SAFETY DATA SHEET

FIRESHIELD SQ476

1. MATERIAL AND SUPPLY COMPANY IDENTIFICATION

Product name:	**FIRESHIELD SQ476**
Other names:	Not Assigned
Recommended use:	White solvent based intumescent coating for interior and exterior structural steel
Product codes:	Not Assigned
Group approval code:	HSR002669
Supplier:	Fireshield, a division of Fire Protection Coatings Ltd
NZBN:	9429041746059
Address:	Level 1/150 Lichfield, Christchurch 8013, New Zealand
Contact Number:	Ph: 0800 FIRESHIELD (0800 347 374)
Email:	info@fireshieldcoatings.com
Website:	www.fireshieldcoatings.com
Emergency Number:	Ph: 111- Police, Ambulance and Fire Brigade
Poison Information Centre:	Ph: 0800 764 766

2. HAZARDS IDENTIFICATION

Classified as hazardous according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Notice 2017.

Classified as a Dangerous Good according to the NZS 5433 – Transport of Dangerous Goods on Land.

2.1 Hazard Classification of the substance or mixture:

Flammable liquids - Category 3
Acute toxicity (oral) – Category 4
Eye irritation - Category 2
Carcinogenicity - Category 2
Reproductive toxicity - Category 2
Specific target organ toxicity - repeated exposure Category 2
Specific target organ toxicity - single exposure Category 3 narcotic effects
Hazardous to the aquatic environment chronic Category 4

WARNING:

Signal Word
Danger

2.2 Hazard Statements:

H226 - Flammable liquid and vapour.
H303 – May be harmful if swallowed.
H313 – May be harmful in contact with skin.
H315 – Causes skin irritation.
H320 – Causes eye irritation.
H341 – Suspected of causing cancer
H361 - Suspected of damaging fertility or the unborn child
H371 - May cause damage to organs through prolonged or repeated exposure.
H336 - May cause drowsiness or dizziness.
H402 - Harmful to aquatic life.
H433 - Harmful to terrestrial vertebrates.

2.3 Prevention 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.
P104 - Read Safety Data Sheet before use.
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from ignition sources. No smoking.
P233 - Keep container tightly closed.
P240 - Ground/bond container and receiving equipment.
P241 - Use explosion-proof electrical equipment.
P242 - Use only non-sparking tools.
P243 - Take precautionary measures against static discharge.
P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/eye/face protection.
P281 - Use personal protective equipment as required.
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 – Refer Section 4 – First aid measures of this Safety data sheet
P331 - Do NOT induce vomiting.
P337+P313 - If eye irritation persists: 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.
P308+P313 - IF exposed or concerned: Get medical advice/ attention.
P304+P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P312 - Call a POISON CENTRE or doctor/physician if you feel unwell.
P370 + P378 - In case of fire: Use dry chemical, carbon dioxide, regular foam extinguishing agent for extinction
P403+P233+P235 - Store in a well-ventilated place. Keep container tightly closed. Keep cool.
P405 - Store locked up.

2.4 Other hazards

Health hazard:

Long lasting and repeated exposure to solvent vapours above the occupational exposure limits may be seriously

detrimental to health and result in adverse health effects such as mucous membrane and respiratory system irritation. It may cause permanent nerve damage. Repeated exposure may cause skin dryness or cracking.

Fire:
Prevent formation of flammable or explosive concentrations of vapour in air. Avoid vapour concentrations above the occupational exposure limits. Ventilate well. Keep away from open flame or other ignition sources. The product may build up electrostatic charges. Ground all equipment. Prevent sparks from static electricity. Operators should wear antistatic footwear and clothing

Physical / Chemical Hazards:
May cause damage to seals, certain painted surfaces, protective grease layers and materials of natural rubber.

DANGEROUS GOOD CLASSIFICATION
Classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

Dangerous Goods Class: 3

3. COMPOSITION INFORMATION

Component	CAS/ Identification	Conc (%)
Ammonium Polyphosphate	68333-79-9	20 - 30%
Xylene	1330-20-7	20 - 30%
2-propenoic acid, 2-methyl-, polymer with ethenylbenzene and 2-ethylhexyl 2-propenoate	26636-08-8	10 - 20%
Titanium dioxide	13463-67-7	10 - 20%
Toluene	108-88-3	1 – 8.2%
Melamine	108-78-1	1 - 10%
Pentaerythritol	115-77-5	1 – 4.4%
Dipentaerythritol	126-58-9	1 - 10%
Ethylbenzene	100-41-4	0.1 - 2.7%
Chlorinated paraffine C22-C30	63449-39-8	1 - 10%
Solvent naphtha (petroleum), light aromatic	64742-95-6	0.1 - 0.2%
Secret	--	1 - 10%

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

4. FIRST AID MEASURES

4.1 Description of first aid measures:

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone: New Zealand 0800 764 766). If medical advice is needed, have product container or label at hand.

Inhalation:

Remove to fresh air. Keep person warm and at rest. If breathing is irregular or if respiratory arrest occurs, provide artificial respiration. Give nothing by mouth. If unconscious, place in recovery position and seek medical advice. If INHALED and symptoms develop, or you feel unwell: call NZ Poisons Information Centre (0800 764 766). Do NOT induce vomiting.

Skin contact:	For gross contamination, immediately drench with water and remove clothing. Continue to flush skin and hair with plenty of water (and soap if material is insoluble). For skin burns, cover with a clean, dry dressing until medical help is available. If blistering occurs, do NOT break blisters. If swelling, redness, blistering, or irritation occurs seek medical assistance.
Eye contact:	If in eyes wash out immediately with water. Seek medical attention.
Ingestion:	Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water to drink. Never give anything by the mouth to an unconscious patient. If vomiting occurs give further water. Seek medical advice.
PPE for First Aiders:	Wear safety shoes, overalls, gloves, safety glasses, respirator. Use with adequate ventilation. If inhalation risk exists wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.
Notes to physician:	Treat symptomatically.

4.2 Indication of any immediate medical attention and special treatment needed:
IF exposed or concerned: Get immediate medical advice/attention.

Information to medics:
Bring this safety data sheet or the label from this product.

5. FIRE-FIGHTING MEASURES

5.1 Hazchem Code: 3YE

5.2 Suitable extinguishing media: Carbon dioxide, extinguishing powder, foam

5.3 Specific hazards:

Flammable liquid. May form flammable vapour mixtures with air. Flameproof equipment necessary in area where this chemical is being used. Nearby equipment must be earthed. Electrical requirements for work area should be assessed according to AS3000. Vapour may travel a considerable distance to source of ignition and flash back. Avoid all ignition sources. All potential sources of ignition (open flames, pilot lights, furnaces, spark producing switches and electrical equipment etc) must be eliminated both in and near the work area. Do NOT smoke.

5.4 Firefighting further advice:
Heating can cause expansion or decomposition leading to violent rupture of containers. If safe to do so, remove containers from path of fire. Keep containers cool with water spray Fire fighters to wear self-contained breathing

apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion.

5.5 Hazardous combustion products:
On burning may emit toxic fumes, including oxides of carbon and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

6.1 SMALL SPILLS
Wear protective equipment to prevent skin and eye contamination. Wipe up with absorbent (clean rag or paper towels). Allow absorbent to dry before disposing with normal household garbage.

6.2 LARGE SPILLS
Shut off all possible sources of ignition. Clear area of all unprotected personnel. Prevent further leakage or spillage if safe to do so. Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. Use a spark-free shovel. If contamination of sewers or waterways has occurred advise local emergency services.

6.3 Dangerous Goods – Initial Emergency Response Guide No: 14

6.4 Reference to other sections:
See section 13 “Disposal considerations” on handling of waste.
See section 8 "Exposure controls/personal protection" for protective measures.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:
Keep out of reach of children.
Read label and safety data sheet before use.
Avoid skin and eye contact and inhalation of vapour, mist or aerosols.
Keep away from sources of ignition.
Ground / bond receiving equipment and use explosion-proof electrical equipment.
Take precautionary measures against static discharge.
Prohibit eating, drinking and smoking in work areas.
Always wash hands before smoking, eating, drinking or using the toilet.
Wash contaminated clothing and other protective equipment before storing or re-using.

7.2 Conditions for safe storage, including any incompatibilities:
Store in a cool, dry, well-ventilated place and out of direct sunlight.
Store away from foodstuffs.
Store away from incompatible materials described in Section 10.
Store away from sources of heat or ignition.
Keep containers closed when not in use - check regularly for leaks.
Store locked up.

This material is classified as a Dangerous Good Class 3 Flammable Liquid and must be stored in accordance with the relevant regulations.

This material is a Scheduled Poison S5 and must be stored, maintained and used in accordance with the relevant regulations.

7.3 Specific end use(s):
This product should only be used for applications quoted in section 1.2.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 National occupational exposure limits:

	TWA		STEL		CARCINOGEN	NOTICES
	ppm	mg/m3	ppm	mg/m3	CATEGORY	
Xylene	50*	217*	150†	655†	-	-
Toluene	50*	188*	150†	574†	-	-
Titanium Dioxide	-	10*	-	-	-	-
Ethyl Benzene	100*	434*	125*	543*	-	-
Pentaerythritol	-	10†				

As published by the **Workplace Exposure Standards for Airborne Contaminants – 2018* (Safe Work Australia) and †*Workplace Exposure Standards and Biological Exposure Indices – 2018* (WorkSafe New Zealand and Department of Labour New Zealand).

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15-minute period which should not be exceeded at any time during a normal eight-hour workday.

'Sk' Notice - absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept too as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

8.2 Biological Exposure Monitoring:

Component	CAS/ Identification	BEI
Xylene	1330-20-7	1.5 g/L
Toluene	108-88-3	0.03 mg/L 0.3 mg/g (creatinine)
Ethylbenzene	100-41-4	0.25 g/g (creatinine)

As published in the *Workplace Exposure Standards and Biological Exposure Indices – 2018* (WorkSafe New Zealand and Department of Labour New Zealand).

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

8.3 Engineering measures:
Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use with local exhaust ventilation or while wearing appropriate respirator. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use.

8.4 Personal protection equipment: G: OVERALLS, SAFETY SHOES, SAFETY GLASSES, GLOVES, RESPIRATOR.
Wear overalls, safety glasses and impervious gloves. Use with adequate ventilation. If inhalation risk exists wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment.

8.5 Hygiene measures: When using do not eat, drink or smoke. Wash hands prior to eating, drinking or smoking. Avoid skin and eye contact and inhalation of vapour, mist or aerosols. Ensure that eyewash stations and safety showers are close to the workstation location.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form / Colour / Odour:	White, viscous liquid with a solvent odour.
Solubility:	Insoluble in water. Soluble in organic solvents.
Specific Gravity (20 ℃):	1.2 – 1.3
Relative Vapour Density (air=1):	N Av
Vapour Pressure (20 ℃):	N Av
Flash Point (℃):	32
Flammability Limits (%):	N Av
Autoignition Temperature (℃):	N Av
% Volatile by Weight:	N Av
Melting Point/Range (℃):	N Av
Boiling Point/Range (℃):	111°C
Decomposition Point (℃):	N Av
pH:	N Av
Viscosity:	Min 95 KU
VOC	370 g/l

(Typical values only - consult specification sheet)
N Av = Not available N App = Not applicable

10. STABILITY AND REACTIVITY

Reactivity: No reactivity hazards are known for the material.

Chemical stability: This material is thermally stable when stored and used as directed.

Hazardous reactions: No known hazardous reactions.

Conditions to avoid: Elevated temperatures and sources of ignition.

Incompatible materials: May emit flammable vapours in the event of a fire. May emit toxic fumes in a fire

Hazardous decomposition products: Oxides of carbon and nitrogen, smoke and other toxic fumes.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

IF SWALLOWED:	Harmful if swallowed. Swallowing can result in nausea, vomiting and irritation of the gastrointestinal tract.
IF IN EYES:	may cause serious eye irritation
IF ON SKIN:	may cause skin irritation. Sensitised individuals may experience an allergic skin reaction.
IF INHALED:	Material may be an irritant to mucous membranes and respiratory tract. Inhalation of vapour can result in headaches, dizziness and possible nausea. Inhalation of high concentrations can produce central nervous system depression, which can lead to loss of co-ordination, impaired judgement and if exposure is.

CHRONIC TOXICITY:	Reproductive toxicity -	Hazard Category 2
	Carcinogenicity -	Hazard Category 2
	Specific target organ toxicity -	Repeated exposure Hazard Category 2
	Specific target organ toxicity -	Single exposure Hazard Category 3 narcotic effects
		may cause central nervous system effects, damage to kidney and liver, may cause ototoxicity. May cause cancer.

Acute toxicity

*** Oral**

- Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
- [Polyphosphoric acids ammonium salts] : LD50 > 2000 mg/kg Rat
- [Xylene] : LD50=3523 mg/kg rat (EU Method B1)
- [Titanium dioxide] : LD50 > 10000 mg/kg Rat (HSDB)
- [Toluene] : LD50 5580 mg/kg Rat (EU Method B.1)
- [Melamine] : LD50 = 3161 mg/kg Rat (SIDS,IUCLID,NLM,THOMSON)
- [Pentaerythritol] : LD50 = 10000 mg/kg Rat
- [Dipentaerythritol] : LD50 = 2000 mg/kg Rat
- [Chlorinated paraffin] : LD50 > 11,700 mg/kg Rat
- [Ethylbenzene] : LD50 = 3500 mg/kg Rat (NITE)
- [Secret] : LD50 = 6200 mg/kg Rat (HSDB)
- [Secret] : LD50 >2000 mg/kg : Rat OCD TG 423, GLP)) (ECHA)
- [Secret] : LD50 > 3100 mg/kg Rat (SIDS)
- [Solvent naphtha (petroleum), light arom.] : LD50 = 8400 mg/kg Rat (RTECS)
- [Secret] : LD50 > 90000 mg/kg Rat (KOSHA)
- [Secret] : LD50 = 1746 mg/kg Rat (SIDS (1997))
- [Secret] : LD50 > 5000 mg/kg Rat (NITE)
- [Secret] : LD50 = 4710 mg/kg Rat (HSDB) LD50 5840 mg/kg Rat (OECD TG 401, ECHA)
- [Secret] : LD50 > 31600 mg/kg Rat

- [Secret] : LD50 = 1800 mg/kg Rat (RTECS)
- [Secret] : LD50 2080 mg/kg Rat (NITE, ECHA)

*** Dermal**
- Product (ATEmix) : >5000mg/kg
- [Polyphosphoric acids ammonium salts] : LD50 > 5000 mg/kg Rat
- [Xylene] : LD50 >4350 mg/kg Rabbit (IUCLID) LD50 12126 mg/kg Rabbit (isomer: m-xylene)
- [Titanium dioxide] : LD50 > 10000 mg/kg Rabbit (IUCLID)
- [Toluene] : rabbit LD50=12,124 mg/kg (HSDB)
- [Melamine] : LD50 > 1000 mg/kg Rabbit (SIDS)
- [Pentaerythritol] : LD50 = 10000 mg/kg rabbit
- [Chlorinated paraffin] : LD50 > 10,000 mg/kg Rabbit
- [Ethylbenzene] : LD50 = 15400 mg/kg Rabbit (NITE)
- [Solvent naphtha (petroleum), light arom.] : LD50 > 2000 mg/kg Rabbit (IUCLID)
- [Secret] : LD50 > 2000 mg/kg Rat (SIDS)
- [Secret] : LD50 = 99 mg/kg Rabbit (SIDS (1997))
- [Secret] : LD50 = 12870 mg/kg rabbit (HSDB), LD50 16400 mg/kg Rabbit (OECD TG402, ECHA)
- [Secret] : LD50 > 2000 mg/kg Rabbit
- [Secret] : LD50 = 947 mg/kg Rabbit (RTECS)
- [Secret] : LD50 >16,000 mg/kg rabbit (NITE), LD0≧2000 mg/kg OECD TG402, GLP(ECHA)

*** Inhalation**
- Product (ATEmix) : 20.0mg/L < ATEmix <= 50.0 mg/l
- [Polyphosphoric acids ammonium salts] : Steam LC50 > 5.09 mg/l 4 hr Rat
- [Xylene] : LC50 5922 ppm 4 hr Rat (25.713 mg/l EPA OPP 81-3, GLP)
- [Titanium dioxide] : LC50 >3.43 mg/l Rat (OECD TG 403)
- [Toluene] : LC50 >20 mg/l Rat (OECD TG 403) (ECHA)
- [Melamine] : dust LC50 = 3.248 mg/l Rat (SIDS)
- [Pentaerythritol] : dust LC50 = 16.5 mg/l 4hr (11 g/m3 6hr) Rat
- [Ethylbenzene] : LC50 = 17.4 mg/L/4 hr Rat (4000 ppm/4hr)(EHC, ASTDR)
- [Secret] : LC50 = 59.59 mg/L/4hr Rat (HSDB)
- [Secret] : Dust LC50 = 1.9 mg/L (conversion value) (LC50 = 7.6 mg/L 1 hr) Rat male (OECD TG 403) (ECHA)
- [Solvent naphtha (petroleum), light arom.] : LC50 > 5.2 mg/L 4 hr Rat, LC50=3400 ppm 4hr (IUCLID)
- [Secret] : LC50 = 2.2 mg/l 4 hr Rat (SIDS (1997))
- [Secret] : LC50 = 72.6 mg/l 4 hr Rat (HSDB), LC50 >10000 ppm 6 hr Rat (OECE TG 403, GLP)
- [Secret] : (> 2mg/l , Rat - LC50 (W.R. Grace & Co.))
- [Secret] : Steam LC50 = 2.375 mg/l Mouse (RTECS)
- [Secret] : LC50 11.6 mg/l 4h Rat (OECD TG 403)(ECHA)

Corrosion/irritation
- Causes skin irritation

Serious eye damage/irritation
- Causes serious eye irritation

Respiratory sensitization
- Not available

Skin sensitization
- May cause an allergic skin reaction

Carcinogenicity
This material has been classified as not a carcinogen.

*** IARC**

- [Melamine] : Group 3
- [Secret] : Group 3
- [Secret] : Group 1 (Ethanol in alcoholic beverages)
- [Ethylbenzene] : Group 2B
- [Secret] : Group 2B
- [Titanium dioxide] : Group 2b ※ IARC
- [Toluene] : Group 3

*** EU CLP**

- [Solvent naphtha (petroleum), light arom.] : Carc.1B

○ Germ cell mutagenicity

- May cause genetic defects

○ Reproductive toxicity

- May damage fertility or the unborn child

○ STOT-single exposure

- Causes damage to organs(Refer Section SDS 11)
- May cause drowsiness and dizziness.

○ STOT-repeated exposure

- Causes damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ Aspiration hazard

- May be fatal if swallowed and enters airways

○ Acute toxicity

*The above data is reproduced directly from the Manufacturer's MSDS published figures.

12. ECOLOGICAL INFORMATION

This mixture may be harmful towards aquatic organisms and towards terrestrial vertebrates.

Ecotoxicity

○ **Fish**

- [Polyphosphoric acids ammonium salts] : LC50 123 ㎎/ℓ 96 hr Oncorhynchus mykiss (ECOTOX)
- [Xylene] : LC50=3.3mg/L 96 hr (NITE)
- [Titanium dioxide] : LL50 >100 ㎎/ℓ 96 hr Oryzias latipes(OECD TG 203)
- [Toluene] : LC50 5.5 ㎎/ℓ 96 hr (ECHA)
- [Melamine] : LC50 = 2290.81 ㎎/ℓ 96 hr (Estimate)
- [Pentaerythritol] : LC50 = 50000 ㎎/ℓ 48 hr (IUCLID)
- [Dipentaerythritol] : LC50 = 4060000 ㎎/ℓ 96 hr (Estimate)
- [Chlorinated paraffin] : LC50 = 0.06 ㎎/ℓ 96 hr Oncorhynchus mykiss (ECOTOX)
- [Ethylbenzene] : LC50 5.1 ㎎/ℓ 96 hr (ECHA)
- [Secret] : LC50 = 42 ㎎/ℓ 96 hr Oncorhynchus mykiss (ECOTOX)
- [Secret] : "LC50 >218.6441 mg/L 96 hr Pimephales promelas(Semi-still-water culture, ASTM 2000, GLP) (ECHA)"
- [Solvent naphtha (petroleum), light arom.] : LC50 = 9.22 ㎎/ℓ 96 hr Oncorhynchus mykiss (IUCLID)
- [Secret] : LC50 > 1116 ㎎/ℓ 96 hr (NITE)
- [Secret] : LC50 = 140 ㎎/ℓ 96 hr (SIDS)
- [Secret] : LC50 >100 ㎎/ℓ 96 hr Oryzias latipes (NITE: MOE eco-toxicity tests of chemicals, 1997)
- [Secret] : LC50 = 527 ㎎/ℓ 96 hr Pimephales promelas (ECOTOX)

- [Secret] : ECHA LD50 >179 ㎎/ℓ 96 hr Brachydanio rerio(OECD TG 203, GLP)

○ **Crustaceans**

- [Polyphosphoric acids ammonium salts] : EC50 = 813 ㎎/ℓ 48 hr Daphnia magna (ECOTOX)
- [Titanium dioxide] : EC50 >100 ㎎/ℓ 48 hr Daphnia magna(48h-EL50Daphnia magna>100 mg/L, 48h-EC50>100, 48h-EC10=91.2 mg/L, OECD TG 202)
- [Toluene] : EC50 3.78 ㎎/ℓ 48hr (ECHA)
- [Melamine] : LC50 = 6.884 ㎎/ℓ 48 hr (Estimate)
- [Pentaerythritol] : EC50 = 600 ㎎/ℓ 48 hr Daphnia magna (OECD SIDS)
- [Dipentaerythritol] : LC50 = 3170000 ㎎/ℓ 48 hr (Estimate)
- [Chlorinated paraffin] : EC50 = 102 ㎎/ℓ 24 hr Daphnia magna (IUCLID)
- [Ethylbenzene] : LC50 2.4 ㎎/ℓ ~ 1.8 ㎎/ℓ 48 hr Mysidopsis bahia(EC50 48hr >5.2mg/L, EPA 1985, GLP)
- [Secret] : EC50 = 2 ㎎/ℓ 48 hr Daphnia magna (ECOTOX)
- [Secret] : LC50 22 mg/L 96 hr ㎎/ℓ(Gammarus sp., Still-water culture) (ECHA)
- [Solvent naphtha (petroleum), light arom.] : EC50 = 6.14 ㎎/ℓ 48 hr Daphnia magna (IUCLID)
- [Secret] : LC50 >130 ㎎/ℓ 96 hr
- [Secret] : LC50 = 65 ㎎/ℓ 24 hr
- [Secret] : ECHA LC50 5102 ㎎ /ℓ 24 hr Daphnia magna(OECD TG 202)
- [Secret] : EC50 = 820 ㎎/ℓ 24 hr Daphnia magna (ECOTOX)
- [Secret] : ECHA EC50 >200 ㎎ /ℓ 48 hr Daphnia magna(OECD TG 202, GLP)

○ **Algae**

- [Titanium dioxide] : ErL50 >100 ㎎/ℓ 72 hr (Pseudokirchneriella subcapitata, 72h-ErL50 Pseudokirchneriella subcapitata >100 mg/L growth rate, static, 72h-EyL50 >100 mg/L static, OECD TG 201)
- [Melamine] : EC50 = 2.675 ㎎/ℓ 96 hr (Estimate)
- [Dipentaerythritol] : EC50 = 1520000 ㎎/ℓ 96 hr (Estimate)
- [Ethylbenzene] : EC50 3.6 ㎎/ℓ 96 hr (EPA 1985, GLP)
- [Secret] : ErC50 0.0455 ~ 0.6999 mg/L 72 hr other (Pseudokirchneriella subcapitata, Still-water culture, OECD Guideline 201) (ECHA)
- [Solvent naphtha (petroleum), light arom.] : EC50 = 19 ㎎/ℓ 72 hr Selenastrum capricornutum (IUCLID)
- [Secret] : EC50 = 2.2 ㎎/ℓ 96 hr
- [Secret] : EC50 = 32.9 ㎎/ℓ 72 hr (Chlamydomonas reinhardtii(Algae)) (ECOTOX)

○ **Persistence**

- [Xylene] : log Kow=3.16 (NITE)
- [Toluene] : log Kow 2.73 (HSDB)
- [Melamine] : log Kow = -1.37
- [Pentaerythritol] : log Kow = -1.69
- [Dipentaerythritol] : log Kow = -2.61 (Estimate)
- [Chlorinated paraffin] : log Kow 6 (IUCLID)
- [Ethylbenzene] : log Kow 3.6 (ECHA)
- [Secret] : -0.5304 log Kow (molbase)
- [Solvent naphtha (petroleum), light arom.] : log Kow = 2.1 ~ 6 (IUCLID)
- [Secret] : log Kow = -1.38
- [Secret] : log Kow = 0.83 (PHYSPROP Database)

- [Secret] : log Kow 2.56 (SRC)
- [Secret] : log Kow = 0.81 (ICSC)
- [Secret] : ECHA 1.9 log Kow (OECD TG 117)

○ **Degradability**

- [Secret] : BOD5/COD = 0.57 (IUCLID)
- [Solvent naphtha (petroleum), light arom.] : BOD5/COD = 0.43

○ **Bioaccumulative potential**

- [Melamine] : BCF = 0.05 (HSDB)
- [Pentaerythritol] : BCF = 0.3 ~ 2.1 (IUCLID)
- [Ethylbenzene] : BCF 1
- [Secret] : BCF = 2.4 (Estimate)

○ **Biodegration**

- [Xylene] : 39 (%) (NITE)
- [Toluene] : Readily biodegradable (ECHA)
- [Pentaerythritol] : Biodegradability = 0 (%) 28 day (AFNOR T 90-302)
- [Ethylbenzene] : 70-80% 28 day (ISO 14593 CO2, GLP)
- [Secret] : Biodegradability = 75 (%) 20 day (Aerobic, Other, Easily decomposed) (IUCLID)
- [Secret] : Biodegradability = 96 (%) (NITE: existing chemical safety inspections data)
- [Secret] : ECHA 83% 28 day (OECD TG 301, GLP)

○ **Mobility in soil**

- [Xylene] : log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
- [Melamine] : Koc = 8452.79 (log Koc = = 3.93, Estimated from water solubility)
- [Secret] : Koc = 1
- [Secret] : log koc= 0.03
- [Secret] : ECHA 101.85 Koc (estimate)

*The above data is reproduced directly from the Manufacturer's MSDS published figures.

13. DISPOSAL CONSIDERATIONS

Persons conducting disposal, recycling or reclamation activities should ensure that appropriate personal protection equipment is used, see "Section 8. Exposure Controls and Personal Protection" of this SDS. If possible material and its container should be recycled. If material or container cannot be recycled, dispose in accordance with local, regional, national and international Regulations.

Disposal of this product must comply with the Hazardous Substances (Disposal) Notice 2017 and the requirements of the Resource Management Act for which approval should be sought from the Regional Authority. The substance must be treated and therefore rendered non-hazardous before discharge to the environment.

Contaminated packaging	Disposal of contaminated packaging must comply with the Hazardous Substances (Disposal) Notice 2017 clause 12. Ensure that the package is rendered incapable of containing any substance and is disposed in a manner that is consistent with the requirements of the substance it contained and the material of the package. If possible, reuse or recycle the packing.

14. TRANSPORT INFORMATION

14.1 ROAD AND RAIL TRANSPORT

Classified as Dangerous Goods according to NZS 5433 (Transport of Hazardous Substances on Land). Considered dangerous goods for transport.

UN number:	1263
Dangerous Goods Class(es)	3
Precautions:	Flammable liquid
Proper shipping name:	PAINT
Packing group:	III
Hazchem code:	3Y

14.2 MARINE TRANSPORT

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

UN number:	1263
Dangerous Goods Class(es)	3
Precautions:	Flammable liquid
Proper shipping name:	PAINT
Packing group:	III
Hazchem code:	3Y

14.3 AIR TRANSPORT

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN number:	1263
Dangerous Goods Class(es)	3
Precautions:	Flammable liquid
Proper shipping name:	PAINT
Packing group:	III
Hazchem code:	3Y

15. REGULATORY INFORMATION

15.1 HSNO Group Standard.
This product is an approved substance under the Hazardous Substances and New Organisms Act (HSNO).
Group Approval code: HSR002669, Surface Coatings and Colourants (Flammable, Toxic [6.7]) Group Standard 2017.
All ingredients appear on the NZIoC.

This material is not subject to the following international agreements:
Montreal Protocol (Ozone depleting substances)
The Stockholm Convention (Persistent Organic Pollutants)
The Rotterdam Convention (Prior Informed Consent)
Basel Convention (Hazardous Waste)
International Convention for the Prevention of Pollution from Ships (MARPOL)

Key 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 > 1000L is stored.
Secondary containment	Required if > 10,000L is stored.
Signage	Required if > 1000L is stored.
Location compliance certificate	Required if > 500L (containers >5L), 1500L (containers ≤5L), 250L (in use) is stored.
Hazardous Area Zone	Must be established if > 100L (closed containers), 25L (decanting), 5L (open occasionally), 1L (in use), stored in any one location is stored.
Fire extinguisher	If > 500L present.

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

16.1 Abbreviations

Approval Code	Approval HSR002669, Surface Coatings and Colourants (Flammable, Toxic [6.7]) Group Standard 2017 Controls, EPA. www.epa.govt.nz
BEI	Biological Exposure Indices
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.
EC_{50}	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
EPA	Environmental Protection Authority (New Zealand)
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/UEL	Lower Explosive Limit/ Upper 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)
NZIoC	New Zealand Inventory of Chemicals
STEL	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15-minute period, provided the TWA is not exceeded.
TWA	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours), for a five-day working week over an entire working life.
UN Number	United Nations Number
WES	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed during work hours (usually 8 hours, 5 days a week). The WES relates to exposure that has been measured by personal monitoring using procedures that gather air samples in the worker's breathing zone.

References

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

Prepared with reference to: EPA - *Hazardous Substances (Safety Data Sheets) Notice 2017.*

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Disclaimer:
This safety data sheet attempts to describe as accurately as possible the potential exposures associated with normal use of the product described herein. Health and safety precautions in the data sheet may not be adequate for all individuals and/or situations. Users have the responsibility to evaluate and use this product safely and to comply with all applicable laws and regulations. Whilst the information contained in this document is based on data, which, to the best of our knowledge, was accurate and reliable at the time of preparation, no warranty or responsibility can be accepted by Chemsafety Ltd for errors and omissions. The provision of this information should not be construed as a recommendation to use any of our products in violation of any patent rights or in breach of any statute or regulation. Users are advised to make their own determination as to the suitability of this information in relation to their purposes and specific circumstances. Since the information contained in this document may be applied under conditions beyond our control, no responsibility can be accepted by us for any loss or damage caused by any person acting or refraining from action as a result of this information. The user is responsible for that last revision of this document is used. Please check on www.fireshieldcoatings.com

End of SDS