PFL Surface Preparation

PFL Surface Preparation is a traditional etching solution used to prepare concrete surfaces for sealing.

1. Description

PFL Surface Preparation is a concentrated acidic solution which, when correctly diluted, removes surface laitance (efflorescence) from concrete. PFL Surface Preparation is primarily employed to lightly 'etch' the floor in preparation for sealing but can also be used to change the appearance and texture of concrete.

This product guide covers the preparation and application of PFL Surface Preparation - if there is any question as to the suitability or application of this product please contact Peter Fell Ltd prior to use. Refer to the SDS for full Health and Safety information.

2. Precautions

- PFL Surface Preparation is a STRONG ACIDIC SOLUTION and should be used with extreme care - please ensure all safety guidelines are read prior to use and are strictly adhered to during application.
- PFL Neutralizer & Cleaner should be used in conjunction with PFL Surface Preparation to control and neutralize its corrosive activity.
- All susceptible surfaces i.e. walls and joinery, should be protected from splashing during application.
- The concrete surface must be well buffered with water prior to application of PFL Surface Preparation - failure to do so will result in 'acid burns' to the concrete surface.
- Ensure runoff during application is correctly neutralized to prevent corrosion of surrounding surfaces i.e. untreated concrete, asphalt etc.
- DO NOT dispose of PFL Surface Preparation down drains or waterways.

3. Test Area

Prior to full application of PFL Surface it is recommended that a small test area away from the main visual area of the floor is prepared (following instructions) to ensure that the Surface Preparation is correctly diluted for your application.

Correctly diluted	The Surface Preparation 'bubbles' lightly on the surface, and following short exposure (<1 min), neutralization, and drying, the area appears free of surface laitance (dusty or 'chalky' substance on surface).
Too concentrated	Aggressive bubbling is observed on application of the Surface Preparation, and after a short period (<1 minute) concrete starts to corrode, exposing sand grains, then aggregate particles. Following neutralization and drying, concrete appears darker with 'grainy' or textured appearance.
Too dilute	Little to no 'bubbling' evident following application of the Surface preparation, and following neutralization and drying, the area appears unchanged.

If the concrete surface is still 'soft' (if concrete is not fully cured or incorrectly finished) the Surface Preparation will have a corrosive effect, like that of a 'too concentrated' solution.

Always start with the weakest applicable dilution as the concentration can always be increased.
- Conversely, if the solution is too concentrated and adversely alters the concrete surface, the effects are a lot more difficult or impossible to remedy!

If you are unsure about the appropriate dilution or application of PFL Surface Preparation contact Peter Fell Ltd before proceeding with the entire area.

4. Preparation

The concrete must be clean and free of any contamination prior to application of PFL Surface Preparation. Floors can be cleaned with **PFL Neutralizer and Cleaner** or **PFL Concrete Cleaner** – see Product Guides for application instructions.

Ensure all susceptible surfaces i.e. walls, joinery etc, are protected from any contact with PFL Surface Preparation.
- Polythene or cardboard can be used to protect walls and joinery
- PFL Neutralizer & Cleaner can be used to wipe down other surfaces to protect from splashes.

5. Equipment

- Polythene sheet or tray (placed under watering cans when diluting the surface preparation).
- Plastic watering can (x2).
- Hose (or source of fresh clean water).
- Broom – soft bristle
- PFL Neutralizer & Cleaner (prepared diluted solution)
- Wet and Dry Vacuum cleaner (interior floors only).
- Safety Equipment – see section 8. Personal Protective Equipment.

6. Application

<u>Dilution:</u>

- Dilute PFL Surface Preparation with clean water to the appropriate concentration.
  - ALWAYS add PFL Surface Preparation to water (not the other way around).
- Place watering can on polythene sheet or soil away from the concrete surface.
  - Any spills of concentrated surface preparation will burn the concrete surface.

Strength	Dilution (Prep:water)	Description
Mild etch	1:30	Recommended for preparation of internal floors, or areas with minimal surface laitance. Will not significantly alter texture of the floor.
Medium etch	1:20	Recommended for preparation of external surfaces, or areas with significant surface laitance. Prolonged treatment exposes sand (and eventually aggregate), increasing surface texture and changing concrete appearance.
Heavy etch	1:10	Recommended ONLY when heavy exposure or 'Sandstone' effect is required. Will significantly alter the appearance and texture of the concrete - proceed with caution!

- Prepare equivalent dilution of PFL Neutralizer & Cleaner in the second watering can.
  - This solution is used to 'neutralize' the effects of PFL Surface Preparation, enabling tight control of the etching process.

Application:

Apply PFL Surface Preparation to small areas at a time (initially 2 - 4 m^2) and start away from main parts of the floor to get comfortable with procedure.

- Prepare diluted solutions of PFL Surface Preparation and PFL Neutralizer & Cleaner as described above.
- Wet down area with clean water, making sure water is ALWAYS visible on the surface where PFL Surface Preparation is applied.
    - If surface is not properly wet, the PFL Surface Preparation will react directly with the concrete surface resulting in 'acid burns', which significantly alter both the concrete colour and texture.
- Disperse solution with watering can in a controlled motion.
    - Solution can be moved around with soft bristle broom, ensuring solution is spread evenly over surface.
        - Take care not to 'sweep' aggressively as this will damage the concrete surface.
    - Care must be taken NOT to exceed area which has been pre-wetted.
- Once initial reaction has stopped (typically 1-2 minutes), treat area with PFL Neutralizer & Cleaner, leave on surface for a few minutes (solution turns 'milky' in patches)
    - Internal surfaces: Vacuum up with wet and dry vacuum.
    - External surfaces: Use excess water to wash solution off concrete surface ensuring runoff does not go down waterways, or onto areas susceptible to pH changes i.e. gardens.
- Repeat process over whole area to be treated, remembering to keep surface wet as you move from area to area.
- Once complete, rinse floor with clean water, using wet and dry vacuum to remove from the interior surfaces.

Coverage:

- Coverage is dependent on dilution rate.

Clean-up:

- All equipment should be neutralized and cleaned with appropriately diluted solution of PFL Neutralizer & Cleaner.
    - Ensure runoff does not go down waterways, or onto area's susceptible to pH changes i.e gardens.

7. Storage and Handling

Pack Sizes: 1, 2, 5, 10, and 20 L units.

Handling: Keep exposure to a minimum, and minimise the quantities kept in work areas. Avoid skin and eye contact and inhalation of vapour, fumes, mist and aerosols. Wear suitable personal protective equipment – see section 8.

Storage: Store in cool, dry, well ventilated place in original container. Store out of reach of children. Store away from direct sunlight, oxidizing agents (e.g. pool chemicals and nitrates), acids, anionic, detergents, and foodstuffs. Keep away from naked flames and other heat sources. Take precautions against static discharge. Ensure container is sealed when not in use and checked regularly for leaks or spills. Do not allow vapours to collect in enclosed spaces. PFL Surface Preparation can be stored for up to 12 months.

8. Personal Protective Equipment

Eyes: Avoid contact with eyes. Use safety glasses and/or chemical splash goggles.

Skin: Suitable protective workwear e.g. cotton overalls buttoned at the neck and wrist are recommended. Chemical resistant apron is also recommended where large qualities are handled. Protective gloves are recommended. PVA or Viton/Butyl glosses are recommended. Replace frequently. Gloves should be checked for tears or holes before use. Open cuts abraded, or irritated skin should not be exposed to this material. Wear rubber safety boots.

Respiratory: A respirator is recommended. Use a respirator with an acid gas cartridge and a full-face mask. Ensure that the cartridges are correct for the potential air contamination and are in good working order. Refer to SDS for full safety information.

Refer to the SDS for full Health and Safety information.

9. First Aid

Swallowed: DO NOT induce vomiting. Rinse mouth with water. If conscious, give pent of water to drink. Contact the National Poison Centre (0800 764 766) or doctor/physician immediately. If vomiting occurs, place victim face downwards, with the head turned to the side and lower than the hips to prevent vomit entering lungs.

Eyes: Immediately flood with copious quantities of water, holding eye open if necessary, for at least 15 minutes. Immediately call the National Poison Centre (0800 764 766) or a doctor/physician.

Skin: Remove contaminated clothing and shoes and wash skin thoroughly with excess water. If irritation occurs or persists, seek medical attention. Launder clothing and clean shoes before re-use.

Inhalation: Remove patient from exposure, keep warm and at rest. If there is respiratory distress, give oxygen and seek immediate medical attention.

10. Physical Properties and Identification

Appearance: colourless to yellow liquid

Odour: pungent irritating fumes

Solubility: miscible with water in all proportions

Reactivity: Highly corrosive to most metals with evolution of hydrogen gas. Reacts violently with alkali reacts with sodium hypochlorite to evolve chlorine gas.

UN Number: 1789

HSNO Approval: HSR001557

Hazchem code: 2R

DG Class: 8, 6.1

Packing Group: II

Product Warranty

The information contained in this document is true and accurate to the best knowledge of Peter Fell Ltd. We cannot however anticipate all conditions under which this information and our products may be used. Peter Fell Ltd therefore accepts no responsibility and offers no warranty with respect to results obtained by the application of our products, their suitability, or for their safe use. Peter Fell Ltd offers our products for sale subject to, and 'The Customer' and all users are deemed to have accepted, our Terms and Condition of Trade. Peter Fell Ltd warrants our products to be free of manufacturing defects. If the product when purchased was defective and was within recommended storage life when used, Peter Fell Ltd will replace the defective product with new product without charge to the purchaser. Peter Fell Ltd makes NO OTHER WARRANTY, either expressed or implied, concerning our products.

1. Identification of Substance & Company

Product	
Product name	PFL Surface Preparation
Other name	NA
Product code	SPRP
HSNO approval	HSR001557
Approval description	Hydrochloric acid, >25% aqueous solution
UN number	1789
Proper Shipping Name	HYDROCHLORIC ACID
DG class	8, 6.1
Packaging group	II
Hazchem code	2R
Uses	Surface preparation
Company Details	
Company	**Peter Fell LTD**
Address	81 Patiki Rd Avondale Auckland
Telephone	09 828 6460
Email	info@peterfell.co.nz

Emergency Telephone Number: 0800 764 766

2. Hazard Identification

Approval

This product has been approved under the Hazardous Substances and New Organisms Act (HSNO, Approval HSR001557, Hydrochloric acid, >25% aqueous solution), and is classified as follows:

Classes	Hazard Statements
6.1B (inhalation)	H330 - Fatal if inhaled.
6.1D (oral)	H302 - Harmful if swallowed.
8.1A	H290 - May be corrosive to metals.
8.2B	H314 - Causes severe skin burns and eye damage.
8.3A	H318 - Causes serious eye damage.
9.1D	H402 - Harmful to aquatic life.
9.3C	H433 - Harmful to terrestrial vertebrates.

SYMBOLS

DANGER

Other Classifications

There are no other Classifications that are known to apply.

Precautionary Statements

Read label before use.
Keep out of reach of children.
Do not breathe fume/vapours.
Use only outdoors or in a well-ventilated area.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Keep only in original container.
Absorb spillage to prevent material damage.
Store in corrosive resistant container with a resistant inner liner.
Wear respiratory protection.
Wear protective gloves/protective clothing/eye protection/face protection.
Call a POISON CENTRE or doctor if you feel unwell.
Avoid release to the environment.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in a corrosive resistant container with a resistant inner liner.

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

3. Composition / Information on Ingredients

Component	CAS/ Identification	Concentration
hydrochloric acid	7647-01-0	33%
water	7732-18-5	balance

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 poisoned, burned or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service).

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. If conscious, give plenty of water to drink. Contact the National Poisons Centre or a Doctor immediately. If vomiting occurs, place victim face downwards, with the head turned to the side and lower than the hips to prevent vomit entering the lungs.

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

Skin contact: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.

Inhaled: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTRE or doctor/physician.

Advice to Doctor

Treat symptomatically. May cause corneal burns.

5. Firefighting Measures

Fire and explosion hazards: There are no specific risks for fire/explosion for this chemical. It is non-flammable.

Suitable extinguishing substances: Carbon dioxide, extinguishing powder, foam, fog sprays.

Unsuitable extinguishing substances: Unknown.

Products of combustion:	Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Water. May form toxic mixtures in air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures.
Protective equipment:	Self-contained breathing apparatus. Safety boots, non-flammable overalls, gloves, hat and eye protection.
Hazchem code:	2R

6. Accidental Release Measures

Containment	If greater than 100L is stored, secondary containment and emergency plans to manage any potential spills must be in place.In all cases design storage to prevent discharge to stormwater.
Emergency procedures	In the event of spillage alert the fire brigade to location and give brief description of hazard. Stop the source of the leak, if safe to do so. Wear protective equipment to prevent skin, eye and respiratory exposure. Clear area of any unprotected personnel. Contain using sand, earth or vermiculite. Prevent by whatever means possible any spillage from entering drains, sewers, or water courses. (If this occurs contact your regional council immediately).
Clean-up method	Use absorbent (soil, sand or other inert material). Rags are not recommended for the clean-up of spills, as they may create fire or environmental hazard. Collect 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	Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation.

7. Storage & Handling

Storage	Avoid storage of harmful substances with food. Store out of reach of children. Store in original container only. Containers should be kept closed in order to minimise contamination. Keep from extreme heat and open flames. Avoid contact with incompatible substances as listed in Section 10.
Handling	Keep exposure to a minimum, and minimise the quantities kept in work areas. See section 8 with regard to personal protective equipment requirements. Avoid skin and eye contact and inhalation of vapour, fumes, mist or aerosols. If diluting, always add acid to water. Do not add water to concentrated acid.

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 10mg/m^3 for dusts and mists when limits have not otherwise been established.

	Ingredient	WES-TWA	WES-STEL
NZ Workplace Exposure Stds (2016)	hydrochloric acid	Ceiling 5 ppm (7.5 mg/m3)*	data unavailable

* 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, rubber boots and impervious gloves. Nitrile, neoprene, PVC, or natural rubber gloves are recommended. PVA gloves are not recommnded. Replace frequently. Gloves should be checked for tears or holes before use. Remove protective clothing and wash exposed areas with soap and water prior to eating, drinking or sl

Respiratory

A respirator when airborne concentrations approach the WES (section 8). Use an acid gas cartridge with a full face mask. If using a respirator, ensure that the cartridges are correct for the potential air contamination and are in good working order.

WES Additional Information
Not applicable

9. Physical & Chemical Properties

Appearance	clear liquid
Odour	pungent chlorine odour
pH	<1
Vapour pressure	25kPa @25°C
Viscosity	no data
Boiling point	109°C
Volatile materials	No data
Freezing / melting point	-74°C
Solubility	miscible with water
Specific gravity / density	1.18 (water =1)
Flash point	non flammable
Danger of explosion	no data
Auto-ignition temperature	no data
Upper & lower flammable limits	no data
Corrosiveness	corrosive to metals, skin and eyes

10. Stability & Reactivity

Stability	Stable
Conditions to be avoided	Use original container only. Containers should be kept closed in order to avoid contamination. Keep from extreme heat and open flames. Any foodstuffs.
Incompatible groups	Alkalis, oxidising agents, sodium hypochlorite, cyanides, metals.
Substance Specific Incompatibility	As above.
Hazardous decomposition products	Hydrogen chloride gas
Hazardous reactions	Corrosive to many metals with the liberation of hydrogen gas, which is highly flammable and explosive. reactions with alkalis, may heat up if water is added to concentrated acid.

11. Toxicological Information

Summary

IF SWALLOWED: may cause severe abdominal pain, breathing difficulties, chest pains, severe mouth and throat pain, drooling, fever, rapid drop in blood pressure and vomiting of blood.
IF IN EYES: may cause blindness, burns of the eye
IF ON SKIN: may cause blisters, burns, pain.
IF INHALED: may cause tightness of chest, bluish colour to lips, choking, coughing, dizziness, low blood pressure, rapid pulse, shortness of breath, weakness.

Supporting Data

Acute	**Oral**	Using LD_{50}'s for ingredients, the calculated LD_{50} (oral, rat) for the mixture is >5,000 mg/kg. Data considered includes: hydrochloric acid 700mg/kg (rat).
	Dermal	Using LD_{50}'s for ingredients, the calculated LD_{50} (dermal, rat) for the mixture is >5000 mg/kg. Data considered includes: hydrochloric acid 2000 mg/kg.
	Inhaled	Using LC_{50}'s for ingredients, the calculated LC_{50} (inhalation, rat) for the mixture is >5,000 ppm. Data considered includes: hydrochloric acid 5mg/L (60mins), 0.4mg/L (mouse).
	Eye	The mixture is considered to be corrosive to the eye. Hydrochloric acid is an eye corrosive.
	Skin	The mixture is considered to be corrosive to the skin. Hydrochloric acid is a skin corrosive.
Chronic	**Sensitisation**	No ingredient present at concentrations > 0.1% is considered a sensitizer.
	Mutagenicity	No ingredient present at concentrations > 0.1% is considered a mutagen.
	Carcinogenicity	No ingredient present at concentrations > 0.1% is considered a carcinogen.
	Reproductive / Developmental	No ingredient present at concentrations > 0.1% is considered a reproductive or developmental toxicant or have any effects on or via lactation.
	Systemic	No ingredient present at concentrations > 1% is considered a target organ toxicant.
	Aggravation of existing conditions	None known.

12. Ecological Data

Summary

Hydrochloric acid 33% is considered to be harmful to aquatic organisms. Do not allow mixture to enter drains, sewers or waterways.

Supporting Data

Aquatic	Hydrochloric acid 33% is classed by EPA as 9.1D based on the change of pH caused by this substance. LC
Bioaccumulation	Does not bioaccumulate.
Degradability	Rapidly degradable.
Soil	EPA has not classified the mixture as ecotoxic in the soil environment.
Terrestrial vertebrate	EPA have classed this mixture as harmful towards terrestrial vertebrates. Data considered includes: hydrochloric acid 700mg/kg (rat).
Terrestrial invertebrate	No evidence of ecotoxicity towards terrestrial invertebrates.
Biocidal	no data
Environmental effect levels	No EELs are available for this mixture or ingredients

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 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	Rinse containers with water before disposal. Preferably re-cycle container, otherwise send to landfill or similar.

14. Transport Information

Transport according to NZS 5433 (Transport of Hazardous Substances on Land). Considered a hazardous substance for transport.

UN number:	1789	**Proper shipping name:**	HYDROCHLORIC ACID
Class(es)	8, 6.1	**Packing group:**	II
Precautions:	CORROSIVE, TOXIC	**Hazchem code:**	2R
Limited quantities	50L		

15. Regulatory Information

This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO). Approval code: HSR001557, Hydrochloric acid, >25% aqueous solution.

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

Key workplace requirements are:

SDS	To be available within 10 minutes in workplaces storing >0.1L.
Labelling	No removal of labels and/or decanting of product into other containers can occur.
Emergency plan	Required if > 100L is stored.
Approved handler	Not required, an exemption applies: This substance must, if left unattended, be secured so that a person cannot gain access to the substance unless the person has a key or other device used for operating locks.
Tracking	Not required.
Bunding & secondary containment	Required if > 100L is stored.
Signage	Required if > 250L 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 HSR001557, Hydrochloric acid, >25% aqueous solution 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 Agency
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 2016	The NZ Workplace Exposure Standards Effective from 2016, 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
November 2016	Not applicable – 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 for this SDS have been estimated based on general information from the supplier (e.g., hazard, toxicological). 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: ***+64 9 940 30 80.***