



## 1. Identification of Substance & Company

### Product

<b>Product name</b>	FIRTH Ready Mix Concrete, dry
<b>Other names</b>	Rib Raft, Steelcrete, Nofines Concrete, Kerb Mix This SDS provides information on wet concrete and on hardened concrete – e.g., concrete dust from sanding, cutting of concrete. For information on wet concrete, refer to SDS for FIRTH Ready Mix Concrete, wet.
<b>Product code</b>	NA
<b>HSNO approval</b>	HSR002545
<b>Approval description</b>	Construction Products (Carcinogenic) Group Standard 2020
<b>UN number</b>	NA
<b>Proper Shipping Name</b>	NA
<b>Packaging group</b>	NA
<b>Hazchem code</b>	NA
<b>Uses</b>	Ready Mix Concrete

### Company Details

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

**Emergency Telephone Number: 0800-764 766**

## 2. Hazard Identification

### Approval

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR002545, Construction Products (Carcinogenic) Group Standard 2020). The substance has been classified as hazardous according to the criteria in the Hazardous Substances (Hazard Classification) Notice 2020., and is classified as follows:

GHS Classes	Hazard Statement
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



### HSNO Classes (valid until April 2021)

HSNO Classes (valid until April 2021)	Hazard Statement
6.3A	H315 - Causes skin irritation.
8.3A	H318 - Causes serious eye damage.
6.7A	H350 - May cause cancer if inhaled (contains crystalline silica)
6.9A	H372 - Causes damage to organs through prolonged or repeated exposure if inhaled. (may cause silicosis and effects to the lungs)
9.1D	H402 - Harmful to aquatic life.



## Precautionary Statements

P101 - If medical advice is needed, have product container or label at hand.  
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.  
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.  
P405 - Store locked up.  
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
Flyash	68131-74-8	0-5
Aggregates (may include crystalline silica)	mixture	10-90
Chemical additives	mixture	0-5

May contain one or more of the following ingredients:

Component	CAS/ Identification	Conc (%)
Metal Oxides	mixture	3-6
Limestone	1317-65-3	0-5
Calcium sulphate hemihydrate	26499-65-0	0-5
Hexavalent Chromium	1333-82-0	<0.01
Crystalline Silica	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



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### Exposure

<b>Swallowed</b>	IF SWALLOWED: Do NOT induce vomiting. Rinse mouth. Contact a doctor if you feel unwell.
<b>Eye contact</b>	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.
<b>Skin contact</b>	IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
<b>Inhaled</b>	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

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

## 6. Accidental Release Measures

<b>Containment</b>	If greater than 1000kg (dust or dry concrete) is stored, secondary containment is required. Emergency plans to manage any potential spills must be in place. Prevent spillage from spreading or entering soil, waterways or drains.
<b>Emergency procedures</b>	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.
<b>Clean-up method</b>	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.
<b>Disposal</b>	Mop up 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.
<b>Precautions</b>	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** Avoid storage of harmful substances with food. Store out of reach of children. Containers should be kept closed in order to minimise contamination. Keep in a cool, dry place. Avoid contact with incompatible substances as listed in Section 10.

**Handling** Keep exposure to a minimum, and minimise the quantities kept in work areas. Minimise dust generation and accumulation. See section 8 with regard to personal protective equipment requirements. Avoid skin and eye contact and inhalation of 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<sup>3</sup> for respirable particulates and 10mg/m<sup>3</sup> for inhalable particulates when limits have not otherwise been established.


NZ Workplace Exposure Stds	Ingredient	WES-TWA	WES-STEL
	Cement	3mg/m <sup>3</sup> 1mg/m <sup>3</sup> (respirable)	no data
	Limestone	10mg/m <sup>3</sup>	no data
	Calcium sulphate hemihydrate	10mg/m <sup>3</sup>	no data
	Chromium oxide	0.05mg/m <sup>3</sup>	no data
	Flyash	See crystalline silica	no data
	Aggregates	See crystalline silica	no data
	Crystalline Silica (all forms)	0.05mg/m <sup>3</sup> (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. Protective gloves are recommended. Nitrile, PVC, Rubber or Neoprene gloves are recommended. Protective gloves or suitably resistant material must comply with AS 2161. Replace frequently. Gloves should be checked for tears or holes before use. Protective clothing must comply with AS 2919, AS3765.1 or AS3765.2. PVC or rubber boots must comply with AS/NZS 2210.2 and selected and maintained in accordance with AS/NS2210.1.

 Tuck overalls inside boots and seal with duct tape to reduce risk of concrete 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 also important to ensure that wet concrete does not become trapped within gloves, boots or clothing – leaving concrete in contact with the skin for extended period of time may cause skin burns.

It is important that skin is also covered when concrete dust is created (e.g., sanding, grinding, crushing or cutting concrete). The dust may also irritate and/or damage the skin.



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### 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 concrete, it is possible that the silica dust WES ( $0.05 \text{ mg/m}^3$ ) will be exceeded hence a respirator will be required. If exposure to the concentrated aqueous solution, dust and mist is likely, a full face respirator with a particulate filter is recommended.

### WES Additional Information

Not applicable

## 9. Physical & Chemical Properties

<b>Appearance</b>	hardened concrete/ concrete dust.
<b>Odour</b>	bland
<b>pH</b>	not applicable for dry concrete, >12 for wet concrete
<b>Vapour pressure</b>	not applicable
<b>Viscosity</b>	no data
<b>Boiling point</b>	not applicable
<b>Volatile materials</b>	no data
<b>Freezing / melting point</b>	no data
<b>Solubility</b>	insoluble in hardened state, slightly soluble in wet state to form alkaline solution (pH >12)
<b>Specific gravity / density</b>	$2300\text{-}2400\text{kg/m}^3$
<b>Flash point</b>	not applicable
<b>Danger of explosion</b>	no data
<b>Auto-ignition temperature</b>	no data
<b>Upper &amp; lower flammable limits</b>	not applicable
<b>Corrosiveness</b>	may be corrosive when mixed with water.

## 10. Stability & Reactivity

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

## 11. Toxicological Information

### Summary

IF SWALLOWED: Ingestion of this product may cause gastrointestinal irritation.

IF IN EYES: Contact with 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 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

<b>Acute</b>	<b>Oral</b>	The estimated LD <sub>50</sub> (oral, rat) for the mixture is > 5,000 mg/kg. Ingestion of this product may cause gastrointestinal irritation.
	<b>Dermal</b>	The estimated LD <sub>50</sub> (dermal, rat) for the mixture is > 5,000 mg/kg.
	<b>Inhaled</b>	The estimated LC <sub>50</sub> (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.
<b>Chronic</b>	<b>Eye</b>	Cement, is considered to be an eye corrosive. pH >11, if wetted. Dust may also be irritating to eye (mechanical irritation)
	<b>Skin</b>	Cement contained in masonry is considered a skin irritant.
	<b>Sensitisation</b>	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.
	<b>Mutagenicity</b>	No ingredient present at concentrations > 0.1% is considered a mutagen.
	<b>Carcinogenicity</b>	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 carcinogenicity cat 1 classification (confirmed carcinogen).
	<b>Reproductive / Developmental</b>	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.
	<b>Systemic</b>	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.
<b>Aggravation of existing conditions</b>	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

Concrete and concrete 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

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

## 13. Disposal Considerations

<b>Restrictions</b>	There are no product-specific restrictions, however, local council and resource consent conditions may apply, including requirements of trade waste consents.
<b>Disposal method</b>	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.
<b>Contaminated packaging</b>	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).

<b>UN number:</b>	NA	<b>Proper shipping name:</b>	NA
<b>Class(es)</b>	NA	<b>Packing group:</b>	NA
<b>Precautions:</b>	NA	<b>Hazchem code:</b>	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

Key workplace requirements are:

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.
Bundling & 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.

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

<b>Approval Code</b>	Approval HSR002545, Construction Products (Carcinogenic) Group Standard 2020, Controls, EPA. <a href="http://www.epa.govt.nz">www.epa.govt.nz</a>
<b>CAS Number</b>	Unique Chemical Abstracts Service Registry Number
<b>EC<sub>50</sub></b>	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
<b>EPA</b>	Environmental Protection Authority (New Zealand)
<b>GHS</b>	Globally Harmonised System of Classification and Labelling of Chemicals, 7 <sup>th</sup> revised edition, 2017, published by the United Nations.
<b>HAZCHEM Code</b>	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
<b>HSNO</b>	Hazardous Substances and New Organisms (Act and Regulations)
<b>IARC</b>	International Agency for Research on Cancer
<b>LEL</b>	Lower Explosive Limit
<b>LD<sub>50</sub></b>	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
<b>LC<sub>50</sub></b>	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
<b>NZIoC</b>	New Zealand Inventory of Chemicals
<b>STEL</b>	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



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<b>STOT RE</b>	TWA is not exceeded
<b>STOT SE</b>	System Target Organ Toxicity – Repeated Exposure
<b>TWA</b>	System Target Organ Toxicity – Single Exposure
<b>UEL</b>	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
<b>UN Number</b>	Upper Explosive Limit
<b>WES</b>	United Nations Number
	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

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

### Review

Date	Reason for Review
December 2011	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

This SDS was prepared by Datachem LTD and is based on our current state of knowledge, including information obtained from suppliers. The SDS is given in good faith and constitutes a guideline (not a guarantee of safety). The level of risk each substance poses is relevant to its properties (as summarised in the SDS) AND HOW THE SUBSTANCE IS USED. While guidelines are given for personal protective equipment, such precautions must be relevant to the use. The likely HSNO and GHS classifications, are based on our experience, EPA Guidelines and international classifications. A compliance record is available on request. This SDS is copyright Datachem and must not be copied, edited or used for other than intended purpose. To contact the SDS author, email [info@datachem.co.nz](mailto:info@datachem.co.nz) or phone: **021 104 0951**.

