Material Safety Data Sheet

 Issue date: March 2008

GREENLINK EF510 ISOCYANATE

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: GREENLINK EF510 ISOCYANATE
Synonym: None

Use: Polyurethane prepolymer

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2. HAZARDS IDENTIFICATION

HAZARDOUS ACCORDING TO NOHSC CRITERIA

Hazard Category: Harmful (Xn), Irritant (Xi)

Hazard Classification: HAZARDOUS SUBSTANCE, NON-DANGEROUS GOOD

RISK PHRASES
R20 Harmful by inhalation.
R36/37/38 Irritating to eyes, respiratory system and skin.
R42/43 May cause sensitisation by inhalation and skin contact.

SAFETY PHRASES
S23 Do not breathe fumes/vapour/spray.
S26 In case of contact with eyes, rinse immediately with plenty of water and contact a doctor.
S28 After contact with skin, wash immediately with plenty of water and soap.
S36/37 Wear suitable protective clothing and gloves.
S45 In case of accident or if you feel unwell, contact a doctor immediately and show this container or label.

Poison Schedule: S6 [Aust]
This material is a Scheduled **S6** Poison and must be stored, handled and used according to the appropriate regulations.

Warning Statement:
Avoid breathing vapours. Avoid skin and eye contact. Breathing vapours may produce asthma-like symptoms. Skin contact may cause allergic reaction.

3. COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE NAME	Proportion	CAS Number
DIPHENYLMETHANE-4,4'-DIISOCYANANTE [MDI]	30 to 60%	101-68-8
PREPOLYMER MDI/ETHER	Greater than 60%	Mixture

All other ingredients not hazardous according to NOHSC Criteria.

4. FIRST AID MEASURES

Swallowed:
If swallowed, DO NOT induce vomiting. Rinse mouth out with water. Affected person should be made to rest. Obtain medical attention.

Eye:
If material is splashed into eyes, immediately, flush with plenty of water for 15 minutes, ensuring eyelids are held open. Obtain medical attention.

Skin:
If material is splashed onto the skin, remove any contaminated clothing and wash skin thoroughly with water (preferably warm) and soap. Obtain medical attention. It is important to clean material off skin as soon as possible.

Inhaled:
Remove victim to fresh air and away from risk of further exposure. Apply resuscitation if victim is not breathing. If trained personnel available administer oxygen if breathing is difficult. Obtain medical attention immediately. The onset of symptoms may occur several hours after exposure has taken place.

First Aid Facilities:
Eye wash fountain, safety shower and normal washroom facilities.

Advice to Doctor:
Treat symptomatically.
In case of poisoning, contact Poisons Information Centre
In Australia call Tel: 131126
In New Zealand Tel: 034747000

5. FIRE-FIGHTING MEASURES

Fire/Explosion Hazard
If safe to do so, move undamaged containers from fire area.

HAZARDOUS DECOMPOSITION PRODUCTS: Decomposes on heating emitting toxic fumes including oxides of carbon and nitrogen, hydrogen cyanide and isocyanate vapours.

FIRE FIGHTING PROCEDURES: All non-essential members of the should be moved upwind of the fire and only trained and well-equipped personnel allowed near to the fire until the fire service takes control of the situation. Fire fighters should wear Self-contained breathing apparatus (SCBA) in confined spaces, in oxygen deficient atmospheres or if exposed to products of decomposition. Full protective clothing is also recommended.

EXTINGUISHING MEDIA (SMALL FIRES): Use dry chemical or carbon dioxide. Water should not be applied unless from a safe distance (e.g. by hoses) and in large quantities.

EXTINGUISHING MEDIA (LARGE FIRES): Can use large volumes of water, as normally applied from a distance by hoses. Water-based protein or other fire fighting foams can be effective in extinguishing such fires, as well as suppressing the release of diisocyanate vapours.

HAZCHEM CODE: None allocated [Aust]

FLAMMABILITY
This material is not flammable.

6. ACCIDENTAL RELEASE MEASURES

All spills should be attended to immediately. Evacuate from the immediate area everyone not essential to dealing with the spill, and keep them upwind to avoid breathing vapour. Isolate the area and prevent access. Wear protective equipment to prevent skin and eye contact, as outlined under personal protection in this MSDS. Control the source of the leak, where possible. Ventilate area. Contain the spill to prevent further spread of material and prevent fun off into drains and waterways. Use absorbent material such as wet sand, wet earth, wet sawdust or absorbent clays. These materials will not only contain the spill, but also absorb and partially neutralise the diisocyanate content of the material. Neutralise used absorbent materials and any remaining product with neutraliser (see below) and decontaminate all surfaces and equipment that have been in contact. Dispose of all clean-up materials in accordance with government regulations.

Neutraliser formulations include:
(a) surfactant 1 - 20% and water to make up to 100%;
(b) liquid surfactant 0.2 - 2%, sodium carbonate 5 - 10%, and water to make up to 100%;
(c) liquid surfactant 0.2 - 2%, concentrated ammonia 3 - 8% and water to make up to 100%.

7. HANDLING AND STORAGE

Water, either as liquid or as vapour, 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.

Store in a cool place and out of direct sunlight. Store away from sources of heat or ignition. Store away from strong oxidizing agents. Keep containers tightly closed, when not using the product. Store in original packages as approved by manufacturer. Purge with nitrogen and close container when not in use. Do not eat, drink or smoke in the workplace.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards
No exposure standards are available for this product, however, the following exposure standards have been assigned by [NOHSC] to the following components of the product:

DIPHENYLMETHANE-4,4'-DIISOCYANANTE [MDI]
Isocyanate exposure standards (Worksafe Australia)
[TWA] 0.02 mg/m³
[STEL] 0.07 mg/m³
Notices: Sen

(ACGIH)
[TWA] 0.005 ppm 0.051 mg/m³

PREPOLYMER MDI/ETHER
No Exposure details available

Engineering Controls
Maintain adequate general and local exhaust ventilation at all times. If exhaust ventilation is not available or inadequate, use approved respirator to Australian Standards. Respiratory protection will be necessary when carrying out spraying operations externally, and also when spraying internally in the absence of proper spray containment and removal facilities. Respiratory protection should also be used when heating diisocyanates.

Personal Protection Equipment
CLOTHING: Wear suitable protective clothing to prevent risk of skin contact.
GLOVES: Wear impervious gloves to prevent risk of skin contact - PVC or natural rubber.
EYES: Wear protective eyewear, such as safety glasses, chemical goggles or face shield to protect eyes.
RESPIRATORY PROTECTION: Avoid breathing of vapours/gases. Select and use respirators in accordance with AS/NZS 1715/1716. The use of a respirator for organic vapours 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.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Opaque viscous liquid
Boiling Point Melting Point:	Not determined
Vapour Pressure:	Not determined
Specific Gravity:	1.11 @ 22°C
Flash Point:	Not determined
Flammability Limits:	Not determined
Solubility in Water:	Reacts with water liberating carbon dioxide

Other Properties
None determined.

10. STABILITY AND REACTIVITY

STABILITY:
Stable under normal conditions of use.

HAZARDOUS DECOMPOSITION PRODUCTS:
Emits toxic fumes including oxides of carbon and nitrogen, hydrogen cyanide and isocyanate vapours when heated to decomposition.

HAZARDOUS POLYMERIZATION:
Will not occur under normal conditions of use.

INCOMPATIBILITIES:
Strong alkalis, strong acids, strong oxidizing agents, alcohols, amines, carboxylic acids and water.

CONDITIONS TO AVOID:
Heat, flames, ignition sources, moisture and incompatibles.

11. TOXICOLOGICAL INFORMATION

No adverse health effects are expected, if the product is handled in accordance with this Material Safety Data Sheet and the product label. Symptoms and effects that may arise if the product is mishandled and overexposure occurs are:

ACUTE HEALTH EFFECTS:
Swallowed:
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 diarrhoea.

Eye:
Will cause irritation to the eyes, with effects including: tearing, pain, stinging 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, tightness of the chest, coughing or shortness of breath. Severe cases: the victim may suffer acute bronchial irritation with difficulty in breathing, or even bronchospasm.
Will cause irritation to the nose, throat and respiratory system with effects including: dizziness, headache, coughing, loss of co-ordination and chest pains.

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Chronic:
Prolonged or repeated contact with this substance may cause sensitisation by inhalation. Overexposure to diphenylmethane-4,4'-diisocyanate can lead to adverse respiratory effects, which may include the development of asthma. Once asthma has developed and a person has become sensitised 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 and some form of permanent eye damage may occur.
Prolonged or repeated contact with this substance will cause sensitisation by inhalation.
Prolonged or repeated contact with this substance will cause sensitisation by skin contact.

Toxicological Data:
Acute Toxicity Data:
LD50 (oral, rat) > 2000 mg/kg
LD50 (dermal, rabbit) > 2000 mg/kg
LC50 (inhalation, rat, 4hr) = 490 mg/m³ (aerosol). The experimentally produced aerosol has an aerodynamic diameter of <5µm.

Teratogenicity:
Did not cause birth defects in laboratory animals; other foetal effects occurred only at doses toxic to the mother.

Reproductive Toxicity:
No relevant information found.
Carcinogenicity:
Rats have been exposed for two years to an experimentally produced respirable aerosol of polymeric MDI, which resulted in chronic pulmonary irritation at high concentrations. The prolonged irritation led to the formation of tumours in the lungs of a small proportion of the rats exposed to 6 mg/m³. There were no tumours at 1 mg/m³ and no effects at 0.2 mg/m³. In the absence of prolonged high exposure leading to chronic irritation and lung damage, it is highly unlikely that tumours could occur, although these results reinforce the need to observe the recommended safety precautions and occupational exposure limit when working with MDI-based products. Industrial experience in humans has not shown any links between MDI-based products exposure and cancer development.

12. ECOLOGICAL INFORMATION

Ecotoxity:
The measured ecotoxicity is that of the hydrolysed product, generally under conditions maximising production of soluble species. Material is not expected to be toxic to aquatic organisms on an acute basis (LC50/EC50 greater than 100mg/L in most sensitive species). The LC50 in earthworm Eisenia foetida is greater than 1000mg/kg.

Mobility:
In the aquatic or terrestrial environment, movement is expected to be limited by its reactivity with water forming predominantly insoluble polyureas. No appreciable volatilisation from water to air is expected.

Persistence / Degradability:
In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates.

Chemical Fate Information:
Avoid contaminating waterways, drains, sewers or ground.

13. DISPOSAL CONSIDERATIONS

Do not allow into any sewers, drains, on the ground or into any body of water. Any disposal must be in accordance with applicable State, Territory and/or Local government regulations.

Product Waste: 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 a technically competent 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.

Container Disposal: Any disposal of contaminated packaging and washings must be in accordance with State, Territory and/or Local government regulations. When containers/drums have been drained to leave as little residue as possible, either seal the drum and send it to a drum-handling specialist, or decontaminate the drum using a slow reacting water-based neutraliser (see below). Add (several centimetres of) neutraliser to the drum, slowly shake and roll to allow contact. Leave open until all reaction is completed, then dispose of drum and washings in approved manner. If the container is to be reconditioned, the reconditioning company should be made aware of the nature of the original contents.

Neutraliser formulations:
(a) surfactant 1-20% and water to make up to 100%;
(b) liquid detergent 2%, PEG400 35% and water to make up to 100%.

14. TRANSPORT INFORMATION

Road Transport
UN Number: None allocated
Proper Shipping Name: NONE ALLOCATED
Dangerous Goods Class: None allocated
Packing Group: None allocated
Label: Harmful (**Xn**), Irritant (**Xi**)

Air Transport
UN Number: None allocated
Proper Shipping Name: NONE ALLOCATED
Dangerous Goods Class: None allocated
Packing Group: None allocated
Label: Harmful (**Xn**), Irritant (**Xi**)

Sea Transport
UN Number: None allocated
Proper Shipping Name: NONE ALLOCATED
Dangerous Goods Class: None allocated
Packing Group: None allocated
Label: Harmful (**Xn**), Irritant (**Xi**)

15. REGULATORY INFORMATION

Poison Schedule: S6 [Aust]

Inventory Status:

Inventory	*Status*
Australia (AICS)	Y

Y = all ingredients are on the inventory.

16. OTHER INFORMATION

Date of Preparation:
Issue date: 13/03/2008

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Supersedes: August 2005

Reasons for Update:
Review at section 11 and 12

Key Legend Information:
NOHSC - National Occupational Health & Safety Commission {Formerly Worksafe}[Aust]
SUSDP - Standard for the Uniform Scheduling of Drugs and Poisons [Aust]
TWA - Time Weighted Average [Int]
STEL - Short Term Exposure Limit [Int]
AICS - Australian Inventory of Chemical Substances
EPA - Environmental Protection Agency [Int]
NIOSH - National Institute for Occupational Safety and Health [US]
AS/NZS 1715 - Selection, use and maintenance of respiratory protective devices. [Aust/NZ]
AS/NZS 1716 - Respiratory protective devices. [Aust/NZ]
IATA - International Aviation Transport Authority [Int]
ICAO - International Civil Aviation Organization [Int]
IMO - International Maritime Organisation. [Int]
IMDG - International Maritime Dangerous Goods [Int]
United Nations Recommendations for the Transport of Dangerous Goods and Globally Harmonized System for the classification and labelling of Chemicals. [Int]
EU - European Union

[Aust/NZ] = Australian New Zealand
[Int] = International
[US] = United States of America

Removal of the heading of *Poison Schedule [Aust]*, in section 3 and 15 of this Material Safety Data Sheet (MSDS) makes this a valid health and safety document in other international jurisdictions/countries. For full compliance please contact your Federal, State or Local regulators for further information.

Disclaimer
This MSDS summarises our best knowledge of the health and safety hazard information available on the product and the measures to be used to handle and use the product safely. Each user should read this MSDS and consider the information in connection with the way the product is intended to be handled or used.

Principal References:
Information supplied by manufacturer, reference sources including the public domain.

END OF MSDS