SAFETY DATA SHEETS (SDS)
Enviro 900 PUR TC Part B

Version: 1

Issued by: Envirosystems Technologies

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Hazard Identifiers

SECTION 1 – IDENTIFICATION OF MATERIAL & SUPPLIER

1.1	**Product Name:**	Enviro 900 PUR TC Part B
	Manufacturer's Product Code:	N/A
1.2	**Recommended Use:**	Part B of a two component coating
1.3	**Company:**	Envirosystems Technologies Pty Ltd
	Address:	295 Princes Highway St Peters, NSW 2044.
	Website:	www.envirosystems.com.au
	Telephone:	+61 2 85958699 (business hours)
	Fax:	+61 2 85958660
1.4	**Emergency Telephone:**	Info Safe – 1800 638 556, Poisons Centre – 131126

Other Information: All information in this SDS is to the best of our knowledge at time of publication. Users of this product should fully review this SDS prior to use to ensure best safety practices. Further information and or clarification can be obtained by contacting our technical department on the above telephone number.

SECTION 2 – HAZARDS IDENTIFICATION

2.1 Hazard Classification:

Classified as **Hazardous** according to WHS Regulations, Australian GHS criteria and a **Non-Dangerous Goods** according to the Australian Dangerous Goods Code.

Class	Category
Acute Toxicity Inhalative	4
Skin Corrosion/Irritation	2
Serious eye damage/eye irritation	2
Skin Sensitization	1
Respiratory Sensitization	1
Carcinogenicity	2
Specific target organ toxicity (single exposure)	3
Specific target organ toxicity (repeated exposure)	2, Inhalative

2.2 Label Elements

Signal word **DANGER**

H-code	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
P-Code	**Precautionary Statement - Prevention**
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P-Code	**Precautionary Statement - Response**
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
P370	Advice for fire-fighters
P378	Suitable extinguishing media: Carbon dioxide (CO2), Foam, extinguishing powder. In cases of largerfires, water spray should be used. Don't use high volume water jet.
P-Code	**Precautionary Statement - Storage**
P403, P233	Store in a well-ventilated place. Keep container tightly closed.
P-Code	**Precautionary Statement - Disposal**
P501	Dispose of contents / containers to hazardous or special waste collection point. In accordance with local regulation

2.3 Other Hazards None known

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
3.2 Mixtures

See section below for Mixtures

CAS No.	Material	Content %
9016-87-9	diphenylmethane-diisocyanate, isomers and homologues	>75%

SECTION 4 – FIRST AID MEASURES

4.1 Description of first aid measures

General Advice:
Soiled, soaked clothing and shoes must be immediately removed, decontaminated and disposed of.
Ingestion:
DO NOT induce the patient to vomit, medical advice is required..
Inhalation:
Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.
Eye Contact:
Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long

period of time (at least 10 minutes). Contact an ophthalmologist.
Skin Contact:
In the event of contact with the skin, preferably wash with a cleanser based on polyethylene glycol or with plenty of warm water and soap. Consult a doctor in the event of a skin reaction.

4.2	**Most important symptoms and effects, both acute and delayed**	Any relevant information can be found in other parts of this section and in sections 2 and 11.
4.3	**Advice for doctor**	The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation or bronchial constriction is primarily symptomatic. Extended medical treatment may be required depending on the degree of exposure and the severity of the symptoms.

SECTION 5 – FIRE FIGHTING MEASURES

5.1	**Extinguishing media**	Suitable extinguishing media: Carbon dioxide (CO_2), Foam, extinguishing powder, in cases of larger fires, water spray should be used. Unsuitable extinguishing media that may not be used for safety reasons: High volume water jet
5.2	**Special hazards arising from the substance or mixture**	Oxides of carbon and isocyanate vapors and traces of hydrogen cyanide as well as other possibly toxic fumes from fire. Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area.
5.3	**Advice for firefighters**	Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Combustible. Slight fire hazard when exposed to heat or flame. Heating may cause expansion or decomposition leading to violent rupture of containers. On combustion, may emit toxic fumes.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Secure the area. Wear personal protection equipment (see section 8). Keep unprotected persons away. Avoid contact with eyes and skin. Do not inhale gases/vapours/aerosols. If material is released indicate risk of slipping. Do not walk through spilled material.
6.2	**Environmental precautions**	Do not discharge into sewers or waterways or soil.
6.3	**Methods and material for containment and cleaning up**	Remove mechanically; cover the remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO_2!). Keep damp in a safe ventilated area for several days. Spill area can be decontaminated with the following recommended decontamination solution: Decontamination solution 1: 8-10% sodium carbonate and 2% of liquid soap in water Decontamination solution 2: Liquid/yellow soap (potassium soap with ~15% anionic

tenside): 20ml; Water:700ml; Polyethylenglycol (PEG 400): 350ml

6.4 Reference to other sections

Relevant information in other sections has to be considered. This applies in particular for information given on personal protective equipment (section 8) and on disposal (section 13).

SECTION 7 – HANDLING & STORAGE

7.1 Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Hands and/or face should be washed before breaks and at the end of the shift.

In all areas where isocyanate aerosols and/or vapor concentrations are produced in elevated concentrations, exhaust ventilation must be provided in such a way that the workplace exposure limits (WEL) is not exceeded. The air should be drawn away from the personnel handling the product

The personal protective measures described in section 8 must be observed. The precautions required in the handling of isocyanates must be taken. Avoid contact with skin and eyes and the inhalation of vapor.

7.2 Conditions for safe storage

Storage Requirements:
Keep container tightly closed, store in a cool, dry area
Storage Incompatibility:
Not known
Suitable containers:
Original packing as recommended by manufacturer.
Temperature Conditions:
5º to 35º C
Protection from weather:
Store undercover and away from frost and moisture

7.3 Specific end use(s)

Once mixed with part A and applied, produces a hard wearing, durable surface suitable for commercial and industrial applications.

7.4 Regulations and standards (Australia):

N/A

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Emergency limits:

Ingredient	STEL	TWA	
diphenylmethane-diisocyanate, isomers and homologues	0.07 mg/m3	0.02mg/m3	

8.2 Exposure controls

General protection and hygiene measures:
Avoid exposure. Avoid contact with eyes and skin. Do not inhale gases/vapours/aerosols. Do not eat, drink or smoke when handling. Wash hands at the end of work and before eating. Keep working clothes separately. Remove contaminated, soaked clothing immediately. Clean work areas regularly. 1st monitor air quality should be checked regularly in accordance with AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment (AS/NZS 1715). Then use dilution ventilation systems to dilute and displace contaminated air with fresh air supplied to the work area by mechanical exhaust fans (make sure

explosion and spark proof equipment as solvents are used) or natural air currents through doors, windows or other openings in the building.

Personal protection equipment:

Respiratory protection

Full-face respirators should be used rather than half-face respirators as this minimizes the area for potential skin and eye contact. Organic vapour respirators with particulate pre-filters (eg 3M™ Organic Vapor Cartridges, 6051) and powered air-purifying respirators should be fine **only when hand applying and combined ventilation systems and air quality monitoring**, but not suitable when spraying isocyanates or in low ventilated spaces or when monitoring equipment suggest exposure levels are reached, as they do not provide adequate protection, as the filter will saturate quickly and the smell will come through. During on-site mixing, spray painting, foaming, low or no ventilation and where exposure limits are close to being meet, in these situations, air-line respirators or self-contained breathing apparatus complying with AS/NZS 1716.

In case of hypersensitivity of the respiratory tract (e.g. asthmatics and those who suffer from chronic bronchitis) it is inadvisable to work with the product.

Eye protection

Chemical goggles. Full face shield may be required for supplementary but never for primary protection of eyes. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.

Hand protection

Suitable materials for safety gloves; EN 374:
Polychloroprene - CR: thickness >=0,5mm; breakthrough time >=480min.
Nitrile rubber - NBR: thickness >=0,35mm; breakthrough time >=480min.
Butyl rubber - IIR: thickness >=0,5mm; breakthrough time >=480min.
Fluorinated rubber - FKM: thickness >=0,4mm; breakthrough time >=480min.
Recommendation: contaminated gloves should be disposed of..

Skin protection

Low static overalls and PVC apron for mixing chemicals. Barrier are ok is some circumstances. Full body spray suit should be used when spraying.

Other Information

Use barrier creams to protect skin from contact with the material. Always wash hands before smoking, eating, drinking or using the toilet and after finishing work. Observe the usual precautions when handling chemicals.

8.3 Further information for system design and engineering measures

Ventilation is recommended under normal use conditions. State regulations on speed and direction of airflow away from operators must be observed. Keep containers closed when not in use.

SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

9.1

Odour:	Earthy, musty
Colour:	Brown
Physical State:	Liquid
Flash Point:	229ºC
Boiling Point:	>300 ºC
Melting Point:	Not Available
Specific Gravity:	1.23 g/cm^3 at 20ºC
pH:	N/A
Solubility in Water (g/L):	Immiscible at 15 °C
Flammability:	N/A
Lower Limit:	N/A

	Higher Limit:	N/A
	Vapour Pressure:	11hPa at 20°C, 20hPa at 50°C
	Vapour Density (Air = 1)	N/A
9.2	**Other information**	Non available

SECTION 10 – STABILITY AND REACTIVITY

10.1 -3	**Reactivity; Chemical stability; Possibility of hazardous reactions**	If stored and handled in accordance with standard industrial practices not hazardous reactions are known. Polymerises at about 200 °C with evolution of CO2. Exothermic reaction with amines and alcohols; reacts with water forming CO2; in closed containers, risk of bursting owing to increase of pressure.
10.4	**Conditions to avoid**	This information is not available.
10.5	**Incompatible materials**	This information is not available.
10.6	**Hazardous decomposition products**	No hazardous decomposition products when stored and handled correctly. But Oxides of carbon and other possibly toxic fumes from fire.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity/Effects

	Acute toxicity
Enviro 900 PUR TC part B	Not available
diphenylmethane-diisocyanate, isomers and homologues	dermal (rat) LD50: > 9.400 mg/kg
	Inhalation (rat) LC50: 0,31 mg/l, 4 h
	Oral (rat) LD50: >10.000 mg/kg

Acute toxicity, inhalation
diphenylmethane-diisocyanate, isomers and homologues
LC50 rat, male/female: 0,31 mg/l, 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.
Assessment: Harmful by inhalation.
Converted acute toxicity point estimate 1,5 mg/l
Test atmosphere: dust/mist
Method: Expert judgement

Primary mucosae irritation:
diphenylmethane-diisocyanate, isomers and homologues
Species: rabbit
Result: non-irritant
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.

Sensitisation:
diphenylmethane-diisocyanate, isomers and homologues

Skin sensitisation according to Magnusson/Kligmann (maximizing test):
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.
Method: OECD Test Guideline 406

Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD Test Guideline 429

Toxicological studies of a comparable product.
Respiratory sensitization
Species: rat
Result: positive
Classification: May cause sensitization by inhalation.

Chronic Toxicity/Effects

diphenylmethane-diisocyanate, isomers and homologues:

Repeated dose toxicity
NOAEL: 0,2 mg/m3
LOAEL (Lowest observable adverse effect level): 1 mg/m3
Application Route: Inhalative
Species: rat, male/female
Dose Levels: 0 - 0,2 - 1 - 6 mg/m3
Exposure duration: 2 a
Frequency of treatment: 6 hours a day, 5 days a week
Target Organs: Lungs, Nasal inner lining
Test substance: as aerosol
Method: OECD Test Guideline 453
Findings: Irritation to nasal cavity and to lungs.

Genetic toxicity
Assessment of mutagenicity: No mutagenic effect was found in various tests with bacteria and mammalian cell culture. The substance was not mutagenic in a test with mammals.
Studies of a comparable product.

Carcinogenicity
Species: rat, male/female
Application Route: Inhalative
Dose Levels: 0 - 0,2 - 1 - 6 mg/m3
Test substance: as aerosol
Exposure duration: 2 a
Frequency of treatment: 6 hours/day, 5 days/week
Method: OECD Test Guideline 453
Occurrence of tumors in the highest dose group.

Reproductive toxicity
No data available

Teratogenicity
NOAEL (teratogenicity): 12 mg/m³
NOAEL (maternal): 4 mg/m³
NOAEL (developmental toxicity): 4 mg/m³
Species: rat, female
Application Route: Inhalative

Dose Levels: 0 - 1 - 4 - 12 mg/m3
Frequency of treatment: 6 hours/day (Exposure duration: 10 days (day 6 - 15 p.c.))
Test period: 20 d
Test substance: as aerosol
Method: OECD Test Guideline 414
NOAEL (developmental toxicity): 4 mg/m3
Did not show teratogenic effects in animal experiments.

Aspiration toxicity:
Based on available data, the classification criteria are not met.

CMR Assessment:
Carcinogenicity: Suspected of causing cancer by inhalation (Carc. 2).
Mutagenicity: In vitro an in vivo tests did not show mutagenic effects. Based on available data, the classification criteria are not met.
Teratogenicity: Did not show teratogenic effects in animal experiments. Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

Toxicology Assessment:
Acute effects: Harmful if inhaled. The product causes irritation of eyes, skin and mucous membranes.
Sensitization: May cause sensitization by inhalation and skin contact.

Additional:

Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the UK Workplace Exposure Limit (WEL). Prolonged contact with the skin may cause tanning and irritant effects.

SECTION 12 – ECOLOGICAL INFORMATION

Toxicity

diphenylmethane-diisocyanate, isomers and homologues:
Acute Fish toxicity
LC50 > 1.000 mg/l
Test type: Acute Fish toxicity
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203

Acute toxicity for daphnia
EC50 > 1.000 mg/l
Test type: static test
Species: Daphnia magna (Water flea)
Exposure duration: 24 h
Method: OECD Test Guideline 202

Chronic toxicity to daphnia
NOEC (Reproduction) > 10 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 202

Acute toxicity for algae

ErC50 > 1.640 mg/l
Test type: Growth inhibition
Species: scenedesmus subspicatus
Exposure duration: 72 h
Method: OECD Test Guideline 201

Acute bacterial toxicity
EC50 > 100 mg/l
Test type: Respiration inhibition
Species: activated sludge
Exposure duration: 3 h
Method: OECD Test Guideline 209

Toxicity to soil dwelling organisms
NOEC (mortality) > 1.000 mg/kg
Species: Eisenia fetida (earthworms)
Exposure duration: 14 d
Method: OECD Test Guideline 207

Toxicity to terrestrial plants
NOEC (seedling emergence) > 1.000 mg/kg
Species: Avena sativa (oats)
Exposure duration: 14 d
Method: OECD Test Guideline 208

NOEC (seedling emergence) > 1.000 mg/kg
Species: Lactuca sativa (lettuce)
Exposure duration: 14 d
Method: OECD Test Guideline 208

Ecotoxicology Assessment
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: There is no evidence of a chronic aquatic toxicity.
Toxicity Data on Soil: Not expected to adsorb on soil. The substance is graded as non-critical to soil-dwelling organisms.
Impact on Sewage Treatment: Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

Microorganisms/Effect on sludge

Not available

Persistence and degradability

diphenylmethane-diisocyanate, isomers and homologues:
Biodegradability:
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 0 %, 28 d, i.e. not inherently degradable
Method: OECD Test Guideline 302 C
According to the results of tests of biodegradability this product is not readily biodegradable

Stability in water:
Test type: Hydrolysis
Half life: 20 h at 25 °C
The substance hydrolyzes rapidly in water.
Studies of a comparable product.

Photodegradation:

Test type: Phototransformation in air
Temperature: 25 °C
sensitizer: OH-radicals
Concentration sensibilisator: 500.000 1/cm3
Half-life indirect photolysis: 0,92 d
Method: SRC - AOP (calculation)
After evaporation or exposure to the air, the product will be moderately degraded by photochemical processes.
Studies of a comparable product

Volatility (Henry's Law constant):
Calculated value = 0,0229 Pa*m3/mol
The substance has to be scored as being slightly volatile from water.

Bioaccumulative potential

diphenylmethane-diisocyanate, isomers and homologues
Bioconcentration factor (BCF): < 14
Species: Cyprinus carpio (Carp)
Exposure duration: 42 d
Concentration: 0,2 mg/l
Method: OECD Test Guideline 305 C
An accumulation in aquatic organisms is not to be expected.
The substance hydrolyzes rapidly in water.
Studies of hydrolysis products.

Mobility in soil

Not applicable

Additional Information

Isocyanate reacts with water at the interface forming CO2 and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

SECTION 13 – DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Material Recommendation:
Material that cannot be used, reprocessed or recycled should be disposed of in accordance with Federal, State, and local regulations at an approved facility. Depending on the regulations, waste treatment methods may include, e.g., landfill or incineration.

Uncleaned packaging Recommendation:
After final product withdrawal, all residues must be removed from containers (drip-free, powder-free or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

None disposal into waste water.

SECTION 14 – TRANSPORT INFORMATION

Transport Information

Classified as a **Non-Dangerous** Good according to the Australian Code for the Transportation of Dangerous Goods by Road and Rail.

U.N. Number: Not applicable
DG Class: Non-Dangerous
EPG card: Not applicable

Hazchem Code:	Not applicable
Proper Shipping Name:	Not applicable
Packing Group:	Not applicable
Poison Schedule	6
Label	Not applicable

SECTION 15 – REGULATORY INFORMATION

15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture**	National and local regulations must be observed. For information on labeling please refer to section 2 of this document. **Poisons Schedule Number:6** **Isocyanates**
	Australian Inventory:	Listed
	Controlled Schedule	No listed substances
	Carcinogenic Substances:	

SECTION 16 – OTHER INFORMATION

Safety Data Sheets are updated regularly. Please ensure you have a current copy. SDS can be obtained from our website: www.envirosystems.com.au
The SDS should be used to assist in the Risk Management. Many other factors determine whether the reported Hazards are risks in any given workplace.
Specific Risks may be determined by reference to various Exposure Scenarios, Scale of use, Frequency of use and current or available engineering controls must be considered.

Emergency Telephone: Info Safe – 1800 638 556, Poisons Centre – 13112