

MATERIAL SAFETY DATA SHEET

Effective Date: June 26, 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: STAINLESS STEEL TILE		NOT A CONTROLLED PRODUCT	
Chemical Family Inorganic Compound	Chemical Formula Mixture	Molecular Weight Not Applicable	
Material Use Stainless Steel Tile, Wall & Floor Tile		DOT Identification No. None	
Trade Name and Synonyms Stainless Steel Tile, Nickel-Iron Alloys,			

SECTION 2 – COMPOSITION AND INFORMATION ON INGREDIENTS

COMPONENTS CHEMICAL NAME	CAS REGISTRY NO.	% by WEIGHT (approximate)	MSHA/OSHA PEL	ACGIH TLV-TWA
Aluminum, Al	7429-90-5	< 2	Not Established	(R) 5.00 mg/m ³ (T) 10.00 mg/m ³
Carbon, C	1333-86-4	< 3	3.50 mg/m ³	3.5 mg/m ³
Chromium, Cr	7440-47-3	10.5 - 30	1.00 mg/m ³	0.50 mg/m ³
Cobalt, Co	7440-48-4	< 1	0.10 mg/m ³	0.10 mg/m ³
Copper, Cu	7440-50-8	0 – 5	(R) 0.10 mg/m ³ (T) 1.00 mg/m ³	(R) 0.20 mg/m ³ (T) 1.00 mg/m ³
Iron, Fe	1309-37-1	45 – 90	10.00 mg/m ³	5.00 mg/m ³
Manganese, Mn	7439-96-5	0 – 15	(R) Not Established (T) 5.00 mg/m ³	(R) 1.00 mg/m ³ (T) 5.00 mg/m ³
Molybdenum, Mo	7439-98-7	0 – 5	15.00 mg/m ³	10.00 mg/m ³
Nickel, Ni	7440-02-0	0 – 40	1.00 mg/m ³	1.00 mg/m ³
Niobium, Nb	7440-03-01	< 1	5.00 mg/m ³	5.00 mg/m ³
Phosphor, P	7723-14-0	< 1	0.10 mg/m ³	0.10 mg/m ³
Silicon, Si	7440-21-3	0 – 5	Not Established	(R) 5.00 mg/m ³
Sulfur, S	7446-09-5	< 2	Not Established	5.00 mg/m ³
Tin, Sn	7440-31-5	< 3	2.00 mg/m ³	2.00 mg/m ³
Titanium, Ti	13463-67-7	< 1	15.00 mg/m ³	5.00 mg/m ³
Tungsten, W	7440-33-7	< 1	Not Established	5.00 mg/m ³
Vanadium, V	1314-62-1	< 2	(R) 0.10 mg/m ³ (T) 0.50 mg/m ³	(R) 0.05 mg/m ³ (T) 0.05 mg/m ³

(R): Respirable (T): Total

TILE, USUALLY MADE BY WRAPPING STAINLESS STEEL AROUND A MAIN BODY OF CERAMIC, IS NOT HARMFUL UNTIL RESPIRABLE DUST APPEARS DURING CUTTING OR WHEN REMOVING TILE. THE MAIN HAZARDS FROM STAINLESS STEEL, BESIDES DUST, IS FROM NICKEL AND CHROMIUM. NICKEL METAL POWDER HAS CAUSED TUMORS AT THE SITE OF INJECTION IN RODENTS. HOWEVER, STUDIES DO NOT SUGGEST A SIGNIFICANT RISK FOR HUMANS FROM NICKEL. NIOSH CONCLUDED THERE IS NO EVIDENCE THAT NICKEL AND ITS INORGANIC COMPOUNDS ARE CARCINOGENIC WHEN INGESTED. HOWEVER, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER IS CLASSIFYING CHROMIUM, NICKEL, AND CHROMIUM-COBALT ALLOYS AS POTENTIAL CANCER CAUSING AGENTS. IN ADDITION, VANADIUM PENTOXIDE CAN RELEASE DUST THAT IRRITATES THE EYES, MUCOUS MEMBRANES, AND RESPIRATORY TRACT AND MAY CAUSE NERVOUS SYSTEM, GASTROINTESTINAL TRACT, LIVER, AND KIDNEY DAMAGE IN LABORATORY ANIMALS.

SECTION 3 – PHYSICAL AND CHEMICAL PROPERTIES	
Appearance and Odor Tiles are brittle, solid, and manufactured in various grey colored shapes, and sizes. Odorless. Surface of tile is stainless steel while the body is often a ceramic material.	Specific Gravity 7.5 – 8.5
Boiling Point, Melting Point Not applicable, 2400 °F – 2800 °F (1370 °C – 1400 °C)	Vapor Density in Air (Air = 1) Not applicable
Vapor Pressure Not applicable	% Volatile, by Volume 0%
Evaporation Rate 0%	Solubility in Water Insoluble

SECTION 4 – STABILITY AND REACTIVITY DATA	
Stability Stable. Oxidizes at elevated temperature.	Hazardous Polymerization Will not occur
Conditions to Avoid Avoid respirable dust, usually generated while cutting, crushing, sawing, or removing.	
Incompatibility (material to avoid) Avoid contact with strong acids that can produce hydrogen gas and damage and/or discolor the surface of stainless steel.	
Hazardous Decomposition Products These products do not contain asbestos. Under normal conditions these products do not release hazardous materials after installation and are not hazardous waste should disposal be necessary. The main concern would come from inhaling dust or fumes from cutting and from the ceramic body during removal.	

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[®] = 0.05 mg/m³ (inhalable /total particulate, not otherwise specified)
 2001 ACGIH TLV[®] = 0.05 mg/m³ (respirable particulate, not otherwise specified)
 OSHA PEL = 0.10 mg/m³ (total particulate, not otherwise regulated)
 OSHA PEL = 0.05 mg/m³ (respirable particulate, not otherwise regulated).

Respirable Limit, Vanadium

ACGIH TLV[®] = 0.05 mg/m³; MSHA and OSHA PEL = 0.10 mg/m³ for respirable fumes containing Vanadium.

Total Dust Limits, Respirable and Nonrespirable

1973 ACGIH TLV[®] 15 mg/m³
 NIOSH IDEL = 5 mg/m³ for respirable dust.

Route of Entry

Skin Contact

Skin Absorption

Eye Contact

Ingestion

Acute Inhalation

Chronic Inhalation

Effects of Acute Exposure to Product

Skin One should experience no acute effects from exposure to intact tile. Direct contact with broken or cut tile produces a potential for cuts to the hands and exposed body parts by mechanical abrasion. Skin absorption is not a significant route of exposure.

Eyes Acute effects such as eye irritation may occur with high levels of dust exposure during dry cutting or removal of installed tile by mechanical abrasion with discomfort or pain, local redness, and swelling of the conjunctiva. Exposure to a concentration of 0.018 mg/m³ vanadium pentoxide causes eye irritation.

Inhalation If inhaled in the form of dust, it may cause nose, throat, and respiratory tract irritation by mechanical abrasion. Exposures in excess of allowable occupational exposure limits may cause coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, a metallic taste, and flu-like fever may occur. In very rare cases, symptoms of acute silicosis (a nodular pulmonary fibrosis), associated with exposure to respirable crystalline silica, may develop following exposure to extremely dusty environments generated from ceramic tile dust. Signs such as labored breathing and fatigue may indicate silicosis; however, these symptoms can arise from many other causes.

Ingestion Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and/or blockage.

Use of stainless steel/ceramic tile 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 Dust and Fumes

No chronic effects occur with exposure to intact tile. Quartz is a natural constituent of the Earth's crust and does not chemically combine with any other substance. Ceramic tile contains 14% to 18% silica. Exposure to silica-containing dust at any time poses a potential health hazard. Repeated overexposure to very high levels above allowable occupational exposure limits of respirable crystalline silica (quartz, cristobalite, tridymite) for periods of six months or more have caused silicosis (a nodular pulmonary fibrosis), and is associated with pulmonary tuberculosis (TB), bronchitis, emphysema, and other airway diseases. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. 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. These symptoms can arise from many other causes. Excessive inhalation of dust may result in the development of autoimmune disorders, respiratory disease, including silicosis, pneumoconiosis, and pulmonary fibrosis, chronic renal disease, and other adverse health effects. Persons with silicosis have an increased risk of mycobacterial or fungal infections. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Respirable dust containing newly broken silica particles is more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Recent epidemiologic studies demonstrate that workers exposed to elevated silica concentrations have a significant risk of developing chronic silicosis. Exposure to fumes from cutting stainless steel is of concern with Vanadium becoming vanadium pentoxide (V₂O₅). Vanadium Pentoxide melts at 1274 °F. Contact of vanadium pentoxide with chlorine trifluoride, lithium, or peroxyformic acid causes a violent reaction, and the dust is likely to be incompatible with these substances.

Irritancy of Product Eyes	Sensitization to Product None	Synergistic Materials None reported
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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.
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

Ceramics are 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 ceramic tile, 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 come from 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 Ceramic 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
Stainless Steel and Ceramic 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 Stainless Steel and Ceramic 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).

Ceramic tile 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). Ceramic tile 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 the 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/m³.
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/m³.
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/m³.
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 dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use. Avoid breathing dust. Avoid 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 and vanadium pentoxide dust usually appear during processing, cutting, drilling, routing, storage, and removal. Do not breathe dust. Use the personal protection and controls identified in Section 8 of this MSDS as appropriate. Avoid contact with skin and eyes. Always wear protection from breathing dust while processing.

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 with appropriately strong racks and crates designed to handle large loads.

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, vacuuming, and/or use of respiratory protective equipment may be necessary.

Spilled material must 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 stainless steel, ceramics, forklifts, sampling, etc. as needed.

Waste Disposal

Collect and reuse clean material.

Waste materials should be disposed of in a landfill certified to accept such 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

Lump material is not combustible. Use extinguishing media appropriate to surrounding fire conditions. If encountering some metal dust or powders, they may be flammable, use dry chemical to extinguish.

Special Fire Fighting Procedures

Must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes.

Flash point (°C) and Method

Not applicable

Upper flammable limit

Not applicable

Lower flammable limit

Not applicable

Auto Ignition Temperature (°C)

Not applicable

TDG Flammability Classification

Not applicable

Hazardous Combustion Products

None

Dangerous Combustion Products

None

EXPLOSION DATA

Sensitivity to Chemical Impact

Strong acids produce hydrogen gas. Contact of vanadium pentoxide with chlorine trifluoride, lithium, or peroxyformic acid causes a violent reaction.

Rate of Burning
Not applicable

Explosive Power
Not applicable

Sensitivity to Static Discharge
Will conduct electricity

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. Shipping description: Stainless Steel/Ceramic Tiles.

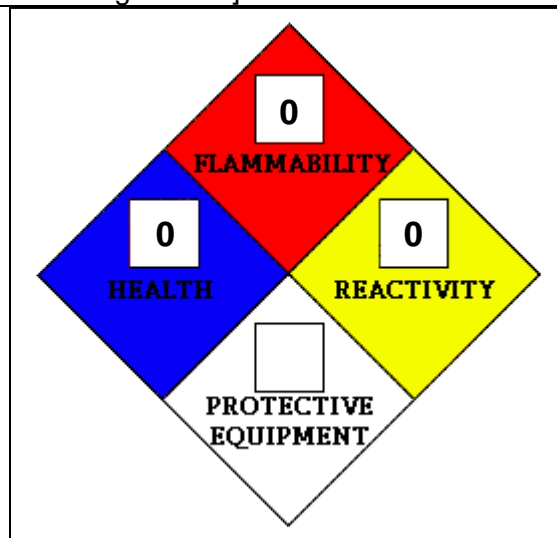
RQ (Reportable Quantity) – 49 CFR 172.101
Not applicable

MATERIAL IDENTIFICATION SYSTEMS – LABELING

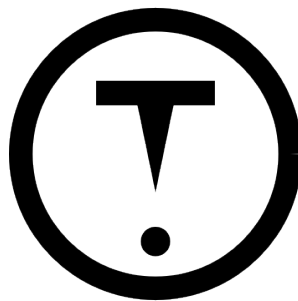
[May be required by the OSHA Hazard Communication standard {29 CFR 1910.1200 (f)}, and applicable state and local regulations]



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

IDLH: Immediately Dangerous to Life and Health
mg/m³ = 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 that 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 nonmetallic, Health Canada, APAC Inc MSDS, American Olean Monterrey Wall Tile MSDS 3-15-05, Marble Institute of America Technical Bulletin "Preparing a Generic MSDS for Natural Stone," Novamet Stainless Steel Flake MSDS, Hohmann & Barnard MSDS.

SECTION 14 – PREPARATION OF THIS DOCUMENT

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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 this product in a manner that could cause harm.

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