Material Safety Data Sheet

AUSTHANE ECOISO-GP ISOCYANATE

Issue Date May 2008 **Status** Issued by AUS

Hazardous according to criteria of NOHSC

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	AUSTHANE ECOISO-GP ISOCYANATE
Product Use	Part B Liquid Component of ecomate based Polyurethane Foam System
Company	Australian Urethane Systems Pty Limited
Address	25 Garling Road Kings Park NSW 2148
Emergency Tel.	1800 039 008 **International:** + 800 2436 2255
Telephone / Telex Number	Tel: (02) 9678 9833 Fax: (02) 9678 9887

Other Names	**Name**	**Manf. Code**
	ECOISO-GP, Polymeric MDI, Diphenylmethane-4,4-diisocyanate	ECOISO-GP

Other Information

2. HAZARDS IDENTIFICATION

Classified as hazardous according to criteria of NOHSC.

HAZARDOUS SUBSTANCE NON DANGEROUS GOODS.

Risk Phrases:	**R 20**	Harmful by inhalation.
	R 36/37/38	Irritating to eyes / irritating to respiratory system / irritating to skin.
	R 42/43	May cause sensitisation by inhalation / may cause sensitisation by skin contact.
Safety Phrases:	**S 26**	In case of contact with eyes, rinse immediately with plenty of water and contact medical advice or contact a Poisons Information Centre.
	S 28	After contact with skin, wash immediately with water and soap - warm, soapy water, if available.
	S 38	In case of insufficient ventilation, wear suitable respiratory equipment.
	S 45	In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately. (show the label if possible).

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	Name	**CAS**	**Proportion**
	Polymethylene polyphenylisocyanate [Diphenylmethane diisocyanate (isomers and homologues)]	9016-87-9	> 60 % w/w
	Proprietary Additive	NIL	< 10% w/w

4. FIRST AID MEASURES

Inhalation

May cause respiratory sensitisation in susceptible individuals. If any breathing difficulty occurs, keep patient calm, remove to fresh air, and if allergic reaction occurs seek medical attention.

MDI concentrations below the exposure standards may cause allergic respiratory reactions in individuals already sensitised. Symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Effects may be delayed.

Ingestion

Immediately rinse mouth and drink plenty of water. Do not induce vomiting.
Ingestion of this product causes vomiting, nausea and abdominal pain.
Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

Skin

Avoid contact with skin. Wash immediately with plenty of warm water and soap.
Remove any contaminated clothing.
Prolonged or repeated exposure may cause skin irritation. May stain the skin. Skin contact may result in allergic skin reactions or respiratory sensitisation but is not expected to result in absorption of amounts sufficient to cause other adverse effects.

Eye

Irrigate with copious flowing water immediately and continuously for 15 minutes.
May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.

First Aid Facilities

Eye wash and normal washroom facilities.

Advice to Doctor

No specific antidote. Supportive care. Symptoms may appear later.

5. FIRE FIGHTING MEASURES

Extinguishing Media

Foam, alcohol resistant foam, carbon dioxide and dry chemical.
Keep containers cool with water spray

Hazards from Combustion Products

Produces oxides of carbon and nitrogen on combustion. May produce traces of hydrogen cyanide. May decompose in heat/fire releasing products of greater hazard.

Specific Precautions

Fire fighters to wear positive pressure self-contained breathing apparatus, safety glasses, boots, gloves and coveralls.
Contain any run-off by diking to prevent entry into sewers, drains or water systems.

Specific Hazards

Isocyanate vapour and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

6. ACCIDENTAL RELEASE MEASURES

Evacuate and ventilate spill area. Contain spill by diking, to prevent entry into sewers, drains or water systems.

Wear full protective equipment including respiratory equipment during clean up. Avoid skin and eye contact. Wear gloves, safety glasses and coveralls. Avoid breathing vapours directly. Refer to Section 8 of this MSDS for Exposure Standards.

For small spills, < 20 litres, absorb spilled material with inert absorbent (sand, vermiculite etc.) and put into open top containers. Do not permit to contaminate waterways, sewers or drains. Absorb the Isocyanate with sawdust or other absorbent and shovel into open top containers - **do not make pressure tight.** Transport to well-ventilated area (outside) and treat with neutralising solution consisting of a mixture of 90 % water, 5 % detergent and 5 % concentrated ammonium hydroxide. Add about 10 parts of the neutralising solution per part of Isocyanate with mixing.
Allow to stand for 48 to 72 hours letting any evolved carbon dioxide escape. Do not seal.

For large amounts, > 20 litres, either pump product into or collect in suitable containers and transfer into clean closed head type drums. In case of any contamination, do not make pressure tight.

Residual contamination from spills can be cleaned up with the neutralising solution - a mixture of 90% water, 5% industrial grade detergent and 5% concentrated ammonium hydroxide.

7. HANDLING AND STORAGE

Handling

Wear the protective equipment as set out below when handling this product.

Excessive exposure may cause irritation of the eyes, upper respiratory tract and lungs. Impaired lung function (decreased ventilatory capacity) has been associated with over exposure to Isocyanates.

At room temperature, vapours are minimal due to low vapour pressure. Fresh air should be directed at personnel handling / using the product.

In any applications/operations where isocyanate aerosol or vapour concentrations are produced , exhaust ventilation must be provided to meet Exposure Standards. These include activities in which the material is heated, sprayed or otherwise mechanically dispersed such as drumming, venting or pumping.

Wear industrial safety clothing, as per details below:

Impervious PVC gloves - refer to
AS 2161: Industrial Safety Gloves and Mittens

Safety goggles or Face Mask - refer to
AS 1336: Recommended practices for eye protection in the industrial environment
AS/NZS 1337: Eye protectors for industrial application

Respiratory Protection - refer to
AS/NZS 1715: Selection, use and maintenance of respiratory protective devices

and Coveralls.

Storage

Keep containers closed at all times.

Store indoors at 15 to 25℃ in original, unopened containers. Protect from atmospheric moisture. Replace outage with inert Dry Nitrogen Gas. Avoid product temperatures above 50℃ and below 5℃. At temperatures below 5℃ crystallisation may occur.

Crystallised product can be melted by heating overnight to 60-70℃.

Store away from oxidising agents, acids, alkali, amines, direct sunlight or any source of ignition or heat.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits

Workplace Exposure Standard (ES) for Isocyanates, all (as –NCO): **#**

TWA = 0.02 mg / m³	[Time weighted average exposure]
STEL = 0.07 mg / m³	[Short term exposure limit]
Sen.	[Sensitiser]

 # Exposure Standard for Atmospheric Contaminants in the Occupational Environment, published by Worksafe Australia.

Engineering Controls

Use only in well ventilated area. Maintain air concentrations below Exposure Standards.

Protective Equipment Personal

Wear industrial safety clothing, as per details below. Always wash hands before smoking, eating, drinking or using toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Impervious PVC gloves - refer to
AS 2161: Industrial Safety Gloves and Mittens

Safety goggles or Face Mask - refer to
AS 1336: Recommended practices for eye protection in the industrial environment
AS/NZS 1337: Eye protectors for industrial application

Respiratory Protection - refer to
AS/NZS 1715: Selection, use and maintenance of respiratory protective devices

Clothing – refer to
AS/NZS 2210: Occupational protective footwear. AS 2919: Industrial clothing

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear dark amber liquid
Odour	Mild musty odour
pH	Not applicable
Vapour Pressure	< 0.01 Pascals (25°C)
Vapour Density [Air = 1]	> 1
Melting Point	< 0°C
Boiling Point	200°C @ 1 atm
Solubility in Water	Insoluble – reacts slowly with water
Solubility in Organic Solvents	Slightly soluble
Specific Gravity [Water = 1]	1.22 g/ml (25°C)
Flashpoint	> 204°C (DIN 51758)
Ignition Temperature	> 600°C
Flammability	Non flammable

10. STABILITY AND REACTIVITY

Stability	Stable. Thermal decomposition > 230°C
Hazardous Polymerisation	Exothermic reaction with amines and alcohols. Reacts with water forming Carbon Dioxide gas, if in closed containers this may cause sufficient pressure build-up to burst containers.
Materials to Avoid	Water, acids, alkalis, alcohols, and metal compounds. Avoid water as it reacts to form heat and carbon dioxide. Enough heat and pressure can be produced to rupture a closed container. The reaction with water is slow at temperatures less than 49^{o}C, but accelerated at higher temperature and in the presence of the above mentioned materials. Some reactions are violent.
Hazards from Combustion Products	Produces oxides of carbon and nitrogen on combustion. May produce traces of hydrogen cyanide. May decompose in heat/fire releasing products of greater hazard.

11. TOXICOLOGICAL INFORMATION

Inhalation	MDI concentrations below the exposure standards may cause allergic respiratory reactions in individuals already sensitised. Symptoms may include coughing, difficult breathing and a feeling of tightness in the chest. Effects may be delayed. LC_{50} inhalation, rat 490 mg aerosol / m³, 4 hr exposure. Concentration of the saturated vapour of Diphenylmethane-4,4-diisocyanate (MDI0 @ 25℃ – 0.09 mg/m³.
Ingestion	Ingestion of this product causes vomiting, nausea and abdominal pain. Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations. LD_{50} oral / rat - > 10,000 mg/kg
Skin	Prolonged or repeated exposure may cause skin irritation. May stain the skin. Skin contact may result in allergic skin reactions or respiratory sensitisation but is not expected to result in absorption of amounts sufficient to cause other adverse effects. LD_{50} dermal / rabbits > 5,000 mg/kg.
Eye	May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.
Chronic Effects	Systemic (Other Target Organ) Effects Tissue injury in the upper respiratory tract and lungs has been observed in laboratory animals after repeated excessive exposures to MDI / Polymeric, MDI aerosols.

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Cancer Information
Lung tumors have been observed in laboratory animals exposed to aerosol droplets of MDI / Polymeric MDI at 6mg/m^3 for their lifetime. Tumours occurred concurrently with respiratory irritation and lung injury. Only irritation was noted at the lower concentrations of 0.2 and 0.1 mg / m^3.
Current Exposure Standards are expected to protect against these effects.

Teratology (Birth Defects)
In laboratory animals, Polymeric MDI did not produce birth defects; other fetal effects occurred only at high doses, which were toxic to the mother.

Mutagenicity: Mutagenicity data on MDI are inconclusive. MDI was weakly positive in some in vitro (test tube) studies; other in-vitro studies were negative. A mutagenicity study in animals was negative.

12. ECOLOGICAL INFORMATION

Do not allow to escape into waters, wastewater or soil.

Movement & Partitioning Movement in the environment is expected to be limited by the formation of insoluble polymers.

Degradation & Transportation Biodegradability: 0%, 28 days. Immiscible in water. Reaction with water at interface produces Carbon Dioxide and forms an insoluble and high melting point solid – polyurea. Degradation is expected in the atmospheric environment.

Ecotoxicity

Toxicity to fish:	LC_0 (96 h)	> 100 mg/l - Brachydanio rerio
Aquatic invertebrates:	EC_{50} (24 h)	> 750 mg/l – Daphnia pulex

13. DISPOSAL CONSIDERATIONS

Liquid Residues Small quantities < 20 kgs can be disposed of by reaction with a suitable Polyol blend.
Mix one part of AUSTHANE ECOISO-GP Isocyanate with one part by volume of the selected polyol blend.
Mix in open top container in well ventilated area, in < 5 kg mix quantities.
Allow at least 30 minutes cooling time between each mix to allow the reacted foam to cool before the next mix.
After reaction into a solid foam product, dispose of in solid waste.

For larger quantities, normally suitable for incineration by an approved agent.

Containers Drain containers to remove ullage material. Rinse the container with a neutralising solution consisting of a mixture of 90% water, 5% industrial grade detergent and 5% concentrated ammonium hydroxide.
Allow neutralising solution to react for 48 hours in unsealed containers in external area.
Absorb the rinse liquid into inert absorbent and hold in open containers to allow evaporation of water, then dispose of in solid waste.
Dispose of cleaned container appropriately.

14. TRANSPORT INFORMATION

This product is not classified in the Australian Dangerous Goods Code either by reference to a specific substance name or a generic substance name or group in accordance with regulations applicable to combustible liquids.

UN Number	None allocated
Proper Shipping Name	Not applicable
DG Class	Not relevant
Hazchem Code	Not relevant
Packaging Group	Not relevant
EPG Number	Nil
IERG Number	Nil

15. REGULATORY INFORMATION

Poisons Schedule	Class 6	
Hazard Category	Symbol: Xn. Harmful. Irritant. Sensitiser**.**	
Other CAS Numbers / Products	Diphenylmethane – 4,4' – di-isocyanate	101-68-8
	Methylenediphenyl diisocyanate	26447-40-5

16. OTHER INFORMATION

Issue Date May 2008

References

Worksafe Australia Guide - "ISOCYANATES" - July 1990.

National Occupational Health and Safety Commission.
Australian Government Publishing Service Canberra.
Code WAP 90/017 GS O12-1990.

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment
NOHSC: 1003 (1995)
Occupational Health and Safety Commission.

END OF MSDS