



ENDURING



ELEGANCE

STONE SPECIFICATIONS

STONE SPECIFICATIONS
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STONE SPECIFICATION

1 - STONE SPECIFICATIONS

MATERIAL Quartzite

CHEMICAL ANALYSIS

Silicon Dioxide 95.20%, Aluminum Oxide 0.23%. Iron 0.82%. Magnesium Oxide ND, Calcium Oxide 0.16%. Sodium Oxide ND, Potassium Oxide ND, Titanium Oxide ND, Phosphorous Pentoxide 0.01 %, Manganese Oxide ND

QUALITY RESULTS

% Absorption 0.15 - 0.11
Bulk Specific Gravity 2.647 - 2.643
lb/ft³ Density 165 lb/in² Comprehensive strength 39,870 - 26,770
lb/in² Modulus of Rupture 5,120 - 4,600 lb/in² Flexural Strength 4,550 - 4,160

1.1 QUALITY ASSURANCE

A. All stone is from Jasper, MN.
B. Stone and workmanship shall conform to Building Stone Institute and Marble Institute of America standards.

1.2 DELIVERY, STORAGE, AND HANDLING

A. All stone shall be stored and handled to prevent damage due to moisture, contaminants, breakage, chipping or other causes.
B. Lift with wide belt-type slings where possible; do not lift with wire ropes.
C. Do not use pinch bars or wrecking bars to handle stone. Do not use equipment that contains substances that might stain.
D. Store stone on wood skids or pallets, covered with a non-staining membrane.

2 - STONE

A. Stone Type: Quartzite
B. Color: varies in shades of mauve to dusty rose
C. Finish: (select one or more as applicable)
1. Sawed
2. Flamed
3. Sand Blasted
4. Split
5. Pitched
6. Modified Pitched

7. Bull-Nose
8. Polished
9. Engraved
10. Special Finishes Available

2.1 STONE FABRICATION

A. General: Fabricate stonework in sizes and shapes required to comply with requirements indicated, including details on drawings and final shop drawings.
B. Comply with recommendations of MIA/BSI.
C. Cut stone to produce pieces of thickness, size and shape indicated or required and within fabrication tolerances recommended by MIA/BSI.
D. Finish exposed faces and edges of stone to comply with requirements indicated for finish under each type and application of stone required and to match approved samples.

2.2 MORTAR AND GROUT

A. Meeting or exceeding latest ASTM standards.

2.3 ANCHORS

A. Anchors and Dowels: Stainless steel.

3 - SETTING DIMENSION STONE

A. Execute dimension stonework by skilled mechanics, and employ skilled stone fitters at site to do necessary field cutting as stones are set.
B. Set stones to comply with requirements indicated on drawings and final shop drawings. Install anchors, supports, fasteners and other attachments indicated or necessary to secure stonework in place. Shim and adjust as necessary.
C. At cavity walls, install weep holes as indicated using plastic or other weep tubes at joints where water may accumulate.

4 - CLEANING

Special care should be taken to not expose to oil or staining chemicals. Normal brick cleaning is acceptable.

5 - LIMITED LIFETIME WARRANTY

The Product is warranted to be free from defects in materials and workmanship for as long as Owner owns the Product. This Limited Lifetime Warranty applies only to Product used for personal, family, or household purposes and does not cover normal wear and tear or damage caused by accidents, abuse, alteration, modification, misuse, or improper care or maintenance. The Owner's sole and exclusive remedy against Jasper Stone Company for any claims, losses, or causes of action relating to or in any way arising from the Product shall be at the sole option of Jasper Stone Company, to repair or replace the defective Product, or refund of the purchase price.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY OTHER WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESS OR IMPLIED, AND ALL OTHER LIABILITIES OR OBLIGATIONS ON THE PART OF JASPER STONE. IN NO CASE WILL JASPER STONE BE LIABLE FOR DIRECT, INDIRECT, GENERAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES OF ANY KIND WHATSOEVER, REGARDLESS OF THE CAUSE OF SUCH DAMAGE AND REGARDLESS OF WHETHER JASPER STONE HAD PRIOR KNOWLEDGE OF THE POSSIBILITY OF SUCH DAMAGE. The terms of this LIMITED LIFETIME WARRANTY shall be governed by the laws of the State of South Dakota and any disputes or claims based upon this LIMITED LIFETIME WARRANTY shall be heard in the South Dakota Circuit Court in Sioux Falls, Minnehaha County, South Dakota (or if applicable the United States District Court sitting in Sioux Falls, Minnehaha County, South Dakota.



STONE CARE AND CLEANING

Stone Care Guide

New natural stone is an investment in lasting beauty that will give many years of wear. This care guide gives a few tips on how to properly care for natural stone and help extend its life and beauty. Following some simple precautions, properly sealing, and using the correct cleaning methods and products, will insure a lifetime of use from natural stone.

Sealing Your Stone

Natural stone has been formed over millions of years but improper care can ruin nature's beauty. Although we usually think of stone as "hard", it is a porous material that can absorb spills and stains if left untreated. Sealing stone with a quality impregnating sealer will prevent most spills from damaging it.

There are a wide variety of sealers available, so you need to select one for your specific needs and natural stone type. Impregnating sealers, with new, advanced fluoropolymer technology, penetrate the stone and help protect it against water and oil-based stains. Industry professionals now recognize that natural stone is best protected with a fluoropolymer-based sealer. We recommend sealing new stone with an impregnator formulated with the latest in fluoropolymer technology.

Cleaning Procedures & Recommendations

Keeping stone free of dust and dry. Sweep or dust all natural stone surfaces regularly to remove loose soil and dust. Clean natural stone on a regular basis with warm water and a clean, non-abrasive cloth, sponge or mop. In addition, using a neutral cleaner specially formulated for natural stone will help remove soils that normal dusting or damp mopping leave behind. Do not use general purpose cleaners or you may damage the stone or the sealer applied. Do not use products that contain lemon, vinegar or other acids as these may etch the stone surface and damage the polish. Do not use scouring powders or creams; these products contain abrasives that may scratch the surface.

Countertops and Vanities

Use a stone revitalizer on a regular basis to remove residues from cooking oils and everyday food spills as well as hairspray or other cosmetics. Many common foods and drinks contain acids that may etch or dull the stone surface. Also, some common toiletries (e.g., perfume, toothpaste, mouthwash) contain acids and other ingredients that may damage the stone surface or degrade the sealer.

Floor Surfaces

Dust mop interior floors frequently using a clean non-treated dry dust mop. Sand, dirt and grit do the most damage to natural stone surfaces due to their abrasiveness. Mats or area rugs inside and outside an entrance will help to minimize the potential damage from these particles. In addition, be careful when using a vacuum cleaner as the metal or plastic attachments or wheels may scratch the surface. Damp mop the stone floor or use an all purpose stone cleaner as directed on the label. Keep off floor until completely dry, as wet stone floors may be slippery.

Bath and Other Wet Areas

Periodic use of a revitalizer will remove any soap scum or hard water deposits that may have formed. In the bath, or other wet areas, using a squeegee after each use can minimize soap scum and hard water deposit buildup.

What To Do When A Spill Occurs

No matter how careful you are, spills are going to happen. A quick response and the right solutions can keep spills from damaging stone or the sealer. Only use the proper stone cleaning products.



STONE CARE AND CLEANING

Etch Marks

Substances that are highly acidic, such as orange juice, coffee, vinegar, wine, tomato products, mustard and many soft drinks, may “etch” whether the stone is sealed or unsealed. Although sealing allows you time to wipe up a spill, it cannot stop the chemical reaction that may leave a dull area or etch mark in the stone.

In addition, cleaners not specifically designed for natural stone are not recommended. These may etch away the polish, discolor the surface, scratch the stone or degrade the sealer. That’s why selecting the correct cleaning products is so important to the life-time beauty of your natural stone. Professional re-finishing is the best way to permanently remove etch marks and restore your natural stone’s even finish.

Food Spills

Scoop up the food with a plastic spoon. Blot with a dry, white cloth. Spray the area with a revitalizer and wipe dry with a clean cloth or clean the soiled area with approved stone wipes.

Liquid Spills

Blot away the excess with a clean, dry, white cloth; turning the cloth frequently. Spray the area with a revitalizer and wipe dry with a clean cloth or clean the soiled area with approved stone wipes.

Mud

Let the mud stain dry completely. Remove dried mud with a soft plastic or nylon brush. Spray affected area with a revitalizer. Wipe dry with a clean cloth.

Oily Stains

If you identify the stain as having an oil base (from foods like salad and cooking oils, butter, or some cosmetics) you may be able to remove the stain using a poultice. We recommend an oil stain remover for natural stone. This easy-to-use poultice is designed to slowly remove oily stains from natural stone surfaces. Follow the directions on the label.

Do’s & Don’ts

- **DO** use coasters under glasses, especially if they contain alcohol or citrus juices.
- **DO** use trivets or mats under hot dishes or cookware.
- **DO** use place mats under china, ceramics, silver or other objects that may scratch your stone’s surface.
- **DO** place a small rug at entryways to trap dirt and sand from normal foot traffic.
- **DO** dust countertops, islands, vanities and floors frequently.
- **DO** blot up spills immediately to minimize permanent damage to the stone.
- **DO** clean surfaces by wiping with clean water or by using a professional stone & tile cleaner and protector.
- **DON’T** use vinegar, bleach, ammonia or other general-purpose cleaners.
- **DON’T** use cleaners that contain acid such as bathroom cleaners, grout cleaners or tub and tile cleaners.
- **DON’T** use abrasive cleaners such as dry cleansers or soft cleansers.
- **DON’T** use alkaline cleaners not specifically formulated for natural stone.



INSTALLATION GUIDELINES

STANDARD SPECIFICATIONS

PART 1 - PRODUCTS

QUARTZ-BASED STONE

Comply with ASTM C 616, Classification; Quartzite.

MORTAR MATERIALS

1. **Portland Cement:** ASTM C 150, Type I or II.

2. **Mortar Cement:** ASTM C 1329

3. **Masonry Cement:** ASTM C 91

4. **Mortar Pigments:** Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in stone masonry mortar.

5. **Aggregate:** ASTM C 144 and as follows: For pointing mortar, use aggregate graded with 100 percent passing No. 16 (1.18-mm) sieve.

Colored Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar color.

6. **Colored Cement Product:** Packaged blend made from Portland cement and lime, masonry cement or mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors. Pigments shall not exceed 10 percent of Portland cement by weight.

7. **Thin Bed Mortar:** Packaged blend of Laticrete® 254 Platinum meeting requirements of ANSI A118.4 and ANSI A118.11. The thin bed mortar shall be used

in conjunction with Laticrete® Hydro Ban™ as a waterproofing membrane that meets the requirements of ANSI A118.10 and ANSI A118.12 for outdoor applications only.

Refer to Laticrete International for product specific information.

MORTAR MIXES

General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.

Do not use calcium chloride.

Limit cementitious materials in mortar to Portland cement or mortar cement, and lime.

VENEER ANCHORS

1. **Materials:**

Stainless-Steel Wire: ASTM A 580/A 580M, Type 304.

Stainless-Steel Sheet: ASTM A 167, [Type 304] [Type 316].

2. **Stainless-Steel Drill Screws for Steel Studs:**

Proprietary fastener consisting of carbon-steel drill point and 300 Series stainless-steel shank, complying with ASTM C 954 except manufactured with hex washer head and neoprene washer, No. 10 (4.8-mm diameter) by length required to penetrate steel stud flange with not less than three exposed threads.

3. **Polymer-Coated, Steel Tapping Screws for Concrete Masonry:**

Self-tapping screws with specially designed threads for tapping and wedging into masonry, with hex washer head and neoprene washer, 3/16-inch (4.8-mm) diameter by 1-1/2-inch (38-mm) length, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours per ASTM B 117.



INSTALLATION GUIDELINES

EPOXY ANCHORAGE

Materials:

Latapoxy® 310 stone adhesive is a two-component, high strength construction epoxy adhesive for spot bonding stone on vertical surfaces, for either interior or approved exterior applications.

Bonstone Anchor™ is a two-part, high performance epoxy adhesive used for anchoring stainless steel anchors in stone panels and to anchor concrete or stone to stone bonding. Bonstone Anchor™ is a slow setting epoxy (6-8 hours) with a longer pot life.

PART 2 - EXECUTION

SETTING OF STONE MASONRY, GENERAL

1. Perform necessary field cutting and trimming as stone is set.
Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edge ease slightly to prevent snipping.
Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
Pitch face at field-split edges as needed to match stones that are not field split.
2. Sort stone before it is placed on wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties or fabrication, or that is otherwise deemed unsuitable for intended use.
3. Arrange stones in range coursed pattern with courses as indicated and uniform joint widths.

4. Set stone to comply with requirements indicated on drawings. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place. Set stone accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

5. Maintain uniform joint widths except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any.

CONSTRUCTION TOLERANCE

1. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet (6 mm in 3m), 3/8 inch in 20 feet (10 mm in 6 m), or 1/2 inch in 40 feet (13 mm in 12 m) or more. For external corners, expansion joints, control joints, and other conspicuous lines, to not exceed 1/4 inch in 20 feet (6 mm in 6 m) or 1/2 inch in 40 feet (13 mm in 12 m) or more.
2. Variation from Level: For bed joints and lines of exposed lintels, sill parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet (6 mm in 6m) or 1/2 inch in 40 feet (13 mm in 12m) or more.

ADJUSTING AND CLEANING

Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:

- Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
- Clean stone masonry by bucket and brush hand cleaning method described in BIA Technical Note No. 20 Revised II, using job-mixed detergent solution.
- Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.



SEALANT STAINING

Dow Corning Construction Industry System Laboratory Report - Sealant Staining - Non-Stain Warranty

Date: 25 Jan 2007
Document ID: 0000031643
Project Number: 0000019906
Customer: Jasper Stone
Customer Fax: 605-334-3656
Warranty No.: 0000010559

Dow Corning has completed staining testing & adhesion testing /evaluation in support of the above referenced

STAINING TESTING Modified ASTM C1248

	Substrate	
Substrate Manufacturer and Code	Jasper Stone	
Substrate Type	Natural Stone	
Substrate Description	Mauve Colored Quartzite	
Surface to Test	Edge	
		Testing Results
Sealant		
Dow Corning® 756 SMS Building Sealant		No Staining Observed
Dow Corning® 790 Silicone Building Sealant		No Staining Observed
Dow Corning® 791 Silicone Weatherproofing Sealant		No Staining Observed
Dow Corning® 795 Silicone Building Sealant		No Staining Observed

The results of the staining testing are only valid as long as the supplier certifies that the consistency and the processing of the stone sample tested are representative of the materials used on the project.

Weatherseal warranties shall apply to the above referenced project. In addition, Dow Corning warrants that, for a period of 20 years, if discoloration of the substrates occurs and is directly attributable to the sealants recommended above, then Dow Corning will pay up to a maximum of five times the purchase price of the sealant.

The above statement of warranty is subject to all limitations and conditions of the limited weatherseal warranty.

For further information regarding these test results, please contact your Dow Corning Construction Field Specialist, Wilbert William, on 630-872-8173 at Schaumburg, Illinois UNITED STATES E-mail: Wilber.williams@dowcorning.com



SEALANT ADHESION

Dow Corning Construction Industry System Laboratory Report - Sealant Adhesion

Date: 25 Jan 2007
Document ID: 0000030918
Project Number: 0000019906
Customer: Jasper Stone
Customer Fax: 605-334-3656

ADHESION TESTING (Modified ASTM C794) or (ETAG 002 Paragraph 8.3.2.4)

Dow Corning has completed adhesion testing / evaluation in support of the above referenced project. A summary of this laboratory testing / evaluation and application recommendations is given below.

	Substrate Description
Substrate Manufacturer and Code	Jasper Stone
Substrate Type	Natural Stone
Substrate Description	Mauve Colored Quartzite
Surface to Test	Edge

Sealant	Cleaner	Primer	Application Recommendation
Dow Corning® 756 SMS Building Sealant	Isopropanol	No Primer	Approved for Weatherseal Applications
Dow Corning® 790 Silicone Building Sealant (see notes)	Xylene	No Primer	Approved for Weatherseal Applications
Dow Corning® 791 Silicone Weatherproofing Sealant	Isopropanol	No Primer	Approved for Weatherseal Applications
Dow Corning® 795 Silicone Building Sealant	Isopropanol	No Primer	Approved for Weatherseal Applications

790 Cure Inhibition Statement

NOTE: Alcohol types of solvents such as IPA must be allowed to dry completely when used in association with Dow Corning® 790 Silicone Building Sealant. Alcohol by products may inhibit the curing characteristics of Dow Corning® 790 silicone technology. To abrade and dust the edge or the use of Xylene as a solvent are preferred surface preparation techniques when using Dow Corning® 790.

Application recommendations are based on Dow Corning laboratory testing, evaluation and technical specifications.

It is recommended that regular jobsite adhesion testing be performed throughout the project to confirm that good adhesion is obtained consistently on actual job site substrates. Information and literature on field adhesion testing and Dow Corning application procedures may be obtained by contacting your Dow Corning distributor or customer service representative.

For further information regarding these test results, please contact your Dow Corning Construction Field Specialist, Wilbert Williams, on 630-872-8173 at Schaumburg, Illinois UNITED STATES E-mail: wilbert.williams@dowcorning.com



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Segments protrude out from the sides and some are longer than others which prevents binding, increases the cutting speed and provides a smooth cut.

For more information or to talk to a sales specialist, please call (800) 328-7094

Qty	Item #	Description	
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PRODUCT DATA

IDENTIFICATION—PRODUCT AND COMPANY

Chemical Name: Quartzite
Trade Names: Crushed Stone, Ballast, Decorative Stone, Architectural Stone
Synonyms: Aggregate, Manufactured Sand, Industrial Stone

Chemical Formula: N/A
Molecular Weight: N/A
DOT Identification No: None

Company Name: L. G. Everist, Inc./Jasper Stone Co.
Address: PO Box 5829
300 S Phillips Ave, Suite 200
Sioux Falls, SD 57117-5829

Telephone: (605) 334-5000
Fax: (605) 334-3656

PRODUCT AND COMPONENT DATA

<u>Component(s)</u>	<u>Chemical Name</u>	<u>CAS Registry No.</u>	<u>% (Approx)</u>	<u>Exposure Limits</u>
Quartzite*		None	100	See Product Handling

*Composition varies naturally – typically contains quartz (Silicon Dioxide SiO₂), also known as crystalline silica

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PHYSICAL DATA

Appearance & Odor: Angular particles, pink, gray, white, black colored, ranging in size from sand, to pebbles, to boulders. No odor.
Specific Gravity: 2.60-2.81
Boiling Point (At 1 Atm.): N/A
Vapor Density in Air (Air = 1): N/A
Vapor Pressure (mmHg @ 20° C): N/A
% Volatile, By Volume (@ 100° F): 0%
Evaporation Rate (at 1 Atm. & 25° C; n-butyl acetate = 1): 0
Solubility in Water: Negligible

REACTIVITY DATA

Stability: Stable
Conditions to Avoid: Avoid contact with incompatible materials (see below)
Incompatibility (Materials to Avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.
Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling.
Hazardous Polymerization: Not known to polymerize.

FIRE AND EXPLOSION DATA

Flashpoint (Method Used): Not flammable
Flammable (Limits in Air): Not flammable
Extinguishing Agents: None required

Unusual Fire & Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see Section 4 of this MSDS).



PRODUCT HANDLING

TOXICITY AND FIRST AID

Exposure Limits: When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the work place.

Unless stated otherwise, limits are expressed as eight-hour time-weighted averages (TWA). OSHA PEL's for cristobalite and trydimite (other forms of crystalline silica) are equal to one-half of the PEL for quartz (29 CFR 1910.1000, Table Z-3).

Abbreviations: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); mg/m^3 = milligrams of substance per cubic meter of air.

Respirable Crystalline Silica (SiO_2 /Quartz): 2006 ACGIH TLV = $0.025\text{mg}/\text{m}^3$; MSHA & OSHA PEL = $10\text{mg}/\text{m}^3 \div (\% \text{SiO}_2 + 2)$, for respirable dust containing crystalline silica.

Silica, Total Dust: 1973 ACGIH TLV and MSHA PEL = $30\text{mg}/\text{m}^3 \div (\% \text{SiO}_2 + 3)$; OSHA PEL = $30\text{mg}/\text{m}^3 \div (\% \text{SiO}_2 + 2)$.

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated by Exposure:

Inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure:

Inhalation Skin Ingestion

ACUTE TOXICITY:

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion.

Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of quartzite for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

Chronic Toxicity:

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include (but are not limited to) the following: shortness of breath, difficulty breathing with or without exertion, coughing, diminished work capacity, diminished chest expansion, reduction of lung volume, right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.



PRODUCT HANDLING

Chronic Toxicity cont...:

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

PERSONAL PROTECTION CONTROLS

Respiratory Protection (MSHA): For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of $0.1\text{mg}/\text{m}^3$, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of $0.5\text{mg}/\text{m}^3$, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of $5\text{mg}/\text{m}^3$, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Respiratory Protection (OSHA): Engineering controls should be implemented to reduce dust and potential exposure. If engineering controls are not sufficient to reduce exposures below recommended or regulatory limits, NIOSH-approved respirators should be used to control exposure. Respirator use by employees requires a compliance program including fit testing, medical evaluation, training, and more, in accordance with 29 CFR 1910.134.

Up to $0.25\text{ mg}/\text{m}^3$:

(APF = 10) Any particulate respirator equipped with a N95, R95, or P95 filter (including N95, R95, and P95 filtering face pieces) except quarter-mask respirators.

Up to $0.625\text{ mg}/\text{m}^3$:

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter.

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode.

Up to $1.25\text{ mg}/\text{m}^3$:

(APF = 50) Any air-purifying, full-face piece respirator with an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting face piece and a high-efficiency particulate filter.

Up to $25\text{ mg}/\text{m}^3$:

(APF = 1,000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any supplied-contained breathing apparatus that has a full face piece and is operated in a pressure demand or other positive-pressure mode.

(APF = 10,000) Any supplied-air respirator that has a full face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Ventilation: Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection: See "Hygiene" section below.

Eye Protection: Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene: Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures: Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.



PRODUCT HANDLING

STORAGE AND HANDLING PRECAUTIONS

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. This product is not intended for use as an abrasive blasting medium or for foundry applications, and should not be used for these purposes. Do not store near food and beverages or smoking materials. The personal protection and controls identified in this guide should be used as appropriate.

TRANSPORTATION

DOT Hazard Classification: None

Placard Requirement: None

Label Requirement: Label as required by OSHA Hazard Communication Standard [29 CFR 1910.1200 (f)] and applicable state and local laws and regulations.

For Further Information Contact: See Identification – Product and Company section.

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