AGGREGATE INDUSTRIES

MATERIAL SAFETY DATA SHEET

FILE NO.: Concrete/Concrete Products
MSDS Date: January 1, 2008

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Concrete/Concrete Products**

DESCRIPTION: **Wet unhardened concrete and dry hardened concrete products such as block, pipe and pre-cast concrete**

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

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

PRODUCT USE: **Concrete products are used for many applications in buildings and engineering projects.**

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	% (Range)	OSHA PEL	ACGIH TLV	MSHA PEL
Portland Cement	65997-15-1	10 – 30	15 mg/m^3 (Total)	10 mg/m^3 (Total)	10 mg/m^3 (Total)
Limestone ($CaCO_3$, calcium carbonate if limestone aggregates are used))	1317-65-3		15 mg/m^3 (Total)	10 mg/m^3 (Total)	10 mg/m^3 (Total)
Particulates not otherwise classified		0 – 100	15 mg/m^3 (Total)	10 mg/m^3 (Total)	10 mg/m^3 (Total)
Crystalline Silica (Quartz)	14808-60-7	0.5 – 80	30 / (%SiO_2 + 2) mg/m^3 Total particulate 10 / (%SiO_2 + 2) mg/m^3 Respirable	0.1 mg/m^3 (Respirable Quartz)	30 / (%SiO_2 + 2) mg/m^3 Total particulate 10 / (%SiO_2 + 2) mg/m^3 Respirable
Fly Ash Containing:	68131-74-8	1 – 4	Not applicable	Not applicable	
Aluminum oxide	1344-28-1		15 mg/m^3 (Total) 5 mg/m^3 (Respirable)	10 mg/m^3 (Total)	10 mg/m^3 (Total)
Amorphous silica	61790-53-2	0.1 – 3	80 mg/m^3 / (% SiO_2)	10 mg/m^3 (Total) 3 mg/m^3 (Respirable)	20 mppcf (million particles per cubic foot)
Calcium oxide	1305-78-8	0 – 1	5 mg/m^3 (Total)	2 mg/m^3 (Total)	5 mg/m^3 (Total)
Iron oxide	1309-37-1	0.1 – 2	10 mg/m^3 (Total)	10 mg/m^3 (Total)	10 mg/m^3 (Total)

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

WET CONCRETE: Exposure of sufficient duration to wet product, or dry material on moist areas of the body, can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due caustic (chemical) burns, including third degree burns. Symptoms may be delayed 24 to 48 hours. Wet product can cause skin sensitization due to presence of hexavalent chromium. The reaction can range from a mild rash to severe skin ulcers. Others may develop allergic dermatitis after prolonged or repeated contact with wet cement products. When working with wet cement wear water-impervious gloves and boots. Remove clothing if it becomes wet, immediately wash exposed skin with soapy water. When job is finished wash boots, gloves, and clothing with soapy water.

DRY CONCRETE: Respirable crystalline silica (quartz) is a primary hazard. Crystalline silica is bound in the block matrix. Concrete blocks in their intact state will not release airborne dust. Dust can be generated during cutting, drilling, grinding, chiseling, crushing or other machining of the product. The generated dust will contain respirable

crystalline silica. When exposed to airborne dusts, use appropriate ventilation controls, and/or dust suppression measures (e.g., water streams or mists) and personal protective equipment (PPE) as described in Section 8.

SAFE WORK PRACTICES: Concrete blocks, pipes and pre-cast concrete products can be heavy and pose hazards such as sprains and strains to the back, legs, arms and shoulders during lifting. Make sure these products are securely stored to prevent falling. Ensure ground, floors, or platforms have adequate load bearing capacity before placing concrete products on them. Use appropriately rated equipment such as cranes and rigging when moving and placing concrete products.

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

POTENTIAL HEALTH EFFECTS

EYES: **Exposure to wet cement or airborne dust generated from dry concrete products can cause immediate or delayed irritation or inflammation. Exposure to large amounts of concrete dust can cause moderate eye irritation from abrasion. Eye exposures require immediate first aid and medical attention to prevent serious damage to eyes.**

SKIN: **Exposure to wet cement can cause immediate or delayed irritation or inflammation. Concrete dust, especially combined with sweat and friction, can cause dry, irritated skin and dermatitis. Dermatitis symptoms include symptoms like redness, itching, rash, scaling and cracking.**

INGESTION: **Ingesting small amounts of concrete are not known to be harmful, but ingestion of large amounts can cause digestive tract distress and discomfort. Call your Poison Control Center at 1-800-222-1222**

INHALATION:

Acute: **Depending on the airborne concentration, breathing concrete dust can cause nose, throat, or respirable tract irritation.**

Chronic: **Prolonged and repeated exposures to airborne dust containing respirable crystalline silica can cause chronic diseases such as silicosis, a lung disease which can be disabling and fatal, and lung cancer. Concrete is not listed as a carcinogen by the International Agency for Research on Cancer (IARC) or the National Toxicology Program (NTP). However, crystalline silica is classified as a known human carcinogen by IARC, NTP and California Proposition 65.**

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Lung diseases such as bronchitis, emphysema, COPD (Chronic Obstructive Pulmonary Disease), and other pulmonary diseases can be aggravated by exposure to airborne dusts containing concrete. Skin allergies or dry, cracked skin conditions can be aggravated by exposure to wet cement products,

SECTION 4: FIRST AID MEASURES

EYES: **Do not rub eyes. Immediately flush eyes with lots of clean water for at least 15 minutes. Flush under eyelids to remove all particles. Seek medical attention. An eye exam is recommended. It may take 2 to 3 days after the exposure to assess condition of eyes.**

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

INGESTION: **Concrete is not meant to be eaten. Seek medical attention if gastric irritation occurs.**

INHALATION: **Move person to fresh air. Seek medical attention for discomfort or if coughing and other symptoms do not stop.**

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR (% BY VOLUME): Not flammable or combustible

FLASH POINT: Not Applicable
METHOD USED: Not Applicable

AUTOIGNITION TEMPERATURE: Not Applicable

NFPA HAZARD CLASSIFICATION
HEALTH: 3 FLAMMABILITY: 0 REACTIVITY: 0

HMIS HAZARD CLASSIFICATION
HEALTH: *3 FLAMMABILITY: 0 REACTIVITY: 0

0 = Minimal Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

- **Respirable crystalline silica can cause lung disease and/or lung cancer**

  PROTECTION: E – Safety glasses, gloves (gloves and boots impervious to water if working with wet cement) and dust respirator

EXTINGUISHING MEDIA: Use extinguishing media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: Concrete products do not pose a fire-related hazard. A SCBA is recommended to limit exposures to combustion products when extinguishing any fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: None

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Place broken pieces in suitable containers for disposal. Avoid procedures which generate dust. If dust is generated, wear appropriate protective equipment as described in Section 8.

WASTE DISPOSAL METHOD: Dispose of waste concrete according to Local, State, Provincial and Federal regulations.

SECTION 7: HANDLING AND STORAGE

HANDLING AND STORAGE: Concrete products may be heavy and pose hazards such as sprains and strains to the back, legs, arms and shoulders during lifting. Make sure concrete products are securely stored to prevent falling. Ensure ground, floors, or platforms have adequate load bearing capacity before placing concrete products on them. Use appropriately rated equipment such as cranes and rigging when moving and placing concrete products.

OTHER PRECAUTIONS: Avoid actions which cause concrete dust to become airborne during clean – up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean – up dust. Use PPE described in Section 8.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:	**To minimize exposure to dust or respirable crystalline silica, cutting or grinding concrete block products should be conducted with a wet saw/grinder or with sufficient ventilation if possible.**
RESPIRATORY PROTECTION:	**Under normal conditions no respiratory protection is required. In dusty conditions and where engineering controls are not feasible, NIOSH/MSHA approved respirators must be worn in accordance with a respiratory protection program which meets OSHA requirements as set forth at 29 CFR 1910.134 and ANSI Z88.2 – 1080 "Practices for Respiratory Protection."**
EYE PROTECTION:	**Wear ANSI – approved glasses 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:	**Wear gloves when handling concrete products. Remove clothing and protective equipment that becomes wet or dusty and launder and clean before re-using. When handling wet concrete, wear water-impermeable gloves.**
OTHER PROTECTIVE CLOTHING OR EQUIPMENT:	**Wear ANSI – approved hazard – toed safety boots when handling concrete products. When handling wet concrete, wear water-impermeable boots.**
WORK HYGIENIC PRACTICES:	**Avoid creating and breathing dust.**

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	**Liquid or Granular matrix**
ODOR:	**None**
PHYSICAL STATE:	**Liquid or Solid**
pH:	**7**
BOILING POINT:	**None, Solid**
MELTING POINT:	**None, Solid**
FREEZING POINT:	**None, Solid**
VAPOR PRESSURE (mmHg):	**Not applicable**
VAPOR DENSITY (AIR = 1):	**Not applicable**
SPECIFIC GRAVITY (H2O = 1):	**2.5**
EVAPORATION RATE:	**Not applicable**
SOLUBILITY IN WATER:	**Negligible**
PERCENT SOLIDS BY WEIGHT:	**100 %**
PERCENT VOLATILE:	**0 %**

SECTION 10: STABILITY AND REACTIVITY

STABILITY: **Stable**

CONDITIONS TO AVOID (STABILITY): **None**

INCOMPATIBILITY (MATERIAL TO AVOID): **Reactive to strong oxidizing agents. Hydrofluoric acid dissolves silica to produce corrosive silicon tetrafluoride gas. Acids react to produce heat. Nitro-organic compounds may react to form explosive salts.**

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: **None**

HAZARDOUS POLYMERIZATION: **Will not occur**

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION: **Repeated, prolonged exposure to respirable crystalline silica can cause silicosis and lung cancer. Silicosis is a disabling, nonreversible and sometimes fatal lung disease. The development of silicosis may increase the risk of additional diseases.**

Repeated and prolonged exposures to wet concrete can cause skin dermatitis and skin sensitization (allergy) due to the presence of hexavalent chromium in concrete products.

SECTION 11 NOTES: **Concrete products do not release respirable dust in their installed state and do not present any known health hazards when installed and maintained properly. Release of respirable crystalline silica will occur if concrete products are sawed, drilled, ground, chiseled, crushed or pulverized. Actual levels must be determined by workplace industrial hygiene testing.**

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION: **This product may be toxic to fish because of its high alkalinity.**

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: **These products are classified as a non-hazardous solid waste for disposal. Dispose of waste in compliance with applicable Local, State, Provincial and Federal regulations.**

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: **Same as product name**
HAZARD CLASS: **Not classified as hazardous**
ID NUMBER: **None**
PACKING GROUP: **None**
LABEL STATEMENT: **Not applicable**

SECTION 14 NOTES: **These products are not classified as hazardous under U.S. DOT or Canadian TDG regulations.**

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): **Not listed.**

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

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): Not listed under Sections 302, 304 and 313.

OSHA: **Dust and respirable crystalline silica generated during product use may be hazardous.**

RCRA: **If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. Under RCRA it is the responsibility of the product end 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.**

STATE REGULATIONS:
Pennsylvania HSSF List – Components are listed.
Massachusetts Substance List – Components are listed.
Minnesota Substance List – Components are listed
New Jersey Right –to-Know Hazardous Substance List – Components are listed.
California Proposition 65 – Components are listed.

CANADIAN REGULATIONS:
These products have been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations. All components of this product are included in the Canadian Domestic Substances List (DSL).

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.