

ERAPOL RN70A

Era Polymers Pty Ltd

Version No: 3.6

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Chemwatch Hazard Alert Code: 2

Issue Date: **04/09/2015**Print Date: **04/09/2015**Initial Date: **01/01/0001**S.GHS.USA.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

| Product name | ERAPOL RN70A |
|-------------------------------|---------------|
| Synonyms | Not Available |
| Other means of identification | Not Available |

Relevant identified uses of the substance or mixture and uses advised against

| Bullion of the CC at an are | Data and a constant access |
|-----------------------------|----------------------------|
| Relevant identified uses | Polyurethane prepolymer |

Details of the supplier of the safety data sheet

| Registered company name | Era Polymers Pty Ltd | |
|-------------------------|---------------------------------------|--|
| Address | 25-27 Green Street 2019 NSW Australia | |
| Telephone | +61 (0)2 9666 3788 | |
| Fax | +61 (0)2 9666 4805 | |
| Website | www.erapol.com.au | |
| Email | erapol@erapol.com.au | |

Emergency telephone number

| Association / Organisation | CHEMWATCH |
|-----------------------------------|---------------|
| Emergency telephone numbers | Not Available |
| Other emergency telephone numbers | Not Available |

CHEMWATCH EMERGENCY RESPONSE

| Primary Number | Alternative Number 1 | Alternative Number 2 |
|----------------|----------------------|----------------------|
| 877 715 9305 | +612 9186 1132 | Not Available |

Once connected and if the message is not in your prefered language then please dial 01

Una vez conectado y si el mensaje no está en su idioma preferido, por favor marque 02

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

CHEMWATCH HAZARD RATINGS

| | Min | Max | |
|--------------|-----|-----|--------------|
| Flammability | 0 | | |
| Toxicity | 2 | | 0 = Minimum |
| Body Contact | 0 | | 1 = Low |
| Reactivity | 1 | | 2 = Moderate |
| Chronic | 2 | | 3 = High |



GHS Classification

Acute Toxicity (Inhalation) Category 4, Respiratory Sensitizer Category 1B, Carcinogen Category 2

Version No: 3.6 Page 2 of 7

ERAPOL RN70A

Issue Date: **04/09/2015**Print Date: **04/09/2015**

GHS label elements



SIGNAL WORD

DANGER

Hazard statement(s)

| H332 Harmful if inhaled | |
|--|-----------------------------|
| H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled | |
| H351 | Suspected of causing cancer |

Precautionary statement(s) Prevention

| P201 | Obtain special instructions before use. | |
|--|--|--|
| P261 Avoid breathing dust/fume/gas/mist/vapours/spray. | | |
| P271 | Use only outdoors or in a well-ventilated area. | |
| P281 Use personal protective equipment as required. | | |
| P285 | In case of inadequate ventilation wear respiratory protection. | |

Precautionary statement(s) Response

| P304+P340 | P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. | |
|--|---|--|
| P308+P313 IF exposed or concerned: Get medical advice/attention. | | |
| P342+P311 | If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician/first aider | |
| P312 Call a POISON CENTER/doctor/physician/first aider/if you feel unwell. | | |

Precautionary statement(s) Storage

| | P405 | Store locked up. |
|--|------|------------------|
|--|------|------------------|

Precautionary statement(s) Disposal

P501 Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

| CAS No | %[weight] | Name |
|---------------|-----------|------------------------------------|
| Not Available | to 100 | All other substances non hazardous |
| 584-84-9 | <1 | toluene-2,4-diisocyanate |

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

| Eye Contact | If this product comes in contact with eyes: ► Wash out immediately with water. ► If irritation continues, seek medical attention. ► Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
|--------------|--|
| Skin Contact | If skin or hair contact occurs: ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation. |
| Inhalation | If furnes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. 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. Following uptake by inhalation, move person to an area free from risk of further exposure. Oxygen or artificial respiration should be administered as needed. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic. A physician should be consulted. |
| Ingestion | Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor. |

Version No: 3.6 Page 3 of 7

ERAPOL RN70A

Issue Date: 04/09/2015 Print Date: 04/09/2015

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- ▶ There is no restriction on the type of extinguisher which may be used.
- ▶ Use extinguishing media suitable for surrounding area

Special hazards arising from the substrate or mixture

Fire Incompatibility

None known.

Advice for firefighters

Fire Fighting

- ▶ Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves in the event of a fire.
- Prevent, by any means available, spillage from entering drains or water courses.
- Use fire fighting procedures suitable for surrounding area.
- ▶ DO NOT approach containers suspected to be hot.

Fire/Explosion Hazard

▶ Not considered a significant fire risk, however containers may burn.

May emit poisonous fumes.

Non combustible.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Minor Spills

- ► Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- ▶ Wipe up.

Major Spills

Moderate hazard.

- Clear area of personnel and move upwind.
- ▶ Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves
- ▶ Prevent, by any means available, spillage from entering drains or water course.

Personal Protective Equipment advice is contained in Section 8 of the SDS

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area
- Prevent concentration in hollows and sumps.
- ► DO NOT enter confined spaces until atmosphere has been checked.

Other information

Conditions for safe storage, including any incompatibilities

Suitable container

- Polyethylene or polypropylene container.
- Packing as recommended by manufacturer
- ▶ Check all containers are clearly labelled and free from leaks.

Storage incompatibility

- NOTE: May develop pressure in containers; open carefully. Vent periodically.
- Segregate from alcohol, water.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|---|------------------------------|--------------------------|------------------|------------------|--------------------------|-------|
| US OSHA Permissible Exposure Levels (PELs) - Table Z1 | toluene- 2,4-diisocyanate | Toluene-2,4-diisocyanate | Not Available | Not Available | 0.14 mg/m3 / 0.02 ppm | (TDI) |

Version No: 3.6 Page 4 of 7 Issue Date: 04/09/2015 Print Date: 04/09/2015

ERAPOL RN70A

| US ACGIH Threshold Limit Values (TLV) | toluene- 2,4-diisocyanate | ‡ Toluene-2, 4- or 2, 6-diisocyanate (or as a mixture) | 0.005 ppm | 0.02 ppm | Not Available | TLV® Basis: (Resp sens) |
|---|------------------------------|--|------------------|------------------|---------------|-------------------------|
| US ACGIH Threshold Limit Values (TLV) | toluene- 2,4-diisocyanate | Toluene-2, 4- or 2, 6-diisocyanate (or as a mixture) | 0.005 ppm | 0.02 ppm | Not Available | TLV® Basis: (Resp sens) |
| US NIOSH Recommended Exposure Limits (RELs) | toluene- | TDI; 2,4-TDI; 2,4-Toluene diisocyanate | Not Available | Not Available | Not Available | Ca See Appendix A |

EMERGENCY LIMITS

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|--------------------------|--------------------------------------|---------------|---------------|---------------|
| toluene-2,4-diisocyanate | Toluene diisocyanate (mixed isomers) | 0.045 ppm | 0.43 ppm | 0.43 ppm |
| toluene-2,4-diisocyanate | Toluene-2,4-diisocyanate; (TDI) | Not Available | Not Available | Not Available |

| Ingredient | Original IDLH | Revised IDLH |
|---|---------------|---------------|
| Polyurethane prepolymer - Non hazardous | Not Available | Not Available |
| toluene-2,4-diisocyanate | Not Available | Not Available |

Exposure controls

Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard 'physically' away from the worker and ventilation that strategically 'adds' and 'removes' air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly.

Personal protection











Eye and face protection

- Safety glasses with side shields
- Chemical goggles
- 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. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available.

Skin protection

See Hand protection below

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Hands/feet protection

- Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:
- ► frequency and duration of contact, • chemical resistance of glove material,
- ▶ glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

Body protection

See Other protection below

Other protection

- Overalls.
- ▶ P.V.C. apron.
- Barrier cream ► Skin cleansing cream.
- Thermal hazards

Not Available

Respiratory protection

Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| Appearance | Clear light amber liquid | | |
|-------------------------------------|--------------------------|---|---------------|
| | | | |
| Physical state | Liquid | Relative density (Water = 1) | 1.05 |
| Odour | Not Available | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | Not Available |
| pH (as supplied) | Not Available | Decomposition temperature | Not Available |
| Melting point / freezing point (°C) | Not Available | Viscosity (cSt) | Not Available |

Version No: 3.6 Page 5 of 7 Issue Date: 04/09/2015 Print Date: 04/09/2015

ERAPOL RN70A

| Initial boiling point and boiling range (°C) | Not Available | Molecular weight (g/mol) | Not Available |
|--|---------------|----------------------------------|---------------|
| Flash point (°C) | Not Available | Taste | Not Available |
| Evaporation rate | Not Available | Explosive properties | Not Available |
| Flammability | Not Available | Oxidising properties | Not Available |
| Upper Explosive Limit (%) | Not Available | Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%) | Not Available | Volatile Component (%vol) | Not Available |
| Vapour pressure (kPa) | Not Available | Gas group | Not Available |
| Solubility in water (g/L) | Reacts | pH as a solution (1%) | Not Available |
| Vapour density (Air = 1) | Not Available | VOC g/L | Not Available |

SECTION 10 STABILITY AND REACTIVITY

| Reactivity | See section 7 |
|------------------------------------|--|
| Chemical stability | Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur. |
| Possibility of hazardous reactions | See section 7 |
| Conditions to avoid | See section 7 |
| Incompatible materials | See section 7 |
| Hazardous decomposition products | See section 5 |

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

| Inhaled | Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. |
|--------------|---|
| Ingestion | The material is not thought to produce adverse health effects following ingestion (as classified by EC Directives using animal models). Nevertheless, adverse systemic effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum. |
| Skin Contact | Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. |
| Eye | Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn). |
| Chronic | There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment. Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population. |

| ERAPOL RN70A | TOXICITY Not Available | IRRITATION Not Available |
|--------------------------|---|---|
| toluene-2,4-diisocyanate | TOXICITY dermal (rat) LD50: >2000 mg/kg ^[1] Inhalation (mouse) LC50: 14.1 ppm6 h ^[1] Inhalation (rat) LC50: 14 ppm/4H ^[2] Oral (rat) LD50: >2000 mg/kg ^[1] | IRRITATION Eye (rabbit): 100 mg - SEVERE Skin (rabbit): 500 mg(open)-SEVERE Skin (rabbit):500 mg/24hr-moderate |

1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data Legend: extracted from RTECS - Register of Toxic Effect of chemical Substances

FRAPOL RN70A

Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms. Allergy causing activity is due to interactions with proteins. Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema.

TOLUENE-2,4-DIISOCYANATE

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 antibodymediated 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.

Version No: 3.6 Page 6 of 7 Issue Date: 04/09/2015 Print Date: 04/09/2015

ERAPOL RN70A

| Acute Toxicity | ✓ | Carcinogenicity | ✓ |
|-----------------------------------|---|--------------------------|---|
| Skin Irritation/Corrosion | 0 | Reproductivity | 0 |
| Serious Eye Damage/Irritation | 0 | STOT - Single Exposure | 0 |
| Respiratory or Skin sensitisation | ✓ | STOT - Repeated Exposure | 0 |
| Mutagenicity | 0 | Aspiration Hazard | 0 |

Legend:

✓ – Data required to make classification available

— Data available but does not fill the criteria for classification

Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

DO NOT discharge into sewer or waterways.

Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|--------------------------|-------------------------|------------------|
| toluene-2,4-diisocyanate | HIGH | HIGH |

Bioaccumulative potential

| Ingredient | Bioaccumulation |
|--------------------------|-----------------|
| toluene-2,4-diisocyanate | LOW (BCF = 5) |

Mobility in soil

| Ingredient | Mobility |
|--------------------------|------------------|
| toluene-2,4-diisocyanate | LOW (KOC = 9114) |

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

- Containers may still present a chemical hazard/ danger when empty.
- ▶ Return to supplier for reuse/ recycling if possible.

Product / Packaging disposal

- Otherwise: Fig. If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then
- puncture containers, to prevent re-use, and bury at an authorised landfill. ▶ Where possible retain label warnings and MSDS and observe all notices pertaining to the product.
- Legislation addressing waste disposal requirements may differ by country, state and/ or territory.

SECTION 14 TRANSPORT INFORMATION

Labels Required

Marine Pollutant

NO

Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL 73 / 78 and the IBC code

| Source | Ingredient | Pollution Category |
|---|--------------------------|--------------------|
| IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk | toluene-2,4-diisocyanate | Υ |

SECTION 15 REGULATORY INFORMATION

Safety, health and environmental regulations / legislation specific for the substance or mixture

TOLUENE-2,4-DIISOCYANATE(584-84-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Version No: 3.6 Page 7 of 7 Issue Date: 04/09/2015 Print Date: 04/09/2015

ERAPOL RN70A

| International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs | US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants |
|---|---|
| US - Alaska Limits for Air Contaminants | US - Washington Permissible exposure limits of air contaminants |
| US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals | US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values |
| Causing Reproductive Toxicity | US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants |
| US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs | US ACGIH Threshold Limit Values (TLV) |
| (CRELs) | US ACGIH Threshold Limit Values (TLV) - Carcinogens |
| US - California Permissible Exposure Limits for Chemical Contaminants | US ACGIH Threshold Limit Values (TLV) - Notice of Intended Changes |
| US - California Proposition 65 - Carcinogens | US EPCRA Section 313 Chemical List |
| US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens | US National Toxicology Program (NTP) 13th Report Part B. Reasonably Anticipated to be a |
| US - Hawaii Air Contaminant Limits | Human Carcinogen |
| US - Idaho - Limits for Air Contaminants | US NIOSH Recommended Exposure Limits (RELs) |
| US - Michigan Exposure Limits for Air Contaminants | US OSHA Permissible Exposure Levels (PELs) - Table Z1 |
| US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): | US SARA Section 302 Extremely Hazardous Substances |
| Carcinogens | US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |
| US - Oregon Permissible Exposure Limits (Z-2) | , |

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants

US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants

SECTION 311/312 HAZARD CATEGORIES

| Immediate (acute) health hazard | YES |
|---------------------------------|-----|
| Delayed (chronic) health hazard | YES |
| Fire hazard | NO |
| Pressure hazard | NO |
| Reactivity hazard | NO |

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

None Reported

State Regulations

US. CALIFORNIA PROPOSITION 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm

US - CALIFORNIA PREPOSITION 65 - CARCINOGENS & REPRODUCTIVE TOXICITY (CRT): LISTED SUBSTANCE

Toluene diisocyanate Listed

| National Inventory | Status |
|----------------------------------|---|
| Australia - AICS | Υ |
| Canada - DSL | Υ |
| Canada - NDSL | N (toluene-2,4-diisocyanate) |
| China - IECSC | Υ |
| Europe - EINEC / ELINCS / NLP | Y |
| Japan - ENCS | Υ |
| Korea - KECI | Υ |
| New Zealand - NZIoC | Υ |
| Philippines - PICCS | Υ |
| USA - TSCA | Υ |
| Legend: | Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets) |

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

This document is copyright.

Apart from any fair dealing for the purposes of privatestudy, research, review or criticism, as permitted under the Copyright Act, nopart may be reproduced by any process without written permission fromCHEMWATCH.

TEL (+61 3) 9572 4700.