AGGREGATE INDUSTRIES

MATERIAL SAFETY DATA SHEET

FILE NO.: Hot Mix Asphalt
MSDS Date: January 1, 2008

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Hot Mix Asphalt**
SYNONYMS: **Asphalt Concrete, Black Top, Bituminous Concrete**
CHEMICAL FAMILY: **Asphalt Cements, Hydrocarbons, Stone/Sand, Non-metallic minerals**

MANUFACTURER: **Aggregate Industries, Inc.**
ADDRESS: **7529 Standish Pl.**
Rockville, MD 20855

EMERGENCY PHONE: **(301) 284-3617**
NATIONAL POISON CONTROL: **(800) 222-1222**

PRODUCT USE: **Hot mix asphalt is used in road construction for paving.**

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

CAS NO.		% WT	OSHA PEL-TWA: mg/m3 (8 – Hr Ave)	ACGIH TLV-TWA mg/m3 (8 – Hr Ave)
8052-42-4	Asphalt Cement	4.0 – 7.2	5 (fumes)	5 (fumes)
	Sand and stone	92.8 - 96		

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- **When hot, this product can cause skin burns. If burned by hot product, cool burned area immediately with cool water. Do not attempt to remove solidified material from skin. Seek medical attention immediately. Normal handling temperature for hot mix asphalt is from 250 to 350 degrees Fahrenheit.**
- **Water contact with hot product can cause a violent eruption (splashing) of hot asphalt.**
- **Fumes from hot product can irritate the eyes, skin, nose and respiratory system.**

HAZARD CLASSIFICATION:	NFPA	HMIS
Health Hazard:	1	*2
Fire Hazard:	1	1
Reactivity:	0	0

*** = Chronic health hazard**

ROUTES OF ENTRY: Inhalation, Skin, Eye Contact, and Ingestion

POTENTIAL EFFECTS OF ACUTE EXPOSURES

THE OSHA HAZARD CLASSIFICATION as defined in the OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) for this product is IRRITANT.

EYE CONTACT: **Hot product can cause burns to eyes. Mists or vapors may cause eye redness, stinging, burning and tearing. Symptoms may be more serious with repeated or prolonged contact.**

SKIN: **Hot product can burn the skin. Skin contact with product can cause redness, itching, burning and swelling of the skin which may become more serious with repeated or prolonged contact.**

INGESTION: **If a small amount of unheated product is swallowed, no significant adverse effects are likely. If large amounts are swallowed, product may obstruct intestine. Swallowing hot product causes thermal burns to the digestive system.**

INHALATION: **For short-term exposure to this product at ambient (normal) temperatures, no significant health effects are expected.**

Breathing heated vapor can irritate the mucus membranes of the respiratory system (nose throat, bronchi and lungs).

When this product is stored or handled at elevated temperature, hydrogen sulfide gas can be produced. Hydrogen sulfide gas can irritate the respiratory system and cause hypoxia (lack of oxygen). At low concentrations (1 to 12 parts per million) hydrogen sulfide gas smells like rotten eggs. At high concentrations the odor is not noticed. The national Institute for Occupational Safety and Health (NIOSH) has determined that air concentrations of hydrogen sulfide gas of 100 parts per million or higher are Immediately Dangerous to Life and Health (IDLH).

POTENTIAL EFFECTS OF CHRONIC EXPOSURES:

This product or one or more of its components caused cancer in laboratory animals. The relevance of this to humans is not known. Prolonged and repeated exposures to this product or its vapors should be avoided. Smoking, eating food and/or drinking in or near the worksite should be prohibited.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Skin or lung diseases and skin diseases can be aggravated by exposures to this product.

SECTION 4: FIRST-AID MEASURES

EYES: **Do not rub eyes. Check for contact lenses and, if present, remove them. Immediately flush eyes with lots of clean water for at least 15 minutes. Occasionally lift and lower eyelids. Seek medical attention if excessive redness or pain continues.**

SKIN: **Wash with clean, cool water and a pH neutral soap or a mild soap detergent for at least 15 minutes. Seek medical attention for irritation and rashes.**

INGESTION: **Do not induce vomiting. Do not give any drink to an unconscious person. If large amounts are swallowed or irritation or discomfort occurs, seek medical attention immediately. Contact your local Poison Control Center at (800) 222-1222.**

INHALATION: **Move person to fresh air. If breathing is difficult, seek medical attention immediately.**

CONTAMINATED CLOTHING: **Launder contaminated clothing in soap and water before reuse. Throw away contaminated leather.**

NOTES TO PHYSICIAN: **Hot product can cause skin and eye burns. An eye exam is recommended for burns to eyes.**

SECTION 5: FIRE-FIGHTING MEASURES

NFPA FLAMMABILITY CLASSIFICATION: **Class-IIIB (Combustible Material)**

FLASH POINT: **Open cup: > 400 degrees (Fahrenheit (> 320 degrees Centigrade)**

FLAMMABLE LIMITS: **No Data**

AUTOIGNITION TEMPERATURE: **Not Applicable**

COMBUSTION PRODUCTS: **Carbon dioxide, carbon monoxide, fumes, oxides of sulfur and nitrogen. At elevated temperatures, hydrogen sulfide gas and asphalt fumes can be released from this product.**

EXTINGUISHING MEDIA: **Use dry chemical, foam, carbon dioxide or water fog.**

SPECIAL FIRE PROPERTIES/PROCEDURES:

Molten material can form flaming droplets if ignited. Water on hot product (above 212 degrees Fahrenheit or 100 degrees Centigrade) can cause explosion. Do not allow liquid product to run-off into sewers or public waters.

Caution is recommended in the use of water in closed containers because the resulting steam pressure may cause violent eruptions.

FIRE PROTECTION: **Wear full equipment including NIOSH-approved positive pressure self-contained breathing apparatus.**

Never use welding or cutting torches on or near drum (even an empty one) because product or residue can ignite explosively.

SECTION 6: ACCIDENTIAL RELEASE MEASURES

RELEASE MEASURES: Shut off all ignition sources. Contain spilled product and do not allow it to flow into public sewers or water ways. Allow product to harden and place hardened product into containers for proper disposal.

WASTE DISPOSAL METHOD: Unused product can be recycled. Landfill wastes at approved sites. Dispose in accordance with local, state and federal regulations.

SECTION 7: HANDLING AND STORAGE

HANDLING: **Do not smoke, eat food and/or drink beverages when working with or around hot product. Use precautions when handling hot material such as wearing proper and adequate skin, eye and respiratory protection. Do not breathe fumes or vapors from heated material. Do not allow hot material to contact skin or eyes. Wash thoroughly with soapy water after handling this product.**

OTHER PRECAUTIONS: **Recycling and other destructive operations to asphalt pavements may result in airborne dust. This dust may contain respirable crystalline silica which can cause silicosis. Engineering controls to protect against this hazard should be applied at the point of destruction where possible. When this is not possible and where airborne respirable crystalline silica levels exceed or are expected to exceed an eight hour TWA (Time-Weighted Average) of 0.1 mg/m^3 , the appropriate NIOSH/Mine Safety and Health Administration (MSHA) approved air-purifying respirator must be worn (NIOSH Guide to Industrial Respiratory Protection, NIOSH, 1982. Pub. No. 87-116).**

If respirable dust levels exceed, or are likely to exceed an 8-hour TWA of 5 mg/m^3, a NIOSH/MSHA approved, positive pressure, full- face respirator is required. All respirator use must comply with applicable OSHA Standards, including 29 CFR 1910.134.

STORAGE: **This product is combustible. Storage temperatures of 350 degrees Fahrenheit or below are generally recommended in cone roof storage tanks to minimize formation of pyrophoric sulfides and carbonaceous deposits on tank roof and surrounding structures.**

Be sure to store at a safe distance from fire and ignition sources. Consult appropriate local, state and federal authorities before reusing, reconditioning, reclaiming, recycling or disposal of empty containers or waste residues of this product. For additional guidance read the American Petroleum Institute (API) Recommended Practice 2023.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: **Use general dilution and local exhaust ventilation as required to maintain exposures below appropriate limits. Consult NIOSH Engineering Control Guidelines for Hot Mix Asphalt Pavers, DHHS (NIOSH) Pub. No. 97 – 105, April, 1977 for more information on engineering controls.**

RESPIRATORY PROTECTION:

Under normal use and operations personal respiratory protection is not needed due to low airborne exposures and in-place engineering controls.

Where air contaminant concentrations exceed or are likely to exceed applicable TLV's, use a NIOSH/MSHA approved air purifying respirator or a positive, self-contained breathing apparatus. Follow all applicable respirator use standards and regulations including OSHA 29 CFR 1910.134.

For demolition activities engineering controls to protect against this hazard should be applied at the point of destruction where possible. When this is not possible and where airborne respirable crystalline silica levels exceed or are expected to exceed an eight hour TWA (Time- Weighted Average) of 0.1 mg/m^3 , the appropriate NIOSH/Mine Safety and Health Administration (MSHA) approved air-purifying respirator must be worn (NIOSH Guide to Industrial Respiratory Protection, NIOSH, 1982. Pub. No. 87-116) and ANSI Z88.2 – 1080 "Practices for Respiratory Protection".

EYE PROTECTION:

Wear ANSI – approved safety glasses with side shields or safety goggles when handling this product and where dust is generated. Do not wear contact lenses when involved with activities which generate dust.

SKIN PROTECTION:

When handling heated product, avoid skin contact by wearing heat-resistant gloves and insulated, heat resistant clothing such as a chemical resistant apron or slicker suit.

Non-synthetic long pants and long-sleeved shirts, rubber boots, and face shield should be worn to prevent thermal burns and to prevent skin contact.

When product is at ambient temperature, wear chemical-resistant gloves such as heavy nitrile rubber if frequent or prolonged contact with product is expected.

WORK HYGIENIC PRACTICES:

Wash face and hands with soap and warm water before taking breaks and after work. Do not wash with gasoline, kerosene, solvents or harsh abrasive skin cleaners.

Remove clothing and protective equipment that becomes dusty and/or contaminated, and launder and clean before re-using.

Do not smoke, eat food and/or drink beverages when working with or around hot product or when demolishing old asphalt pavement.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: **Black mixture**

ODOR: None at ambient temperature; asphalt odor when hot (mix temperature = 300 degrees Fahrenheit).

PHYSICAL STATE: **Black viscous fluid mixed with stone and sand**

pH: **Not applicable**

BOILING POINT: **900 degrees Fahrenheit**

MELTING POINT: **100 – 130 degrees Fahrenheit**

FLASH POINT: **> 400 degrees Fahrenheit (COC)**

VAPOR PRESSURE (mmHg): **None at 68 degrees Fahrenheit; negligible at mix temperature (≥ 300 degrees Fahrenheit)**

VAPOR DENSITY (AIR = 1): **> 1**

SPECIFIC GRAVITY (H2O = 1): **2.0 - 2.5**

EVAPORATION RATE: **Not applicable**

SOLUBILITY IN WATER: **Not soluble in cold water**

SECTION 10: STABILITY AND REACTIVITY

STABILITY: **Stable**

CONDITIONS TO AVOID: **Extreme heat, strong acids and strong oxidizers**

INCOMPATIBILITY: **Reactive to strong oxidizing agents.**

HAZARDOUS POLYMERIZATION: Not expected to occur

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: See Section 5

SECTION 11: TOXICOLOGICAL INFORMATION

ASPHALT, Unoxidized: Acute exposure to asphalt fumes can cause irritation to eyes, nose and throat and other respiratory effects.

Animal Studies for Carcinogenicity: Polycyclic aromatic hydrocarbon compounds (PAHs) with 4 to 6 benzene ring structures are thought to cause cancers in mice skin painting studies. These compounds can condense from asphalt fumes and vapors produced at high temperatures.

Bitumen extracts of asphalt have been shown to induce cancers in mouse skin painting studies. The International Agency for Research on Cancer (IARC) determined in 1985 that the evidence is insignificant to conclude that asphalts alone are carcinogenic to humans. IARC concluded there is sufficient evidence for the carcinogenicity of extracts of steam-refined bitumen, air-refined bitumen and pooled mixtures of steam- and air-refined bitumen in laboratory animals.

However, when evaluating animal studies, it is important to note that no animal studies have examined the carcinogenic potential of either field- or laboratory – generated paving asphalt condensates (Concise International Chemical Assessment Document (CICAD), Asphalt (Bitumen), Vol. 59:2004, 43 p).

Epidemiological Studies: A large cohort study of 29,820 from eight countries engaged in road paving, asphalt mixing, roofing, waterproofing or other specified jobs where exposure to asphalt fumes was possible (Boffetta et al., 2003). Analysis suggested a slight increase in lung cancer mortality among road pavers after adjusting for coal tar pitch and allowing a 15-year lag (Standard Mortality Ratio (SMR) = 1.23% Confidence Interval = 1.02 – 1.48). The authors concluded that the exposure-response analysis suggested an association between lung cancer mortality and indices of average level of exposure to bitumen fumes; however, they could not rule out that confounding played a role in this suggested association (Concise International Chemical Assessment Document (CICAD), Asphalt (Bitumen), Vol. 59:2004, 43 p).

A retrospective cohort of 3,714 Dutch workers with at least one season of employment in road construction and asphalt mixing companies Semi-quantitative exposure to bitumen fume was assessed by a job-exposure matrix. Information on smoking habits was available for a sub-cohort of 1,138 workers who had undergone medical exams by occupational health services in the past. After adjusting for differences in smoking habits, all risks were reduced, but a weak positive association between semi-quantitative bitumen fume exposure and lung cancer risk was still observed. The authors concluded that the association between exposure to bitumen fume and lung cancer may have been confounded by smoking, although a positive trend (not statistically significant) for lung cancer mortality remained after adjusting for smoking. The authors also concluded that only a nested case-control study may allow proper treatment of potential confounding by smoking in this population of workers Hooiveld et al (2003).

The potential carcinogenicity of asphalt/bitumen fumes is still unanswered. There are still various uncertainties and gaps in the scientific and medical knowledge base which need to be addressed. Nevertheless, uncertainties such as these should not preclude appropriate preventive health measures and actions to protect workers in the event that asphalt fumes are found to be a carcinogenic hazard (Schulte, 2007).

SECTION 11 NOTES: **This product does not release respirable dust when installed and maintained properly.**

Release of respirable crystalline silica may occur if finished pavement is drilled, ground, chiseled, crushed or pulverized. Actual levels must be determined by workplace industrial hygiene testing. Respirable crystalline silica is an IARC Group 1 carcinogen and the NTP classifies it as a known human carcinogen. Prolonged and repeated exposures to airborne respirable crystalline silica can result in lung disease (silicosis and/or lung lancer).

Do not smoke, eat food and or drink beverages in or around work areas.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: **Ecological effects studies have not been carried out on this product. Spills into water ways may be harmful to benthic organisms and bottom feeders.**

This product is estimated to have a slow rate of biodegradation. It is not expected to bio-accumulate through food chains.

SECTION 13: RECYCLE AND DISPOSAL INFORMATION

Maximize material recovery for reuse or recycle. Conditions of use may cause this material to become an unwanted or "hazardous waste", as defined by state or federal regulations. It is the responsibility of the user to determine if the material is such a waste at the time of disposal.

Transportation, treatment, storage, and disposal of waste material must be in accordance with RCRA regulations (see 40 CFR 260 through 40 CFR 271) for guidance. Local and/or state regulations may be more restrictive. Contact your regional US EPA office for guidance concerning case specific disposal issues.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

This product is not regulated by the US DOT when shipped at ambient temperatures and does not require DOT labeling.

This product is regulated when offered for shipment at temperatures above 212 degrees Fahrenheit (100 degrees Centigrade).

PROPER SHIPPING NAME: **Elevated Temperature Liquid, n.o.s.**

HAZARD CLASS (if shipped above 212 degrees F): **9**

Packing Group III

UN/NA Number:UN3257

PLACARD REQUIRED: **HOT, UN3257**

SECTION 14 NOTES: Emergency Response Guide Number: 128.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): This product and/or its components are listed in the Toxic Substances Control Act (TSCA) inventory.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): Not listed.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): Emergency Planning and Notification (Sections 302/304): No components were identified.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): Hazard Identification (Hazard Identification (Sections 311/312): This material would be classified: Acute (Immediate) Health Hazard), Chronic (Delayed) Health Hazard.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): Toxic Chemical Notification and Release Reporting (Section 313): No components identified.

STATE REGULATIONS: California Proposition 65 – Components are listed (Polynuclear Aromatic Hydrocarbons)

SECTION 16: OTHER INFORMATION

Abbreviations:

<	Greater than	NA	Not Applicable
>	Less than		
≥	Equal to or greater than		
ACGIH	American Conference of Governmental Industrial Hygienists	NFPA	National Fire Protection Association
CAS No	Chemical Abstract Number	NIOSH	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NTP	National Toxicology Program
CFR	Code of Federal Regulation	OSHA	Occupational Safety and Health Administration
CL	Ceiling Limit	PEL	Permissible Exposure Limit
DOT	US Department of Transportation	pH	Negative log of hydrogen ion
EST	Eastern Standard Time	PPE	Personal Protective Equipment
HEPA	High-Efficiency Particulate Air	R	Respirable particulate
HMIS	Hazardous Materials Identification System	RCRA	Resource Conservation and Recovery Act
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
LC_{50}	Lethal Concentration	T	Total particulate
LD_{50}	Lethal Dose	TDG	Transportation of Dangerous Goods
mg/m^3	Milligrams per cubic meter	TLV	Threshold Limit Value
mppcf	Million particles per cubic foot	TWA	Time Weighted Average (hours)
MSHA	Mine Safety and Health Administration	WHMIS	Workplace Hazardous Materials Information System

THE INFORMATION RELATES TO THIS SPECIFIC MATERIAL. IT MAY NOT BE VALID FOR THIS MATERIAL IF USED IN COMBINATION WITH OTHER MATERIALS OR IN ANY PROCESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY ONESELF AS TO THE SUITABILITY AND COMPLETENESS OF THIS INFORMATION FOR HIS OWN PARTICULAR USE. ALL MATERIALS MAY PRESENT UNKNOWN HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.