SAFETY DATA SHEET ACCORDING TO CLASS REQUIREMENTS

SECTION 1 –
IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND THE COMPANY / UNDERTAKING

Product Identifier

Product name	GREENEDGE ADHESIVE MORTAR
Synonyms	Not Available
Other means of identification	Not Available

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Cementitious tile adhesive

Details of the supplier of the safety data sheet

Registered company name	BDC Concrete Sdn Bhd
Address	No. 59-3 (3rd Floor), Jalan Kg. Pandan, Kampung Pandan, 55100 Kuala Lumpur, Malaysia
Telephone	+603 – 9281 2387
Mobile no.	+6012 – 588 0304
Website	www.bdcc.com.my
Email	enquiry@bdcc.com.my

Emergency telephone number

Association / Organisation	Not Available
Emergency telephone no.	+6012 – 588 0304
Other emergency telephone no.	Not Available

SECTION 2 –
HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS Classification [1]	Skin Corrosion/Irritation Category 2, Serious Eye Damage Category 1, Skin Sensitizer Category 1, Carcinogen Category 1B, STOT - SE (Resp. Irr.) Category 3, STOT - RE Category 2
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from ICOP ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI*

Label elements

GHS label elements	Not Available
SIGNAL WORD	Not Applicable

Hazard statement(s)

H315	Causes skin irritation
H318	Causes serious eye damage
H317	May cause an allergic skin reaction
H350	May cause cancer
H335	May cause respiratory irritation
H373	May cause damage to organs

.

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P272	Contaminated work clothing should not be allowed out of the workplace.

Precautionary statement(s) Response

P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P310	Immediately call a POISON CENTER or doctor/physician.
P362	Take off contaminated clothing and wash before reuse.
P363	Wash contaminated clothing before reuse.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Precautionary statement(s) Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See the section below for the composition of Mixtures

Mixtures

CAS No	%[weight]	Name	GHS Classification
65997-15-1	20-40	Portland cement	Skin Corrosion/Irritation Category 2, Serious Eye Damage Category 1, Skin Sensitizer Category 1, Germ Cell Mutagen Category 2, STOT - SE (Resp. Irr.) Category 3, Chronic Aquatic Hazard Category 1; H315, H318, H317, H341, H335, H410[1]
14808-60-7	20-40	Silica crystalline - quartz	STOT - RE Category 2; H373[1]
471-34-1	10-30	Calcium carbonate	Skin Corrosion/Irritation Category 2, Serious Eye Damage Category 1, STOT - SE (Resp. Irr.) Category 3; H315, H318, H335[1]
Legend:	*1. Classified by Chemwatch;* *2. Classification is drawn from ICOP ;*		

	3. Classification is drawn from EC Directive 1272/2008 - Annex VI *4. Classification is drawn from C&L*

SECTION 4 – FIRST-AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ▪ Immediately hold eyelids apart and flush the eye continuously with running water. ▪ Ensure complete eye irrigation by keeping the eyelids apart and away from the 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	If skin contact occurs: ▪ Immediately remove all contaminated clothing, including footwear. ▪ Flush skin and hair with running water (and soap if available). ▪ Seek medical attention in the event of irritation.
Inhalation	If dust is inhaled, remove it from the contaminated area. ▪ Encourage the patient to blow their nose to ensure clear breathing passages. ▪ Ask the patient to rinse the mouth with water but do not drink water. ▪ Seek immediate medical attention.
Ingestion	If swallowed, do **NOT** induce vomiting. ▪ If vomiting occurs, lean the patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. ▪ Observe the patient. ▪ Never give liquid to a person showing signs of being sleepy or with reduced awareness, i.e. becoming unconscious. ▪ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▪ Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
For acute or short-term repeated exposures to highly alkaline materials:

- Respiratory stress is uncommon but present occasionally because of soft tissue oedema.
- Unless endotracheal intubation can be accomplished under direct vision, cricothyroidotomy or tracheotomy may be necessary.
- Oxygen is given as indicated.
- The presence of shock suggests perforation and mandates an intravenous line and fluid administration.
- Damage due to alkaline corrosives occurs by liquefaction necrosis whereby the saponification of fats and solubilisation of proteins allow deep penetration into the tissue.

Alkalis continue to cause damage after exposure.

INGESTION:

- Milk and water are the preferred diluents
  No more than 2 glasses of water should be given to an adult.

- Neutralising agents should never be given since exothermic heat reaction may compound injury.
  (a) Catharsis and emesis are absolutely contra-indicated.
  (b) Activated charcoal does not absorb alkali.
  (c) Gastric lavage should not be used.

Supportive care involves the following:

- Withhold oral feedings initially.
- If endoscopy confirms transmucosal injury start steroids only within the first 48 hours.
- Carefully evaluate the amount of tissue necrosis before assessing the need for surgical intervention.
- Patients should be instructed to seek medical attention whenever they develop difficulty in swallowing (dysphagia).

SKIN AND EYE:

- The injury should be irrigated for 20-30 minutes.
- Eye injuries require saline. [Ellenhorn & Barceloux: Medical Toxicology]

SECTION 5 – FIREFIGHTING MEASURES

Extinguishing media

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

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.

Advice for firefighters

Fire Fighting	▪ When silica dust is dispersed in the 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 the Fire Brigade and tell them the location and nature of the hazard. ▪ Wear breathing apparatus plus protective gloves in the event of a fire. ▪ Prevent, by any means available, spillage from entering drains or watercourses. ▪ Use firefighting procedures suitable for the 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 the path of the fire. ▪ Equipment should be thoroughly decontaminated after use.
Fire/Explosion Hazard	▪ Non-combustible. ▪ Not considered a significant fire risk. However, containers may burn. Decomposes on heating and produces toxic fumes of: silicon dioxide (SiO2).

SECTION 6 –
ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills	▪ Clean up all 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. ▪ Sweep up, shovel up or ▪ Vacuum up (consider explosion-proof machines designed to be grounded during storage and use). ▪ Place spilt material in a clean, dry, sealable, labelled container.
Major Spills	▪ Moderate hazard. ▪ **CAUTION**: Advice personnel in the area. ▪ Alert Emergency Services and tell them the location and nature of the hazard. ▪ Control personal contact by wearing protective clothing. ▪ Prevent, by any means available, spillage from entering drains or watercourses. ▪ Recover products wherever possible. ▪ **IF DRY:** Use dry clean-up procedures and avoid generating dust. Collect residues and place them in sealed plastic bags or other containers for disposal. ▪ **IF WET:** Vacuum/shovel up and place in labelled containers for disposal. ▪ **ALWAYS:** Wash the area with large amounts of water and prevent runoff into drains. ▪ If contamination of drains or waterways occurs, advise Emergency Services.
Note	▪ Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 –
HANDLING AND STORAGE

Precautions for safe handling

Safe handling	▪ Avoid all personal contact, including inhalation. ▪ Wear protective clothing when risk of exposure occurs. ▪ Use in a well-ventilated area. ▪ Prevent concentration in hollows and sumps. ▪ **DO NOT** enter confined spaces until the atmosphere has been checked. ▪ **DO NOT** allow material to contact humans, exposed food or food utensils. ▪ Avoid contact with incompatible materials. ▪ When handling, **DO NOT** eat, drink or smoke. ▪ Keep containers securely sealed when not in use. ▪ Avoid physical damage to containers. ▪ Always wash hands with soap and water after handling. ▪ Work clothes should be laundered separately. Launder contaminated clothing before re-use. ▪ Use good occupational work practice. ▪ Observe the manufacturer's storage and handling recommendations contained within this SDS. ▪ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Other information	▪ Store in original containers. ▪ Keep containers securely sealed. ▪ Store in a cool, dry area protected from environmental extremes. ▪ Store away from incompatible materials and foodstuff containers. ▪ Protect containers against physical damage and check regularly for leaks. ▪ Observe the manufacturer's storage and handling recommendations contained within this SDS. ▪ For major quantities: ▪ Consider storage in bunded areas - ensure storage areas are isolated from community water sources (including stormwater, groundwater, lakes and streams}. ▪ Ensure that accidental discharge to air or water is the subject of a contingency disaster management plan; this may require consultation with local authorities.

Conditions for safe storage, including any incompatibilities

Suitable container	Paper bag.
Storage incompatibility	➢ Avoid strong acids, acid chlorides, acid anhydrides and chloroformates. ➢ Avoid contact with copper, aluminium and their alloys. ➢ **NOTE:** Pressure may develop in containers; open them carefully. Vent periodically.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL) INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Malaysia Permissible Exposure Limits	portland cement	Portland cement	10 mg/m3	Not Available	Not Available	The value is for particulated matter containing no asbestor and <1% crystalline silica.
Malaysia Permissible Exposure Limits	silica crystalline - quartz	Silica Crystalline - Quartz	0.1 mg/m3	Not Available	Not Available	Respirable fraction
Malaysia Permissible Exposure Limits	calcium carbonate	Calcium carbonate	10 mg/m3	Not Available	Not Available	The value is for particulate matter containing no asbestors and <1% crystalline silica.

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
silica crystalline - quartz	Silica, crystalline-quartz; (Silicon dioxide)	0.025 mg/m3	0.025 mg/m3	0.025 mg/m3
calcium carbonate	Limestone; (Calcium carbonate; Dolomite)	27 mg/m3	27 mg/m3	1300 mg/m3
calcium carbonate	Carbonic acid, calcium salt	45 mg/m3	210 mg/m3	1300 mg/m3

Ingredient	Original IDLH	Revised IDLH
portland cement	N.E. mg/m3 / N.E. ppm	5,000 mg/m3
silica crystalline - quartz	N.E. mg/m3 / N.E. ppm	50 mg/m3
calcium carbonate	Not Available	Not Available

MATERIAL DATA

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
The basic types of engineering controls are:
Process controls involve changing how a job activity or process is done to reduce the risk.
Enclosure and/or isolation of the emission source keeps a selected hazard "physically" away from the worker, and ventilation strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.
Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection.
Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.
In some situations, an approved self-contained breathing apparatus (SCBA) may be required.
Provide adequate ventilation in the warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities, which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of contaminant:	Air Speed:
solvent, vapours, degreasing, etc., evaporating from the tank (still in the air).	0.25-0.5 m/s (50-100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low-speed conveyor transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into the zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dust, gas discharge (active generation into the zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
Grinding, abrasive blasting, tumbling, and high-speed wheel-generated dust (released at high initial velocity into the zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range, the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of the distance from the extraction point (in simple cases). Therefore,

the air speed at the extraction point should be adjusted accordingly, depending on the distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Personal protection	

Eye and face protection
Safety glasses with side shields.
Chemical goggles.
Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document describing the wearing of lenses or restrictions on use should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal, and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove the contact lens as soon as practicable. The lens should be removed at the first signs of eye redness or irritation – the lens should be removed in a clean environment only after workers have washed their hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

Skin protection
See Hand protection below

Hands/feet protection
NOTE:
- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and.has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).
- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater then 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.

Some glove polymer types are less affected by movement, and this should be considered when considering gloves for long-term use.
- Contaminated gloves should be replaced.
- Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. A non-perfumed moisturiser is recommended.
- Neoprene rubber gloves

- Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids where abrasive particles are not present.
- polychloroprene.
- nitrile rubber.
- butyl rubber.
- fluoro caoutchouc.
- polyvinyl chloride.

Gloves should be constantly examined for wear and/ or degradation.

Body protection
See Other protection below

Other protection
- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eyewash unit.

Thermal hazards
Not Available

Respiratory protection
Type AX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AX P1 Air-line*	- -	AX PAPR-P1 -
up to 50 x ES	Air-line**	AX P2	AX PAPR-P2
up to 100 x ES	-	AX P3	-
		Air-line*	-
100+ x ES	-	Air-line**	AX PAPR-P3

* - Negative pressure demand ** - Continuous flow
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Light grey powder with no odour; slightly soluble in water.		
Physical state	Divided Solid	**Relative density (Water = 1)**	1.2
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	Not Applicable	**Decomposition temperature**	Not Available
Melting point / Freezing point (°C)	Not Available	**Viscosity (cSt)**	Not Applicable
Initial boiling point And boiling range (°C)	Not Applicable	**Molecular weight (g/mol)**	Not Applicable
Flashpoint (°C)	Not Applicable	**Taste**	Not Available
Evaporation rate	Not Applicable	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Available	**Surface Tension (dyn/cm or mN/m)**	Not Applicable
Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Applicable	**Gas group**	Not Available
Solubility in water (g/L)	Reacts	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Applicable	**VOC g/L**	Not Available

SECTION 10 – STABILITY AND REACTIVITY

Reactivity

See section 7

Chemical stability

- Unstable in the presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Possibility of hazardous reactions

See section 7

Conditions to avoid

See section 7

Incompatible materials

See section 7

Hazardous decomposition products

See section 5

SECTION 11 –
TOXICOLOGICAL INFORMATION

Information on toxicological effects **Inhaled**	Inhalation may result in chrome ulcers or sores of nasal mucosa and lung damage. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals exposed to further risk if handling and using the material results in excessive exposures. The presence of respirable particles significantly enhances lung effects. Overexposure to respirable dust may produce wheezing, coughing, and breathing difficulties, leading to or symptomatic of impaired respiratory function. Acute silicosis occurs under extremely high silica dust exposure, particularly when the dust particles are small. It differs greatly from classical silicosis both clinically and pathologically. The disease is rapidly progressive, with diffuse pulmonary involvement developing only months after the initial exposure and causing deaths within 1 to 2 years. An associated tuberculosis often complicates it. The victims' lungs contain no classical silicotic nodules or microscopic abortive nodules. In contrast, the air spaces are diffusively filled and distended with silica-containing lipoprotein paste in which degenerating and necrotic macrophages are sometimes discernible - the condition is sometimes described as alveolar lipoproteins. The uptake of silica particles by macrophages and lysosomal incorporation is followed by the rupture of the lysosomal membrane and the release of lysosomal enzymes into the cytoplasm of the macrophage. This causes the macrophage to be digested by its own enzymes, and after lysis, the free silica is released to be ingested by other macrophages, thus continuing to initiate collagen formation in the lung tissue, producing the characteristic nodule found in classical (chronic) silicosis.
Ingestion	EC Directives or other classification systems have **NOT** classified the material as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The material may still be damaging to the individual's health following ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill health). Gastrointestinal tract discomfort may produce nausea and vomiting. However, ingesting insignificant quantities in an occupational setting is not considered cause for concern.
	Due to its physical form, the product is not usually a hazard. However, it is a physical irritant to the gastrointestinal tract.

Skin Contact	The material may accentuate any pre-existing dermatitis condition. Handling wet cement can cause dermatitis. Cement, when wet is quite alkaline, and this alkali action on the skin contributes strongly to cement contact dermatitis since it may cause drying and defatting of the skin, which is followed by hardening, cracking, lesions developing, possible infections of lesions and penetration by soluble salts. Skin contact may result in severe irritation, particularly to broken skin. Ulceration known as "chrome ulcers" may develop. Chrome ulcers and skin cancer are significantly related. Open cuts and abraded or irritated skin should not be exposed to this material. The material produces moderate skin irritation; evidence exists, or practical experience predicts, that the material either ➢ produces moderate inflammation of the skin in a substantial number of individuals following direct contact and/or ➢ produces significant but moderate 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 occur after prolonged or repeated exposure, which may result in contact dermatitis (nonallergic). Dermatitis is often characterised by skin redness (erythema) and swelling (oedema), which may progress to blistering (vesiculation) and scaling and thickening of the epidermis. At the microscopic level, there may be intercellular oedema in the spongy layer of the skin (spongiosis) and intracellular oedema in the epidermis.
Eye	When applied to animals' eye(s), the material produces severe ocular lesions, which are present twenty-four hours or more after instillation.

Chronic	Based on epidemiological data, it has been concluded that prolonged inhalation of the material in an occupational setting may produce cancer in humans. Practical experience shows that skin contact with the material can either induce a sensitisation reaction in a substantial number of individuals or produce a positive response in experimental animals. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Cement contact dermatitis (CCD) may occur when contact shows an allergic response, which may progress to sensitisation. Sensitisation is due to soluble chromates (chromate compounds) in some cement and cement products in trace amounts. Soluble chromates readily penetrate intact skin. Cement dermatitis can be characterised by fissures, eczematous rash, dystrophic nails, and dry skin; acute contact with highly alkaline mixtures may cause localised necrosis. Cement eczema may be caused by chromium in feed stocks or contamination from construction materials used in processing the cement. Sensitisation to chromium may be the leading cause of nickel and cobalt sensitivity, and the high alkalinity of cement is an important factor in cement dermatoses [ILO]. Repeated, prolonged, severe inhalation exposure may cause pulmonary oedema and, rarely, pulmonary fibrosis. Workers may also suffer from dust-induced bronchitis, with chronic bronchitis reported in 17% of a group occupationally exposed to high dust levels. Respiratory symptoms and ventilatory function were studied in 591 male Portland cement workers employed in four Taiwanese cement plants with at least 5 years of exposure (1). This group had a significantly lowered mean forced vital capacity (FCV), forced expiratory volume at 1 s (FEV1) and forced expiratory flows after exhalation of 50% and 75% of the vital capacity (FEF50, FEF75). The data suggests that occupational exposure to Portland cement dust may lead to a higher incidence of chronic respiratory symptoms and a reduced ventilatory capacity. Chun-Yuh et al; Journal of Toxicology and Environmental Health 49: 581-588, 1996 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 and scarring of the lung's lining of the air sacs. 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 (where the nodules are less than 1.0 cm in diameter) is generally asymptomatic but may be slowly progressive without continuing exposure. Simple silicosis can develop in complicated silicoses (in which nodules are more significant than 1.0 cm in diameter). It can produce disabilities, including an associated tuberculous infection (which 50 years ago accounted for 75% of the deaths among silicotic workers).

	Crystalline silica deposited in the lungs causes epithelial and macrophage injury and activation. Crystalline silica translocates to the interstitium and the regional lymph nodes and cause the recruitment of inflammatory cells in a dose dependent manner. In humans, a large fraction of crystalline silica persists in the lungs. The question of potential carcinogenicity associated with chronic inhalation of crystalline silica remains equivocal with some studies supporting the proposition and others finding no significant association. The results of recent epidemiological studies suggest that lung cancer risk is elevated only in those patients with overt silicosis. A relatively large number of epidemiological studies have been undertaken and in some, increased risk gradients have been observed in relation to dose surrogates - cumulative exposure, duration of exposure, the presence of radiographically defined silicosis, and peak intensity exposure. Chronic inhalation in rats by single or repeated intratracheal instillation produced a significant increase in the incidences of adenocarcinomas and squamous cell carcinomas of the lung. Lifetime inhalation of crystalline silica (87% alpha-quartz) at 1 mg/m3 (74% respirable) by rats, produced an increase in animals with keratinising cystic squamous cell tumours, adenomas, adenocarcinomas, adenosquamous cell carcinomas, squamous cell carcinoma and nodular bronchiolar alveolar hyperplasia accompanied by extensive subpleural and peribronchiolar fibrosis, increased pulmonary collagen content, focal lipoproteinosis and macrophage infiltration. Thoracic and abdominal malignant lymphomas developed in rats after single intrapleural and intraperitoneal injection of suspensions of several types of quartz. Some studies show excess numbers of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney diseases, and end-stage kidney disease in workers **NOTE**: Some jurisdictions require health surveillance on workers occupationally exposed to silica and crystalline. Such surveillance should emphasise ➢ demography, occupational and medical history and health advice ➢ standardised respiratory function tests such as FEV1, FVC and FEV1/FVC ➢ standardised respiratory function tests such as FV1, FVC and FEV1/FVC ➢ chest X-ray, full-size PA view ➢ records of personal exposure Overexposure to respirable dust may cause coughing, wheezing, difficulty breathing, and impaired lung function. Chronic symptoms may include decreased vital lung capacity and chest infections. In an occupational setting, repeated exposures to high levels of fine-divided dust may produce a condition known as pneumoconiosis, which is the lodgement of any inhaled dust in the lung, irrespective of the effect. This is particularly true when a significant number of particles, less than 0.5 microns (1/50,000 inch), are present. Lung shadows are seen in the X-ray. Symptoms of pneumoconiosis may include a progressive dry cough, shortness of breath on exertion (exertional dyspnea), increased chest expansion, weakness and weight loss. As the disease progresses, the cough produces a stringy mucous, vital capacity decreases further, and shortness of breath becomes more severe. Other signs or symptoms include altered breath sounds, diminished lung capacity, diminished oxygen uptake during exercise, emphysema and pneumothorax (air in the lung cavity) as a rare complication. Removing workers from the possibility of further exposure to dust generally halts the progress of lung abnormalities. Where worker exposure potential is high, periodic examinations with emphasis on lung dysfunctions should be undertaken. Dust inhalation over an extended number of years may produce pneumoconiosis. Pneumoconiosis is the accumulation of dust in the lungs and the tissue's reaction to it. It is further classified as noncollagenous or collagenous. The benign form of noncollagenous pneumoconiosis is identified by minimal stromal reaction. It consists mainly of reticulin fibres, has an intact alveolar architecture, and is potentially reversible.

Cemfix 777	TOXICITY	IRRITATION
	Not Available	Not Available
portland cement	**TOXICITY**	**IRRITATION**
	Not Available	Not Available

silica crystalline - quartz	TOXICITY	IRRITATION
	Not Available	Not Available

calcium carbonate	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg[1]	Eye (rabbit): 0.75 mg/24h - SEVERE
	Oral (rat) LD50: >2000 mg/kg[1]	Skin (rabbit): 500 mg/24h-moderate
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified, data extracted from RTECS - Register of Toxic Effect of Chemical Substances*	

PORTLAND CEMENT	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. Its sensitisation potential does not simply determine the significance of the contact allergen: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with more substantial sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airway dysfunction syndrome (RADS), which can occur following exposure to high levels of highly irritating compounds. Key criteria for diagnosing RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration and duration of exposure to the irritating substance. Industrial bronchitis, conversely, is a disorder that occurs due to exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. No significant acute toxicological data was identified in the literature search.

SILICA CRYSTALLINE - QUARTZ	**WARNING:** For inhalation exposure ONLY: This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS** The International Agency for Research on Cancer (IARC) has classified occupational exposures to **respirable** (<5 um) crystalline silica as being carcinogenic to humans. This classification is based on what IARC considered sufficient evidence from epidemiological studies of humans for the carcinogenicity of inhaled silica in the forms of quartz and cristobalite. Crystalline silica is also known to cause silicosis, a non-cancerous lung disease. Intermittent exposure produces focal fibrosis (pneumoconiosis), cough, dyspnoea, and liver tumours. *Millions of particles per cubic foot (based on impinger samples counted by light-field techniques). **NOTE :** the physical nature of quartz in the product determines whether it is likely to present a chronic health problem. To be a hazard the material must enter the breathing zone as respirable particles.

CALCIUM CARBONATE	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as a result of exposure to high concentrations of irritating substances (often particulate) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. The material may produce severe irritation to the eye, causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. After prolonged or repeated exposure, the material may cause skin irritation and produce contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling of the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. No evidence of carcinogenic properties. There is no evidence of mutagenic or teratogenic effects.

Acute ✔
Skin ✔
Serious Eye Damage/Irritation ✔
Respiratory or Skin sensitisation ✔
Mutagenicity ✔
Carcinogenicity ✔
Reproductivity ⊘
STOT - Single Exposure ✔
STOT - Repeated Exposure ✔
Aspiration ✔

Legend: ✘ *– Data available but does not fill the criteria for classification*
✔ *– Data required to make classification available*
✔ *– Data Not Available to make classification*

SECTION 12 – ECOLOGICAL INFORMATION

Toxicity

Ingredient	Endpoint	Test Duration (hr)	Species	Value	Source
calcium carbonate	LC50	96	Fish	>56000mg/L	4
calcium carbonate	EC50	72	Algae or other aquatic plants	>14mg/L	2
calcium carbonate	NOEC	72	Algae or other aquatic plants	14mg/L	2
Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration*				

	Data 8. Vendor Data

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging Disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some places, particular wastes must be tracked. A Hierarchy of Controls seems to be expected - the user should investigate: ▪ Reduction ▪ Reuse ▪ Recycling ▪ Disposal (if all else fails) This material may be recycled if unused or if it has not been contaminated to make it unsuitable for its intended use. Shelf life considerations should also be applied when making decisions of this type. Note that the properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances, the material supplier should be consulted. ▪ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ▪ It may be necessary to collect all wash water for treatment may be necessary before disposal. ▪ In all cases, sewer disposal may be subject to local laws and regulations, and these should be considered first. ▪ Where in doubt, contact the responsible authority. ▪ Recycle wherever possible or consult the manufacturer for recycling options. ▪ Consult the State Land Waste Management Authority for disposal. ▪ Bury residue in an authorised landfill. ▪ Recycle containers, if possible, or dispose of them in an authorised landfill.

SECTION 14 – TRANSPORT INFORMATION

Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

Land transport (UN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

SECTION 15 –
REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific to the substance or mixture

PORTLAND CEMENT(65997-15-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS
Malaysia Permissible Exposure Limits

SILICA CRYSTALLINE - QUARTZ(14808-60-7) IS FOUND ON THE FOLLOWING REGULATORY LISTS
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Malaysia Permissible Exposure Limits

CALCIUM CARBONATE(471-34-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS
Malaysia Permissible Exposure Limits

This safety data sheet complies with the Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013 (CLASS).

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (portland cement; silica crystalline - quartz)
China - IECSC	Y
Europe - EINEC / NLP / ELINCS	Y
Japan - ENCS	N (Portland Cement)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	N (Portland Cement)
USA - TSCA	Y
Legend:	*Y = All ingredients are on the inventory.* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 –
OTHER INFORMATION

Other information

Ingredients with multiple case numbers

Name	CAS No
silica crystalline - quartz	122304-48-7, 122304-49-8, 12425-26-2, 1317-79-9, 14808-60-7, 70594-95-5, 87347-84-0
calcium carbonate	1317-65-3, 13397-26-7, 146358-95-4, 15634-14-7, 198352-33-9, 459411-10-0, 471-34-1, 63660-97-9, 72608-12-9, 878759-26-3

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to exposure scenarios. Scale of use, frequency, and current or available engineering controls must be considered.

Definitions and abbreviations

PC - TWA: Permissible Concentration-Time Weighted Average

PC - STEL: Permissible Concentration-Short Term Exposure Limit IARC:

International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit。

IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

END