

MATERIAL SAFETY DATA SHEET

GRANITE

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SECTION I MATERIAL IDENTIFICATION

CHEMICAL NAME Not Applicable	CHEMICAL FORMULA Mixture	MOLECULAR WEIGHT Not Applicable
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TRADE NAME(S)
Modified Asphalt Concrete

SYNONYMS
Hot-Mix Paving Material, Petroleum-derived Asphalt Concrete, Blacktop

DOT IDENTIFICATION NO.
Unclassified

SECTION II PRODUCT AND COMPONENT DATA

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO.	% (APPROX.) (optional)	OSHA PEL	ACGIH TLV
Petroleum Asphalt (liquid component)	8052-42-4	> 5	See Section X	See Section X
Mineral Aggregate (crushed stone, sand and gravel)	None	> 90	See Section X	See Section X
Silica, crystalline - Quartz (content typically greater than 1% and can be higher than 20%) Other possible forms of crystalline silica	14808-60-7	Varies	See Section X	See Section X
Cristobalite	14464-46-1	Varies	See Section X	See Section X
Tridymite	15468-32-3	Varies	See Section X	See Section X

Note: Modified Asphalt Oil may contain other ingredients including but not limited to:

- Petroleum Residues Vacuum Distillates (CAS # 68955-27-1) 0 - 5%
- Copolymer of ethylene and Octane (CAS # 26221-73-8) 0 - 0.5%
- Maleic Anhydride Modified Polypropylene (CAS # NA) 0 - 0.5%
- Ground Tire Rubber (CAS # NA) 0 - 0.5%
- Polymer (CAS # 68683-29-4) 0 - 0.5%
- Styrene - Butadiene block copolymer (CAS # 9003-55-8) 0 - 0.5%
- Sulfur (CAS # 7704-34-9) 0 - 0.5%
- Calcium Oxide (CAS # 1305-78-8) 0 - 0.5%
- Asphalt fumes (CAS # 8052-42-2) < 0.1%
- Hydrogen sulfide (CAS # 7783-06-4) < 0.1%

SECTION III PHYSICAL DATA

APPEARANCE AND ODOR Course black material with a petroleum odor (liquid component is volatile)	SOLUBILITY IN WATER Negligible
BOILING POINT NE	SPECIFIC GRAVITY (H₂O = 1 @ 39.2 F) 2.2 - 2.5
VAPOR PRESSURE (mm Hg) NE	MELTING POINT NE
VAPOR DENSITY IN AIR (AIR = 1) NE	EVAPORATION RATE (Butyl Acetate = 1) NE

SECTION IV PHYSICAL HAZARDS (FIRE AND EXPLOSION HAZARD DATA)

FLASHPOINT (method used) NE (LIQUID COMPONENT IS COMBUSTIBLE)	FLAMMABLE LIMITS IN AIR (% Vol. in air) NE	LEL NE	UEL NE
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EXTINGUISHING AGENTS

Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, halogenated agents, foam, steam), and water fog. Avoid use of straight-stream water. Use water to keep fire-exposed containers cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Do not allow to heat above flash point. Volatile components can burn when supplied with an ignition source and can explode when concentrated above the LEL (e.g., in an enclosed environment). Never use welding or cutting torch on or near containers (especially empty) because vapors can ignite explosively.

Contact with powerful oxidizing agents may cause fire and/or explosion.

SECTION V REACTIVITY DATA

STABILITY	Unstable		CONDITIONS TO AVOID Keep away from ignition sources. Avoid contact with incompatible materials. Keep water out of hot asphalt.
	Stable	X	

INCOMPATIBILITY (MATERIALS TO AVOID)

Strong oxidizers may react with hydrocarbons. Adding water to hot asphalt presents an explosion hazard.

Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, oxygen difluoride and hydrogen peroxide yielding possible fire and/or explosions. Silica is also incompatible with acetylene and ammonia. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide and other compounds (such as amines, nitrogen dioxide, sulfur dioxide, ozone, hydrogen sulfide, and various hydrocarbons may be released by thermal decomposition. Hazardous vapors may collect in enclosed vessels or areas if not properly ventilated.

HAZARDOUS POLYMERIZATION	May Occur		CONDITIONS TO AVOID Not Applicable
	Will Not Occur	X	

SECTION VI TOXICITY AND FIRST AID

PRIMARY ROUTE(S) OF EXPOSURE	Inhalation? Yes	Skin? Yes	Ingestion? No
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HEALTH HAZARDS (ACUTE AND CHRONIC)

Eye Contact: Heated material can cause severe thermal burns. Asphalt fumes may cause eye irritation. Exposure to hydrogen sulfide at concentrations above 4 ppm may cause eye irritation.

Skin Contact: Heated material can cause severe thermal burns. Emissions may cause mild irritation. Chronic exposure to petroleum asphalt has caused skin disorders such as dermatitis, folliculitis, or oil acne. There may be an increased sensitivity to sunburn when the skin is exposed to petroleum asphalt and asphalt emissions (fumes and vapors). Cutback asphalt oil contains petroleum oils similar to ones categorized by the IARC as causing skin cancer in mice. Some trace components (e.g. naphthalene, n-hexane and toluene) may be skin absorbed.

Ingestion: Direct contact with heated material can produce thermal burns on contacted tissues. Petroleum asphalt has a low toxicity when ingested. However, petroleum distillates may be absorbed from the gastrointestinal tract, with possible systemic effects (gastrointestinal irritation, vomiting, diarrhea, and CNS depression) and possible aspiration into the lungs. Aspiration of petroleum distillates has caused pulmonary edema and chemical pneumonitis.

Inhalation: Petroleum asphalt emissions (fumes and vapors) may have an unpleasant odor, and may produce nausea and irritation of the upper respiratory tract. Elevated concentrations of thermal decomposition products may result in various health effects, including respiratory irritation (nitrogen oxides, sulfur oxides, hydrogen sulfide, hydrocarbons), CNS depression (hydrocarbons) and chemical asphyxiation (carbon monoxide, hydrogen sulfide). Systemic effects associated with trace components (less than 1 percent) are not anticipated during normal use. Chronic exposure to elevated levels of asphalt emissions may result in chronic respiratory irritation and/or other lung disease.

Emission of airborne dust or silica is not expected during normal handling and use of this material. If hardened asphalt concrete is subjected to mechanical forces (such as in demolition or asphalt recycling work) which generate dust particles, exposure to respirable crystalline silica is possible. Chronic overexposure to respirable silica-containing dust may cause silicosis, a progressive pneumoconiosis, and/or lung cancer. Chronic tobacco smoking may further increase the risk of developing chronic lung disease.

CARCINOGENICITY

Crystalline silica, a component of this product, is listed by IARC as a carcinogen. The IARC has determined that there is sufficient evidence of carcinogenicity in experimental animals exposed to crystalline silica and limited evidence of its carcinogenicity in humans. The NTP has listed respirable crystalline silica as a known human carcinogen. The American Conference of Governmental Industrial Hygienists (ACGIH) has listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2 designation).

Petroleum asphalt and the asphalt additives in this product are not listed on the NTP, IARC, or OSHA lists of carcinogens. The IARC has determined that there is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumens, air refined bitumens and pooled mixtures of steam- and air-refined bitumens in experimental animals. Further, IARC has determined that there is limited evidence for the carcinogenicity of undiluted steam-refined bitumens in experimental animals. Also, IARC determined that there is inadequate evidence that bitumens alone are carcinogenic to humans. Some possible trace components (e.g., benzene, < 0.1 %) may be carcinogenic.

NTP Silica, Crystalline (Respirable)	IARC Silica – Carcinogen (Group 1)	OSHA NE
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CALIFORNIA PROPOSITION 65 WARNING

"This product contains chemical(s) known to the State of California to cause cancer."

CA. LISTED CARCINOGEN(S)
Crystalline silica (quartz, cristobalite), benzene

SIGNS AND SYMPTOMS OF EXPOSURE

Symptoms of petroleum asphalt exposure include (but may not be limited to): irritation of the nose and throat, nausea, dizziness, eye irritation and dermatitis.

The signs and symptoms of acute exposure to dust from hardened asphalt may include irritation of the eyes, skin and respiratory tract. Symptoms of silicosis include (but may not be limited to): shortness of breath, difficulty breathing with or without exertion, coughing, diminished work capacity, diminished chest expansion, reduction in lung volume, right heart enlargement or failure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Exposure to asphalt fumes and/or vapors may aggravate existing respiratory, skin and/or eye conditions.

Exposure to dust from disrupted hardened asphalt may aggravate existing respiratory, skin and eye conditions.

EMERGENCY AND FIRST AID

Eyes: Flush eye(s) with plenty of water for 15 minutes, while holding eyelid(s) open. Beyond flushing, do not attempt to remove material from eyes except under medical supervision. Contact physician immediately.

Skin: Hot Material- Remove contaminated clothing and immediately flush in cool water for at least 15 minutes. Apply iced water or cold packs to burned area if burned area is less than 10% of the body surface. Do not attempt to remove material from a burn. Get prompt medical attention. Cold Material- Clean exposed skin with oil-dissolving skin cleaner. Do not use solvents or thinners to remove material from skin.

Ingestion: Do not induce vomiting. If conscious, give large amounts of water. Contact a physician immediately.

Dust inhalation: Remove to fresh air if breathing is difficult. Get prompt medical attention if breathing remains difficult or if irritation persists.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Personnel involved in cleanup processes should implement controls as identified in Section VIII as appropriate. Keep all ignition sources at least 50 feet away. Avoid personal contact with heated material. Prevent materials from entering streams, drainages, or sewers. Spills entering surface waters (or any other watercourse or sewers entering/leading to surface waters) that cause a sheen must be reported to the National Response Center 800/424-8802. Some of the components in these products are subject to the reporting requirements of Title III of SARA, 1986, and 40 CFR 372.

WASTE DISPOSAL METHOD

Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

STORAGE AND HANDLING PRECAUTIONS

Store away from all ignition sources and open flames, in accordance with applicable laws and regulations. Storage containers should be ventilated to reduce fire and explosion hazard, and possible overexposure of personnel to fumes and vapors. Do not weld, heat, or drill container. Emptied container may contain hazardous material which may ignite explosively if heated sufficiently. Do not store near food and beverages or smoking material. Avoid incompatible materials. When petroleum asphalt products are heated, potentially irritating emissions (fumes and vapors) may be released. Respirable dust may be generated when hardened asphalt concrete is subjected to mechanical forces, such as in demolition work, surface treatment (sanding, grooving, chiseling, etc.), and recycling of pavement. Tripping accidents have occurred because of asphalt buildup on bottoms of shoes and boots. Materials should be removed regularly to prevent such accidents. See Section VIII for additional information.

SECTION VIII PERSONAL PROTECTION AND CONTROL MEASURES

RESPIRATORY PROTECTION

Not required under normal use and working conditions. For air contaminant concentrations which exceed or are likely to exceed applicable exposure limits, use a NIOSH-MSHA approved, contaminant-specific, air-purifying respirator. If such concentrations are sufficiently high that the air-purifying respirator is inadequate, or if oxygen adequate to sustain life is not present, use a positive pressure self-contained breathing apparatus. Consult an industrial hygienist for evaluation of exposures. Follow all applicable MSHA or OSHA respirator use, fitting, and training standards and regulations.

VENTILATION

Use only in well ventilated areas. Natural ventilation generally adequate to maintain exposures below appropriate exposure limits under anticipated use conditions.

Local Exhaust As required	Special
Mechanical (General) As required	Other

PROTECTIVE GLOVES

Chemical-resistant gloves for direct contact with product.

EYE PROTECTION

Safety glasses with side shields should be worn as minimum protection. As needed, wear chemical safety goggles to prevent eye contact with product.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT

Protective clothing should be worn to prevent skin contact.

HYGIENE

Use normal good hygiene practices. Clothes saturated from contact with petroleum distillates should be removed promptly to prevent continued contact with skin. Wash hands with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use. Clean skin with soap and water, or an oil-dissolving skin cleaner. Do not use solvents or thinners to remove material from skin.

OTHER CONTROL MEASURES

A fresh water supply for emergency first aid and washing facilities should be readily available. An oil-dissolving skin cleaner should be available. Workers should station themselves on the windward side of asphalt emissions when possible. Asphalt emission levels should be monitored as needed to evaluate exposures during handling and use of product, including activities which generate dust from hardened asphalt concrete. Exposures in excess of the PEL should be reduced to the lowest feasible level through engineering and administrative controls (such as source control, ventilation and/or work practice changes); respiratory protection should be used only where exposures continue to exceed applicable PEL(s).

SECTION IX TRANSPORTATION

DOT HAZARD CLASS None	PLACARD REQUIRED None
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LABEL REQUIRED

If the shipping temperature of a solid equals or exceeds 464 °F, D.O.T. regulations classify the solid as an "Elevated Temperature Material", and a "HOT" label is required. Label as required by the OSHA and MSHA Hazard Communication standards [29 CFR 1910.1200 (f) and 30 CFR Part 42], and applicable state and local regulations.

SECTION X EXPOSURE LIMITS

	MSHA PEL	OSHA PEL	NIOSH REL	ACGIH TLV
PETROLEUM ASPHALT (ASPHALT FUMES)	TWA	NE	NE	0.5 mg/m ³
	STEL	NE	NE	NE
	C	NE	NE	NE
	IDLH	NE	NE	NE
	OTHER EXPOSURE LIMITS: Cal/OSHA PEL – 5 mg/m ³ (TWA)			
PETROLEUM DISTILLATES (NAPHTHA)	TWA	NE	500 ppm	350 mg/m ³
	STEL	NE	NE	NE
	C	NE	NE	1800 mg/m ³
	IDLH	NE	NE	1100 ppm
	OTHER EXPOSURE LIMITS: Cal/OSHA PEL – 300 ppm (TWA), 400 ppm (STEL)			
PETROLEUM DISTILLATES (OIL MIST)	TWA	NE	5 mg/m ³	5 mg/m ³
	STEL	NE	NE	10 mg/m ³
	C	NE	NE	NE
	IDLH	NE	NE	2500 mg/m ³
	OTHER EXPOSURE LIMITS: Cal/OSHA PEL – 5 mg/m ³ (TWA)			
PETROLEUM DISTILLATES (KEROSENE, DIESEL)	TWA	NE	NE	100 mg/m ³ (kerosene)
	STEL	NE	NE	NE
	C	NE	NE	NE
	IDLH	NE	NE	NE
	OTHER EXPOSURE LIMITS: Cal/OSHA PEL – NE			
PARTICULATES (NOT OTHERWISE REGULATED)	TWA	10 mg/m ³ (total)	15 mg/m ³ (total) 5 mg/m ³ (respirable)	NE
	STEL	NE	NE	NE
	C	NE	NE	NE
	IDLH	NE	NE	NE
	OTHER EXPOSURES LIMITS: Cal/OSHA PEL – 10 mg/m ³ (total), 5 mg/m ³ (respirable)			
CRYSTALLINE SILICA (QUARTZ, CRISTOBALITE, TRIDYMITE)	TWA	30 mg/m ³ / (%SiO ₂ +2) (total particulate containing silica)	10 mg/m ³ / (%SiO ₂ +2) (respirable particulate containing silica)	0.05 mg/m ³ (respirable silica)
	STEL	NE	NE	NE
	C	NE	NE	NE
	IDLH	NE	NE	25 mg/m ³ (respirable cristobalite and/or tridymite)
	OTHER EXPOSURE LIMITS: Cal/OSHA PEL – 0.1 mg/m ³ (respirable quartz), 0.05 mg/m ³ (respirable cristobalite and tridymite)			

NOTES

PEL = permissible exposure limit
 REL = recommended exposure limit
 TLV = threshold limit value
 % SiO₂ = percent silicon dioxide (silica) in dust

TWA = 8-hour time-weighted average
 STEL = short-term exposure limit (15-minute average)
 C = ceiling (peak exposure)
 IDLH = immediately dangerous to life or health

ppm = parts per million in air
 mg/m³ = milligrams per cubic meter of air
 NE = not established
 NA = not applicable