SAFETY DATA SHEETS (SDS)
Enviro HP1200 Part A

Version: 2

Issued by: Envirosystems Technologies

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Hazard Identifiers

SECTION 1 – IDENTIFICATION OF MATERIAL & SUPPLIER

1.1	**Product Name:**	Enviro HP1200 Part A
	Manufacturer's Product Code:	N/A
1.2	**Recommended Use:**	Part A of a two component, polyurethane 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
Skin Corrosion/Irritation	2
Eye Irritation	2A
Respiratory Sensitizer	1B
Skin Sensitizer	1B
Carcinogenicity	2
Specific target organ toxicity - single exposure	3 (respiratory tract irritation)
Specific target organ toxicity - repeated exposure	2

2.2 Label Elements

Signal word **Danger**

H-code	Hazard Statements
H315	Causes skin irritation.
H335	May cause respiratory irritation.
H319	Causes serious eye irritation
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer
H373	May cause damage to organs through prolonged or repeated exposure.
AUH066	Repeated exposure may cause skin dryness and cracking
P-Code	**Precautionary Statement - Prevention**
P201	Obtain special instructions before use
P280	Wear protective gloves / protective clothing / eye protection / face protection
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233	Keep container tightly closed.
P271	Use only outdoors or in a well-ventilated area.
P285	In case of inadequate ventilation wear respiratory protection.
P272	Contaminated work clothing should not be allowed out of the workplace
P-Code	**Precautionary Statement - Response**
P308, P313	IF exposed or concerned: Get medical advice/attention.
P304, P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P342, P311	experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P305, P351, P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
P337, P313	If eye irritation persists: Get medical advice/attention.
P305, P351, P338	IF ON SKIN: Wash with plenty of soap and water.
P333, P313	If skin irritation or rash occurs: Get medical advice/attention.
P308, P313	IF exposed or concerned: Get medical advice/attention
P361, P364	Take off immediately all contaminated clothing and wash before reuse.
P-Code	**Precautionary Statement - Storage**
P405, P303, P235	Store locked up in a cool well-ventilated area
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 %
101-68-8	4,4'-diphenylmethane diisocyanate (MDI)	30-60
None	Polyurethane prepolymer	remaining

SECTION 4 – FIRST AID MEASURES

4.1 Description of first aid measures

General Advice:
Immediately remove contaminated clothing. If in danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial reparation if necessary. First aid personal should pay attention to the own safety.

Ingestion:
Do not induce vomiting. Observe the patient carefully. Wash mouth with water then provide liquid slowly and as much as casualty can comfortably drink. Never give liquid to a person showing signs of being sleepy or with reduced awareness. Seek medical attention immediately.

Inhalation:
Keep patient calm and remove to fresh air. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor without delay.

Eye Contact:
While holding eyes open, gently flood with plenty of fresh water for 15 minutes. Seek medical attention without delay; if pain persists or recurs seek medical attention. Skilled personnel should only undertake removal of contact lenses after an eye injury.

Skin Contact:
Flush contacted area thoroughly with soap and plenty of water, shower if availed. Seek medical attention if irritation occurs. Remove contaminated clothing including footwear.

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. Noncardiogenic pulmonary oedema and bronchospasm are the most serious consequences of exposure. Markedly symptomatic patients should receive oxygen, ventilatory support and an intravenous line.

Personnel who work with isocyanates, isocyanate prepolymers or polyisocyanates should have a pre-placement medical examination and periodic examinations thereafter, including a pulmonary function test. Anyone with a medical history of chronic respiratory disease, asthmatic or bronchial attacks, indications of allergic responses, recurrent eczema or sensitisation conditions of the skin should not handle or work with isocyanates. Anyone who develops chronic respiratory distress when working with isocyanates should be removed from exposure and examined by a physician. Further exposure must be avoided if a sensitivity to isocyanates or polyisocyanates has developed.

SECTION 5 – FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:
Flooding quantities of water only or Foam or Dry chemical powder or BCF (where regulations permit) or Carbon dioxide or Water spray or fog - Large fires only. Large Fires – Can use large volumes of water, as normally applied from a distance by hoses. Water based or other firefighting foams can be effective in extinguishing such fires, as well as suppressing the release of diisocyanate vapors.

Unsuitable extinguishing media that may not be used for safety reasons:

		None known
5.2	**Special hazards arising from the substance or mixture**	Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.
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 of carbon monoxide (CO). Combustion products include:, carbon dioxide (CO2), phenolics products typical of burning organic material, isocyanate vapor and traces of hydrogen cyanide may be given off. Closed containers may rupture due to pressure buildup under fire conditions.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	All spills should be attended immediately. 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 and soil.
6.3	**Methods and material for containment and cleaning up**	Small or major spills should be absorbed with dry, inert filler (soil or sand) which then can be shoveled into appropriately labeled drums for disposal. Disposal of this material should be undertaken by a registered chemical disposal company. May be violently or explosively reactive. Wear breathing apparatus plus protective gloves. Treat isocyanate spills with sufficient amounts of isocyanate decontaminant preparation ("neutralising fluid"). Isocyanates and polyisocyanates are generally not miscible with water. Liquid surfactants are necessary to allow better dispersion of isocyanate and neutralising fluids/ preparations. Alkaline neutralisers react faster than water/surfactant mixtures alone. Neutralizer formulations include: Surfactant 1-20% and water to make up to 100% Liquid surfactant 0.2-2%, sodium carbonate 5-10% and water to make up to 100% Liquid surfactant 0.2-2%, concentrated ammonia 3-8% and water to make up to 100%
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**	Provide for fresh air ventilation. Do not inhale the vapor. Avoid contact with skin and eyes. Water, either as liquid or vapor, must be rigorously excluded from the material during both handling and storage, as the product will react with water giving insoluble polyurea and liberating carbon dioxide gas. In a closed container this could cause the container to rupture. Do not drink or eat during work – no smoking. Comply with the health and safety laws at work
7.2	**Conditions for safe storage**	**Storage Requirements:** Store in a cool, dry area away from incompatible materials. Containers should be kept dry and sealed. Containers, which are opened, must be carefully resealed and kept upright to prevent leakage. Store away from sources of ignition or heat.

Incompatible materials:
Avoid reaction with water, alcohols and detergent solutions. Isocyanates are incompatible with many classes of compounds, reacting exothermically to release toxic gases. Reactions with amines, strong bases, aldehydes, alcohols, alkali metals, ketones, mercaptans, strong oxidisers, hydrides, phenols, and peroxides can cause vigorous releases of heat. Acids and bases initiate polymerization reactions in these materials.
Temperature Conditions:
5 to 35º C
Protection from weather:
Store undercover and away from frost and moisture. Avoid reaction with oxidising agents, strongly alkaline and strongly acid materials. Exothermic reaction with amines and alcohol. Avoid reaction with water, alcohols and detergent solutions. Isocyanates and thioisocyanates are incompatible with many classes of compounds, reacting exothermically to release toxic gases. Reactions with amines, strong bases, aldehydes, alcohols, alkali metals, ketones, mercaptans, strong oxidisers, hydrides, phenols, and peroxides can cause vigorous releases of heat. Acids and bases initiate polymerisation reactions in these materials. Isocyanates easily form adducts with carbodiimides, isothiocyanates, ketenes, or with substrates containing activated CC or CN bonds. A range of exothermic decomposition energies for isocyanates is given as 20-30 kJ/mol.

7.3 Specific end use(s)

Once mixed with part B and applied, produces a polyurethane coating.

7.4 Regulations and standards (Australia):

Classified as Hazardous Liquid which should be stored and handled in accordance with regulations

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure limits: Worksafe

Ingredient	TWA	STEL
4,4'-diphenylmethane diisocyanate (MDI)	0.02 mg/m3	0.07 mg/m3

Emergency limits:

Ingredient	TEEL-1	TEEL-2	TEEL-3
4,4'-diphenylmethane diisocyanate (MDI)	29mg/m3	40mg/m3	240mg/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. Air quality should be checked regularly in accordance with AS/NZS 1715. 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
Avoid breathing of vapors/gases. Select and use respirators in accordance with AS/NZS 1715/1716.The use of a respirator for organic vapors with (disposable) or

with replaceable filters is recommended. Filter capacity and respirator type depends on exposure levels and type of contaminant. If entering spaces where the airborne concentration of a contaminant is unknown then the use of a self-contained breathing apparatus (SCBA) with positive pressure air supply complying with AS/NZS 1715/1716, or any other acceptable International Standard is recommended

Eye protection

Safety glasses with side shields or chemical goggles. Full face respiratory may be required if exposure causes discomfort. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants

Hand protection

Protective gloves made of Isocyanate resistant materials include Teflon, Viton, nitrile rubber and some PVA.

Skin protection

Low static overalls clothing. A protective suit may be required if exposure severe. Do not use barrier creams.

Other Information

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**	Please ensure adequate ventilation. Keep containers closed when not in use.

SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

9.1	**Odour:**	Not Determined
	Odour Threshold	No test data available
	Colour:	Clear pale yellow
	Physical State:	Not Determined
	Flash Point:	Not Determined
	Boiling Point:	Not Determined
	Melting Point:	Not Determined
	Specific Gravity:	1.10
	pH (5% solution):	Not Determined
	Solubility in Water (g/L):	Reacts
	Flammability:	Not Determined
	Explosive Lower Limit:	Not Determined
	Explosive Higher Limit:	Not Determined
	Vapour Pressure:	<0.01
	Vapour Density (Air = 1)	Not Determined
	Volatile component	Not Determined
	Auto-ignition temperature (°C)	Not Determined
9.2	**Other information**	None 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. Unstable in the present of incompatible material.
10.4	**Conditions to avoid**	Avoid all sources of ignition: heat, sparks, open flame. See SDS section 7 - Handling and storage.
10.5	**Incompatible materials**	See section 7, Strong alkalis, strong acids, strong oxidizing agents, alcohols, amines, carboxylic acids and water.

10.6 Hazardous decomposition products

See section 5, Emits toxic fumes including oxides of carbon and nitrogen, hydrogen cyanide and isocyanate vapors when heated to decomposition.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity/Effects

4,4'-diphenylmethane diisocyanate (MDI):
Acute toxicity
Dermal (rabbit) LD50: >6200 mg/kg
Inhalation (rat) LC50: 0.49 mg/l/4hr
Oral (rat) LD50: >2000 mg/kg

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Irritation
Dermal Sensitiser
Skin (rabbit): 500 mg /24 hours

Eyes:
Will cause irritation to the eyes, with affects including: tearing, pain, stringing, and blurred vision. Depending upon duration of exposure, eye damage may occur.

Skin:
Will cause irritation to the skin, with effects including: redness, itchiness and possible dermatitis.

Inhaled:
Harmful if inhaled. The effects may be immediate or delayed. Mild cases: there may be a slight irritation of the nose and throat; there may be dryness of the throat, wheezing, and tightness of the chest, coughing or shortness of breath. Sever cases: the victim may suffer acute bronchial irritation with difficulty in breathing, or even bronchospasm.

Ingestion:
May cause irritation to mouth, throat and stomach with effects including mucous build up, irritation to the tongue and lips and pains in the stomach, which may lead to nausea, vomiting and diarrhea.

Chronic Toxicity/Effects

Enviro HP1200 part A:

Prolonged or repeated contact with this substance will cause sensitation by inhalation. Overexposure to diphenylmethane diisocyanate can lead to adverse respiratory effects, which may include the development of asthma. Once asthma has developed and a person has become sensitized to a diisocyanate, even concentration well below the permitted exposure levels can be sufficient to induce an asthmatic attack. Prolonged or repeated skin contact may lead to dermatitis. Prolonged contact may cause severe eye irritation. Prolonged or repeated exposure may lead to irreversible damage to health. Prolonged or repeated contact with this substance will cause sensitization by inhalation. Prolonged or repeated contact with this substance will cause sensitization by skin contact. The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Aromatic and aliphatic diisocyanates may cause airway toxicity and skin sensitization. Monomers and prepolymers exhibit similar respiratory effect. Of the several members of diisocyanates tested on experimental animals by inhalation and oral exposure, some caused cancer while others produced a harmless outcome. This group of compounds has therefore been classified as cancer-causing. Thou evidence of carcinogenicity may be inadequate or limited in animal testing.

Long Term Effects:	Practical evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population. Persons with a history of asthma or other respiratory problems or are known to be sensitised, should not be engaged in any work involving the handling of isocyanates.

SECTION 12 – ECOLOGICAL INFORMATION

Toxicity	**4,4'-diphenylmethane diisocyanate (MDI):** LC50 96 Fish >0.500mg/L NITE (Japan) - Bioconcentration Data
Microorganisms/Effect on sludge	No data
Persistence and degradability	4,4'-diphenylmethane diisocyanate (MDI): LOW (Half-life = 1 days) LOW (Half-life = 0.24 days)
Bioaccumulative potential	4,4'-diphenylmethane diisocyanate (MDI): LOW (BCF = 15)
Mobility in soil	4,4'-diphenylmethane diisocyanate (MDI): LOW (KOC = 376200)
Additional Information	Do NOT discharge into sewer or waterways

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. Do **NOT** allow wash water from cleaning or process equipment to enter drains.

The disposal of large quantities of product should normally be undertaken only by a specialist contractor. The product may be incinerated in a suitable facility, however consult with local authorities before doing so to ensure that all local regulations are observed. In the case of only a small quantity of product waste, the following method may be applied, with caution, by technically component person: The waste product is reacted with an excess of Polyol to form a foam or solid polyurethane. The product of the reaction can then be incinerated or disposed of in landfill. This process should be carried out slowly in an open drum to avoid rapid heat generation and release of gases.

Uncleaned packaging Recommendation:
Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations. Uncleaned packaging should be treated with the same precautions as the material.

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:	N/A
	DG Class:	N/A
	EPG card:	N/A
	Hazchem Code:	N/A
	Proper Shipping Name:	N/A
	Packing Group:	N/A
	Poison Schedule	S6
Classification for SEA transport (IMO-IMDG)	U.N. Number:	N/A
	DG Class:	N/A
	Proper Shipping Name:	N/A
	Packing Group:	N/A
	Marine Pollutant:	NO
Classification for AIR transport (IATA/ICAO)	U.N. Number:	N/A
	DG Class:	N/A
	Proper Shipping Name:	N/A
	Packing Group:	N/A
Label	None	

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: S6**
	Australian Inventory:	Listed
	Controlled Schedule	Not 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