

Name:	CAS Number:	Inhalation:	Dermal:	Oral:
Hot Mix Asphalt (HMA)	Mixture	No Data Available	No Data Available	No Data Available

Some epidemiologic studies conducted on workers exposed to asphalt fume have shown no increased incidence of cancer while other studies have reported a slightly increased incidence of lung, other respiratory tract or gastrointestinal cancers. In those studies in which elevated cancer incidences were reported, concurrent or previous exposure to coal-tar products have been documented. therefore, it cannot be concluded that cancer incidence is related to exposure to asphalt fume.

Although early studies have some technical shortcomings, long term inhalation exposures to asphalt aerosols or fumes did not produce evidence of carcinogenicity even though chronic inflammatory changes similar to those produced by nonspecific respiratory irritants were observed. Inhalation of 150 mg/m³ asphalt fume (particulate + vapor) 6 hours/day, 5 days/week for 13 weeks, did not produce toxicity except for reduced body weight and irritation in nasal passages in exposed rats.

Laboratory animals administered subcutaneous or intramuscular injections of asphalt preparations or repeated skin applications of hot (212 F) undiluted asphalt have occasionally produced a low incidence of skin tumors at the site of application. These findings are of questionable validity since repeated tissue trauma (and/or burns) at the application site can induce tumors. Solvent dilutions of different types of asphalts have been tested in chronic skin painting studies. Some of the studies have reported a low incidence of skin tumors. The use of diluents may enhance bioavailability or metabolic activation of chemicals in the mixture in a fashion not representative of occupational exposure. Skin painting studies in mice have been conducted using condensates from fumes generated at temperatures >450 F diluted in solvent. Asphalt fume condensate preparations have produced skin tumors. Experimental conditions (temperature and dose) were grossly exaggerated over that likely to occur in humans.

Extracts of whole asphalts tested in a modified Ames assay gave negative or slightly positive findings (mutagenicity index <1.5). Fume condensates derived from heating asphalts to high temperatures (>450 F) were moderately active (MI 4-9). Fumes generated from coal tar pitch were >1000 times more active. Asphalt fume samples collected under actual field conditions did not show any significant mutagenic activity.

Summary of health effect data on asphalt components:

This product can contain a toxicologically significant concentration of hydrogen sulfide (H₂S). Hydrogen sulfide gas (H₂S) is toxic by inhalation. Prolonged breathing of 50-100 ppm H₂S vapors can produce eye and respiratory tract irritation. Higher concentrations (250-600 ppm) for 15-30 minutes can produce headache, dizziness, nervousness, nausea and pulmonary edema or bronchial pneumonia. Concentrations of >1000 ppm will cause immediate unconsciousness and death through respiratory paralysis. Rats and mice exposed to 80 ppm H₂S, 6 hrs/day, 5 days/week for 10 weeks, did not produce any toxicity except for irritation of nasal passages. H₂S did not affect reproduction and development (birth defects or neurotoxicity) in rats exposed to concentrations of 75-80 ppm or 150 ppm H₂S, respectively. Over the years a number of acute cases of H₂S poisonings have been reported. Complete and rapid recovery is the general rule. However, if the exposure was sufficiently intense and sustained causing cerebral hypoxia (lack of oxygen to the brain), neurologic effects such as amnesia, intention tremors or brain damage are possible.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity Effects: If spilled, hot product and/or the coating action of the oil components could harm plant life. This product does not concentrate or accumulate in the food chain. This product is not expected to cause any acute or chronic toxicity to aquatic organisms due to its extremely low water solubility.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of waste and containers according to Federal, State, Provincial, and Local regulations.

Section 14: TRANSPORT INFORMATION

This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

Section 15: REGULATORY INFORMATION

Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

OSHA / MSHA Hazard Communication Standard:

This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product contains the following component(s) that have been Listed on the EPA's Extremely Hazardous Substance (EHS) List:
- Hydrogen Sulfide (H₂S) -

SARA Section 304: This product is not listed as a CERCLA hazardous substance.

SARA Section 311/312: The following EPA hazard categories apply to this product:
- Acute - Health – Hazard -

SARA Section 313: This product contains none of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

RCRA: If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

California Proposition 65: Crystalline silica (airborne particulates of respirable size) is known by the State of California to cause cancer.

Section 16: OTHER INFORMATION

Abbreviations:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
(B)	Inhalable fraction, as benzene – soluble aerosol	OSHA	Occupational Safety and Health Administration
CAS No	Chemical Abstract Service number	PEL	Permissible Exposure Limit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	pH	Negative log of hydrogen ion
CFR	Code of Federal Regulations	PPE	Personal Protective Equipment
DOT	U. S. Department of Transportation	(RP)	Respirable Particulate
EST	Eastern Standard Time	RCRA	Resource Conservation and Recovery Act
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
MG/M ³	Milligrams per cubic meter	SCBA	Self-Contained Breathing Apparatus
MSHA	Mine Safety and Health Administration	(TP)	Total Particulate
N/A	Not Available	TDG	Transportation of Dangerous Goods
NFPA	National Fire Protection Association	TLV	Threshold Limit Value
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average (8 hour)

Section 16: OTHER INFORMATION

This MSDS (Sections 1-16) was revised on January 4, 2008.

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