1. Identification of Substance & Company

Product

Product name	FIRTH MASONRY
Other names	Firth Masonry Block, Firth Paving, Firth Segmental retaining wall, Firth Brick veneer range
Product code	NA
HSNO approval	This product is a manufactured article and does not require HSNO approval. However the following SDS is relevant for fine dust created whilst working with the Masonry. The relevant approval code for masonry dust is: HSR002545
Approval description	Construction Products (Carcinogenic) Group Standard 2020
UN number	Not allocated
Proper Shipping Name	NA
Packaging group	NA
Hazchem code	NA
Uses	Masonry block Paving products Segmental retaining wall products Building veneer products and specialist detail profiles

Company Details

Company	**Firth Industries**	
Address	810 Great South Road Penrose Auckland, 1060 New Zealand	PO Box 14534 Panmure Auckland, 1741 New Zealand
Telephone	+64-9- 583 2121	
Website	www.firth.co.nz	

Emergency Telephone Number: 0800-764 766

2. Hazard Identification

Approval

FIRTH MASONRY is a manufactured article. Dust created when using this product has been approved under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR002545, Construction Products (Carcinogenic) Group Standard 2020), and is classified as follows:

GHS Classes	Hazard Statements
Skin irritation cat 2	H315 - Causes skin irritation.
Eye damage cat 1	H318 - Causes serious eye damage.
Carcinogenicity cat 1	H350 - May cause cancer if inhaled (contains crystalline silica)
STOT RE cat 1	H372 - Causes damage to organs through prolonged or repeated exposure if inhaled. (may cause silicosis and effects to the lungs).

SYMBOLS

DANGER

Other Classifications

No other classification is known to apply.

Precautionary Statements (for the dust created when using these products)

Prevention
P102 - Keep out of reach of children.
P103 - Read label before use.
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/eye protection/face protection*.
P281 - Use personal protective equipment as required.

Response
P101 - If medical advice is needed, have product container or label at hand.
P308+P313 - IF exposed or concerned: Get medical advice/ attention.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P332+P313 - If skin irritation occurs: Get medical advice/ attention.
P362 - Take off contaminated clothing and wash before re-use.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a POISON CENTRE or doctor/physician.

Storage
P405 - Store locked up.

Disposal
P501 - Dispose of contents/container in accordance with local/regional/national/international regulation.

3. Composition / Information on Ingredients

Component	CAS/ Identification	Conc (%)
Cement	65997-15-1	10-70
Aggregates (may include traces of crystalline silica)	mixture	80-90
Sand (may contain traces of silica quartz)	NA	10-60
Metal Oxides	mixture	3-6

May contain one or more of the following ingredients:

Component	CAS/ Identification	Conc (%)
Hexavalent Chromium	1333-82-0	<0.01
Crystalline Silica (contained in cement, sand and aggregates)	14808-60-7	0-5

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.
Note: classifications for ingredients are confirmed through EPA records where available. If unconfirmed, and based on hazardous property information, the classifications are indicated in italics.

4. First Aid

General Information

You should call the National Poisons Centre if you feel that you may have been harmed, burned or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service).
If medical advice is needed, have this SDS, product container or label at hand.
If exposed or concerned: Get medical advice/ attention.

Recommended first aid facilities Ready access to running water is recommended. Accessible eyewash is recommended

Exposure

Swallowed IF SWALLOWED: Do NOT induce vomiting. Rinse mouth. Contact a doctor if you feel unwell.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Apply continuous irrigation with water for at least 15 minutes holding eyelids apart. Immediately call a POISON CENTER or doctor.

Skin contact IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Inhaled IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If patient is unconscious, place in the recovery position (on the side) for transport and contact a doctor. If experiencing respiratory symptoms: Immediately call a POISON CENTER or doctor.

Advice to Doctor

Treat symptomatically. See Section 11 for information on potential long term health effects from exposure to very fine crystalline silica dust.

5. Firefighting Measures

Fire and explosion hazards:	There are no specific risks for fire/explosion for this chemical. It is non-combustible.
Suitable extinguishing substances:	Not applicable.
Unsuitable extinguishing substances:	Unknown.
Products of combustion:	Product does not burn. Masonry dust may form irritating atmosphere. Contaminated water will be strongly alkaline. Product may decompose in a fire and produce toxic or corrosive fumes.
Protective equipment:	Self-contained breathing apparatus. Safety boots, non-flammable overalls, gloves, hat and eye protection.
Hazchem code:	NA

6. Accidental Release Measures

Containment	If greater than 1000kg (dust) is stored, secondary containment is required to prevent harm to the aquatic environment. Emergency plans to manage any potential spills must be in place. Prevent any spillage from spreading or entering soil, waterways or drains.
Emergency procedures	In the event of large spillage (>100kg) of the dry or wetted mixture alert the fire brigade to location and give brief description of hazard. Wear protective equipment to prevent skin, eye and respiratory exposure. Clear area of any unprotected personnel. Contain spill. Prevent by whatever means possible any spillage from entering drains, sewers, or water courses. Do not wash residues down the drain.
Clean-up method	Collect product avoiding any dust formation, and seal in properly labelled containers or drums for disposal. If contamination of crops, sewers or waterways has occurred advise local emergency services.
Disposal	Sweep and collect recoverable material into labelled containers for recycling or salvage. Recycle containers wherever possible. This material may be suitable for approved landfill. Dispose of only in accord with all regulations.
Precautions	The dust may form irritating atmosphere. Contaminated water will be strongly alkaline. Do not allow contaminated water to enter the environment. Wear protective equipment to prevent skin and eye contamination and the inhalation of dust. Work up wind or increase ventilation.

7. Storage & Handling

Storage	Generally product (bricks) are stacked on pallets and stored in a cool dry place. Avoid storage of harmful substances with food. Avoid contact with incompatible substances as listed in Section 10.
Handling	During the manual handling of products please lift carefully - corners are sharp. Minimise dust generation and accummulation. See section 8 with regard to personal protective equipment requirements. Avoid skin and eye contact and inhalation of masonry dust.

8. Exposure Controls / Personal Protective Equipment

Workplace Exposure Standards

A workplace exposure standard (WES) has not been established by WorkSafe NZ for this product. There is a general limit of 3mg/m^3 for respirable particulates and 10mg/m^3 for inhalable particulates when limits have not otherwise been established.

NZ Workplace Exposure Stds	Ingredient	WES-TWA	WES-STEL
	Cement	3mg/m^3 1mg/m^3 (respirable)	no data
	Aggregates	See crystalline silica	no data
	Crystalline Silica (all forms)	0.05mg/m^3 (as respirable dust)	no data

Engineering Controls

In industrial situations, it is expected that employee exposure to hazardous substances will be controlled to a level as far below the WES as practicable by applying the hierarchy of control required by the Health and Safety at Work Act (2015) and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016. Exposure can be reduced by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. If you believe air borne concentrations of mists, dusts or vapours are high, you are advised to modify processes or increase ventilation.

Personal Protective Equipment

General

Personal Protective Equipment (PPE) should not be used as the primary means of exposure protection, except in the event of an accident or emergency situation or where all other means of protection have proven to inadequate.
Clean PPE after use or dispose of as appropriate. Store PPE for re-use in a clean place. Regular training on the correct use of PPE should be provided. In particular the correct fitting and use of respirators and where applicable the cleaning of respirators should be undertaken.

Eyes

Protect eyes with goggles, safety glasses or full face mask. Avoid wearing contact lenses. Select eye protection in accordance with AS/NZS 1337.

Skin

Avoid repeated or prolonged skin contact. Wear overalls, waterproof boots and impervious alkali-resistant gloves (e.g., nitrile, PVC, rubber, neoprene). Tuck overalls inside boots and seal with duct tape to reduce risk of masonry dust entering boots.

Remove protective clothing and wash exposed areas with soap and water prior to eating, drinking or smoking. Take special care to ensure that cuts/abrasions or irritated skin are not exposed to this product.
It is important that skin is also covered when masonry dust is created (e.g., sanding, grinding, crushing or cutting masonry). The dust may also irritate and/or damage the skin.

Respiratory

To prevent irritation a well fitted dust mask should be used (this is not recommended when exposure is close to the WES). A fine particulate half or full face respirator with an effective seal is recommended when airborne concentrations approach the WES (section 8). If sanding, grinding, crushing or cutting masonry, it is possible that the silica dust WES will be exceeded hence a respirator will be required. If during exposure to a concentrated aqueous solution/slurry, dust and mist is likely, a full face respirator with a particulate filter is recommended.

WES Additional Information

Not applicable

9. Physical & Chemical Properties

Appearance	Physically stable pressed, machined form semi dry, no slump concrete brick. Colour may vary from terracotta, grey, brown and blue.
Odour	none
Odour Threshold	no data
pH	not applicable for dry product, >11 for wetted masonry dust.
Freezing/melting point	no data
Boiling Point	no data
Flashpoint	no data
Flammability	no data
Upper & lower flammable limits	no data
Vapour pressure	no data
Vapour density	no data
Specific gravity/density	1600-2300kg/m^3
Solubility	insoluble in hardened state, slightly soluble in wet state to form alkaline solution (pH >11)

Partition coefficient	no data
Auto-ignition temperature	no data
Decomposition temperature	no data
Viscosity	no data
Particle Characteristics	no data

10. Stability & Reactivity

Stability	This product is unlikely to react or decompose under normal storage conditions. This product will not undergo polymerisation reactions.
Conditions to be avoided	Containers should be kept closed in order to avoid contamination.
Incompatible groups	Strong acids.
Substance Specific Incompatibility	Masonry dissolves in hydrofluoric acid producing corrosive silicon tetrafluoride gas. Silicates react with powerful oxidizers such as fluorine, chlorine, trifluorides, and oxygen difluoride.
Hazardous decomposition products	Does not readily decompose. Respirable dust particles may be generated when masonry is sawed, drilled, sanded or grinded.
Hazardous reactions	Will not polymerise

11. Toxicological Information

Summary

IF SWALLOWED: Ingestion of this product may cause gastrointestinal irritation.
IF IN EYES: Contact with masonry dust can cause effects ranging from irritation to serious eye damage/burns and blindness. The pH of the wet masonry dust is >11. Note: the level of irritation/damage is dependent on the quantity of the dust, the pH, and the length of time exposed. E.g., if dust is washed out of the eye immediately, effects will be minor. However, if dust is left in contact with the eye, serious damage/blindness could result.
IF ON SKIN: Dust may cause irritation – particularly in hot conditions or when sweating. Brief exposure to the skin (i.e., washed off immediately) will result in irritation. However, if the masonry dust is left on the skin for an extended time (e.g., if inside boots or absorbed through overalls), burns to the skin are possible. Thickening of the skin and/or rash is also possible.
IF INHALED: Short term (acute) silicosis can occur with one-off exposures to extremely high levels of fine crystalline silica dust. Other short term effects include irritation, choking and difficulty breathing.
CHRONIC EFFECTS: The masonry dust does contain crystalline silica. Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC Group 1). The carcinogenicity of silica is related to long term (e.g., 10 years) inhalation of very fine particulate (e.g., from sand blasting or dry cutting of masonry). Carcinogenicity of silica appears linked to development of silicosis (see systematic below) followed by complications and, eventually lung cancer. In addition to silicosis there is some evidence that exposure to respirable crystalline silica may be linked to scleroderma and an increased risk of kidney disease.

Supporting Data for masonry dust:

Acute	**Oral**	The estimated LD_{50} (oral, rat) for the mixture is > 5,000 mg/kg. Ingestion of this product may cause gastrointestinal irritation.
	Dermal	The estimated LD_{50} (dermal, rat) for the mixture is > 5,000 mg/kg.
	Inhaled	The estimated LC_{50} (inhalation, rat) for the mixture is >5 mg/L (dust mist). Short term (acute) silicosis (see "systemic" below) can also occur with one-off exposures to extremely high levels of fine crystalline silica dust. Other short term effects include irritation, choking and difficulty breathing.
	Eye	Cement, contained in masonry is considered to be an eye corrosive. pH >11, if wetted. Dust may also be irritating to eye (mechanical irritation)
	Skin	Cement contained in masonry is considered a skin irritant.
Chronic	**Sensitisation**	There is evidence that chromium present in some cement mixtures may induce occupational asthma and skin sensitisation (allergic reactions). This mixture contains less than 0.01% hexavalent chromium and hence is not considered sensitising.
	Mutagenicity	No ingredient present at concentrations > 0.1% is considered a mutagen.
	Carcinogenicity	This mixture does contain crystalline silica. Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC Group 1). The mixture triggers carcinogencity cat 1 classification (confirmed carcinogen).
	Reproductive / Developmental	No data for mixture is available. No ingredient present at concentrations > 0.1% is considered a reproductive or developmental toxicant or have any effects on or via lactation.
	Systemic	The mixture is considered to be a target organ toxicant, because of the presence of crystalline silica at greater than 1%. Crystalline silica triggers STOT RE cat 1 classification if it is in the form of a fine respirable dust in an occupational (chronic exposure) setting.
	Aggravation of existing conditions	Persons with existing lung conditions may be at a higher risk of further adverse health effects (as above). Smokers have an increased risk of lung cancer and silicosis.

12. Ecological Data

Summary

Masonry and masonry dusts are considered to be harmful in the environment when in a soluble form. This is primarily due to the high pH of the product. Lime dissolves in water to produce a highly alkaline solution that will burn and kill fish, insects and plants.

Supporting Data

Aquatic	No data for mixture is available. Using EC_{50}'s for ingredients, the estimated EC_{50} for the mixture is between 1 and 100 mg/L. This implies that masonry dust should be considered harmful in the aquatic environment. Water contaminated with this product is alkaline and should not be allowed to enter the environment.
Bioaccumulation	Not applicable
Degradability	Not applicable (predominantly natural products)
Soil	No data available for the mixture. The soil toxicity value for the mixture is estimated to be ≥ 100 mg/kg.
Terrestrial vertebrate	This product is not considered harmful to terrestrial vertebrates. No LC_{50} (diet) data for ingredients are available and the classification is based on the LD_{50} (oral) – see section 11 – oral toxicity.
Terrestrial invertebrate	The mixture is not considered harmful to terrestrial invertebrates.
Biocidal	Not designed as a biocide.

13. Disposal Considerations

Restrictions	There are no product-specific restrictions, however, local council and resource consent conditions may apply, including requirements of trade waste consents.
Disposal method	Disposal of this product must comply with the Hazardous Substances (Disposal) Notice 2017 and the requirements of the Resource Management Act for which approval should be sought from the Regional Authority. The substance must be treated and therefore rendered non-hazardous before discharge to the environment.
Contaminated packaging	Disposal of contaminated packaging must comply with the Hazardous Substances (Disposal) Notice 2017 clause 12. Ensure that the package is rendered incapable of containing any substance and is disposed in a manner that is consistent with the requirements of the substance it contained and the material of the package. If possible reuse or recycle packaging.

14. Transport Information

Land Transport Rule: Dangerous Goods 2005 - NZS 5433:2007
There are no specific restrictions for this product (not a dangerous good).

UN number:	NA	**Proper shipping name:**	NA
Class(es)	NA	**Packing group:**	NA
Precautions:	NA	**Hazchem code:**	NA

IMDG

UN number:	NA	**Proper shipping name:**	Not regulated
Class(es)	NA	**Packing group:**	NA
Precautions:	NA	**EmS**	NA

IATA

UN number:	NA	**Proper shipping name:**	Not regulated
Class(es)	NA	**Packing group:**	NA
Precautions:	NA	**ERG Guide**	NA

15. Regulatory Information

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO). Approval code: HSR002545: Construction Products (Carcinogenic) Group Standard 2020. All ingredients appear on the NZIoC.

Specific Controls

Note: the controls apply to dust of hardened masonry.

SDS	To be available within 10 minutes in workplaces storing any quantity.
Inventory	An inventory of all hazardous substances must be prepared and maintained.
Packaging	All hazardous substances should be appropriately packaged including substances that have been decanted, transferred or manufactured for own use or have been supplied
Labelling	Must comply with the Hazardous Substances (Labelling) Notice 2017.
Emergency plan	Required if > 1000kg is stored.
Certified handler	Not required.
Tracking	Not required.
Bunding & secondary containment	Required if > 1000kg is stored.
Signage	Required if > 1000kg is stored.
Location compliance certificate	Not required.
Flammable zone	Not required.
Fire extinguisher	Not required.
Additional information	Any construction product carrying a Carcinogenicity Category 1 classification due to its respirable silica content may be supplied to, used in or stored in a place, other than a workplace.

Note: The above workplace requirements apply if only this particular substance is present. The complete set of controls for a location will depend on the classification and total quantities of other substances present in that location.

Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health and Safety at Work Act 2015 and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, local Council Rules and Regional Council Plans.

16. Other Information

Abbreviations

Approval Code	For Masonry dust: Approval Construction Products (Toxic [6.7A]) Group Standard 2006, Controls, EPA. www.epa.govt.nz
CAS Number	Unique Chemical Abstracts Service Registry Number
EC_{50}	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
EPA	Environmental Protection Authority (New Zealand)
GHS	Globally Harmonised System of Classification and Labelling of Chemicals, 7th revised edition, 2017, published by the United Nations.
HAZCHEM Code	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
HSNO	Hazardous Substances and New Organisms (Act and Regulations)
IARC	International Agency for Research on Cancer
LEL	Lower Explosive Limit
LD_{50}	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
LC_{50}	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
NZIoC	New Zealand Inventory of Chemicals
STEL	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15 minute period, provided the TWA is not exceeded
STOT RE	System Target Organ Toxicity – Repeated Exposure
STOT SE	System Target Organ Toxicity – Single Exposure
TWA	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
UEL	Upper Explosive Limit

UN Number	United Nations Number
WES	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed during work hours (usually 8 hours, 5 days a week). The WES relates to exposure that has been measured by personal monitoring using procedures that gather air samples in the worker's breathing zone.

References

Data	Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID).
Controls	EPA notices, www.epa.govt.nz, Health and Safety at Work (Hazardous Substances) Regulations 2017, www.legislation.govt.nz
WES	The latest NZ Workplace Exposure Standards, published by WorkSafe NZ and available on their web site – www.worksafe.govt.nz.
Other References:	Ingredients SDS's.

Review

Date	**Reason for Review**
April 2012	NA - new SDS
December 2016	Update, DOL to WorkSafe, HSE to HSAW, formatting, update of section 11
December 2021	5 yearly update, HSNO to GHS, WES update, group standard.

Disclaimer