SAFETY DATA SHEET 2025

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name : ShieldPoly F-15 Part A

Other Means of Identification : None

Recommended Use of the Chemical and Restrictions on Use

Recommended Use : Component of a Polyurea System

Restrictions on Use : Professional use of aprotic polar solvents for cleaning.
Consumer spray applications.
Consumer products requiring heating above 40°C.

Supplier's Information

Name : ShieldCrete® Australia

Company Name : ShieldCrete® Services Australia

Address : 48A Medcalf St., Warners Bay, NSW 2282

Contact Numbers : +61 8 6117 5821

Email : info@shieldcreteinternational.com.au

Website : www.shieldcreteinternational.com.au

Emergency Phone Numbers : Poisons Information Center – Australia (13 1126), New Zealand (03 4747000)

SECTION 2: HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Inhalation):	Category 4
Skin corrosion/irritation:	Category 2
Serious eye damage/eye irritation:	Category 2A
Respiratory sensitisation:	Category 1
Skin sensitisation:	Category 1
Carcinogenicity:	Category 2
Specific target organ toxicity - single exposure:	Category 3 (Respiratory system)
Specific target organ toxicity - repeated exposure:	Category 2 (Inhalation)
Short-term (acute) aquatic hazard:	Category 2

GHS Label Elements

Hazard pictograms:

Signal Word: **Danger**

Hazard Statements:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs through prolonged or repeated exposure if inhaled.
H401 Toxic to aquatic life.

Precautionary Statements:
Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe mist or vapours.
P264 Wash skin thoroughly after handling.
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/ protective clothing/ eye protection/ face protection/ hearing protection.
P284 Wear respiratory protection.

Response:
P302 + P352 IF ON SKIN: Wash with plenty of water.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/ doctor.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal:
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards which do not result in classification: None known.

SECTION 3: COMPOSITES / INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Chemical Name / CAS No.	CAS-No.	Concentration (% w/w)
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis[isocyanatobenzene]	39420-98-9	>= 60 - <= 100
4,4'-methylenediphenyl diisocyanate	101-68-8	>= 20 - < 30
2,4'-methylenediphenyl diisocyanate	5873-54-1	>= 10 - < 20

SECTION 4: FIRST AID MEASURES

General advice:
Move out of dangerous area.
Do not leave the victim unattended.
Get medical attention immediately if symptoms occur.
Show this material safety data sheet to the doctor in attendance.

If inhaled:
If breathed in, move person into fresh air.
Call a physician or poison control centre immediately.
Keep patient warm and at rest.
Keep respiratory tract clear.
If breathing is difficult, give oxygen.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious, place in recovery position and seek medical advice.
Consult a physician immediately if symptoms such as shortness of breath or asthma are observed.
A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitized persons.
The exposed person may need to be kept under medical surveillance for 48 hours.
LC50 (rat): ca. 490 mg/m³ (4 hours): using experimentally produced respirable aerosol having aerodynamic diameter <5microns.
Methods used to generate the exposure concentrations in the animal studies use extreme laboratory conditions and does not represent actual exposure conditions of the material in the workplace, storage, transportation or expected use on the market due to the very low vapour pressure. Therefore, these test results cannot be used to for hazard classification of the material. Rather, an acute toxicity estimate is calculated based on weight of evidence and expert judgement and is used to justify a modified classification for acute inhalation toxicity.

In case of skin contact: In case of contact, immediately flush skin with soap and plenty of water.
Take off contaminated clothing and shoes immediately.
Wash contaminated clothing before reuse.
Thoroughly clean shoes before reuse.
Call a physician if irritation develops or persists.
An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-Tam≈, PEG 400) or corn oil may be more effective than soap and water.

In case of eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Protect unharmed eye.
Keep eye wide open while rinsing.
Seek medical advice.

If swallowed: Gently wipe or rinse the inside of the mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Keep respiratory tract clear.
Keep at rest.
If a person vomits when lying on his back, place him in the recovery position.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed:

Severe allergic skin reactions, bronchiospasm and anaphylactic shock.
This product is a respiratory irritant and potential respiratory sensitiser: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation.
Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing.
The onset of the respiratory symptoms may be delayed for several hours after exposure.
A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.
Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure if inhaled.

Protection of first aiders:

No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
First Aid responders should pay attention to self-protection and use the recommended protective clothing

Notes to physician: Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.
The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

SECTION 5: FIRE FIGHTING MEASURES

Suitable extinguishing media:

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Foam
Carbon dioxide (CO2)
Dry powder

Unsuitable extinguishing media:

Water may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous.

Specific hazards during firefighting:

Do not allow run-off from firefighting to enter drains or water courses.
The pressure in sealed containers can increase under the influence of heat.
Exposure to decomposition products may be a hazard to health

Hazardous combustion products:

Combustion products may include carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

Specific extinguishing methods:

Cool containers/tanks with water spray.
Standard procedure for chemical fires.
Due to reaction with water producing CO2-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed.
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Prevent fire extinguishing water from contaminating surface water or the ground water system.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters:

Wear an approved positive pressure self-contained breathing apparatus in addition to standard firefighting gear.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Special protective equipment for fire-fighters:

Immediately evacuate personnel to safe areas.
Use personal protective equipment.
If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.
Ensure adequate ventilation.
Keep people away from and upwind of spill/leak.
Only qualified personnel equipped with suitable protective equipment may intervene.
For additional precautions and advice on safe handling, see section 7.
Never return spills in original containers for re-use.
Make sure that there is a sufficient amount of neutralizing/ absorbent material near the storage area.
The danger areas must be delimited and identified using relevant warning and safety signs.
Treat recovered material as described in the section "Disposal considerations".
For disposal considerations see section 13.

Environmental precautions:

Do not allow uncontrolled discharge of product into the environment.
Do not allow material to contaminate ground water system.
Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
Local authorities should be advised if significant spillages cannot be contained.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up:

Clean-up methods - small spillage.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local/ national regulations (see section 13).
Clean contaminated surface thoroughly.
Sweep up or vacuum up spillage and collect in suitable container for disposal.
Neutralize small spillages with decontaminant.
The compositions of liquid decontaminants are given in Section 16.
Remove and dispose of residues.
Clean-up methods - large spillage
If the product is in its solid form: Spilled MDI flakes should be picked up carefully.
The area should be vacuum cleaned to remove remaining dust particles completely.
If the product is in its liquid form: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder,

universal binder, sawdust).
Leave to react for at least 30 minutes.
Shovel into open-top drums for further decontamination.
Wash the spillage area with water.
Test atmosphere for MDI vapour.
Keep in suitable, closed containers for disposal

SECTION 7: HANDLING AND STORAGE

Technical measures:

Ensure that eyewash stations and safety showers are close to the workstation location.

Local/Total ventilation:

Use only with adequate ventilation.

Advice on protection against fire and explosion:

Normal measures for preventive fire protection.

Advice on safe handling:

For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Do not breathe vapours/dust.
Do not swallow.
Do not get in eyes or mouth or on skin.
Do not get on skin or clothing.
Avoid exposure - obtain special instructions before use.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Keep container closed when not in use.
Open drum carefully as content may be under pressure.
Dispose of rinse water in accordance with local and national regulations.
Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.
Medical supervision of all employees who handle or come in contact with respiratory sensitizers is recommended.
Persons allergic to isocyanates, and particularly those suffering from asthma or other respiratory conditions, should not work with isocyanates.
Industrial use of aprotic polar solvents for cleaning can release hazardous primary aromatic amines (>0.1%).
Sudden Release of Pressure Hazard.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice.
Wash face, hands and any exposed skin thoroughly after handling.
Remove contaminated clothing and protective equipment before entering eating areas.
When using do not eat, drink or smoke.
Contaminated work clothing should not be allowed out of the workplace.
Wash hands before breaks and immediately after handling the product.
Wash hands before breaks and at the end of workday.

Conditions for safe storage:

Keep containers tightly closed in a dry, cool and well-ventilated place.
Keep in properly labeled containers.
Observe label precautions.
Protect from moisture.
Electrical installations / working materials must comply with the technological safety standards.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Materials to avoid:

For incompatible materials please refer to Section 10 of this SDS.

Recommended storage temperature: 25°C

Conditions for safe storage: 9 Months

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Ingredients	CAS No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.02 mg/m³ (NCO)	AU OEL
	Further information: Category 2 (Carc. 2) Suspected human carcinogen, Sensitizer			
		STEL	0.07 mg/m³ (NCO)	AU OEL
	Further information: Category 2 (Carc. 2) Suspected human carcinogen, Sensitizer			
2,4'-methylenediphenyl diisocyanate	5873-54-1	TWA	0.02 mg/m³ (NCO)	AU OEL
	Further information: Sensitizer			
		STEL	0.07 mg/m³ (NCO)	AU OEL
	Further information: Sensitizer			
		TWA	0.02 mg/m³ (NCO)	
	Further information: Category 2 (Carc. 2) Suspected human carcinogen, Sensitizer			
		STEL	0.07 mg/m³ (NCO)	AU OEL
	Further information: Category 2 (Carc. 2) Suspected human carcinogen, Sensitizer			

Personal Protective Equipment

Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
In emergency, non-routine and unknown exposure situations, including confined space entries, a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA)or a full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.

Refer to Australian/New Zealand Standard AS/NZS 1715 and AS/NZS 1716 for guidance on selection and use of respiratory devices.

Respiratory protection: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Refer to Australian/New Zealand Standard AS/NZS 1715 and AS/NZS 1716 for guidance on selection and use of respiratory devices.

Filter type: Combined particulates and organic vapour type.

Hand Protection

Remarks:

The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin.

Use chemical resistant gloves classified under Standard EN374: protective gloves against chemicals and microorganisms. Examples of glove materials that might provide suitable protection include: Butyl rubber, Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol copolymers laminated ("EVAL"), Polychloroprene (Neoprene*), Nitrile/butadiene rubber ("nitrile" or "NBR"), Polyvinyl chloride ("PVC" or "vinyl"), Fluoroelastomer (Viton*).

When prolonged or frequently repeated contact may occur, a glove with protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN374) is recommended.

When only brief contact is expected, a glove with protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN374) is recommended.
Notice: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to: other chemicals that may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as instructions/specifications provided by the glove supplier.

By industrial use of aprotic polar solvents for cleaning: Butyl rubber (0.7mm), Nitrile rubber (0.4mm), Chloroprene (0.5mm).

Refer to Australian/New Zealand Standard AS/NZS 2161.1: 2000 for guidance on selection and use of protective gloves.

Eye protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Chemical splash goggles.

Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.

Ensure that eyewash stations and safety showers are close to the workstation location.

Refer to Australian/New Zealand Standard AS/NZS 1337:1992 for guidance on selection and use of protective eyewear.

Skin and body protection:

Impervious clothing.

Choose body protection according to the amount and concentration of the dangerous substance at the workplace.

Recommended: Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C', Tyvek Pro 'F' disposable coverall.

Protective measures:

Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing.

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Ensure that eye flushing systems and safety showers are located close to the working place.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance	liquid	**Color**	yellow, Clear
Odor	No data is available on the product itself	**Odor Threshold**	No data is available on the product itself
pH	substance/mixture reacts with water	**Melting point/ Freezing point**	No data is available on the product itself
Boiling point/ Boiling range	No information available	**Flash Point**	210 °C Method: Cleveland open cup
Evapouration Rate	No data is available on the product itself	**Flammability (solid, gas)**	No data is available on the product itself
Flammability (liquids)	No data is available on the product itself	**Upper explosion limit / Upper flammability limit**	No data is available on the product itself
Vapour pressure	No data is available on the product itself	**Lower explosion limit / Lower flammability limit**	No data is available on the product itself
Relative vapour density	No data is available on the product itself	**Relative density**	No data available
Density	1.11 g/cm^3 (25 °C)	**Partition coefficient: N-octanol/water**	No Data
Solubility(ies): Water solubility	No data is available on the product itself	**Auto Ignition Temperature**	No data is available on the product itself
Solubility(ies): Solubility in other solvents	No data is available on the product itself	**Decomposition temperature**	No data is available on the product itself
Self-Accelerating decomposition temp (SADT)	No data is available on the product itself	**Viscosity, dynamic**	600 - 800 mPa.s (25°C)
Explosive properties	No data is available on the product itself	**Oxidizing properties**	No data is available on the product itself
Particle size	No data is available on the product itself		

SECTION 10: STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions:

Reaction with water (moisture) produces CO2-gas.
Exothermic reaction with materials containing active hydrogen groups.
The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents.
MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface.
A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.

Conditions to avoid:

Extremes of temperature and direct sunlight.
Exposure to air or moisture over prolonged periods.

Incompatible materials:

Acids
Amines
Bases
Metals
Water

Hazardous decomposition products:

Combustion products may include carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN.
In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity

Product	Harmful if inhaled.
Acute inhalation toxicity	Assessment: The substance/mixture is not toxic on inhalation as defined by dangerous goods regulations. Remarks: Methods used to generate the exposure concentrations in the animal studies use extreme laboratory conditions and does not represent actual exposure conditions of the material in the workplace, storage, transportation or expected use on the market due to the very low vapour pressure. Therefore, these test results cannot be used to for hazard classification of the material. Rather, an acute toxicity estimate is calculated based on weight of evidence and expert judgement and is used to justify a modified classification for acute inhalation toxicity. Acute toxicity estimate: 10.15 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method

Components	Acute oral toxicity	Acute inhalation toxicity	Acute dermal toxicity
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	LD50 (Rat, male): >10,000 mg/kg Method: OECD Test Guideline 401	LC50 (Rat): 0.49 mg/l Exposure time: 4 h Test atmosphere: dust/mist LC50 (Rat, male and female): > 2.24 mg/l Exposure time: 1 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Assessment: The component/mixture is moderately toxic after short term inhalation.	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402
4,4'-methylenediphenyl diisocyanate	LD50 (Rat, male and female): > 2,000 mg/kg Assessment: The substance or mixture has no acute oral toxicity Remarks: Information given is based on data obtained from similar substances.	LC50 (Rat, male and female): 431.18 mg/m^3 Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Assessment: The component/mixture is moderately toxic after short term inhalation.	LD50 (Rabbit): > 9,400 mg/kg Remarks: Information given is based on data obtained from similar substances.
2,4'-methylenediphenyl diisocyanate	LD50 (Rat): > 2,000 mg/kg Assessment: The substance or mixture has no acute oral toxicity. Remarks: Information given is based on data obtained from similar substances.	LC50 (Rat, male and female): 431.18 mg/m^3 Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Assessment: The component/mixture is moderately toxic after short term inhalation.	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402 GLP: no Remarks: Information given is based on data obtained from similar substances.

Skin Corrosion / Irritation

Product	Cause skin irritation.
Remarks	May cause skin irritation and/or dermatitis.

Components	Species	Assessment	Method	Result
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Rabbit	Irritant	OECD Test Guideline 404	Irritating to skin
4,4'-methylenediphenyl diisocyanate	Rabbit	Irritating to skin	OECD Test Guideline 404	Irritating to skin
2,4'-methylenediphenyl diisocyanate	Rabbit	Irritating to skin	OECD Test Guideline 404	Irritating to skin

Serious Eye Damage / Eye Irritation

Product	Causes serious eye irritation.

Remarks	Vapours may cause irritation to the eyes, respiratory system and the skin.					
Components	**Species**	**Result**	**Assessment**	**Method**	**Remarks**	
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Rabbit	Mild eye irritation	Irritant	No information available	Mild eye irritation largely based on human evidence.	
4,4'-methylenediphenyl diisocyanate	Rabbit	Irritating to eyes	Irritating to eyes	OECD Test Guideline 405		
2,4'-methylenediphenyl diisocyanate	Rabbit	Eye irritation		OECD Test Guideline 405	Information given is based on data obtained from similar substances. largely based on human evidence	

Respiratory or Skin Sensitisation

Skin Sensitisation	May cause an allergic skin reaction.
Respiratory Sensitisation	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Product	
Remarks	Causes sensitisation.

Components	
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Exposure routes: Skin Species: Mouse Assessment: May cause sensitisation by skin contact. Results : Causes sensitisation. : Respiratory Tract : Guinea pig : May cause sensitisation by inhalation. : Causes sensitisation. Assessment: Mild eye irritation
4,4'-methylenediphenyl diisocyanate	Exposure routes: Skin Species: Guinea pig Assessment: May cause sensitisation by skin contact. Method: OECD Test Guideline 406 Result: May cause sensitisation by skin contact. Test Type : Local lymph node assay (LLNA) : Respiratory Tract : Guinea pig : May cause sensitisation by inhalation. : May cause sensitisation by inhalation. Assessment: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
2,4'-methylenediphenyl diisocyanate	Exposure routes: Respiratory Tract Species: Guinea pig Assessment: May cause sensitisation by inhalation. Result: May cause sensitisation by inhalation. Remarks : Information given is based on data obtained from similar substances. : Guinea pig : May cause sensitisation by skin contact. Method : OECD Test Guideline 406 : May cause sensitisation by skin contact.

Chronic Toxicity

Germ cell mutagenicity	Not classified due to lack of data.

Components	**Genotoxicity in Vitro**	**Genotoxicity in Vivo**
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Concentration: 200 ug/plate Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B.13/14 Result: negative	Application Route: Inhalation Exposure time: 3 Weeks Dose: 118 mg/m^3 Method: OECD Test Guideline 474 Result: negative

4,4'-methylenediphenyl diisocyanate	Test Type: reverse mutation assay Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: Directive 67/548/EEC, Annex, B.13/14 Result: negative	Test Type: Micronucleus test Species: Rat (male) Cell type: Somatic Application Route: Inhalation Exposure time: 3 Weeks Method: OECD Test Guideline 474 Result: negative Test Type: comet assay Species: Rat (male) Cell type: Liver cells Application Route: inhalation (dust/mist/fume) Dose: 2.5/4.9/12 mg/m^3 Method: OECD Test Guideline 489 Result: negative
2,4'-methylenediphenyl diisocyanate	Test Type: reverse mutation assay Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative	Test Type: comet assay Result: negative Remarks: Information given is based on data obtained from similar substances. Test Type: Micronucleus test Species: Rat (male) Cell type: Somatic Application Route: Inhalation Exposure time: 3 Weeks Method: OECD Test Guideline 474 Result: negative Remarks: Information given is based on data obtained from similar substances.

Carcinogenicity

Product	Suspected of causing cancer.
Remarks	Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur. Industrial use of aprotic polar solvents for cleaning can release hazardous primary aromatic amines (>0.1%) Based on animal studies, primary aromatic amines are considered as potential carcinogen to humans. Some of those chemicals are proven carcinogens to humans Provided the recommended personal protective equipment and hygiene measures are applied, no adverse effects to human health are to be expected.

Components	
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Species: Rat, male and female Application Route: Inhalation Exposure time: 24 month(s) Dose: 1 mg/m^3 Frequency of Treatment: 5 daily Method: OECD Test Guideline 453 Result: positive Target Organs: Lungs Carcinogenicity - Assessment: Limited evidence of carcinogenicity in animal studies
4,4'-methylenediphenyl diisocyanate	Species: Rat, female Application Route: Inhalation Exposure time: 24 month(s) Activity duration: 17 h Dose: 0, 0.2, 0.7, 2.1 mg/m3 mg/m^3 Frequency of Treatment: 5 days / week NOEL: 0.7 mg/m^3 LOAEL: 0.23 mg/m^3 Result: positive Target Organs: Lungs Carcinogenicity - Assessment: Suspected human carcinogens
2,4'-methylenediphenyl diisocyanate	Species: Rat, male and female Application Route: Inhalation Exposure time: 24 month(s)

	Dose: 1 mg/m³ Frequency of Treatment: 5 daily NOAEL: 1 mg/m³ Method: OECD Test Guideline 453 Target Organs: Lungs Remarks: Information given is based on data obtained from similar substances. Carcinogenicity - Assessment: Suspected human carcinogens

Reproductive Toxicity

Product	Not classified due to lack of data.

Components	Effects on Fetal Development
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Species: Rat, male and female Application Route: Inhalation Method: OECD Test Guideline 414 Result: No teratogenic effects
2,4'-methylenediphenyl diisocyanate	Test Type: Pre-natal Species: Rat, females Application Route: Inhalation General Toxicity Maternal: NOAEC: 4 mg/m³ Developmental Toxicity: NOAEC: 4 mg/m³ Result: No teratogenic effects Remarks: Information given is based on data obtained from similar substances.

STOT - Single Exposure

Product	May cause respiratory irritation.		
Components	**Exposure Routes**	**Target Organs**	**Assessment**
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Inhalation (dust/mist/fume)	Respiratory Tract	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
4,4'-methylenediphenyl diisocyanate	Inhalation	Respiratory system	May cause respiratory irritation. The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
2,4'-methylenediphenyl diisocyanate	Inhalation	Respiratory Tract	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation. May cause respiratory irritation.

STOT - Single Exposure

Product	May cause damage to organs through prolonged or repeated exposure if inhaled.		
Components	**Exposure Routes**	**Target Organs**	**Assessment**
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Inhalation	Respiratory Tract	May cause damage to organs through prolonged or repeated exposure.
4,4'-methylenediphenyl diisocyanate	Inhalation	Respiratory system	May cause damage to organs through prolonged or repeated exposure. The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.
2,4'-methylenediphenyl diisocyanate	Inhalation	Respiratory Tract	May cause damage to organs through prolonged or repeated exposure. The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated Dose Toxicity

Components	
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Species: Rat, male and female NOEC: 0.2 mg/m³ Exposure time: 2 yr Number of exposures: 5 d Method: OECD Test Guideline 453 Repeated dose toxicity - Assessment: Mild eye irritation

4,4'-methylenediphenyl diisocyanate	Species: Rat, female LOEC: 1 mg/m^3 Application Route: Inhalation Test atmosphere: dust/mist Exposure time: 2 years 17 h Number of exposures: 5 days / week Dose: 0, 0.2, 0.7, 2.1 mg/m3 Method: Chronic toxicity Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.
2,4'-methylenediphenyl diisocyanate	Species: Rat, female LOEC: 1 mg/m^3 Application Route: Inhalation Test atmosphere: dust/mist Exposure time: 2 years 17 h Number of exposures: 5 days / week Dose: 0, 0.2, 0.7, 2.1 mg/m3 Method: Chronic toxicity Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Aspiration Toxicity

Not classified due to lack of data.	
Experience with Human Exposure	No data available
Toxicology, Metabolism, Distribution	No data available
Neurological effects	No data available
Further information	
Product	
Remarks	No data available

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

Components		
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Toxicity to fish	LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203
	Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
	Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211
	Toxicity to microorganisms	EC50 (activated sludge): > 100 mg/l Exposure time: 3 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 209
	Toxicity to soil dwelling organisms	NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg Exposure time: 336 h Method: OECD Test Guideline 207
4,4'-methylenediphenyl diisocyanate	Toxicity to fish	LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l End point: mortality Exposure time: 96 h Test substance: Fresh water Method: OECD Test Guideline 203

		Toxicity to daphnia and other aquatic invertebrates	EL50 (Daphnia magna (Water flea)): 9 mg/l End point: Immobilization Exposure time: 48 h Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 202
		Toxicity to algae/aquatic plants	EC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201 GLP: yes
		Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211 Remarks: Information given is based on data obtained from similar substances.
		Toxicity to microorganisms	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Test Type: static test Method: OECD Test Guideline 209
		Toxicity to soil dwelling organisms	NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg Exposure time: 336 h
		Plant toxicity	EC50: >1000 milligram per kilogram Exposure time: 14 d Species: Avena sativa (oats) EC50: >1000 milligram per kilogram Exposure time: 14 d Species: Lactuca sativa (lettuce)
	Ecotoxicology Assessment	Acute Aquatic Toxicity	Toxic to aquatic life.
	2,4'-methylenediphenyl diisocyanate	Toxicity to fish	LL50 (Danio rerio (zebra fish)): > 100 mg/l End point: mortality Exposure time: 96 h Test substance: Fresh water Method: OECD Test Guideline 203
		Toxicity to daphnia and other aquatic invertebrates	EL50 (Daphnia magna (Water flea)): 3.7 mg/l End point: Immobilization Exposure time: 48 h Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 202
		Toxicity to algae/aquatic plants	EL10 (algae): > 100 mg/l Exposure time: 72 h Test substance: Fresh water Method: OECD Test Guideline 201 NOELR (algae): >= 100 mg/l Exposure time: 72 h Test substance: Fresh water Method: OECD Test Guideline 201
		Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): >= 10 mg/l Exposure time: 21 d Test Type: semi-static test Test substance: Fresh water Method: OECD Test Guideline 211 Remarks: Information given is based on data obtained from similar substances.
		Toxicity to microorganisms	EC50 (activated sludge): > 1,000 mg/l Exposure time: 3 h Test substance: Fresh water Method: OECD Test Guideline 209 Remarks: Information given is based on data obtained from similar substances. NOEC (activated sludge): 250 mg/l

		Exposure time: 3 h Test substance: Fresh water Method: OECD Test Guideline 209 Remarks: Information given is based on data obtained from similar substances.
	Toxicity to soil dwelling organisms	EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg Exposure time: 14 d Method: OECD Test Guideline 207 Remarks: Information given is based on data obtained from similar substances.
	Plant toxicity	EC50: >1000 milligram per kilogram Exposure time: 14 d Species: Avena sativa (oats) Method: OECD Test Guideline 208 NOEC: >=1000 milligram per kilogram Exposure time: 14 d Species: Avena sativa (oats) Method: OECD Test Guideline 208 EC50: >1000 milligram per kilogram Exposure time: 14 d Species: Lactuca sativa (lettuce) Method: OECD Test Guideline 208 NOEC: >=1000 milligram per kilogram Exposure time: 14 d Species: Lactuca sativa (lettuce) Method: Terrestrial Plants Test: Seedling Emergence and Seedling Growth Test
Ecotoxicology Assessment	Acute aquatic toxicity	Toxic to aquatic life.

Persistence and degradability

Components		
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Biodegradability	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 0 % Exposure time: 28 d Method: Inherent Biodegradability: Modified MITI Test (II
4,4'-methylenediphenyl diisocyanate	Biodegradability	Aerobic Inoculum: activated sludge, non-adapted Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F Test substance: Fresh water
	Stability in water	Degradation half-life (DT50): 20 hrs (25 °C) Remarks: Fresh water
2,4'-methylenediphenyl diisocyanate	Biodegradability	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 0 % Exposure time: 28 d Method: Inherent Biodegradability: Modified MITI Test (II) Remarks: Information given is based on data on the components and the ecotoxicology of similar products.
	Biochemical Oxygen Demand (BOD)	77 mg/l

Bioaccumulative Potential

Components		
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-hydroxy-, polymer with 1,1'-methylenebis [isocyanatobenzene]	Bioaccumulation	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Remarks: Bioaccumulation is unlikely.
	Partition coefficient: n-octanol/water	log Pow: 4.51 (20 °C) pH: 7 Method: OECD Test Guideline 117

	4,4'-methylenediphenyl diisocyanate	Bioaccumulation	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Exposure time: 28 d Concentration: 0.08 µg/l Method: OECD Test Guideline 305 Remarks: Bioaccumulation is unlikely.
		Partition coefficient: n-octanol/water	log Pow: 4.51 (22 °C) pH: 7 Method: OECD Test Guideline 117
	2,4'-methylenediphenyl diisocyanate	Bioaccumulation	Species: Fish Bioconcentration factor (BCF): 200 Concentration: 0.08 µg/l Method: OECD Test Guideline 305 GLP: yes Remarks: Bioaccumulation is unlikely.
		Partition coefficient: n-octanol/water	log Pow: 4.52 (20 °C) pH: 7 Method: OECD Test Guideline 117 GLP: no
Mobility in Soil			
	Components		
	4,4'-methylenediphenyl diisocyanate	Distribution among environmental compartments	log Koc: 4.5 Method: QSAR
		Stability in soil	Soil temperature: 22 °C Dissipation time: 24 h Method: OECD Test Guideline 307
	2,4'-methylenediphenyl diisocyanate	Distribution among environmental compartments	Koc: 4.5 Method: QSAR
Other Adverse Effects			
	Product	Additional ecological information	No data available

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues: Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14: TRANSPORT INFORMATION

International Regulations

UNRTDG	UN number:	Not applicable
	Proper shipping name:	Not applicable
	Class:	Not applicable
	Subsidiary risk:	Not applicable
	Packing group:	Not applicable
	Labels:	Not applicable
	Environmentally hazardous:	no
IATA-DGR	UN / ID number:	Not applicable
	Proper shipping name:	Not applicable
	Class:	Not applicable
	Subsidiary risk:	Not applicable

	Packing group:	Not applicable
	Labels:	Not applicable
	Packing instruction (cargo aircraft):	Not applicable
	Packing instruction (passenger aircraft):	Not applicable
IMDG-Code	UN number:	Not applicable
	Proper shipping name:	Not applicable
	Class:	Not applicable
	Subsidiary risk:	Not applicable
	Packing group:	Not applicable
	Labels:	Not applicable
	EmS Code:	Not applicable
	Marine pollutant:	Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic Regulation

ADG	UN number:	Not applicable
	Proper shipping name:	Not applicable
	Class:	Not applicable
	Subsidiary risk:	Not applicable
	Packing group:	Not applicable
	Labels:	Not applicable
	Hazchem Code:	Not applicable

Special Precautions for User:

Not applicable

SECTION 15: REGULATORY INFORMATION

Safety, Health and Environmental Regulations / Legislation specific for the Substance or Mixture

Therapeutic Goods (Poisons Standard) Instrument:

No poison schedule number allocated

Australia Work Health and Safety Regulations - Schedule 10 Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals:

There is no applicable prohibition, authorization and restricted use requirements, including for carcinogens referred to in Schedule 10 of the model WHS Act and Regulations.

The ingredients of this product are reported in the following inventories:

DSL:	All components of this product are on the Canadian DSL
AIIC:	On the inventory, or in compliance with the inventory
NZIoC:	On the inventory, or in compliance with the inventory
ENCS:	On the inventory, or in compliance with the inventory
KECI:	On the inventory, or in compliance with the inventory
PICCS:	Not in compliance with the inventory
IECSC:	On the inventory, or in compliance with the inventory
TCSI:	On the inventory, or in compliance with the inventory
TSCA:	All substances listed as active on the TSCA inventory

Inventories:

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

SECTION 16: OTHER INFORMATION

Further Information

Other information:	Liquid decontaminants (percentages by weight or volume):
	Decontaminant 1: *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
	Decontaminant 2: *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water: to make up to 100 %
	Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2.
	Decontaminant 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information.)
AU OEL:	Australia. Workplace Exposure Standards for Airborne Contaminants
AU OEL / TWA:	Exposure standard - time weighted average
AU OEL / STEL:	Exposure standard - short term exposure limit)

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