

Version: 3

Issued by: Envirosystems Technologies

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SECTION 1 - IDENTIFICATION OF MATERIAL & SUPPLIER

1.1 Product Name: Enviro 950 TC Part A

Manufacturer's Product Code: N/A

1.2 Recommended Use: Part A of a two/three 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 Sensitization	1
Specific target organ toxicity (single exposure)	3

2.2 Label Elements



Signal word

Warning

H-code	Hazard Statements
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H335.	May cause respiratory irritation.
P-Code	Precautionary Statement - Prevention
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/
	spray.
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.
P304, P340	IF INHALED: Remove person to fresh air and keep
	comfortable for breathing.
P333, P313	If skin irritation or rash occurs: Get medical advice/
	attention.
P362, P364	Take off contaminated clothing and wash it before
	reuse
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 %
28182-81-2	hexamethylene-1,6-	40-60
	diisocyanate	
	homopolymer	
164250-92-4	Aliphatic Polyisocyanate	40-60
822-06-0	Hexamethylene-1,6-	<0.25
	diisocyanate	

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

Treat symptomatically



SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishing media Suitable extinguishing media:

Carbon dioxide (CO2), 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 CO2!). Keep

damp in a safe ventilated area for several days.

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 B 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	
Hexamethylene-1,6-diisocyanate	0.07 mg/m3	0.02mg/m3	AU NOEL

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

When engineering controls are not effective in controlling airborne exposure, then respiratory equipment should be used to protect against airborne contaminant (organic filter of sufficient capacity eg 3M™ Organic Vapor Cartridges, 6051). The appropriate respiratory equipment can be determined based upon actual airborne concentration (e.g. xylene, isocyanates) and can vary depending on individual circumstances.

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.

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:

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: almost odourless

Colour: colourless to yellow

Physical State: Liquid
Flash Point: 203°C
Boiling Point: 285 °C
Melting Point: Not Available
Specific Gravity: 1.15 g/cm³
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: < 0,00001 hPa at 20 °C

Vapour Density (Air = 1)N/AAuto-ignition temperatureN/AIgnition temperature440°CDecomposition temperature150°c

9.2 Other information Non available

products

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity; Chemical stability; If stored and handled in accordance with standard industrial practices not

-3 Possibility of hazardous hazardous reactions are known.

reactions 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 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 Aliphatic Polyisocyanate

Acute toxicity, oral

LD50 rat, female: > 2.500 mg/kg Method: OECD Test Guideline 423 Toxicological

studies of a comparable product.



Acute toxicity, dermal

LD50 rat, male/female: > 2.000 mg/kg Method: OECD Test Guideline 402 Studies of a comparable product.

Acute toxicity, inhalation LC50 rat, female: 0,390 mg/l, 4 h

Test atmosphere: dust/mist Method: OECD Test Guideline 403 Toxicological studies of a comparable product. 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.

Converted acute toxicity point estimate 1,5 mg/l

Test atmosphere: dust/mist Method: Expert judgement

Assessment: Harmful if inhaled.

Primary skin irritation:

Species: rabbit Result: slight irritant

Classification: No skin irritation

Toxicological studies of a comparable product.

Primary mucosae irritation:

Species: rabbit Result: slight irritant

Classification: No eye irritation

Toxicological studies of a comparable product.

Skin sensitisation according to Magnusson/Kligmann (maximizing test):

Species: Guinea pig Result: positive

Classification: May cause sensitization by skin contact.

Method: OECD Test Guideline 406

Toxicological studies of a comparable product.

Respiratory sensitization

Classification: No classification according to EC Directives 2006/121/EC or

1999/45/EC as respiratory sensitizer.

No pulmonary sensitisation observed in animal tests.

No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene diisocyanate.

hexamethylene-1,6-diisocyanate homopolymer

Acute toxicity, oral

LD50 rat, female: >= 5.000 mg/kg Method: OECD Test Guideline 423

Acute toxicity, dermal

LD50 rat, male/female: > 2.000 mg/kg Method: OECD Test Guideline 402 Studies of a comparable product.

Acute toxicity, inhalation

LC50 rat, female: 0,390 mg/l, 4 h Test atmosphere: dust/mist Method: OECD Test



Guideline 403 Toxicological studies of a comparable product.

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.

Converted acute toxicity point estimate 1,5 mg/l

Test atmosphere: dust/mist Method: Expert judgement

Assessment: Harmful if inhaled.

Primary skin irritation: Species: rabbit

Result: slight irritant

Classification: No skin irritation Method: OECD Test Guideline 404

Primary mucosae irritation:

Species: rabbit Result: slight irritant

Classification: No eye irritation Method: OECD Test Guideline 405

Skin sensitisation (local lymph node assay (LLNA)):

Species: Mouse Result: positive

Classification: May cause sensitization by skin contact.

Method: OECD Test Guideline 429

Respiratory sensitization

Classification: No classification according to EC Directives 2006/121/EC or

1999/45/EC as respiratory sensitizer.

No pulmonary sensitisation observed in animal tests.

No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene

diisocyanate.

Chronic Toxicity/Effects

Repeated dose toxicity

hexamethylene-1,6-diisocyanate homopolymer

NOAEL: 3,3 mg/m³ air Application Route: Inhalative Species: rat, male/female

Dose Levels: 0 - 0,5 - 3,3 - 26,4 mg/m³

Exposure duration: 90 d

Frequency of treatment: 6 hours a day, 5 days a week

Test substance: as aerosol Method: OECD Test Guideline 413

Toxicological studies of a comparable product.

Evidence of damage to organs other than the organs of respiration was not found.

Genetic toxicity in vitro Aliphatic Polyisocyanate

Test type: Ames test Result: negative Method: OECD Test Guideline 471

Toxicological studies of a comparable product.

Test type: Chromosome aberration test in vitro Result: negative Method: OECD



Test Guideline 473 Toxicological studies of a comparable product.

Test type: Point mutation in mammalian cells (HPRT test) Result: negative Method: OECD Test Guideline 476 Toxicological studies of a comparable product.

hexamethylene-1,6-diisocyanate homopolymer
Test type: Salmonella/microsome test (Ames test) Metabolic activation:
with/without Result: No indication of mutagenic effects. Method: OECD Test

Guideline 471

Test type: Point mutation in mammalian cells (HPRT test) Metabolic activation: with/without Result: negative Method: OECD Test Guideline 476 oxicological studies of a comparable product.

Test type: Chromosome aberration test in vitro Test system: Chinese hamster V79 cell line Metabolic activation: with/without Result: negative Method: OECD Test Guideline 473 Toxicological studies of a comparable product

Carcinogenicity
No data available

Reproductive toxicity
hexamethylene-1,6-diisocyanate homopolymer
Available data show no indications for reproductive toxicity.

Teratogenicity

hexamethylene-1,6-diisocyanate homopolymer Animal experiments on structurally similar compounds showed no indication of specific reproductive toxicity.

STOT evaluation – one-time exposure Aliphatic Polyisocyanate Route of exposure: Inhalative May cause respiratory irritation.

hexamethylene-1,6-diisocyanate homopolymer Route of exposure: Inhalative May cause respiratory irritation.

STOT evaluation – repeated exposure No data available

Aspiration toxicity:

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

Toxicology Assessment:

Acute effects: Harmful if inhaled.

Sensitization: May cause sensitization by skin contact.

Additional:

Special properties/effects: Over-exposure, especially when spraying coatings containing isocyanate without the necessary precautions, 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 occupational exposure limit. Prolonged contact with the skin may cause tanning and irritant effects.

Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction.



SECTION 12 – ECOLOGICAL INFORMATION

Toxicity

Aliphatic Polyisocyanate:

Acute Fish toxicity LC50 > 100 mg/l

Test type: Acute Fish toxicity Species: Danio rerio (zebra fish)

Exposure duration: 96 h

Method: Directive 67/548/EEC, Annex V, C.1. Ecotoxicological reports on a comparable product

Acute toxicity for daphnia

EC50 > 100 mg/l

Species: Daphnia magna (Water flea)

Exposure duration: 48 h

Method: Directive 67/548/EEC, Annex V, C.2. Ecotoxicological reports on a comparable product

Acute toxicity for algae ErC50 > 1.000 mg/l

Test type: Growth inhibition Species: scenedesmus subspicatus

Exposure duration: 72 h Method: DIN 38412

Ecotoxicological reports on a comparable product

Aliphatic Polyisocyanate:

Acute Fish toxicity LC50 > 100 mg/l

Species: Danio rerio (zebra fish)

Exposure duration: 96 h

Method: Directive 67/548/EEC, Annex V, C.1.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration

Acute toxicity for daphnia

EC50 > 100 mg/l

Species: Daphnia magna (Water flea)

Exposure duration: 48 h

Method: Directive 67/548/EEC, Annex V, C.2.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

Acute toxicity for algae

hexamethylene-1,6-diisocyanate homopolymer

ErC50 199 mg/l

Test type: Growth inhibition Species: scenedesmus subspicatus

Exposure duration: 72 h

Method: Directive 67/548/EEC, Annex V, C.3.

Sample preparation on account of the reactivity of the substance with water:

Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

Ecotoxicology Assessment

hexamethylene-1,6-diisocyanate homopolymer

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. 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

Aliphatic Polyisocyanate EC50 > 1.000 mg/l Species: activated sludge

Method: OECD Test Guideline 209

hexamethylene-1,6-diisocyanate homopolymer

EC50 > 10.000 mg/l

Test type: Respiration inhibition Species: activated sludge Exposure duration: 3 h Method: EG-RL 88/302/EEC

Persistence and degradability

Aliphatic Polyisocyanate

Biodegradation: 0 %, 28 d, i.e. not readily degradable

Method: OECD Test Guideline 301 C

Ecotoxicological reports on a comparable product

hexamethylene-1,6-diisocyanate homopolymer

Test type: aerobic

Biodegradation: 2 %, 28 d, i.e. not readily degradable Method: Directive 67/548/EEC Annex V, C.4.E. Ecotoxicological studies of the product

Test type: aerobic

Biodegradation: 0 %, 28 d, i.e. not inherently degradable

Method: OECD Test Guideline 302 C Ecotoxicological studies of the product

Stability in water Test type: Hydrolysis Half life: 7,7 h at 23 °C

Method: OECD Test Guideline 111

The substance hydrolyzes rapidly in water.

Studies of a comparable product.

Photodegradation

Test type: Phototransformation in air

Temperature: 25 °C sensitizer: OH-radicals

Half-life indirect photolysis: 11,7 h Method: SRC - AOP (calculation)

After evaporation or exposure to the air, the product will be rapidly degraded by

photochemical processes.

Test type: Phototransformation in air

Temperature: 25 °C sensitizer: OH-radicals

Half-life indirect photolysis: 3,1 h Method: SRC - AOP (calculation)

After evaporation or exposure to the air, the product will be rapidly degraded by

photochemical processes. Studies of hydrolysis products.

Volatility (Henry's Law constant)

Calculated value = < 0,000001 Pa*m3/mol at 25 °C



Method: Bond-method

The substance has to be scored as non-volatile from water.

Calculated value = < 0,000001 Pa*m3/mol at 25 °C

Method: Bond-method

The substance has to be scored as non-volatile from water.

Studies of hydrolysis products.

Bioaccumulative potential hexamethylene-1,6-diisocyanate homopolymer

Bioconcentration factor (BCF): 706,2

Method: (calculated)

The substance hydrolyzes rapidly in water.

An accumulation in aquatic organisms is not to be expected.

Bioconcentration factor (BCF): 10,11

Method: (calculated)

An accumulation in aquatic organisms is not to be expected.

Studies of hydrolysis products.

Partition coefficient (n-octanol/water) log Pow: ca. 8,38(value calculated)

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 water-soluble 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

Not applicable

Label

SECTION 15 – REGULATORY INFORMATION

15.1 Safety, health and National and local regulations must be observed. For information on

environmental labeling please refer to section 2 of this document. **regulations/legislation specific**

for the substance or mixture 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.

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