



**LEHIGH CEMENT COMPANY LLC  
MATERIAL SAFETY DATA SHEET  
FOR  
WHITE PORTLAND CEMENT**

REVISED DATE: Sept. 2011

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**1. PRODUCT/COMPANY IDENTIFICATION**

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**Supplier:**  
Lehigh Cement Company LLC  
7660 Imperial Way – Allentown, PA 18195  
Contact our nearest Sales office for further  
information (SEE PAGE 7).  
Sales office phone numbers and locations are also  
listed on our WEBSITE  
([www.lehighwhitecement.com](http://www.lehighwhitecement.com)).

**Chemical Family:** Calcium Compounds

**Chemical Name and Synonyms:**  
Portland Cement (CAS # 65997-15-1), Hydraulic  
Cement Types I, I (WRA), II, III, V

**Trade Name and Synonyms:**  
Lehigh White Portland Cement

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**2. EMERGENCY AND FIRST AID**

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**EMERGENCY INFORMATION:**

Portland cement is a light gray or white powder. When in contact with moisture in eyes or on skin, or when mixed with water, portland cement becomes highly caustic (pH > 12) and will damage or burn (as severely as third-degree) the eyes or skin. Inhalation may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system or may cause or may aggravate certain lung diseases or conditions. Use exposure controls or personal protection methods described in Section 10.

**EYES:**

Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

**SKIN:**

Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

**INHALATION:**

Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside. Inhalation of large amounts of portland cement require immediate medical attention.

**INGESTION:**

Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

**ACCIDENTIAL RELEASE MEASURES**

Clean up spilled material without causing it to become airborne or mixed with water to limit potential harm. Wear appropriate personal protective equipment. Dispose of waste material according to local, state or federal regulations.

### 3. COMPOSITION INFORMATION

**DESCRIPTION:**

This product consists of finely ground portland cement clinker mixed with a small amount of gypsum (calcium sulfate dihydrate). The portland cement clinker is made by heating to a high temperature a mixture of substances such as limestone, sand, clay and shale. Portland cement is essentially hydraulic calcium silicates contained in a crystalline mass, not separable into individual components. Major compounds are:

3CaO•SiO <sub>2</sub>	Tricalcium Silicate	CAS #12168-85-3
2CaO•SiO <sub>2</sub>	Dicalcium Silicate	CAS #10034-77-2
3CaO•Al <sub>2</sub> O <sub>3</sub>	Tricalcium Aluminate	CAS #12042-78-3
4CaO•Al <sub>2</sub> O <sub>3</sub> •Fe <sub>2</sub> O <sub>3</sub>	Tetracalcium aluminoferrite	CAS #12068-35-8
CaSO <sub>4</sub> •2H <sub>2</sub> O	Calcium Sulfate dihydrate (Gypsum)	CAS #7778-18-9 CAS #13397-24-5
CaCO <sub>3</sub>	Calcium Carbonate	CAS #1317-65-3

### 4. HAZARDOUS INGREDIENTS

COMPONENT	OSHA PEL (8-Hour TWA)	ACGIH TLV-TWA (1995-1996)	NIOSH REL (8-Hour TWA)
<b>Portland Cement</b> (CAS #65997-15-1) 50 to 95% by weight	5 mg respirable dust/m <sup>3</sup> 15 mg total dust/m <sup>3</sup>	10 mg total dust/m <sup>3</sup>	
<b>Calcium sulfate</b> (CAS #7778-18-9) [Gypsum (CAS #13397-24-5)] 0 to 10% by weight	5 mg respirable dust/m <sup>3</sup> 15 mg total dust/m <sup>3</sup>	10 mg total dust/m <sup>3</sup>	
<b>Iron oxide</b> (CAS #1309-37-1) 0 to 15% by weight	10 mg/m <sup>3</sup>	5 mg/m <sup>3</sup>	
<b>Calcium carbonate</b> (CAS #1317-65-3) 0 to 5% by weight	5 mg respirable dust/m <sup>3</sup> 15 mg total dust/m <sup>3</sup>	10 mg total dust/m <sup>3</sup>	
<b>Magnesium oxide</b> (CAS #1309-48-4) 0 to 5% by weight	15 mg total dust/m <sup>3</sup>	10 mg total dust/m <sup>3</sup>	
<b>Calcium oxide</b> (CAS #1305-78-8) 0 to 5% by weight <sup>1</sup>	5 mg/m <sup>3</sup>	2 mg/m <sup>3</sup>	
<b>Crystalline silica</b> (CAS #14808-60-7) 0 to 5% by weight	<u>10 mg of respirable dust/m<sup>3</sup></u> % SiO <sub>2</sub> + 2 <u>30 mg of total dust/m<sup>3</sup></u> % SiO <sub>2</sub> + 2 <u>250 million particles/ft<sup>3</sup></u> % SiO <sub>2</sub> + 5	0.05 mg respirable quartz/m <sup>3</sup>	0.05 mg respirable quartz dust/m <sup>3</sup>

**TRACE INGREDIENTS:**

Due to the use of substances mined from the earth's crust, trace amounts of naturally occurring, potentially harmful constituents may be detected during chemical analysis. Portland cement may contain up to 0.75% insoluble residue. A small amount of this residue includes free crystalline silica. Portland cement also may contain trace (<0.05%) amounts of chromium salts or compounds (including hexavalent chromium) or other metals (including nickel compounds) found to be hazardous or toxic in some chemical forms. These metals are present mostly as trace substitutions within the principal minerals. Other trace constituents may include potassium and sodium sulfate compounds.

<sup>1</sup> If Portland/Lime blended product "0 to 25%" values.

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## 5. HAZARD IDENTIFICATION

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### POTENTIAL HEALTH EFFECTS:

NOTE: Potential health effects may vary depending upon the duration and degree of exposure. To reduce or eliminate health hazards associated with this product, use exposure controls or personal protection methods as described in Section 10.

### EYE CONTACT:

(Acute/Chronic) Exposure to airborne dust may cause immediate or delayed irritation or inflammation of the cornea. Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness.

### SKIN CONTACT:

(Acute) Exposure to dry portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure.

(Chronic) Dry portland cement coming in contact with wet skin or exposure to wet portland cement may cause more severe skin effects, including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of chemical (caustic) burns.

(Acute/Chronic) Some individuals may exhibit an allergic response upon exposure to portland cement. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers.

### INHALATION:

(Acute) Exposure to portland cement may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system. Pre-existing upper respiratory and lung diseases may be aggravated by inhalation of portland cement.

(Chronic) Inhalation exposure to free crystalline silica may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or cause or aggravate other lung diseases or conditions.

### INGESTION:

(Acute/Chronic) Internal discomfort or ill effects are possible if large quantities are swallowed.

### CARCINOGENIC POTENTIAL:

Portland cement is not recognized as a carcinogen by NTP, OSHA, or IARC. However, it may contain trace amounts of heavy metals recognized as carcinogens by these organizations. In addition, IARC classifies crystalline silica, a trace constituent, as a known human carcinogen (Group I). NTP has characterized respirable silica as "reasonably anticipated to be a carcinogen." (See also Section 13.)

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**6. PHYSICAL/CHEMICAL DATA**

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APPEARANCE/ODOR:	Gray, white or colored powder, odorless	PHYSICAL STATE:	Solid (Powder)
BOILING POINT:	> 1000°C	MELTING POINT:	Not applicable
VAPOR PRESSURE:	Not applicable	VAPOR DENSITY:	Not applicable
pH (IN WATER) (ASTM D 1293-95)	12 to 13	SOLUBILITY IN WATER:	Slightly soluble (0.1% to 1.0%)
SPECIFIC GRAVITY (H <sub>2</sub> O = 1.0):	3.15	EVAPORATION RATE:	Not applicable

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**7. FIRE AND EXPLOSION**

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FLASH POINT:	None	LOWER EXPLOSIVE LIMIT:	None
AUTO IGNITION TEMPERATURE:	Not combustible	UPPER EXPLOSIVE LIMIT:	None
FLAMMABLE LIMITS	Not applicable	SPECIAL FIRE FIGHTING PROCEDURES:	None
EXTINGUISHING MEDIA:	Not combustible	UNUSUAL FIRE AND EXPLOSION HAZARDS:	None
HAZARDOUS COMBUSTION PRODUCTS:	None		

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**8. STABILITY AND REACTIVITY DATA**

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<b>STABILITY:</b>	Product is stable. Keep dry until used.
<b>CONDITIONS TO AVOID:</b>	Unintentional contact with water. Contact with water will result in hydration and produces (caustic) calcium hydroxide.
<b>INCOMPATIBILITY:</b>	Wet portland cement is alkaline. As such, it is incompatible with acids, ammonium salts and aluminum metal.
<b>HAZARDOUS DECOMPOSITION:</b>	Will not occur.
<b>HAZARDOUS POLYMERIZATION:</b>	Will not occur.

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**9. PRECAUTIONS FOR HANDLING, STORAGE AND DISPOSAL**

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<b>HANDLING AND STORAGE</b>	Keep dry until used. Handle and store in a manner so that airborne dust does not exceed applicable exposure limits. Use adequate ventilation and dust collection. Use exposure control and personal protection methods as described in Section 10.
<b>SPILL:</b>	Use dry clean-up methods that do not disperse dust into the air or entry into surface water. Material can be used if not contaminated. Place in an appropriate container for disposal or use. Avoid inhalation of dust and contact with skin and eyes. Use exposure control and personal protection methods as described in Section 10.
<b>DISPOSAL:</b>	Comply with all applicable local, state and federal regulations for disposal of unusable or contaminated materials. Dispose of packaging/containers according to local, state and federal regulations.

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## 10. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### RESPIRATORY PROTECTION:

Use local exhaust or general dilution ventilation to control dust levels below applicable exposure limits. Minimize dispersal of dust into the air.

If local or general ventilation is not adequate to control dust levels below applicable exposure limits or when dust causes irritation or discomfort, use MSHA/NIOSH approved respirators.

### EYE PROTECTION:

Wear safety glasses with side shields or goggles to avoid contact with the eyes. In extremely dusty environments and unpredictable environments, wear tight-fitting unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when handling cement or cement containing products.

### SKIN PROTECTION:

Wear impervious abrasion- and alkali-resistant gloves, boots, long-sleeved shirt, long pants or other protective clothing to prevent skin contact. Promptly remove clothing dusty with dry portland cement or clothing dampened with moisture mixed with portland cement, and launder before re-use. If contact occurs, wash areas contacted by material with pH neutral soap and water.

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## 11. TRANSPORTATION DATA

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Portland cement is not hazardous under U.S. DOT regulations.

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## 12. TOXICOLOGICAL AND ECOLOGICAL INFORMATION

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For a description of available, more detailed toxicological and ecological information, contact Lehigh Cement Company LLC.

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## 13. OTHER REGULATORY INFORMATION

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Status under US OSHA Hazard Communication Rule 29 CFR 1910.1200:

Portland cement is considered a hazardous chemical under this regulation and should be included in the employer's hazard communication program.

Status under CERCLA/Superfund, 40 CFR 117 and 302:

Not listed.

Hazard Category under SARA (Title III), Sections 311 and 312:

Portland cement qualifies as a hazardous substance with delayed health effects.

Status under SARA (Title III), Section 313:

May be subject to reporting requirements under Section 313. Contact sales office for further information.

Status under TSCA (as of May 1997):

Some substances in portland cement are on the TSCA inventory list.

Status under the Federal Hazardous Substances Act:

Portland cement is a hazardous substance subject to statutes promulgated under the subject act.

Status under California Proposition 65:

This product contains crystalline silica, a substance known to the State of California to cause cancer. This product also may contain trace amounts of heavy metals known to the State of California to cause cancer, birth defects or other reproductive harm.

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#### 14. OTHER INFORMATION

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This MSDS provides information on various types of portland cement products. A particular product's composition may vary from sample to sample. The information provided herein is believed by Lehigh Cement Company LLC to be accurate at the time of preparation or prepared from sources believed to be reliable. Health and safety precautions in this data sheet may not be adequate for all individuals or situations. Users have the responsibility to comply with all laws and procedures applicable to the safe handling and use of the product, to determine the suitability of the product for its intended use, and to understand possible hazards associated with mixing portland cement with other materials. This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II. **SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY LEHIGH CEMENT COMPANY LLC.**

#### ABBREVIATIONS

ACGIH	American Conference of Governmental Industrial Hygienists
ASTM	American Society for Testing and Materials
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
ft <sup>3</sup>	Cubic foot
IARC	International Agency for Research on Cancer
m <sup>3</sup>	Cubic meter
mg	Milligram
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average

**LEHIGH WHITE SALES OFFICES:**

**NORTH & SOUTHEAST  
REGIONS**

Lehigh Cement Company LLC  
7660 Imperial Way  
Allentown, PA 18195  
Toll Free: 800-961-5932  
Tel: 610-366-4600  
Fax: 610-366-4888

**CENTRAL REGION**

Lehigh Cement Company LLC  
1512 Lake Air Drive, Suite 105  
Waco, Texas 76710  
Toll Free: 800-331-7062  
Tel: 254-772-9350  
Fax: 254-776-1799

**WESTERN REGION**

Lehigh Cement Company LLC  
1980 Atlanta Avenue  
Riverside, CA 92507  
Toll Free: 800-368-7557  
Tel: 951-683-7796  
Fax: 951-683-7798

July 3, 2010

Advanced Cast Stone

115 Lee St.

Everman, Tx 76140

Certification Letter

This is to certify that our C-144 Sand meets ASTM C-33 specification as it refers to particle shape, as well as silt and clay content. Our sand is clear of silt and clay content to the best of our knowledge. Our sand is processed through a high powered plant that uses both cardiodic ions and flocculent treatments. It is doubled washed to help prevent any problems with getting our sand into proper specifications.

Sincerely,



Angela Budzisz



**MATERIAL SAFETY DATA SHEET****SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME: Silica Sand

SYNONYMS / SOLD AS: Silica Sand, Quartz, Crystalline Silica, Ground Silica, Frac Sand, Filtration Sand, Bunker Sand, Turf Sand, Foundry Sand, 100 Mesh Frac Sand, 16/30 Sand, 20/40 Sand, 30/70 Sand, 40/70 Sand, 50/50 Sand Golf Course Sand, 75/25 Sand (75% Greens Plus 25% Texas Best) 80/20 Sand (TB 20% & Greens Plus 80% Mix), 90/10 Mix, C-144 White (Mason Sand), C-144 Yellow (Mason Sand), Caylor White (Golf Course Sand), Green Colored Sand, F50 Sand, Greens Mix Greens (mix for golf course), Greens Plus (Golf Course Sand), Klasic White (Mason Sand), Ottawa White 20/40 frac, Ottawa White 40/70 frac, P50 Sand Kosse, Perma Pore Mix (Mix with Caylor White & Perma Pore), Stone White (Mason Sand), Texas Best White (Bunker Sand) (collectively referred to herein as "Crystalline Silica Sand")

MANUFACTURER: Superior Silica Sands LLC. Product is sold under various names including "Superior Silica Sands LLC" and "Texas Sport Sands Inc."

Superior Silica Sands LLC  
3014 LCR 704  
Kosse, TX 76653  
Phone: (254) 746-7977

EMERGENCY TELEPHONE: CHEMTREC (800) 424-9300

**WARNING: Never Use This Material (Crystalline Silica Sand) for Sand Blasting****SECTION 2 – HAZARDS IDENTIFICATION****A. EMERGENCY OVERVIEW**

A white or tan sand that is granular, crushed or ground. It is mined in several locations in Wisconsin and Kosse, Texas. Uses include, but are not limited to, as sand for golf courses and in horse arenas, in the stone and masonry industry, and in oil and natural gas well fracing. It is not flammable, combustible or explosive. Do not breathe this material - a "National Institute for Occupational Safety and Health" ("NIOSH") approved personal respirator (discussed in Section 8) should be used as directed in Section 8. Additional measures to protect skin and eyes, as set forth in Section 8, should also be taken. Crystalline Silica Sand is not known to be an environmental hazard, however, it is classified as "hazardous" by the Occupational Safety and Health Administration ("OSHA"). This material is a carcinogen, as classified by International Agency for Research on Cancer ("IARC") and The National Toxicology Program ("NTP"). See

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Section 11. Crystalline Silica Sand is incompatible/reactive with ammonia, acetylene, hydrofluoric acid, fluorine, chlorine, and other powerful oxidizers as described in Section 10.

**B. POTENTIAL HEALTH EFFECTS**

**EYE:** Crystalline Silica Sand can cause moderate to severe irritation of eyes, including discomfort or pain, local redness and swelling of the conjunctiva.

**SKIN:** Contact by Crystalline Silica Sand can cause dryness or moderate irritation of skin.

**INGESTION:** None known.

**INHALATION:**

a. Silicosis - Respirable Crystalline Silica Sand can cause silicosis, a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability and death.

b. Lung Cancer - Crystalline Silica Sand is classified by IARC and NTP as a known human carcinogen.

c. Tuberculosis - Silicosis increases the risk of tuberculosis.

d. Autoimmune Disease - Some studies show excess numbers of cases of scleroderma, lupus and other autoimmune diseases, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable Crystalline Silica Sand.

e. Non-Malignant Respiratory Diseases (other than silicosis) - Some studies show an increased incidence in chronic bronchitis and emphysema in workers exposed to respirable Crystalline Silica Sand.

**CHRONIC EFFECTS / CARCINOGENICITY:** Silicosis, cancer, scleroderma, tuberculosis, nephrotoxicity, emphysema, chronic bronchitis, lupus, and arthritis are potential chronic effects of exposure. See Section 11 for further information regarding these conditions.

**SIGNS AND SYMPTOMS OF EXPOSURE:** There are generally no signs or symptoms of exposure to Crystalline Silica Sand. Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. Accelerated silicosis is similar, but symptoms may develop earlier than with chronic silicosis, and may also include weight loss. The symptoms of acute silicosis are the same, but also may include weight loss and fever. Symptoms of chronic bronchitis include a productive cough on most days for at least three months of two sequential years. Chronic coughing is also a symptom of emphysema; other emphysema symptoms include wheezing, shortness of breath, chest tightness, reduced capacity for physical activity, fatigue, reduced appetite, and weight loss. The

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symptoms of scleroderma include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems. Joint pain, swelling, inflammation, and stiffness are the primary symptoms of rheumatoid arthritis. Lupus has a wide range of potential symptoms, including fatigue, fever, weight loss or gain, joint pain, stiffness and swelling, skin lesions or rash, mouth sores, hair loss, white or blue fingers under cold or stressful conditions, shortness of breath, chest pain, dry eyes, easy bruising, anxiety, depression, and memory loss. Symptoms of chronic kidney disease include changes in urine output or color, blood in urine, swelling of the legs, ankles, feet, face, or hands, fatigue, skin rash/itching, metallic taste in the mouth/ammonia breath, nausea and vomiting, shortness of breath, anemia, dizziness or trouble concentrating, and side, back, or leg pain.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:** The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure. See Section 11 for additional detail on potential adverse health effects.

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known.

**SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS**

<b><u>HAZARDOUS INGREDIENTS</u></b>	<b><u>CAS Registry No.</u></b>	<b><u>Percentage (wt/wt)</u></b>
Crystalline silica (quartz)	14808-60-7	90-99.9*

OSHA Regulatory Status: **This ingredient is classified as hazardous under OSHA regulations.**

\* The remaining 10-0.1% of the material is considered to be inert.

**SECTION 4 – FIRST AID MEASURES**

**EYE:** Quickly and gently blot or brush away sand. Do not rub eyes. Do not attempt to manually remove material stuck to the eye(s). Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 15 minutes or until the sand is removed, while holding the eyelid(s) open. Occasionally lift eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Seek medical attention immediately.

**SKIN:** Wash with soap and water. Seek medical attention if irritation persists.

**INGESTION:** Never give anything by mouth if the victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. If irritation or discomfort occurs, obtain medical advice immediately.

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**INHALATION:** Remove source of contamination or move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration. If high airborne concentrations are present, take proper precautions to ensure your own safety before attempting rescue (i.e., wear proper protective equipment as described in Section 8).

**SECTION 5 – FIRE FIGHTING MEASURE****A. Flammable Properties**

Flash Point: Not Flammable

Method: N/A

**B. Extinguishing Media**

None required. Use suitable extinguishing media for surrounding fire.

**C. Fire & Explosion Hazards**

None.

**D. Fire Fighting Instructions**

None.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES**

**SPILL /LEAK PROCEDURES:** Use dustless methods (vacuum equipped with HEPA filters) and place in closable container for disposal or flush with water. Do not dry sweep. Use proper protective equipment indicated in Section 8.

**SECTION 7 – HANDLING AND STORAGE**

**HANDLING:** Keep in tightly closed containers. Protect containers from physical damage. Avoid direct skin contact with the material. Crystalline Silica Sand material contains fine dust. If you breathe this dust you can suffer severe, irreversible lung damage and death. Some medical reports state inhalation of Crystalline Silica Sand dust may increase the risk of lung cancer. Medical reports also link breathing Crystalline Silica Sand dust to crippling arthritis, and link direct contact to skin and eye irritation. See Section 11 for further information. Any time that a potential exists for you to be exposed to Crystalline Silica Sand in excess of the permissible exposure limit (PEL), you must use a NIOSH-approved respirator. The work area must also be thoroughly ventilated by the use of forced air ventilation during and after use of Crystalline Silica Sand. If the work area is dusty, use protective goggles. An eye wash station must be

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readily available where Crystalline Silica Sand is used. Prior to use or handling, you are advised to review and thoroughly understand all health precautions outlined in this Material Safety Data Sheet.

**STORAGE:** Store in a cool, dry, and well-ventilated location. Do not store near incompatible materials such as hydrofluoric acid, fluorine, chlorine, and other incompatible chemicals as described in Section 10.

**SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** Use sufficient air ventilation and exhaust ventilation to reduce the level of respirable Crystalline Silica Sand to below the PEL. See ACGIH "Industrial Ventilation, A Manual of Recommended Practice" (latest edition). Process or personal enclosure, control of process conditions, and process modification are other potential engineering control options.

**RESPIRATORY PROTECTION:** Use NIOSH-approved respirators whenever conditions create a risk of employee exposure to airborne concentrations in excess of the PEL. It is a violation of federal safety laws (OSHA) for employers to permit workers to be exposed to Crystalline Silica Sand without sufficient respiratory protection. The OSHA regulations that apply are: 29 CFR § 1910.134; 29 CFR § 1910.1000; 29 CFR § 1910.94 – (This last one is the regulation for sand blasting and this MSDS provides that this substance should not be used for sand blasting). Engineering controls must be first instituted whenever feasible; when such controls are not feasible to achieve full compliance, then personal protective equipment or other protection should be used. Personal protective equipment should be available for use in emergencies such as spills. The following chart specifies the types of respirators that may provide respiratory protection for Crystalline Silica Sand.

**MINIMUM RESPIRATORY PROTECTION\*****Particulate Concentrations**

**0.5 mg/m<sup>3</sup> or less** - Any air-purifying respirator with a high-efficiency particulate filter (Assigned Protection Factor ("APF") = 10).

**1.25 mg/m<sup>3</sup> or less** - Any powered air-purifying respirator with a high-efficiency particulate filter (APF = 25) OR Any supplied-air respirator operated in a continuous-flow mode (APF = 25).

**2.5 mg/m<sup>3</sup> or less** - Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter (APF = 50) OR Any powered air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter (APF = 50).

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**25 mg/m<sup>3</sup> or less** - Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode (APF = 1,000).

**Emergency or planned entry into unknown concentrations or immediately dangerous to life and health (IDLH) conditions** - Any self-contained breathing apparatus (SCBA) that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode (APF = 10,000) OR Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary SCBA operated in a pressure-demand or other positive-pressure mode (APF = 10,000).

**Escape** - Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter (APF = 50) OR Any appropriate escape-type SCBA.

Also see 42 CFR Part 84.

**\*Regardless of the type of respirator required, use only NIOSH-approved equipment that, if available, employs an end of service life indicator. See 29 CFR § 1910.134. See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection".**

APFs are based on the NIOSH recommended exposure limit (REL) of 0.05 mg/m<sup>3</sup>; an APF of 10, for example, is protective at concentrations up to 10 times the REL.

PEL = permissible exposure limit

TLV = threshold limit value

REL = recommended exposure limit

IDLH = immediately dangerous to life and health

**SKIN PROTECTION:** Use appropriate gloves to prevent skin contact. Clothing should fully cover arms and legs and be tight fitting at the cuffs, neck and ankles to prevent dust from contacting the body. Clothing should be regularly washed to prevent dust accumulation.

**EYE PROTECTION:** Use safety goggles.

**EXPOSURE GUIDELINES:** Crystalline Silica Sand (respirable)

<b>OSHA PEL (8-hour time weighted average [TWA])</b>	<b>ACGIH TLV (8-hour TWA)</b>
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**10 mg/m<sup>3</sup> ÷ (% silica in the dust plus 2)**

**0.025 mg/m<sup>3</sup>**

**MATERIAL SAFETY DATA SHEET****ADDITIONAL EXPOSURE GUIDELINES:** Crystalline Silica Sand (respirable)**NIOSH REL (10-hour TWA)****IDLH CONCENTRATION**0.05 mg/m<sup>3</sup>50 mg/m<sup>3</sup>

Crystalline Silica Sand exists in several forms, the most common of which is quartz. If Crystalline Silica Sand is heated to more than 870°C it can change to a form of crystalline silica known as trypdimite, and if crystalline silica (quartz) is heated to more than 1470°C, it can change to a form of crystalline silica known as cristobalite. Crystalline silica as trypdimite and cristobalite are more fibrogenic than crystalline silica as-quartz.

The OSHA PEL for crystalline silica as trypdimite and cristobalite is one-half the PEL for crystalline silica (quartz); the ACGIH TLV for crystalline silica as trypdimite and cristobalite is one-half the TLV for crystalline silica as quartz; the IDLH concentration for crystalline silica as trypdimite and cristobalite is one-half the IDLH concentration for crystalline silica (quartz, tripoli).

**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES****APPEARANCE:** White or tan sand: granular, crushed, or ground**ODOR:** Odorless**BOILING POINT:** 4046°F**MELTING POINT:** 3110°F**VAPOR PRESSURE:** N/A (0 mmHg approximate)**MOLECULAR WEIGHT:** 60.08**SOLUBILITY IN WATER:** Insoluble**SPECIFIC GRAVITY:** 2.66**PH:** N/A**SECTION 10 – STABILITY AND REACTIVITY****STABILITY:** Chemically stable**MATERIAL TO AVOID:** Contact with powerful oxidizing agents such as fluorine, boron

**MATERIAL SAFETY DATA SHEET**

trifluoride, chlorine trifluoride, manganese trioxide, oxygen difluoride, hydrogen peroxide, and others may cause fires and/or explosions. Heating a mixture of powdered magnesium with slightly wet silica may cause a violent explosion. A violent reaction may result from combination of manganese trifluoride and silica. Finely divided silica (sand) will often react with burning sodium. Combination with xenon hexafluoride may form the explosive xenon trioxide. The *NIOSH Pocket Guide to Chemical Hazards* also indicates incompatibility/reactivity with ammonia and acetylene; details are not specified.

**CONDITIONS TO AVOID:** Generation of dust.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Silica will dissolve in hydrofluoric acid and produce a corrosive gas – silicon tetrafluoride.

**SECTION 11 – TOXICOLOGICAL INFORMATION**

No median lethal dose (“LD50 or LC50”) has been identified for Crystalline Silica Sand.

**A. SILICOSIS**

The major concern is silicosis, caused by the inhalation and retention of respirable Crystalline Silica Sand dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable Crystalline Silica Sand dust. It is further defined as either simple or complicated silicosis.

Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function, or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF).

Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pulmonale).

Accelerated Silicosis can occur with exposure to high concentrations of respirable Crystalline Silica Sand over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or



## MATERIAL SAFETY DATA SHEET

ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable Crystalline Silica Sand over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.

### B. CANCER

The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources," and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz and cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans (Group 1)*." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 68, "Silica, Some Silicates..." (1997). (Emphasis added) NTP - The National Toxicology Program, in its Sixth Annual Report on Carcinogens, concluded that "silica, crystalline (respirable)" may reasonably be anticipated to be a carcinogen, based on sufficient evidence in experimental animals and limited evidence in humans.

Crystalline Silica Sand is not regulated by OSHA as a carcinogen.

### C. SCLERODERMA

There are several studies that show exposure to respirable Crystalline Silica Sand or the disease silicosis is associated with the increased incidence of scleroderma, an immune system disorder manifested by a fibrosis (scarring) of the lungs, skin and other internal organs. The following may be consulted for additional information on silica, silicosis and scleroderma (also known as progressive systemic sclerosis): Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

## MATERIAL SAFETY DATA SHEET

### D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

### E. NEPHROTOXICITY

Several studies suggest that exposure to respirable Crystalline Silica Sand or the disease silicosis is associated with the increased incidence of kidney disorders. The following may be consulted for additional information on silica, silicosis and nephrotoxicity: Occupational Lung Disorders, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases," Parkes, W. Raymond (1994). "Further evidence of human silica nephrotoxicity in occupationally exposed workers", British Journal of Industrial Medicine, Vol. 50, No. 10, pp. 907-912 (1993). "Adverse Effects of Crystalline Silica Exposure", American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

Several studies have reported excess cases of kidney diseases, including end-stage renal disease, among silica-exposed workers. For additional information, the following may be consulted: "Kidney Disease and silicosis," Nephron, Vol. 85, pp. 14-19 (2000).

### F. ARTHRITIS

There are recent studies suggesting that exposure to respirable Crystalline Silica Sand or the disease silicosis is associated with the increased incidence of arthritis. The following may be consulted for additional information on silica exposure and arthritis: American Journal of Industrial Medicine, Volume 35, pp. 375-381 "Connective Tissue Disease and Silicosis", Rosenman KD; Moore-Fuller M.; Reilly MJ. (1999). Environmental Health Perspective, Volume 107, pp. 793-802 "Occupational Exposure to Crystalline Silica and Autoimmune Disease", Parks CG; Conrad K; Cooper GS. (1999).

### H. NON-MALIGNANT RESPIRATORY DISEASES

For information concerning the association between exposure to Crystalline Silica Sand and chronic bronchitis, emphysema and small airways disease, refer to Section 3.5 of the NIOSH Special Hazard Review. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of Crystalline Silica Sand, or the level of crystalline silica in the dust).

**MATERIAL SAFETY DATA SHEET**Sources of Information:

The *NIOSH Hazard Review - Health Effects of Occupational Exposure to Respirable Crystalline Silica* published in April 2002 summarizes the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable Crystalline Silica Sand. The *NIOSH Hazard Review* should be consulted for additional information, and references to published studies on health risks and diseases associated with occupational exposures to respirable Crystalline Silica Sand. The *NIOSH Hazard Review* is available from NIOSH - Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or by calling 1-800-356-4646, or through the NIOSH web site, [www.cdc.gov/niosh/topics/silica](http://www.cdc.gov/niosh/topics/silica). then click on the link "NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica."

**SECTION 12 - ECOLOGICAL INFORMATION**

**ECOTOXICITY:** Crystalline Silica Sand is not known to be eco-toxic; *i.e.*, no data suggests that Crystalline Silica Sand is toxic to birds, fish, invertebrates, microorganisms or plants.

**ENVIRONMENTAL FATE:** This material shows no bioaccumulation effect or food chain concentration toxicity.

**SECTION 13 - DISPOSAL CONSIDERATIONS**

Dispose of in accordance with all applicable federal, state, and local environmental regulations. The material may be landfilled; however, used material may contain materials derived from other sources that because of contamination may not be disposed of in landfills. Disposed material should be covered to minimize generation of airborne dust.

Crystalline Silica Sand is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §§ 261 *et seq.* However, the material may be contaminated during use, and it is the responsibility of the user to assess the appropriate disposal of the used material.

**SECTION 14 - TRANSPORT INFORMATION**

US DOT: Not Regulated

PROPER SHIPPING NAME: N/A

CLASS: N/A

UN NUMBER: N/A

**MATERIAL SAFETY DATA SHEET**

**PACKING GROUP:** N/A

**SECTION 15 – REGULATORY INFORMATION**

**A. United States EPA**

**RCRA Hazardous Waste Number (40 CFR 261.33):** not listed.

**RCRA Hazardous Waste Classification (40 CFR 261):** not classified.

**CERCLA Hazardous Substance (40 CFR 302.4):** unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311(b)(4); CWA, Sec. 307(a), CAA, Sec. 112.

**CERCLA Reportable Quantity (RQ):** not listed.

**SARA 311/312 Codes:** not listed (note: it should be reported under SARA 311/312 if more than 10,000 pounds at facility, based on 29 CFR § 1910.1200(c), definition of a hazardous chemical, assuming OSHA requires maintenance of an MSDS.)

**SARA Toxic Chemical (40 CFR 372.65):** not listed.

**SARA EHS (Extremely Hazardous Substance) (40 CFR § 355):** not listed.

**Threshold Planning Quantity (TPQ):** not listed.

**TSCA:** All chemical ingredients are listed on the U.S. TSCA Inventory List.

**B. Food and Drug Administration**

Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

**C. OSHA/MSHA Regulations**

**Air contaminant (29 CFR 1910.1000, Table Z-3):**  $10 \text{ mg/m}^3 \div (\% \text{ silica in the dust plus } 2) \text{ TWA-8 hour PEL}$ .

**MSHA:** not listed.

**OSHA Specifically Regulated Substance (29 CFR § 1910):** not listed.

**OSHA Hazard Communication Evaluation:** meets the criteria for hazardous material, as defined by 29 CFR § 1910.1200.

**MATERIAL SAFETY DATA SHEET****SECTION 16 – OTHER INFORMATION****A. Hazardous Materials Identification System**

Health Risks - 1\*

Flammability - 0

Physical Hazards - 0

**Health Hazards:**

4. Severe hazard; Life-threatening, major or permanent damage may result from single or repeated overexposures.
  3. Serious hazard; Major injury likely unless prompt action is taken and medical treatment is given.
  2. Moderate hazard; Temporary or minor injury may occur.
  1. Slight hazard; Irritation or minor reversible injury possible.
  0. Minimal hazard; No significant risk to health.
- \* Chronic hazard; chronic (long-term) health effects may result from repeated overexposure.

**Flammability Hazards:**

4. Severe hazard; Flammable gases, or very flammable volatile liquids with flash points below 73 °F, and boiling points below 100 °F. Materials may ignite spontaneously with air.
3. Serious hazard; Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 °F and boiling points above 100 °F, as well as liquids with flash points between 73 °F and 100 °F.
2. Moderate hazard; Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 °F but below 200 °F.
1. Slight hazard; Materials that must be preheated before ignition will occur. Includes liquids, solids, and semi solids having a flash point above 200 °F.
0. Minimal hazard; Materials that will not burn.

**Physical Hazards:**

4. Severe hazard; Materials that are readily capable of water reaction, detonation, or explosive decomposition at normal temperatures and pressures.
3. Serious hazard; Materials that may form explosive mixtures with water are capable of detonation or explosive reaction in the presence of a strong initiating source or undergo chemical change at normal temperature and pressure with moderate risk of explosion.
2. Moderate hazard; Materials that are unstable and may undergo violent chemical change and normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

## MATERIAL SAFETY DATA SHEET

1. Slight hazard; Materials that are normally stable but can become unstable at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

0. Minimal hazard; Materials that are normally stable under fire conditions and will not react to water, polymerize, decompose, condense, or self-react.

### B. National Fire Protection Association

Health Hazard - 1

Fire Hazard - 0

Reactivity - 0

#### Health Hazards:

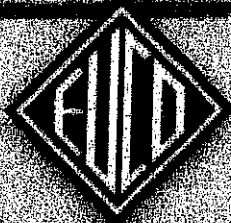
4. Deadly
3. Extreme danger
2. Hazardous
1. Slightly hazardous
0. Normal material

#### Fire Hazards - Flash Point Temp.:

4. Below 73° F
3. Below 100° F
2. Below 200° F
1. Above 200° F.
0. Will not burn

#### Reactivity:

4. May detonate
3. Shock or heat may detonate
2. Violent chemical reaction
1. Unstable if heated
0. Stable



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## Euclid Sustainability/Green Building



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At Euclid Chemical, we understand the critical impact that Sustainable Design have on our world. We also realize that for us to have an impact as a supplier industry, we must make it part of our company's culture to provide sustainable solutions which achieve **social** and **environmental** objectives while providing economic value. Therefore, our mission to develop sustainable solutions that create value for product/system performance, increased application efficiencies and life-cycle.

At the core of our business, in order to achieve our vision, we address sustainability through:

- **Product Innovation**
- **Product Stewardship**
- **Processes & Practices**
- **Sustainable Design**
- **Policy Development**
- **LEED Credit Contribution**
- **Industry Links**

By integrating the social, environmental and economic aspects of sustainable design, Euclid Chemical will continually strive to foster innovation, environmental protection and safety for our employees, communities, customers, investors, and our industry.

- **Product Innovation** - Pioneering product innovation is imperative. We are developing sustainable product technology platforms that provide improved performance and ease of use.
- **Product Stewardship** - The elimination of components used in products that are harmful to human life, our environment or that may drain some of earth's resources is another aspect of our sustainable strategy. Rather than simply reacting to regulations put into place regarding Volatile Organic Compounds (VOCs), Euclid Chemical focuses its efforts to the development of products that meet or exceed even the most stringent regulations currently in place and those to be implemented over the next few years. Our development also focuses on performance, striving for longer life cycle.

An **RPD** Company

use of renewable raw materials in place of petroleum-based raw materials.

Through the implementation of national and local VOC rules, the paint industry has greatly reduced volatile organic compound (VOC) emissions from Architectural Maintenance (AIM) products. These regulations have resulted in many high-solids and water-based formulations, which give off far less VOC than their solvent-based counterparts. Concrete construction products such as curing compounds, water repellent sealers, floor coatings, and form release compounds are also subject to local AIM regulations.

Overall, there are seven VOC regulation development areas in the US. Various rules and regulations often borrow from and influence each other.

1. US EPA National AIM Rule: The National Rule went into effect in 1999. It is a federal rule, but states or locales with more stringent requirements override less stringent rules.

The EPA is currently considering revisions to the AIM coatings National Rule. It is heavily based on the OTC Model Rule for revised limits. The compliance date for the rule is to be in 2010 or 2011.

2. The Northeast Ozone Transport Commission (OTC) AIM Rule: The OTC was established by Amendments of 1990 to address ground level ozone pollution on a regional basis in New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, the District of Columbia, and Virginia. In 2001, the OTC states agreed to adopt rules based on California's VOC limits. The OTC is now considering revisions to the rule based on revisions to the California regulations.

As of August 2007, 11 of the OTC states and Washington DC had adopted the OTC Model or some variation of it. The only OTC state who has not proposed a rule is Rhode Island.

3. The Lake Michigan Air Directors Consortium (LADCO) consists of the four states (Illinois, Indiana, Michigan, and Wisconsin) and Ohio. Like the OTC, LADCO regulates ground level ozone pollution on a regional basis. At this time, only Ohio has adopted an AIM VOC rule effective on January 1, 2009.
4. The California Air Resources Board (CARB): California's state air agency, CARB issues regulations to the 35 individual air quality districts in the state concerning floor coatings. Having the authority to approve and disapprove the individual Districts' suggested VOC limits has considerable influence, and districts generally follow them if they need more stringent controls, as is the case for SCAQMD.
5. South Coast Air Quality Management District (SCAQMD) Rule 1113: The SCAQMD has the most stringent rule in the U.S. and covers Los Angeles and the surrounding air basin. It is the model that other jurisdictions consider when writing their own rules.
6. Rule 335 in Maricopa County, Arizona (the Phoenix metropolitan area) is a VOC rule that is more stringent than the National AIM Rule but less stringent than the OTC rule.
7. International regulations, including: the European Union Directive on Decorative Coatings by the EU Parliament in 2004 and which is now being incorporated into the national rules of many countries. There is also an AIM VOC rule being developed by the Canadian government that will be modeled after the OTC rule.

- **Processes & Practices** - Efforts to make our business operations more environmentally responsible are underway throughout the company. This includes minimizing energy consumption, increasing energy efficiency. Education is key internally and externally. A code of conduct across our business that exemplifies the standards we strive for.

Initiatives have been implemented by the in-house Environmental, Health, and Safety Department.



contribute to the sustainable movement through:

- Waste Stream Reduction: Move Toward Zero Landfill
- Recycling Programs: Cardboard, Paper, Metal, Batteries
- Energy Consumption Reduction
- Energy Harvesting (Heat) for Other Processes
- Water Consumption Reduction
- Print-on-Demand Literature Fulfillment
- **Sustainable Design** - Sustainable design extends the life our building impact on the environment. This strategy focuses on designing for durability science and life cycle analysis as its foundation. Building envelope solutions and systems to ensure longevity is key. Conscientious preservation are traditional models of sustainable construction.

The Business Development Group assists in the promotion of these diverse concentrated specification effort with Architects, Engineers and Owners

- **Policy Development** - In addition to impacting our own culture and through or using our products, Euclid Chemical devotes efforts to educate regulatory organizations so that the impact of sustainable initiatives can be even lasting.

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# PLASTOL 6425

## HIGH RANGE WATER REDUCING ADMIXTURE



HIGH RANGE WATER REDUCERS

### DESCRIPTION

**PLASTOL 6425** is a ready to use polycarboxylate based, high range water-reducing admixture for concrete. PLASTOL 6425 increases early concrete strength as well as ultimate strength. PLASTOL 6425 can be used to produce increased concrete slump or to significantly reduce water demand for a specific slump. PLASTOL 6425 can be added at the plant or jobsite and is compatible with other admixtures. PLASTOL 6425 contains no added chlorides.

### PRIMARY APPLICATIONS

- High performance concrete
- Self-compacting concrete
- Precast concrete
- Low water/cement ratio concrete
- High early strength applications

### FEATURES/BENEFITS

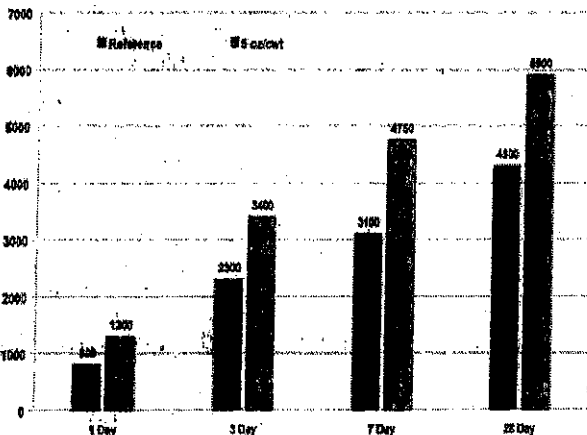
- Low water/cement ratio reduces water demand
- Self-compacting concrete reduces labor costs
- High early strength reduces energy costs
- Controlled setting times reduces labor costs
- Consistent air content

### TECHNICAL INFORMATION

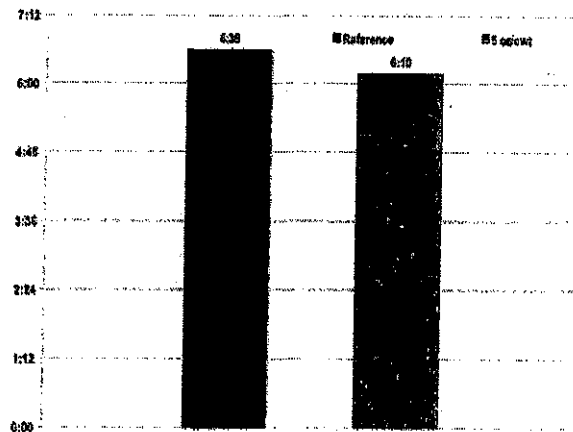
#### Performance Data:

The following test results were achieved using typical ASTM C 494 mix design requirements, 517 lb/yd<sup>3</sup> (307 kg/m<sup>3</sup>) cement content and similar ( $\pm 0.5$ )% air content. These results were obtained under laboratory conditions with materials and mix designs meeting the specifications of ASTM C 494. Changes in materials and mix designs can affect the dosage response of PLASTOL 6425.

Plastol 6425 Compressive Strength Data (psi)



Plastol 6425 Set Time Results (hr:min)



PLASTOL 6425

MasterFormat # 03.3000 03.4000 03.7000



**The Euclid Chemical Company**

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An **FPM** Company



## PACKAGING

PLASTOL 6425 is packaged in bulk, 275 gal (1041 L) totes, 55 gal (208 L) drums and 5 gal (18.9 L) pails.

## SHELF LIFE

2 years in original, unopened container.

## SPECIFICATIONS/COMPLIANCES

Fully complies with the requirements of:

- ASTM C 494, Type F admixture and AASHTO M 194 Type F admixture.
- ASTM C 1017 as a Type I admixture.

## DIRECTIONS FOR USE

PLASTOL 6425 can be added to the initial batch water or directly on the freshly batched concrete and mixed for approximately 5 minutes or 70 revolutions. However, better results have been observed batching directly on the freshly batched concrete. It should not come into contact with dry cement or other admixtures until mixed thoroughly with the concrete batch.

PLASTOL 6425 is typically used at dosages of 3 to 15 oz per 100 lbs (200 to 980 mL per 100 kg) of cementitious material. Other dosages are acceptable with prior testing and confirmation of the desired performance with specific materials being used.

For any concrete application including Self-Consolidating Concrete (SCC), the dosage of PLASTOL 6425 will vary depending on the mix design, local materials, and individual needs of the concrete producer. Trial mixes should be run to verify plastic and hardened performance with local materials. If the material gradations are not optimum for SCC, a viscosity modifier may be used to improve the quality of the mix. Please consult a local Euclid Chemical Sales Professional for trial mixtures and dosage recommendations.

PLASTOL 6425 is compatible with most admixtures including air-entraining agents, accelerators, most water-reducers, retarders, shrinkage reducers, corrosion inhibitors, viscosity modifiers, and microsilica; however, each material should be added to the concrete separately. Please contact a Euclid Sales Professional for any compatibility issues.

## PRECAUTIONS / LIMITATIONS

- Care should be taken to maintain PLASTOL 6425 above freezing; however, freezing and subsequent thawing will not harm the material if thoroughly agitated. Never agitate with air or an air lance.
- Keep concrete from freezing until a minimum strength of 1000 psi (7 MPa) is reached.
- If re-dosing PLASTOL 6425 at the jobsite, it is recommended that the air content is checked to conform to job specifications.
- In all cases, consult the Material Safety Data Sheet before use.

Rev. 10.10

**WARRANTY:** The Euclid Chemical Company ("Euclid") solely and expressly warrants that its products shall be free from defects in materials and workmanship for one (1) year from the date of purchase. Unless authorized in writing by an officer of Euclid, no other representations or statements made by Euclid or its representatives, in writing or orally, shall alter this warranty. EUCLID MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR ORDINARY OR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES THE SAME. If any Euclid product fails to conform with this warranty, Euclid will replace the product at no cost to Buyer. Replacement of any product shall be the sole and exclusive remedy available and buyer shall have no claim for incidental or consequential damages. Any warranty claim must be made within one (1) year from the date of the claimed breach. Euclid does not authorize anyone on its behalf to make any written or oral statements which in any way alter Euclid's installation information or instructions in its product literature or on its packaging labels. Any installation of Euclid products which fails to conform with such installation information or instructions shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of Euclid's products for the Buyer's intended purposes.

Dynamic Color Solutions, Inc. The Color of Today's Architecture Dynamic Color Solutions, Inc. The Color of Today's Architecture

## Liquid Color For Concrete

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### Product Description

#### Basic Use

DCS Liquid Cement Colors are all manufactured using pure mineral pigments designed to be used specifically in cementitious materials. DCS Liquid Cement Colors can be used for integral coloring of concrete block, concrete floors, walks, patios, driveways, concrete pavers, vertical precast, and poured in place concrete construction.

#### Composition and Materials

DCS Liquid Cement Colors are composed of finely milled 95-99% minus 325 mesh inorganic synthetic and natural iron oxides. Depending upon the color, different combinations of natural yellow, red, brown and black iron oxides, and mineral blacks are blended with synthetic red, yellow, and black iron oxides, and chromium oxide greens. The natural iron oxides are dried, pulverized and classified from mineral earth iron oxides (in a range of 50-80% iron oxide). These materials are suspended in a water based slurry to create a stable and easy to use liquid color.

The synthetic iron oxides are manufactured by different methods of calcination and precipitation of iron solutions or oxides under carefully controlled conditions. These processes produce roughly 93-99% pure iron oxides. DCS synthetic and natural inorganic iron oxides are inert, stable to all atmospheric conditions, ultra violet rays, alkalis and normal acid conditions. They are sunfast, limeproof and absolutely free of any water soluble fillers.

#### Packaging

DCS Liquid Cement Colors are packaged in 35 gallon or 55 gallon blow lined fiber drums, or in semi bulk containers as needed.

Select Products



Dynamic Color Solutions, Inc. The Color of Today's Architecture Dynamic Color Solutions, Inc. The Color of Today's Applications

# Liquid Color For Concrete

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## Technical Data

### Performance Properties

DCS Liquid Cement Colors are alkali resistant, water insoluble, inert, light resistant, inorganic, and limeproof.

### Physical Properties

Depending upon the DCS Color Index Name and Number, the fineness of the pigment in each ranges from 95-99% minus 325 mesh.

**General Formula**  
Fe<sub>2</sub>O<sub>3</sub> + H<sub>2</sub>O

**pH**  
6.5 to 8.5

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## Liquid Color For Concrete

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### Installation

#### Preparatory Work

The mixing shall conform to ASTM C94, the portland cement ASTM C150, and the coarse and fine aggregates ASTM C33. Color addition (dry weight basis) should not exceed 10% of the weight of the cement conforming to ASTM C979.

#### Application

A power mixer should be used to provide thorough mixing and dispersing of color. To provide consistent and uniform color a sound method is: (1) Load the mixer with selected mix design of coarse, and fine aggregate. (2) Add the designated amount of DCS Liquid Cement Color by weight or volume as desired. Add the cement for the mix and agitate at full speed for several minutes. Any change in proportioning the amount of water, aggregate, sand and color to the cement and/or type of cement and aggregate used on the same job can result in variation of color tone in the finished job.

Before loading, agitator should be checked for residual water from cleaning.

### Maintenance

After the concrete has cured for a period of at least 28 days various proprietary sealers may be used for protection against the elements. Please check with the sealer manufacturer for aesthetic changes the sealer may cause to the appearance of the Colored Concrete Surface.

Select Products 