

SILICA DUST AND CERAMIC TILES
SAFETY DATA SHEET



Prepared by

MARLIN TILES

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SILICA DUST AND CERAMIC, PORCELAIN AND MOSAIC TILES

QUEENSLAND TILE DISTRIBUTORS Pty Ltd T/A
MARLIN CERAMIC TILES



I 1. COMPANY IDENTIFICATION

Company name: Marlin Ceramic Tiles
ABN: 30 010 778 122
Website: <http://marlintiles.com.au>
Company address: 1B Water Street CAIRNS QLD 4870 AUSTRALIA
Telephone number: 40 314300
Product name: Marlin Ceramic Tiles
Product use: Building Materials – Used as floor / wall coverings and decorations



2. HAZARDS IDENTIFICATION

Silica is the compound formed from the elements silicon (Si) and oxygen (O) and has a molecular form of SiO₂. Silica is the second most common mineral on earth, found in the common form as “sand” and “rock.” The three main forms or ‘polymorphs’ of silica are alpha quartz, cristobalite, and tridymite. The polymer most abundant and most hazardous to human health is alpha quartz and is commonly referred to as Crystalline Silica. Crystalline silica is a common mineral that is found in materials that we see every day in roads, buildings, and sidewalks. It is a common component of stone, granite, slate, sandstone, rock, concrete, brick, mortar, sand, soil, glass and tiles just to name a few. Ceramic tiles contain from 5% to 45% of Crystalline Silica.

The manufacturing process of tiles involves mixing raw materials predominantly clays and other natural occurring minerals with water and trace amounts of organics, pressing into desired shapes, and then drying prior to glazing and decorating. After that the tiles are fired in a high temperature kiln. All finished, fired tiles are odourless, stable, nonflammable, and pose no immediate hazard to health. The fired tiles do not contain asbestos. They do not release hazardous materials after installation and are not considered hazardous.

However, with relation to tiles the health hazards of silica become present from breathing in the dust as they are (dry) cut using saws or grinders. The microscopic dust particles of crystalline silica may become airborne, (and remain in the air for up to 24 hours) through these industrial activities, such as cutting, grinding, sawing or drilling the tiles during installation and the dust is also produced by any other operations, including demolition/removal projects, such as jackhammering etc.

This exposure to ultra fine airborne particles of crystalline silica dust can lead to disabling, sometimes fatal disease called silicosis and other non-malignant respiratory diseases, such as chronic bronchitis, Lung Cancer, kidney disease including nephritis & end-stage renal disease (kidneys), and may be associated with auto-immune disorders & cardiovascular disease.

GHS Classification	Hazard Statements	Pictogram
Crystalline Silica: Category 3 (Respiratory tract irritation) (H335)	May cause respiratory irritation.	
Categories 1A (Carcinogenicity) (H372)	Causes damage to organs (lung/respiratory) through prolonged or repeated exposure (inhalation).	
Carcinogenicity Category 1A (H350)	May cause CANCER (inhalation).	No

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3. COMPOSITION INFORMATION

The tile contains the following major elements:

wt%	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	SiO ₃	K ₂ O	CaO	TiO ₂	Fe ₂ O ₃	L.O.I	Sum
Tile	2.46	0.43	18.51	70.44	0.07	<0.01	4.05	0.19	0.65	1.51	0.31	98.62

The tile contains the following trace elements:

Element	ppm	Element	ppm
V	50	Zr	416
Cr	59	Nb	22
Mn	492	Ba	808
Co	68	La	55
Ni	13	Ce	68
Zn	183	Nd	37
Ga	25	W	732
As	44	Tl	15
Rb	214	Pb	30
Sr	106	Th	22
Y	40	U	12

Below is a list of the common ingredients found in tiles:

Ingredient Name	CAS Registry Name
Quartz/silica sand	14808-60-7
Mullite as a trace crystalline	1302-93-8
Glass (amorphous)	60676-86-0
Feldspar	68476-25-5
Clay	1302-621-1
Zircon	10101-52-7
Kaolin	1332-58-7
Limestone	1317-65-3
Glaze/coating	N/A

4. FIRST AID MEASURES

Description of first aid measures

Eye Contact	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> • Immediately hold eyelids apart and flush the eye continuously with running water • Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids • Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. • Transport to hospital or doctor without delay. • Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> • Immediately flush body and clothes with large amounts of water, using safety shower if available. • Quickly remove all contaminated clothing, including footwear. • Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. • Transport to hospital, or doctor.
Inhalation	<ul style="list-style-type: none"> • If fumes or combustion products are inhaled remove from contaminated area. • Lay patient down. Keep warm and rested. • Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. • Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. • Transport to hospital, or doctor, without delay.
Ingestion	<ul style="list-style-type: none"> • Give a slurry of activated charcoal in water to drink. NEVER GIVE AN UNCONSCIOUS PATIENT WATER TO DRINK. • At least 3 tablespoons in a glass of water should be given. • Although induction of vomiting may be recommended (IN CONSCIOUS PERSONS ONLY), such a first aid measure is dissuaded due to the risk of aspiration of stomach contents. (i) It is better to take the patient to a doctor who can decide on the necessity and method of emptying the stomach. (ii) Special circumstances may however exist; these include non-availability of charcoal and the ready availability of the doctor. <p>NOTE: If vomiting is induced, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</p> <p>NOTE: Wear protective gloves when inducing vomiting.</p> <ul style="list-style-type: none"> • REFER FOR MEDICAL ATTENTION WITHOUT DELAY. • In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition. • If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.

5. FIRE FIGHTING MEASURES

Extinguishing media

- There is no restriction on the type of extinguisher which may be used.
- Use extinguishing media suitable for surrounding area.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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Advice for firefighters

Fire Fighting	<ul style="list-style-type: none">• When silica dust is dispersed in air, firefighters should wear inhalation protection as hazardous substances from the fire may be adsorbed on the silica particles.• When heated to extreme temperatures, (>1700 deg.C) amorphous silica can fuse.• Alert Fire Brigade and tell them location and nature of hazard.• Wear breathing apparatus plus protective gloves in the event of a fire.• Prevent, by any means available, spillage from entering drains or water courses.• Use fire fighting procedures suitable for surrounding area.• DO NOT approach containers suspected to be hot.• Cool fire exposed containers with water spray from a protected location.• If safe to do so, remove containers from path of fire.• Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard	<ul style="list-style-type: none">• Non combustible.• Not considered a significant fire risk, however containers may burn. <p>Decomposes on heating and produces toxic fumes of silicon dioxide (SiO₂) May emit poisonous fumes. May emit corrosive fumes.</p>
HAZCHEM	N/A

6. ACCIDENTAL RELEASE MEASURES

Methods and Material for Containment and Cleaning Up

<p>Minor Spills</p>	<ul style="list-style-type: none"> • Clean up waste regularly and abnormal spills immediately. • Avoid breathing dust and contact with skin and eyes. • Wear protective clothing, gloves, safety glasses and dust respirator. • Use dry clean up procedures and avoid generating dust. • Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use). • Dampen with water to prevent dusting before sweeping. • Place in suitable containers for disposal.
<p>Major Spills</p>	<ul style="list-style-type: none"> • Clear area of personnel and move upwind. • Alert Fire Brigade and tell them location and nature of hazard. • Wear full body protective clothing with breathing apparatus. • Prevent, by all means available, spillage from entering drains or water courses. • Consider evacuation (or protect in place). • No smoking, naked lights or ignition sources. • Increase ventilation. • Stop leak if safe to do so. • Water spray or fog may be used to disperse / absorb vapor. • Contain or absorb spill with sand, earth or vermiculite. • Collect recoverable product into labeled containers for recycling. • Collect solid residues and seal in labeled drums for disposal. • Wash area and prevent runoff into drains. • After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using. • If contamination of drains or waterways occurs, advise emergency services.

7. HANDLING AND STORAGE

- Avoid breathing the dust created by cutting, grinding, drilling, sawing, trimming or other cutting/shaping procedures including demolition work/ jackhammering of tiles.
- Wear Personal Protective Equipment (PPE) see examples below.
- Use 'score and snap' cutters where possible to avoid creating dust with saws and grinders
- Wear Respiratory Protective Equipment (RPE) to minimize exposure to hazard and ensure it fits face correctly (Disposable P1 P2 P3 respirators meet the MPF 10 standard)
- If cutting tiles use an integrated M or H class HEPA-filtered dust collection system on power tool in accordance with AS 60335.2.69 and wear a suitable respirator (e.g. P1/P2/P3 respirator) in accordance with AS1715 and AS1716.
- Ensure tools have on-tool extraction features, Local Exhaust Ventilation (LEV) that fits directly to hand held machines
- Use water suppression whenever possible, especially when LEV is not suitable
- Cut in well ventilated or outdoor environment away from other workers to minimize exposure
- Do not cut in confined spaces
- Do not eat, drink or smoke while handling, cutting, sawing, grinding etc
- Ensure equipment and work areas are cleaned regularly with water
- Always wash hands with soap and water after handling
- Work clothes should be laundered separately. Launder contaminated clothing before re-use
- Use good occupational workplace health and safety practice
- Observe manufactures handling recommendations
- Display warning signs if tasks create silica dust

When stockpiling and handling large quantities of tile products, care should be taken to avoid steep faces on the stockpile, which can cause the tiles to fall without warning. Also keep away from acids or etching products that will cause damage to the tiles if spilt on them.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Control

Hazards relates to dust released by cutting, grinding, drilling, sawing, trimming or other cutting/shaping procedures including demolition work/ jackhammering tiles.

Engineering exposure control recommendations are used to remove a hazards or place a barrier between the worker and the hazard. Some times employees may need to use multiple types of controls to prevent exposure.

Below are recommendation symbols of the Personal Protective Equipment (PPE) which should be worn to help minimalise the risk of silica exposure while cutting, grinding, drilling, sawing, trimming or other cutting/shaping procedures including demolition work/ jackhammering tiles.



Respiratory Personal Protection

Always use Respiratory Personal Protection (RPP) in conjunction to Personal Protective Equipment (PPE) during cutting, grinding, drilling, sawing, trimming or other cutting/shaping procedures including demolition work/ jackhammering tiles as it generates dust that contains chrystalline silica.

Certified respirators are suitable for protecting workers from inhalation of particles when properly selected and fitted correctly as part of a complete respiratory protection program.

(Disposable P1 / P2 / P3 respirators meet the MPF standard)

ALWAYS WEAR RPP AND PPE AND FOLLOW THE WORK HEALTH AND SAFETY QUEENSLAND -

MANAGING RESPIRABLE CHRYSTALLING SILICA DUST EXPOSURE IN CONSTRUCTION AND MANUFACTURING OF CONSTRUCTION ELEMENTS

CODE OF PRACTICE 2022 SEE LINK: https://www.worksafe.qld.gov.au/_data/assets/pdf_file/0025/106486/rcs-construction-manufacturing-construction-elements-cop-2022.pdf

If grinders/saws must be used to cut out corners etc, see Power Tools usage table.

Equipment/Task	Engineering and Work Practice Control Methods
Handheld power saws (any blade diameter), includes quick cut saws, concrete chasing	<ul style="list-style-type: none"> • Use saw equipped with integrated water delivery system that continuously feeds water to the blade and • Operate and maintain tool in accordance with manufacturer's instructions to minimise dust emissions. <p>or;</p> <ul style="list-style-type: none"> • Use saw equipped with commercially available dust collection system: and • Operate and maintain tool in accordance with manufacturer's instructions to minimise dust emissions: and • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and be rated to either M or H-Class in accordance with AS/NZS 60335.2.69.
Handheld power saws for cutting fibre-cement board (with blade diameter of 200mm/8 inches or less)	<ul style="list-style-type: none"> • Use saw equipped with commercially available dust collection system: and • Operate and maintain tool in accordance with manufacturer's instructions to minimise dust emissions: and • Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and be rated to either M or H-Class in accordance with AS/NZS 60335.2.69.

Equipment/Task	Engineering and Work Practice Control Methods
1 – Power tools	
Stationary masonry saws (e.g., tile saws, brick saws)	<ul style="list-style-type: none"> • Use saw equipped with integrated water delivery system that continuously feeds water to the blade; and • Operate and maintain tool in accordance with manufacturer's instructions to minimise dust emissions. <p>or;</p> <p>Use a saw with either:</p> <ul style="list-style-type: none"> • An integrated HEPA-filtered dust collection system which incorporates a filter cleaning mechanism, or • Use a saw with a commercially available dust collection system where the dust collector must provide the air flow recommended by the tool manufacturer, or greater, and be rated to either M or H-Class in accordance with AS/NZS 60335.2.69

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Brittle solid; colour may vary
Odour	Odourless
Melting Point	Not Available
Boiling Point	N/A
Vapour Pressure	N/A
Vapour Density (Air = 1)	N/A
Solubility in Water	Insoluble
Percent Volatile by Volume	N/A

10. STABILITY AND REACTIVITY

Stability	Stable in current form
Conditions to Avoid	Avoid contact with acids (e.g., acetic, hydrofluoric, etc)
Incompatibility (Materials to Avoid)	Avoid contact with acids (e.g., acetic, hydrofluoric, etc)
Hazardous Polymerisation	Will not occur
Hazardous Decomposition Products	None

11. TOXICOLOGICAL INFORMATION

Inhaled	<ul style="list-style-type: none"> • The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. • Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. • Effects on lungs are significantly enhanced in the presence of respirable particles. Overexposure to respirable dust may produce wheezing, coughing and breathing difficulties leading to or symptomatic of impaired respiratory function.
Ingestion	<ul style="list-style-type: none"> • Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastro-intestinal tract
Skin Contact	<ul style="list-style-type: none"> • Generated dust may be discomforting • Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis. • Open cuts, abraded or irritated skin should not be exposed to this material • Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. • Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	<ul style="list-style-type: none"> • Generated dust may be highly discomforting • When applied to the eye(s) of animals, the material produces severe ocular lesions which are present twenty-four hours or more after instillation.
Chronic	<ul style="list-style-type: none"> • On the basis of epidemiological data, the material is regarded as carcinogenic to humans. There is sufficient data to establish a causal association between human exposure to the material and the development of cancer. • Serious damage (clear functional disturbance or morphological change which may have toxicological significance) is likely to be caused by repeated or prolonged exposure. As a rule the material produces, or contains a substance which produces severe lesions. Such damage may • become apparent following direct application in subchronic (90 day) toxicity studies or following sub-acute (28 day) or chronic (two-year) toxicity tests. • Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. • Chronic symptoms produced by crystalline silicas included decreased vital lung capacity and chest infections. Lengthy exposure may cause silicosis a disabling form of pneumoconiosis which may lead to fibrosis, a scarring of the lining of the air sacs in the lung. • The form and severity in which silicosis manifests itself depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are all recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive lung function changes may result from chronic exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silicotuberculosis).

Chronic	<ul style="list-style-type: none">• Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.• Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms may potentially appear years after exposures have ceased. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure.• Respirable dust containing newly broken 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 pieces of silica. There are reports in the literature indicating that crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by• swelling and thickening of fibrous tissue) and other autoimmune and immunity-related disorders. Several studies of persons with silicosis or silica exposure also indicate or suggest increased risk of developing lung cancer, a risk that may increase with the duration of exposure. Many of these studies of silicosis do not account for lung cancer confounders, especially smoking.• Symptoms may appear 8 to 18 months after initial exposure. Smoking increases this risk. Classic silicosis is a chronic disease characterised by the formation of scattered, rounded or stellate silica-containing nodules of scar tissue in the lungs ranging from microscopic to 1.0 cm or more.• The nodules isolate the inhaled silica particles and protect the surrounding normal and functioning tissue from continuing injury. Simple silicosis (in which the nodules are less than 1.0 cm in diameter) is generally asymptomatic but may be slowly progressive even in the absence of continuing exposure. Simple silicosis can develop in complicated silicoses (in which nodules are greater than 1.0 cm in diameter) and can produce disabilities including an associated tuberculous infection (which 50 years ago accounted for 75% of the deaths among silicotic workers).
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12. ECOLOGICAL INFORMATION

No information is available at this time.

13. DISPOSAL CONSIDERATIONS

Waste should be disposed of in an authorised landfill certified to accept such materials in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

D. O. T. Shipping Name	N/A
Hazard Class	Non-regulated (for disposal purposes material is non-hazardous Class III regulated material)
ID Number	N/A
Marking	N/A
Label	None
Placard	None
Hazardous Substance/RQ	N/A
Shipping Description	Ceramic tiles
Packaging References	None

15. OTHER INFORMATION

Global Harmonization Identification System

Health: 3 Fire:4 Reactivity: 4

Hazardous Material Identification System

Health: 1 Fire: 0 Reactivity: 0

Nation Fire Protection Association

Health: 1 Fire: 0 Reactivity: 0

16. VERSION SUMMARY

Version 1: Initial release prepared by Marlin Ceramic Tiles on 1st October 2023.