SAFETY DATA SHEETS (SDS)
Enviro GEL 165

Version: 4

Issued by: Envirosystems

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Hazard Identifiers



SECTION 1 – IDENTIFICATION OF MATERIAL & SUPPLIER

1.1	**Product Name:**	Enviro Gel 165
	Manufacturer's Product Code:	N/A
1.2	**Recommended Use:**	Polyurethane prepolymer
1.3	**Company:**	Envirosystems
	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:**	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 — Inhalation	4
Skin Corrosion/Irritation	2
Eye Corrosion/Irritation	2A
Respiratory Sensitizer	1
Skin Sensitizer	1
Carcinogenicity	2
Specific target organ toxicity - single exposure	3 (respiratory tract)
Specific target organ toxicity - repeated exposure	2

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.
P-Code	**Precautionary Statement - Prevention**
P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P201	Obtain special instructions before use
P280	Wear protective gloves / protective clothing / eye protection / face protection
P260	Do not breathing dust/fume/gas/mist/vapours/spray.
P233	Keep container tightly closed.
P285	In case of inadequate ventilation wear respiratory protection.
P240	Ground/bond container and receiving equipment.
P-Code	**Precautionary Statement - Response**
P312	Call a POISON CENTER or doctor/physician if you feel unwell
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.
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

Once sensitized, exposure to very low atmospheric concentrations may trigger severe asthmatic attacks. Sensitization is irreversible.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

3.2 Mixtures

See section below for Mixtures

CAS No.	Material	Content %
26447-40-5	4,4'-diphenylmethane diisocyanate (MDI)	10-30
	Not requiring disclosure	to 100

Notes on composition:	4,4'-diphenylmethane diisocyanate (MDI) CAS 26447-40-5 Acute Tox. 4 (H332), Skin Irrit. 2 (H315), Eye Irrit. 2A (H319), Resp. Sens. 1 (H334), Skin Sens. 1 (H317), Carc. 2 (H351), STOT SE 3 (H335), STOT RE 2 (H373)

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. Avoid giving milk or oils or alcohol. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

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

This material may be a potent pulmonary sensitiser which causes bronchospasm even in patients without prior airway hyperreactivity. Clinical symptoms of exposure involve mucosal irritation of respiratory and gastrointestinal tracts. Activated charcoal (1 g/kg) and a cathartic (sorbitol, magnesium citrate) may be useful for ingestion

SECTION 5 – FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media:
Dry chemical powder, foam, BCF (where regulations permit) and alcohols stable foams. Water fog or fine spray for large fires only.

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

		Avoid spraying water onto liquid pools.
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. Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions. When heated to high temperatures decomposes rapidly generating vapour which pressures and may then rupture containers with release of flammable and highly toxic isocyanate vapour.

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 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.
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. Avoid all personal contact, including inhalation. Do NOT allow clothing with this material to stay in contact with skin. Isocyanates should be stored in adequately bunded areas. Nothing else should be kept within the same bunding. Pre-polymers need not be segregated. Drums of isocyanates should be stored under cover, out of direct sunlight, protected from rain, protected from physical damage and well away from moisture, acids and alkalis. Do NOT enter confined spaces until atmosphere has been checked. Do NOT use plastic buckets.
7.2	**Conditions for safe storage**	**Storage Requirements:**

Store in a cool, dry area away from incompatible materials.
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:
Up to 40º C
Protection from weather:
Store undercover and away from frost and moisture. Avoid reaction with oxidising agents.

7.3 Specific end use(s)

Polyurethane prepolymer.

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: Australia Exposure Standards

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
Methylene diphenyl diisocyanate; (Diphenylmethane diisocyanate; MDI)	0.45mg/m3		
Methylenebis(isocyanato-benzene), 1,1'-; (Diphenyl methane diisocyanate)	40mg/m3	40mg/m3	240mg/m3

8.2 Exposure controls

General protection and hygiene measures:
Good Ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations. 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.
Personal protection equipment:
Respiratory protection
Avoid breathing of vapour /gases. Select and use respirators in accordance with AS/NZS 1715/1716. When handling in good ventilated environments organic vapour respirators should be worn. When in **inadequate ventilated environments,** positive pressure protection needs to be considered because Isocyanate vapors will not be adequately absorbed by organic vapour respirators.
Eye protection
Chemical goggles. Full face respiratory may be required if exposure causes discomfort.
Hand protection
Protective gloves made of Isocyanate resistant materials include Teflon, Viton, nitrile rubber and some PVA, gloves are short term use only. PE/EVAL will give

better protection. Remember to also take into account of other chemical or processes when selecting glove type as well. Most gloves are only good for short term exposures make sure to change regularly.
Do NOT use natural rubber, butyl rubber, EPDM or polystyrene-containing materials.
Do NOT use skin cream unless necessary and then use only minimum amount. Isocyanate vapour may be absorbed into skin cream and this increases hazard.
Skin protection
Overalls clothing and PVC Apron, PVC protective suit may be required if exposure severe
Other Information
Always wash hands before smoking, eating, drinking or using the toilet and after finishing work. Observe the usual precautions when handling chemicals.
Organic vapour respirators with particulate pre- filters and powered, air-purifying respirators are NOT suitable.

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:**	Not Available
	Odour Threshold	Not Available
	Colour:	Colourless to light yellow
	Physical State:	Liquid
	Flash Point:	Not Available
	Boiling Point:	Not Available
	Melting Point:	Not Available
	Specific Gravity:	1.06
	pH (5% solution):	Not Available
	Solubility in Water (g/L):	Reacts
	Flammability:	Not Available
	Explosive Lower Limit:	Not Available
	Explosive Higher Limit:	Not Available
	Vapour Pressure:	Not Available
	Vapour Density (Air = 1)	Not Available
	Volatile component	Not Available
	Auto-ignition temperature (°C)	Not Available
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**	See SDS section 7 - Handling and storage.
10.5	**Incompatible materials**	See section 7
10.6	**Hazardous decomposition products**	See section 5

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

Chronic Toxicity/Effects

4,4'-diphenylmethane diisocyanate (MDI):

Practical experience shows that skin contact with the material is capable either of inducing a sensitization reaction in a substantial number of individuals, and/or of producing a positive response in experimental animals.

The following information refers to contact allergens as a group and may not be specific to this product.
Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the persons tested. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. Allergic reactions which develop in the respiratory passages as bronchial asthma or rhinoconjunctivitis, are mostly the result of reactions of the allergen with specific antibodies of the IgE class and belong in their reaction rates to the manifestation of the immediate type. In addition to the allergen-specific potential for causing respiratory sensitisation, the amount of the allergen, the exposure period and the genetically determined disposition of the exposed person are likely to be decisive. Factors which increase the sensitivity of the mucosa may play a role in predisposing a person to allergy. They may be genetically determined or acquired, for example, during infections or exposure to irritant substances. Immunologically the low molecular weight substances become complete allergens in the organism either by binding to peptides or proteins (haptens) or after metabolism (prohaptens). Particular attention is drawn to so-called atopic diathesis which is characterised by an increased susceptibility to allergic rhinitis, allergic bronchial asthma and atopic eczema (neurodermatitis) which is associated with increased IgE synthesis. Exogenous allergic alveolitis is induced

essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.

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. Evidence of carcinogenicity may be inadequate or limited in animal testing.

The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.

Long Term Effects: 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 ITE (Japan) - Bioconcentration Data

Persistence and degradability 4,4'-diphenylmethane diisocyanate (MDI):
water/soil; LOW(Half-life = 1 days). Air; 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.

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		

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.
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Emergency Telephone: Poisons Centre – 13112