# MATERIAL SAFETY DATA SHEET

Effective Date: June 20, 2006

Pental Granite & Marble

**EMERGENCY TELEPHONE NO.: 1-800-222-1222**
or **Dial 911** American Poison Control Center

713 S Fidalgo Street
Seattle, WA 98108
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## SECTION 1 -- PRODUCT IDENTIFICATION

| | | |
|---|---|---|
| Material Name: **MARBLE, ONYX, LIMESTONE, & TRAVERTINE** | NOT A CONTROLLED PRODUCT | |
| Chemical Family<br>**Inorganic Compound** | Chemical Formula<br>**Calcium Carbonate Mixture** | Molecular Weight<br>**Not Applicable** |
| Material Use<br>**Aggregates** | DOT Identification No.<br>**None** | |
| Trade Name and Synonyms<br>**Calcium carbonate, calcite, calcium salt, agricultural limestone, aragonite, aggregate, aglime, Barne lime, coverstone, crushed stone, dolomite, flexible base, fluxing agent, Franklin limestone, lithographic stone, manufactured sand, mineral filler, screenings, Tums®.** | | |

## SECTION 2 – COMPOSITION AND INFORMATION ON INGREDIENTS

| COMPONENTS CHEMICAL NAME | CAS REGISTRY NO. | % by WEIGHT (approximate) | MSHA/OSHA PEL | ACGIH TLV-TWA |
|---|---|---|---|---|
| Calcium Carbonate, $CaCO_3$ | 471-34-1 | 40-100 | (T) 15 $mg/m^3$<br>(R) 5 $mg/m^3$ | #10 $mg/m^3$ |
| Calcium Oxide, CaO | 1305-78-8 | 0-43 | 5 $mg/m^3$ | 2 $mg/m^3$ |
| Silicon Dioxide*, $SiO_2$ | 14808-60-7 | 0-10 | (R) 10 $mg/m^3$ / (% $SiO_2$ + 2) § | (R) 0.05 $mg/m^3$ |
| Magnesium Oxide, MgO | 1309-48-4 | 0-8 | 15 $mg/m^3$ | 10 $mg/m^3$ |
| Aluminum Oxide, $Al_2O_3$ | 1344-28-1 | <1 | (T) 15 $mg/m^3$<br>(R) 5 $mg/m^3$ | #10 $mg/m^3$ |
| Ferric Oxide, $Fe_2O_3$ | 1309-37-1 | <1 | 10 $mg/m^3$ | 5 $mg/m^3$ |
| Potassium Oxide, $K_2O$ | 12136-45-7 | <1 | -- | -- |
| Sodium Oxide, $Na_2O$ | 1313-59-3 | <1 | -- | 2 $mg/m^3$ as NaOH |

*: The composition of $SiO_2$ may be up to 100% crystalline silica. (R): Respirable (T): Total §: Crystalline silica is normally measured as respirable dust. The OSHA standard also presents a formula for calculation of the PEL based on total dust: 30 $mg/m^3$ / (% $SiO_2$ + 2). #: Particulate matter containing no asbestos and <1% crystalline silica. OSHA LISTS THESE AS CATEGORY "B" STONES (CONTAINING LESS THAN 1% CRYSTALLINE SILICA), CONSIDRED TO BE A NUISANCE PARTICULATE FROM DUST THAT CAN ACCUMULATE IN THE LUNGS. AVOID DUST PRODUCTION BY CUTTING UNDER WATER, AND USE PROTECTIVE BREATHING APPARATUS AND EYE PROTECTION, AS OUTLINED IN SECTION 8.

## SECTION 3 – PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---|
| Appearance and Odor<br>**Angular gray, white, and tan particles ranging in size from powder to boulders. Odorless.** | Specific Gravity<br>**2.3 – 2.75** |
| Boiling Point<br>**Not applicable** | Vapor Density in Air (Air = 1)<br>**Not applicable** |
| Vapor Pressure<br>**Not applicable** | % Volatile, by Volume<br>**0%** |
| Evaporation Rate<br>**0%** | Solubility in Water<br>**Negligible** |

## SECTION 4 – STABILITY AND REACTIVITY DATA

| | |
|---|---|
| Stability<br>**Stable** | Hazardous Polymerization<br>**Not known to polymerize** |

Conditions to Avoid

**Avoid contact with incompatible materials (see below) and exposure to crystalline silica (quartz) dust particles, usually generated while cutting, crushing, and/or sawing.**

Incompatibility (material to avoid)

**Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetra fluoride.**

Hazardous Decomposition Products

**Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica-containing respirable dust particles may release from handling or cutting.**

## SECTION 5 – HAZARDS AND TOXICITY

Exposure Limits

**Below is a definition of exposure limits in the workplace, that is especially important when contact with this product and other chemicals is concurrent.**

**Unless specified otherwise, limits are eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.**

Inhalable Particulate Limits

**2001 ACGIH TLV® = 10 mg/m$^3$ (inhalable /total particulate, not otherwise specified)**

**2001 ACGIH TLV® = 3 mg/m$^3$ (respirable particulate, not otherwise specified)**

**OSHA PEL = 15 mg/m$^3$ (total particulate, not otherwise regulated)**

**OSHA PEL = 5 mg/m$^3$ (respirable particulate, not otherwise regulated).**

Respirable Limit, Crystalline Silica ($SiO_2$ or Quartz)

**ACGIH TLV® = 0.05 mg/m$^3$; MSHA and OSHA PEL = 10 mg/m$^3$ (%$SiO_2$ + 2), for respirable dust containing crystalline silica.**

Total Dust Limits, Respirable and Nonrespirable

**1973 ACGIH TLV® = 30 mg/m³ ÷ (% quartz + 3).**
**MSHA PEL = 10 mg/m³ for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet. [Appendix E includes: alundum ($Al_2O_3$); calcium carbonate; cellulose (paper fiber); Portland cement; corundum ($Al_2O_3$); emery; glass {fibrous (< 5-7 *µm* in diameter) or dust}; glycerin mist; graphite (synthetic); gypsum; vegetable oil mists (except castor, cashew nut, or similar irritant oils); kaolin; limestone; magnesite; marble; pentacrythritol; plaster of Paris; rouge; silicon carbide; starch; sucrose; tin oxide; and titanium dioxide].**

| Route of Entry | | |
|---|---|---|
| ☑ Skin Contact | ☑ Eye Contact | ☑ **Acute Inhalation** |
| ☐ Skin Absorption | ☑ Ingestion | ☑ **Chronic Inhalation** |

Effects of Acute Exposure to Product

| | |
|---|---|
| Skin | **Direct contact may cause irritation by mechanical abrasion. Some components of material may cause mild corrosive effects to skin and mucous membranes. Skin absorption usually is not a significant route of exposure.** |
| Eyes | **Direct contact may cause eye irritation by mechanical abrasion with discomfort or pain, local redness, and swelling of the conjunctiva may occur.** |
| Inhalation | **If inhaled in the form of dust, it may cause nose, throat, and respiratory tract irritation by mechanical abrasion or corrosive action. Exposures in <u>excess</u> of appropriate exposure limits may cause coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur.** |
| Ingestion | **Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastro-intestinal irritation and/or blockage.** |

**Use of marble, limestone, onyx, or travertine for construction purposes should not cause acute toxic effects. However, inhaling respirable dust may aggravate existing respiratory system disease(s) and/or dysfunctions. Exposure to dust may aggravate existing skin and or eye conditions.**

Effects of Chronic Exposure to Limestone Dust

**Quartz is a natural constituent of the Earth's crust and is not chemically combined with any other substance. Limestone, quartz monzonite, and granodiorite contain 70% to 77% silica. Exposure to silica-containing dust at any time poses a potential health hazard. Repeated overexposure to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods of six months or more have caused acute silicosis. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms can appear at any time, even years after exposure has ceased. Symptoms include (but are not limited to): shortness of breath, diminished work capacity, cough, fever, right heart enlargement and/or failure, weight loss, and chest pain. Excessive inhalation of dust may result in respiratory disease, including silicosis, pneumoconiosis, and pulmonary fibrosis. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. 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.**

| Irritancy of Product | Sensitization to Product | Synergistic Materials |
|---|---|---|
| **Eyes** | **None** | **None reported** |

## SECTION 6 – FIRST AID MEASURES

Eyes

**Immediately rinse contaminated eye(s) with gently running lukewarm water (saline solution is preferred) for at least 15 minutes, while holding the eyelid(s) open. In the case of an embedded particle in the eye, or if irritation occurs, consult a physician. Beyond flushing, do not attempt to remove material from the eye(s).**

Skin

**Carefully and gently, brush the contaminated body surfaces in order to remove all traces of stone dust. Use a brush, cloth, or gloves. Remove all contaminated clothing. Wash work clothes after each use. Wash dust-exposed skin with soap and water before eating or drinking. Contact a physician if irritation persists or later develops.**

Inhalation

**Move source of dust away from person, or move victim to source of fresh air. Dust in throat and nasal passages should clear spontaneously. Obtain medical attention immediately. If victim does not breath, give artificial respiration. Contact a physician immediately.**

Ingestion

**If victim is conscious, wash out mouth with water. Have conscious person drink several glasses of water. Induce vomiting. Contact a physician immediately. Never give anything by mouth to an unconscious or convulsing person.**

General Advice

**Consult a physician for all exposures except minor instances of inhalation.**

## SECTION 7 – REGULATORY INFORMATION

☐ Carcinogenicity ☐ Reproductive Effects ☐ Teratogenicity ☐ Mutagenicity

**Limestone is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of Limestone, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.**

CALIFORNIA PROPOSITION 65: WARNING (Safe Drinking Water and Toxic Enforcement Act of 1986)

**Component Limestone does not appear on the above regulatory listing. However, crystalline silica is a component of this product. California regulates crystalline silica (airborne particles of respirable size) under the state of California Safe Drinking Water and Toxic Enforcement Act of 1986 as a cause of cancer.**

CWA 311 – Clean Water Act List of Hazardous Substances

**Limestone does not appear on the Clean Water Act (CWA) list of hazardous substances.**

Superfund Amendments and Reauthorization Act of 1986 (SARA Title III) / The Emergency Planning and "Community Right-to-Know" Act (EPCRA) / Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

**Component Limestone has been reviewed against the following regulatory listings:**

**Section 302 – Emergency Planning Notification. Extremely Hazardous Substances (EHS) List and Threshold Planning Quantity (TPQ). (40 CFR, Part 355, Section 30): Not listed.**

**Section 304 – Emergency Release Notification. Extremely Hazardous Substances (EHS) and Reportable Quantity (RQ) List. (40 CFR, Part 355, Section 40): Not listed.**

**Section 311/312 – Hazard Categories (40 CFR, Part 370): This product is regulated under CFR 1910.1200 (OSHA Hazard Communication).**

**Section 313 – Toxics Release Inventory (TRI). Toxic Chemical List (40 CFR, Part 372): Not listed.**

Transportation – Hazardous Materials Regulations (USA) & Transportation of Dangerous Goods (TDG) Regulations (Can).

**Limestone does not appear on the above regulatory listings.**

Toxic Substances Control Act (TSCA)

**All naturally occurring components of this product are automatically included in the USEPA TSCA Inventory List per 40 CFR 710.4 (b). Limestone is exempt from reporting under the inventory update rule.**

Canadian Environmental Protection Act (CEPA)

**Quartz, a component of this product, appears on the Domestic Substances List (DSL).**

ANSI/NSF 60 – Drinking Water Treatment Additives.

**Not applicable.**

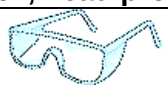
FDA – U.S. Food and Drug Administration, Department of Health and Human Services

**Not applicable.**

## SECTION 8 – PREVENTATIVE MEASURES, PERSONAL PROTECTION, AND CONTROLS

Personal Protective Equipment (PPE) 

**Wear clean, dry gloves, full-length pants over boots, long sleeved shirt buttoned at the neck, head protection, and approved eye protection selected for the working conditions.**

Eyes 

**Wear safety glasses with side shields as minimum protection. Wear dust goggles when excessively (visible) dusty conditions are present or anticipated.**

Skin

**Clothing, boots, and gloves that fully covers all skin provides best protection.**

Respiratory Protection 

**Wear a NIOSH approved dust respirator for respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.1 mg/m$^3$.**

**Wear a NIOSH approved HEPA filter respirator for respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of 0.5 mg/m$^3$.**

**Wear a NIOSH approved positive pressure, full face respirator or equivalent if respirable quartz levels exceed or are likely to exceed an 8-hr TWA of 5 mg/m$^3$.**

**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.**

Hygiene

**Wash work clothes after use and dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Avoid breathing dust, skin, and eye contact.**

Engineering Controls

**Ventilation: Use local exhaust, general ventilation, or natural ventilation adequate to maintain exposures below appropriate exposure limits.**

**Monitor respirable dust and quartz levels 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.**

## SECTION 9 – STORAGE AND HANDLING PRECAUTIONS

Protection

**Respirable crystalline silica-containing dust usually appears during processing, cutting, drilling, routing, storage, and removal. Do not breathe dust. Always wear protection from breathing dust while processing. Use the personal protection and controls identified in Section 8 of this MSDS as appropriate. Avoid contact with skin and eyes.**

Storage

**Do not store near food and beverages or smoking materials. Shelf life is unlimited.**

Handling

**This product is not an abrasive blasting medium or for foundry applications. Do not stand on stacked tiles, as they may be unstable. Use appropriate equipment for handling large pieces: forklift, jacks, etc. and follow all safety rules. Store tiles using appropriately strong racks and crates designed to handle large loads. Store slabs on edge in racks.**

## SECTION 10 – SPILL OR LEAK CLEANUP AND WASTE DISPOSAL

Material Release or Spill

**Spilled material where dust occurs, may overexpose cleanup personnel to respirable crystalline silica-containing dust.**
**Use the personal protection and controls identified in Section 8 of this MSDS as appropriate.**
**Wetting of spilled material and/or use of respiratory protective equipment may be necessary.**
**Spilled material should not be dry swept. Use water or a vacuum instead.**
**Prevent spilled material from inadvertently entering streams, drains, or sewers.**
**Train all personnel on handling and safety rules for working with limestone, fork lifts, sampling, etc. as needed.**

Waste Disposal

**Collect and reuse clean material.**
**Dispose of waste materials in accordance with applicable federal, state, provincial, and local environmental laws and regulations.**

## SECTION 11 – FIRE AND EXPLOSION HAZARD DATA

Flammable

Yes ☐ **No** ☑

Extinguishing Media

**Limestone does not burn. Use extinguishing media appropriate to surrounding fire conditions.**

Special Fire Fighting Procedures

**Limestone is generally non-flammable, but ignites on contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride. These substances may cause fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetra fluoride. Wear adequate personal protection to prevent contact with material or its combustion products. Firefighters should use self-contained NIOSH approved breathing apparatus with full face piece to protect against the products of combustion.**

| Flash point (°C) and Method | Upper flammable limit | Lower flammable limit |
|---|---|---|
| **Not applicable** | **Not applicable** | **Not applicable** |
| Auto Ignition Temperature (°C) | TDG Flammability Classification | Hazardous Combustion Products |
| **Not applicable** | **Not applicable** | **None** |

Dangerous Combustion Products **None**

EXPLOSION DATA

| Sensitivity to Chemical Impact | Rate of Burning | Explosive Power | Sensitivity to Static Discharge |
|---|---|---|---|
| **Not applicable** | **Not applicable** | **Not applicable** | **Not applicable** |

## SECTION 12 – TRANSPORT INFORMATION

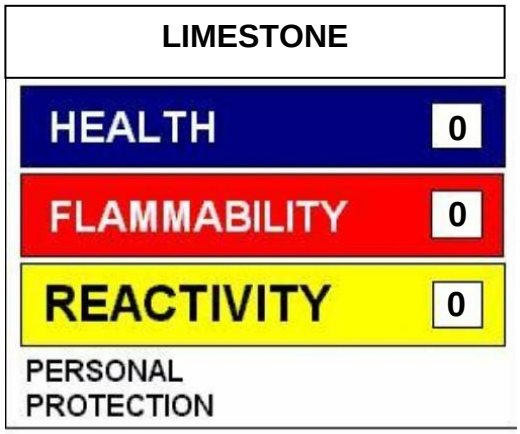
Dot Hazard Classification – 49 CFR 172.101
**Non-Regulated by D.O.T.**

Placard Required
**None**

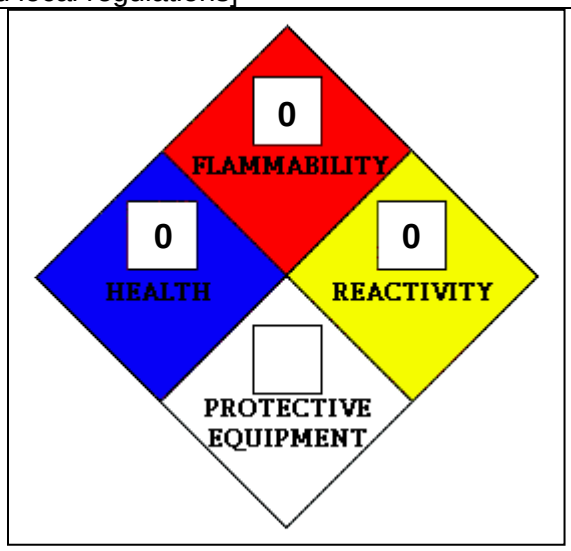
Label Required
**Label as required by the OSHA Hazard Communication standard {29 CFR 1910.1200 (f)}, and applicable state and local regulations.**

RQ (Reportable Quantity) – 49 CFR 172.101
**Not applicable**

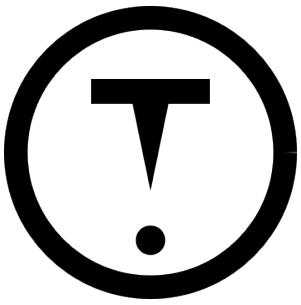
MATERIAL IDENTIFICATION SYSTEMS – LABELING
[May be required by the OSHA Hazard Communication standard {29 CFR 1910.1200 (f)}, and applicable state and local regulations]




Hazardous Materials Identification System (U.S.)




National Fire Protection Association (U.S.)
Where:
0 = Least 1 = Slight 2 = Moderate
3 = High 4 = Extreme



**D-2A**
Workplace Hazardous Materials Information System (Canada)
Classification D2A Materials causing other toxic effects

## SECTION 13 – GLOSSARY

Agencies and Regulations

**ACGIH: American Conference of Government Industrial Hygienists**
**CFR: US Code of Federal Regulations**
**DOT: US Department of Transportation**
**DSL: Domestic Substances List**
**IARC: International Agency for Research on Cancer**
**NIOSH: National Institute for Occupational Safety and Health**
**NTP: National Toxicology Program**
**OSHA: Occupational Safety and Health Administration, US Department of Labor**
**SARA: Title III of the Superfund Amendments and Reauthorization Act, 1986**

Abbreviations and Definitions

**IDLH: Immediately Dangerous to Life and Health**
**$mg/m^3$ = milligrams of substance per cubic meter of air.**
**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)**
**TLV® = Threshold Limit Value of the American Conference of Governmental Industrial Hygienists (ACGIH)**
**TWA = Time-Weighted Average**
**Inhalable = All dust capable of entering the human respiratory tract.**
**Respirable dust = airborne material which is capable of penetrating to the gas-exchange region of the lungs.**

Sources Used

**NFPA, TDG, CSST, RSST, (LSRO-FASEB), Hazardous Products Act, Environment Canada, Enviroguide, OSHA, ACGIH, IARC, NIOSH, CFR, NTP, HSDB, EPA SRS, MSHA, Geology of the nonmatallics, Health Canada, APAC Inc MSDS, Graymont (QC) Inc MSDS, Martin Marietta Materials MSDS, Marble Institute of America Technical Bulletin "Preparing a Generic MSDS for Natural Stone."**

## SECTION 14 – PREPARATION OF THIS DOCUMENT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Date of Preparation

**June 20, 2006**

Notice

**Pental Granite & Marble believes the information contained herein is accurate. The suggested precautions and recommendations come from recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance, as one cannot anticipate all use situations. However, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules, insurance requirements, or safety practices. In addition, one must not use product in a manner that could cause harm.**

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.