Brown's
CONCRETE PRODUCTS LIMITED

MATERIAL SAFETY DATA SHEET

Product(s): Concrete Blocks, Retaining Wall Units, Interlocking Paving Stones, Concrete Curbing

SECTION 1 - Manufacturer Information

Manufacturer's Name and Address:
BROWN'S CONCRETE PRODUCTS LIMITED
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Date Last Updated:
August 8, 2011

SECTION 2 - Hazardous Ingredients

The following hazardous ingredients are used in the production of concrete products and will only be released through dry sawing (cutting), sanding or griding of said products.

Note: this MSDS covers many different types of concrete products. Individual composition of hazardous constituents will vary between product types.

Portland Cement Portland Cement is the binding ingredient used in concrete products.

CAS #	OSHA PEL:	ACGIH TVL	NIOSH REL	IDLH
65997-15-1	5 mg/m^3 for respirable dust 15 mg/m^3 for total dust	10 mg/m^3 for total dust	5 mg/m^3 for respirable dust 10 mg/m^3 for total dust	5000 mg/m^3

Portland cement consists primarly of tricalcium silicate. Other trace elements that may be found include: dicalcium silicate; tetracalcium aluminoferrite; tri-calcium aluminate; calcium sulphate dihydrate; calcium carbonate; magnesium oxide; calcium oxide; crystalline silica; potasium or sodium compounds; chromium compounds; and, nickel compounds.

Crystalline Silica Crystalline silica is a natural component of sands and gravels, which are both aggregate components of concrete products.

CAS #	OSHA PEL:	ACGIH TVL	NIOSH REL	IDLH
14808-60-7	10 $mg/m^3/(\%SiO_2 + 2)$ for respirable dust 30 $mg/m^3/(\%SiO_2 + 2)$ for total dust	0.5 mg/m^3	TWA 0.05 mg/m^3	25 mg/m^3 for cristobalite, tridymite 50 mg/m^3 for quartz, tripoli

Blended Iron Oxide Blended Iron Oxide is a component of pigment, which is a colourant for cementiceous products

Note: depending on the desired colouration, one or more of iron oxide yellow (CAS 51274-00-1), iron oxide

red (CAS 1332-37-2) or iron oxide black (1317-61-9) may be present.

CAS #	OSHA PEL:	ACGIH TVL	NIOSH REL	IDLH
1332-37-2	3 mg/m^3 for respirable dust 15 mg/m^3 for total dust	3 mg/m^3 for respirable dust 10 mg/m^3 for total dust	5 mg/m^3 for respirable dust 15 mg/m^3 for total dust	--
1317-61-9	3 mg/m^3 for respirable dust 15 mg/m^3 for total dust	3 mg/m^3 for respirable dust 10 mg/m^3 for total dust	5 mg/m^3 for respirable dust 15 mg/m^3 for total dust	--
51274-00-1	3 mg/m^3 for respirable dust 15 mg/m^3 for total dust	3 mg/m^3 for respirable dust 10 mg/m^3 for total dust	5 mg/m^3 for respirable dust 15 mg/m^3 for total dust	--

SECTION 3 - Physical and Chemical Properties

Note: The information in the following table applies to concrete products as a whole, not the individual ingrediants listed above.

Boiling Point	4046 ^{O}F	**Specific Gravity (H2O = 1)**	2.7
Vapour Pressure (mm Hg)	N/A	**Melting Point**	3110 ^{O}F
Vapour Density (Air = 1)	N/A	**Evaporation Rate (Butyl Acetate = 1)**	N/A
Solubility in Water	Insoluble	**Odour**	No discernable odour
Appearance	Products have various colours and textures depending on application.		

SECTION 4 - Health Hazard Data

Routes of Entry: **Inhalation?** Yes **Skin?** Unlikely **Ingestion?** Unlikely

Health Hazard (Acute and Chronic)

Acute: Dry sawing, sanding or grinding of concrete masonry may result in the release of dust containing hazardous ingredients listed in Section 2. Dust can produce mechanical abrasion in the eyes and on the skin. Dust may irritate the nose, throat and respiratory system. Prolonged contact to skin or eyes may produce inflammation or burns.

Chronic: Excessive exposure to particulates (dust) over an extended period of time may result in the development of silicosis or other pulmonary diseases.

Target Organs: Eyes, Respiratory System

Carcinogenicity: **NTP?** Yes **IARC Monographs?** Yes **OSHA Regulated:** No

NTP: The National Toxicology Program (NTP) concluded that "Silica, crystalline (respiration)" may reasonably be anticipated to be a carcinogen. The NTP conclusion is based on sufficient evidence for the carcinogenicity of respiration crystalline silica in experimental animal and limited evidence in humans.

IARC Monographs: IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans concludes that there is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals, and that there is limited evidence of the carcinogenicity of crystalline silica to humans. IARC Class 2A.

California Proposition 65 Warning: Dry cutting, sanding or grinding of concrete products may expose you to "respirable crystalline silica which is known in the State of California to cause cancer, and to other items which are known in the State of California to cause cancer, birth defects and other reproductive harm.

Signs and Symptoms of Exposure: Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function, progressive respiratory symptoms (silicosis), irritation eyes. Potential occupational carcinogen.

Medical Conditions Generally Aggravated by Exposure: Possible complications may arise from allergies resulting in irritation to skin, eyes and respiratory passage. Excessive dust exposure may aggravate any existing pulmonary conditions such as emphysema or asthma. Pulmonary function may be reduced by inhallation of respirable crystalline silica. Also lung scarring produced by such inhalation may lead to a progressive massive fibrosis of the lung which may aggrevate other pulmonary conditions, and which

increases susceptability to pulmonary tuberculosis. Progressive massive fibrosis may be accompanies by right heart enlargement, heart failure, and pulmonary failure. Smoking aggrevates the effects of exposure.

SECTION 5 - Emergency First Aid Procedures

Eyes: If dust enters eye, flush with clean water (including under the lid) for at least 15 minutes. Seek medical attention for abrasions.

Skin: If exposed to dust, wash with soap and water. Seek medical attention for persistent rash or irritation. Seek medical attention for abrasions, cuts, etc.

Gross Inhalation: Remove to fresh air, give artificial respiration if needed, and seek medical attention if coughing or other symptoms do not subside.

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

Note to Physician: The three types of silicosis include:

1. Simple chronic silicosis - which results from long term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
2. Accelerated silicosis - occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
3. Acute silicosis - results from short term exposure to very large amounts of respirable crystalline silica. The lungs become very inflammed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

SECTION 6 - Fire and Explosion Data

Flashpoint & Method: Non-combustible

Unusual Fire and Explosion Hazards: No fire or explosion related hazard.

Special Fire Fighting Procedures: Use fire fighting procedures appropriate for surrounding fire.

Extinguishing Media: Use extinguishment media appropriate for surrounding fire.

SECTION 7 - Stability and Reactivity

Stability: Stable **Conditions to avoid:** None

Incompatability (Materials to avoid): Ammonia, powerfull oxidizers (flourine, chlorine trifluoride, oxygen difluoride, manganese trioxide, hydrogen peroxide, etc.), acetylene

Hazardous Decomposition or Byproducts: Sawing, drilling or other abrasion may produce dust. Employees should use appropriate industrial hygiene methods to determine magnitude of exposure and appropriate contol methods.

Hazardous Polymerization: Will not occur.

SECTION 8 - Safe Transport, Installation and Disposal

Steps to be taken in transport and storage:

Transport: Concrete products are not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations; therefore, there are no special transport requirements.

Storage: Concrete products have no special storage requirements. The weight of individual units or bundles must be considered if material placed in racks or other storage device, or if placed on load bearing

support structures such as scaffolding or in place hollow core units. Stack product in secure manner to prevent falling.

Steps to be taken in material handling and installation:

Handling: Concrete products are heavy and pose risks such as sprains or strains to the back, arms, shoulders and legs during lifting; establish an industrial hygiene monitoring program to ensure that processes do not produce working environments outside appropriate limits, and ensure proper lifting and carrying protocols are followed.

Dry Sawing, Sanding, or Grinding: Recommend using dust collection systems for dry sawing, sanding or grinding, as well as for cleanup, so that airborne dust does not exceed the PEL; use adequate ventillation and dust collection equipment for the job. If no dust collection system available, maintain, clean and fit test respirators in accordance with OSHA requirements, and practice good housekeeping to prevent dust from accumulating on walls, floors, sills, ledges, machinery, or equipment. Also wash or vacuum clothing which has become dusty. Use PPE outlined in Section 8.

Installation: The installation of concrete products involves the use of other products and other safety hazards; consult all associated product MSDSs and OSHA standards to establish and maintain a safe and healthy working environment.

Housekeeping: Avoid actions that cause 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 oultined in Section 8.

Other Precautions: See also American Society for Testing and Materials (ASTM) Standard Practice E1132-86, "Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust".

Waste Disposal: Normal breakage may be picked up and discarded as common waste. Residue from dry sawing, sanding or grinding operations should be disposed of in accordance with local waste disposal practices; consult applicable local, provincial/state, and federal agencies; do not wash residue down sewage or drainage systems, or into bodies of water (e.g. streams).

SECTION 9 - Control Measures

Respiratory Protection:

The following chart specifies the type of respirator required to provide respiratory protection for crystalline silica at various concentrations.

Particulate Concentration	Minimum Recommended Respiratory Protection
Upto 5 x PEL	Any dust respirator.
Upto 10 x PEL	Any dust respirator, except single use or quarter mask types. Any fume respirator or high efficiency particulate filter respirator. Any supplied air respirator Any self contained breathing apparatus.
Upto 50x PEL	A high efficiency particulate filter respirator with a full-face piece. Any supplied air respirator with a full-face piece, helmet, or hood. Any self contained breathing apparatus with a full-face piece.
Upto 500x PEL	A powered air purifying respirator with a high efficiency particulate filter. A type Csupplied air respirator operated in pressure demand or other positive pressure or continuous flow mode.
Greater than 500 x PEL or entry and escape from unkown conditions	Self contained breathing apparatus with a full face piece operated in pressure demand or other pressure continuous flow mode and an auxillary self contained breathing apparatus operated in pressure demand or other positive pressure mode.

Note: only NIOSH approved or MSHA approved equipment should be used.

Ventilation

When dry sawing, sanding, or grinding concrete masonry products, use sufficient local exhaust to reduce

the level of respirable dust to the PEL. See ACGIH "Industrial Ventillation, A Manual of Recommended Practices", latest edition.

Personal Protective Eqiupment (PPE)

Protective Gloves: Work gloves are recommended for handling concrete products to protect against the abrasive surface of the products.

Eye Protection: Wear ANSI approved safety glasses to minimize eye contact, particularly when dry sawing, sanding or grinding, or when handling residual dust.

Protective Footwear: Steel toed boots are recommended when handling concrete products to protect against injury in the event a product is accidentaly dropped.

Respiratory Protection: Under ordinary conditions, no respiratory protection is required. For elevated levels of dust, follow the recommendations listed above.

Other Protective Clothing or Equipment: Users of concrete products must determine through representative sampling, the conditions created by the particular end use. From this assessment, engineered controls and PPE can be properly determined.

Work / Hygienic Practices

Avoid creating and breathing dust.

Use wet saw methods to minimize production of respirable dust.

Proper hygiene practices such as hand washing are advisable. Launder dirty clothing.

Minimize buildup of dust on work surfaces and use a filtered vacuum for cleanup.