



1. Identification of Substance & Company

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| Product | |
| Product name | FIRTH Ready Mix Concrete, wet |
| Other names | Rib Raft, Geopoz, Micropoz, Steelcrete, Nofines Concrete, Kerb Mix This SDS provides information on wet concrete. For information on dry and hardened concrete refer to FIRTH Ready Mix Concrete, dry |
| Product code | NA |
| HSNO approval | HSR002544 |
| Approval description | Construction Products (Subsidiary Hazard) Group Standard 2006 |
| UN number | Not allocated |
| Proper Shipping Name | NA |
| Packaging group | NA |
| Hazchem code | 1T (recommended) |
| Uses | Ready mix Concrete |
| Company Details | |
| Company | Firth Industries |
| Address | 585 Great South Rd, Penrose PO Box 99904, Newmarket, 1149 Auckland, New Zealand |
| Telephone | +64-9- 583 2100 |
| Website | www.firth.co.nz |

Emergency Telephone Number: 0800-764 766

2. Hazard Identification

Hazard Classifications

This product has been approved under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR002544), and is classified as follows:

Classes:

- 6.3A skin irritant
- 8.3A eye corrosive
- 9.1D harmful to the aquatic environment

Note: concrete is considered irritating to the skin under the classification system; however, there is a possibility of burns if wet concrete is left in contact with the skin for a prolonged time.

SYMBOLS

DANGER



Other Classifications

There are no other classifications that are known to apply.

Hazard and Precautionary Statements

Hazard Causes skin irritation.
Causes serious eye damage.
Harmful to aquatic life.



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Precautionary Keep out of reach of children.
Read label before use.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Wear protective gloves/eye protection/face protection.

Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment. Collect spillage.

Further precautionary statements can be found in Section 4 – First Aid.

3. Composition / Information on Ingredients

| Component | CAS/ Identification | Class for ingredient(s) | Conc (%) |
|--|---------------------|------------------------------------|----------|
| Cement | 65997-15-1 | 8.3A, 6.3A, 6.7A, 6.9B | 10-70 |
| Flyash | 68131-74-8 | 8.2C, 6.1E, 6.4A, 6.7A, 6.9A, 9.1D | 0-5 |
| Aggregates (may includes crystalline silica) | mixture | 6.7A, 6.9B | 10-90 |
| Chemical additives | mixture | <i>mixture</i> | 0-5 |
| Water | 7732-18-5 | non hazardous | 30-50 |

May contain one or more of the following ingredients:

| Component | CAS/ Identification | Class for ingredient(s) | Conc (%) |
|------------------------------|---------------------|--|----------|
| Metal Oxides | mixture | <i>mixture</i> | 3-6 |
| Limestone | 1317-65-3 | 6.3A, 6.4A | 0-5 |
| Calcium sulphate hemihydrate | 26499-65-0 | non hazardous | 0-5 |
| Hexavalent Chromium | 1333-82-0 | 5.1.1B, 6.1B, 6.5A, 6.5B, 6.6A, 6.7A, 6.8A, 6.9A, 8.1A, 8.2B, 8.3A, 9.1A, 9.2B, 9.3B | <0.01 |
| Crystalline Silica | 14808-60-7 | 6.7A, 6.9A | 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 required. Accessible eyewash. Emergency shower, hand wash, soap.



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Exposure

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| 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/physician. |

Advice to Doctor

Treat symptomatically.

5. Firefighting Measures

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| 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. Product will react exothermically with water. 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: | 1T (recommended) |

6. Accidental Release Measures

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| Containment | 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. |
| 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. |
| 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 | 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. |
| 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

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| 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 the NZ Department of Labour for this product. There is a general limit of 10mg/m³ for dusts and mists when limits have not otherwise been established.

| NZ Workplace Exposure Stds (OSH 2011) | Ingredient | WES-TWA | WES-STEL |
|---------------------------------------|------------------------------|---|----------|
| | Cement | 10mg/m ³ (as nuisance dust) | no data |
| | Limestone | 10mg/m ³ (as nuisance dust) | no data |
| | Calcium sulphate hemihydrate | 10mg/m ³ (as nuisance dust) | no data |
| | Chromium oxide | 0.05mg/m ³ | no data |
| | Flyash | See crystalline silica | no data |
| | Aggregates | See crystalline silica | no data |
| | Crystalline Silica | 0.2mg/m ³ (as respirable dust) | no data |
| | Chemical additives | no data | 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 in Employment Act 1992 (HSE). 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

Eyes



Protect eyes with goggles, safety glasses or full face mask. Avoid wearing contact lenses.

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 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.

Respiratory

The product does not present an inhalation hazard when wet. However when dust is created a well fitted dust mask should be used (this is not recommended when exposure is close to the WES). Refer to SDS for FIRTH Ready Mix Concrete, dry.

WES Additional Information

Not applicable



9. Physical & Chemical Properties

| | |
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| Appearance | Wetted concrete. |
| Odour | bland |
| pH | >12 (wet concrete) |
| Vapour pressure | not applicable |
| Viscosity | no data |
| Boiling point | not applicable |
| Volatile materials | no data |
| Freezing / melting point | no data |
| Solubility | slightly soluble in wet state to form alkaline solution (pH >12) |
| Specific gravity / density | 2300-2400kg/m ³ |
| Flash point | not applicable |
| Danger of explosion | no data |
| Auto-ignition temperature | no data |
| Upper & lower flammable limits | not applicable |
| Corrosiveness | May be corrosive when wet. Note that dust is also corrosive when mixed with water. |

10. Stability & Reactivity

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| Stability | This product is unlikely to react or decompose under normal storage conditions. This product will not undergo polymerisation reactions. Keep dry until used. |
| Conditions to be avoided | Containers should be kept closed in order to avoid contamination. |
| Incompatible groups | Strong acids, ammonium salts, and aluminum metal. |
| Substance Specific Incompatibility | Concrete 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 concrete is sawed, drilled, sanded or grinded. |
| Hazardous reactions | Will not polymerise |

11. Toxicological Information

Summary

Concrete is known to harm the skin and eyes. There are also links between exposure to concrete dust (e.g., construction) and increased rates of silicosis.

Where available, toxicological data for ingredients has been researched and data for the mixture calculated. The results of these calculations are presented below.

Supporting Data

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|--------------|----------------------|--|
| 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 wet concrete is not considered to be harmful if inhaled. The estimated LC ₅₀ (inhalation, rat) for the mixture is >5 mg/L (dust mist). |
| | Eye | Contact with wet (unhardened) concrete, mortar, cement mixtures or concrete dust can cause effects ranging from irritation to serious eye damage/burns and blindness. The pH of the mixture is >12. 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 or wet concrete is left in contact with the eye, serious damage/blindness could result. |
| | Skin | Contact with wet (unhardened) concrete, mortar, cement, or cement mixtures can cause skin irritation, severe chemical burns (third degree). Drying concrete is hygroscopic, i.e. absorbs water. It will draw water away from any material it contacts-including skin. This 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 concrete or 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. |
| | 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. |



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| Mutagenicity | No ingredient present at concentrations > 0.1% is considered a mutagen. |
| Carcinogenicity | This mixture may contain crystalline silica. Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (IARC Group 1). This mixture is wetted concrete and no respirable particles are present. Refer to SDS for dry concrete is dust or dry concrete is present. |
| 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 | This mixture may contain crystalline silica. Crystalline silica triggers 6.9A classification if it is in the form of a fine respirable dust in an occupational (chronic exposure) setting. This mixture does not contain respirable particles (wetted). Refer to SDS for dry concrete is dust or dry concrete is present. |
| 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

Wet concrete is considered to be harmful in the environment when in a soluble form. This is primarily due to the high pH of the product.

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 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. |
| 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

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|-------------------------------|--|
| Restrictions | Local council and resource consent conditions may apply, including requirements of trade waste consents. |
| Disposal method | Disposal of this product must comply with 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 | There are no product-specific restrictions, however, local council and resource consent conditions may apply, including requirements of trade waste consents. |



14. Transport Information

Transport according to NZS 5433 (Transport of Hazardous Substances on Land). It is not considered a hazardous substance for transport.

| | | | |
|---------------------|----|------------------------------|------------------|
| UN number: | NA | Proper shipping name: | NA |
| Class(es) | NA | Packing group: | NA |
| Precautions: | NA | Hazchem code: | 1T (recommended) |

15. Regulatory Information

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO). Approval code: HSR002544: Construction Products (Subsidiary Hazard) Group Standard 2006.

Specific Workplace Controls (as per HSNO approval referenced to Controls Matrix)

Note: the controls apply to the wet product, and to the dust of hardened concrete.

Key workplace requirements are:

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|-----------------------------------|---|
| SDS | To be available within 10 minutes in workplaces storing any quantity. |
| Labelling | No removal of labels and/or decanting of product into other containers can occur. |
| Emergency plan | Required if > 1000kg is stored. |
| Approved handler | Not required. |
| Tracking | Not required. |
| Bunding and secondary containment | Required if > 1000kg is stored. |
| Signage | Required if > 1000kg is stored. |
| Location test certificate | Not required. |
| Flammable zone | Not required. |
| Fire extinguisher | Not required. |

Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health, Safety in Employment Act and Regulations, local Council Rules and Regional Council Plans.



16. Other Information

Abbreviations

| | |
|------------------------|---|
| Approval Code | Approval Construction Products (Subsidiary Hazard) Group Standard 2006, Controls, EPA. www.epa.govt.nz |
| CAS Number | Unique Chemical Abstracts Service Registry Number |
| Ceiling | Ceiling Exposure Value: The maximum airborne concentration of a biological or chemical agent to which a worker may be exposed at any time. |
| Controls Matrix | List of default controls linking regulation numbers to Matrix code (e.g. T1, I16). |
| EC₅₀ | Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species) |
| EPA | Environmental Protection Authority (formally known as ERMA) |
| ERMA | Environmental Risk Management Authority (now known as EPA) |
| 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 |
| LD₅₀ | Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats). |
| LC₅₀ | Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats) |
| SDS | Material Safety Data Sheet (or Safety Data Sheet) |
| OSH | The Occupational Safety and Health Service of the Department of Labour (NZ) |
| 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 |
| 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. |

References

| | |
|------------------------------|---|
| Data | Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID) http://www.epa.govt.nz/hs/compliance/chemicals.html , for specific chemicals. |
| EPA Transfer Gazettes | Classifications and controls assigned for specific ingredients (consolidated gazette, 2004) |
| Controls Matrix | Part of the EPA New Zealand User Guide to the HSNO Control Regulations |
| WES 2011 | The NZ Workplace Exposure Standards Effective from 2011, published by OSH and available on their web site – www.osh.dol.govt.nz . |
| Other References | Ingredients SDS's. |

Review

| Date | Reason for Review |
|---------------|-------------------|
| December 2011 | NA - new SDS |

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 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 or phone: **(09) 940 30 80**.

