## 1. Identification of Substance & Company

| Product | |
|---|---|
| **Product name** | Strongcrete 36 MPa Concrete |
| **HSNO approval** | HSR002545 |
| **Approval description** | Construction Products (Toxic [6.7A]) Group Standard 2006 |
| **UN number** | NA |
| **Proper Shipping Name** | Not allocated |
| **Packaging group** | NA |
| **Hazchem code** | NA |
| **Uses** | Concrete |
| **Company Details** | |
| **Company** | **Drymix NZ Ltd** |
| **Address** | PO Box 109,<br>Greenhithe,<br>Auckland 0756,<br>New Zealand |
| **Telephone** | 0800-379-746 |
| **Fax number** | 0800-379-649 |
| **Website** | www.drymix.co.nz |

**Emergency Telephone Number: 0800 764 766**

## 2. Hazard Identification

**Approval and**

This product has been approved under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR002545, Construction Products (Toxic [6.7A]) Group Standard 2006), and is classified as follows:

| Classes | Hazard Statements |
|---|---|
| 8.3A | H318 - Causes serious eye damage. |
| 6.3A | H315 - Causes skin irritation. |
| 6.7A | H350 - May cause cancer if inhaled. |
| 6.9A | H372 - Causes damage to organs through prolonged or repeated exposure |
| 9.1D | H402 - Harmful to aquatic life. |

*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.

**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.
P270 - Do not eat, drink or smoke when using this product.
P260 - Do not breathe dust.
P264 - Wash hands thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/eye protection/face protection.

P308+P313 - IF exposed or concerned: Get medical advice/ attention.
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."
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.
P405 - Store locked up

## 3. Composition / Information on Ingredients

| Component | CAS/ Identification | Class for ingredient(s) | Conc (%) |
|---|---|---|---|
| sand | NA | non hazardous | 35-45 |
| Aggregate/stone | NA | non hazardous | 35-45 |
| cement | 65997-15-1 | 8.3A. 6.3A, 6.7A, 6.9A, 9.1D | 15-25 |

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.

## 4. First Aid

### General Information

If medical advice is needed, have product container or label at hand. 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 exposed or concerned: Get medical advice/ attention.

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

### 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/physician.

### Advice to Doctor

Treat symptomatically

## 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. Dust may form irritating atmosphere. Product will react exothermically with water. Contaminated water wil 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

| | |
|---|---|
| **Containment** | If greater than 1000kg (wet product or dust) 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.<br>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.<br>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 accummulation. 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$^3$ for respirable particulates and 10mg/m$^3$ for inhalable particulates when limits have not otherwise been established.

| NZ Workplace Exposure Stds (2016) | Ingredient | WES-TWA | WES-STEL |
|---|---|---|---|
| | sand | 10mg/m$^3$ (as nuisance dust) | no data |
| | cement | 10mg/m$^3$ (as nuisance dust) | no data |
| | limestone | 10mg/m$^3$ (as nuisance dust) | no data |
| | crystalline Silica | 0.2mg/m$^3$ (as respirable dust) | no data |

* These workplace exposure standards are also Prescribed Exposure Standards (PES) under the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016.

### 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

**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**

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 (0.02 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

| | |
|---|---|
| **Appearance** | Grey solid |
| **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** | Insoluble in hardened state, slightly soluble in wet state to form alkaline solution (pH >12) |
| **Specific gravity / density** | ~2.4g/cm$^3$ |
| **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

| | |
|---|---|
| **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**

IF SWALLOWED: large amounts of dust may result in abdominal discomfort and irritation and burns to the gastrointestinal tract.

IF IN EYES: Contact with wet (unhardened) concrete, concrete mixtures or dust can cause effects ranging from irritation to serious eye damage/burns and blindness. If product is washed out of the eye immediately, effects can be minor. However, if dust or wet concrete is left in contact with the eye, serious damage/blindness could result.

IF ON SKIN: Contact with wet (unhardened) concrete can cause skin irritation or severe chemical burns. Brief exposure to the dust (i.e., washed off immediately) may result in irritation. However, if the concrete or dust is left on the skin for an extended time burns to the skin are possible. Thickening of the skin and/or rash is also possible.

IF INHALED: dust may cause irritation of the respiratory tract. Short term (acute) silicosis (see "systemic" below) can also occur with one-off exposures to very high levels of fine crystalline silica dust. Other short term effects include irritation, choking and difficulty breathing.

CHRONIC: this product does contain crystalline silica, inhalation of which has been linked to silicosis and lung cancer. Symptoms include shortness of breath, cough, fever, loss of appetite and cyanosis (bluish skin). See carcinogenicity and systemic toxicity below.

**Supporting Data**

| | | |
|---|---|---|
| **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** | Contact with wet (unhardened) concrete, 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, 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. |
| **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 6.7A classification (confirmed carcinogen). 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 concrete). Carcinogenicity of silica appears linked to development of silicosis (see systematic below) followed by complications and, eventually lung cancer |
| | **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 6.9A classification if it is in the form of a fine respirable dust in an occupational (chronic exposure) setting. This is due to the development of acute silicosis which can occur following exposure to extremely high levels of fine silica dust. Silicosis is a type of pneumoconiosis – a disease of the lung that causes inflammation, scar tissue, lesions and fibrosis in the lung (alveolar). Symptoms include shortness of breath, cough, fever, loss of appetite and |

| | |
|---|---|
| | cyanosis (bluish skin). Silicosis can occur following prolonged exposure (e.g., 10 years) to relatively high levels of fine crystalline silica dust. |
| **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**

Concrete and cement 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.

**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.<br>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. |
| **Environmental effect levels** | No EELs are available for this mixture or ingredients |

## 13. Disposal Considerations

| | |
|---|---|
| **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

**Land Transport Rule: Dangerous Goods 2005 - NZS 5433:2007**

This mixture is not considered a hazardous substance for transport on land.

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

**IMDG**

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

| | | | |
|---|---|---|---|
| **UN number:** | **NA** | **Proper shipping name:** | **NA** |
| **Class(es)** | **NA** | **Packing group:** | **NA** |
| **Precautions:** | **NA** | **EmS** | **NA** |

**IATA**

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

| | | | |
|---|---|---|---|
| **UN number:** | NA | **Proper shipping name:** | NA |
| **Class(es)** | NA | **Packing group:** | NA |
| **Precautions:** | NA | **ERG Code** | NA |

## 15. Regulatory Information

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO). Approval code: HSR002545: Construction Products (Toxic [6.7A]) 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:

| | |
|---|---|
| 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 | Approved Evacuation Scheme required if > 1000kg is stored. |
| Approved handler | Approved handlers are NOT required if this product is used in the construction industry (exempted requirement under construction group standards). |
| Tracking | Not required. |
| Bunding and secondary containment | Required if > 1000kg is stored. |
| Signage | Required if > 1000kg is stored in any one location. |
| Location test 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**

| | |
|---|---|
| **Approval Code** | Approval Construction Products (Toxic [6.7A]) Group Standard 2006, Controls, ERMA. www.ermanz.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). |
| **$EC_{50}$** | Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species) |
| **EPA** | Environmental Protection Authority |
| **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) |
| **MSDS (SDS)** | Material Safety Data Sheet (or Safety Data Sheet) |
| **PES** | Prescribed Exposure Standard means a WES or a biological exposure standard that is prescribed in a regulation, a safe work instrument or an approval under HSNO (including group standards). |
| **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 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). |
| **EPA Transfer Gazettes** | Classifications and controls assigned for specific ingredients (consolidated gazette, 2004) |
| **WES 2013** | The NZ Workplace Exposure Standards Effective from 2013, published by WorkSafe NZ and available on their web site – www.worksafe.govt.nz. |
| **WES 2002** | Workplace Exposure Standards published by the Occupational Safety and Health Service, Department of Labour, January 2002, ISBN 0-477-03660-0. These are the WES referred to under the Group Standard (HSNO approval) and may constitute a PES. |
| **Other References:** | Suppliers SDS |

## Review

| **Date** | **Reason for review** |
|---|---|
| June 2017 | Not applicable – new SDS |

## Disclaimer