

SAFETY DATA SHEET

Item Code: N0197 & N0198 Pt A

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| Section 1. | Identification of the material and the supplier |
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Item Code: N0197 & N0198 Part A
 Product: Endurathane 3245N
 Product Use: Component A of a Polyurethane Foam System

New Zealand Supplier: Realcold Ltd
 Address: 9 Prescott Street
 Penrose, Auckland

Telephone: 09 526 5700
 Fax Number: 09 526 5721

Emergency Telephone: 09 526 5700
0800 766 764 (National Poison Centre)

Manufacturer: Polymer Group Ltd, 62 Stonedon Drive, East Tamaki

Date of MSDS Preparation: 14 March 2017- ver 2

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| Section 2. | Hazards Identification |
|-------------------|-------------------------------|

The Manufacturer has stated that this substance is not hazardous according to the *HSNO (Minimum Degrees of Hazard) Regulations 2001*

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| Section 3. | Composition / Information on Ingredients |
|-------------------|---|

| Ingredients | Wt% | CAS NUMBER. |
|--|-------|---------------|
| Hydroxyl Terminated Poly (Oxyalkylene) Polyether | 60-90 | Not available |
| Tertiary Amine bearing Compounds | 0-5 | Not available |
| 1,1-dichloro-1-fluoroethane | 20-40 | 1717-00-6 |

| | |
|-------------------|---------------------------|
| Section 4. | First Aid Measures |
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Routes of Exposure:

If in Eyes: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately.

If on Skin: Remove contaminated clothing and wash skin with warm soapy water. If irritation occurs, get medical assistance

If Swallowed: If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

If Inhaled: Remove person to fresh air. Remove contaminated clothing and loosen remaining clothing. Allow person to assume most comfortable position and keep warm. Keep at rest until fully recovered. Get medical advice if breathing becomes difficult.

Section 5. Fire Fighting Measures

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| Hazard Type | Not combustible |
| Hazards from decomposition products | Keep away from oxidising agents. Do not store wastes in polystyrene, polymethacrylate or ABS. |
| Suitable Extinguishing media | Dry chemical extinguishers such as monoammonium phosphate, potassium chloride, additionally carbon dioxide, high expansion chemical foam, water spray. |
| Precautions for firefighters and special protective clothing | Fire fighters should wear self-contained breathing apparatus in addition to normal protective turnout clothing. |
| HAZCHEM CODE | Not applicable |

Section 6. Accidental Release Measures

Contain the spilled material and then cover with a loose, absorbent material such as oildry, sawdust, Vermiculite or Fuller's Earth. Shovel waste material into the proper waste containers. Wash the contaminated areas down with hot, soapy water thoroughly. Ventilate area to remove vapours.

Waste material may be incinerated or disposed of under local regulations controlling environment protection.

Section 7. Handling and Storage

Handling **Special Sensitivity (Heat, Light, Moisture):** This product is hygroscopic. Containers should be tightly sealed to prevent moisture contamination. Do not expose to high temperatures for any length of time.

Storage Temperature (Min/Max): 18°C – 30°C

Average Shelf Life: 6 months

Section 8 Exposure Controls / Personal Protection**WORKPLACE EXPOSURE STANDARDS (provided for guidance only)**

| Substance | TWA | | STEL | |
|---|-----|-------------------|------|-------------------|
| | ppm | mg/m ³ | ppm | mg/m ³ |
| 1,1-dichloro-1-fluoroethane (HCFC 141b) | 500 | ppm | | |

Workplace Exposure Standard – Time Weighted Average (WES-TWA). *The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure.* Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). *The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply.*

Engineering Controls

Natural or mechanical. Local exhaust will keep TLV below minimum in most cases. Spills or other emergencies may require more forceful ventilation means.

Personal Protection

Skin and eye protection: Chemical resistant gloves such as natural rubber, or poly vinyl alcohol. Cover as much of the exposed skin as possible with appropriate clothing. If skin creams are used, keep the area covered by the cream to a minimum. Liquid chemical goggles or full-face shield. No contact lenses should be worn.

Respiratory Protection: this product has demonstrated no observable effects at room temperatures, however, it is highly recommended that an air purifying respirator with organic filter cartridges be worn. In addition, in any spray application, a supplied air source must be provided.

Other: Safety showers and eye wash stations should be provided in all work areas. All employees should be properly trained.

FLAMMABILITY

Flammability Limits: Not established.

Section 9 Physical and Chemical Properties

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|------------------------------|---|
| Appearance | Viscous amber liquid |
| Odour | Slight ammonia odour |
| Boiling Point: | 32°C with evolution of HCFC then decomposes |
| Vapour Pressure: | Not established |
| Specific Gravity: | 1.13 |
| Flash Point: | 120°C |
| % Volatile by Volume: | 15-25 |
| Flammability Limits: | Not established |
| Solubility in Water: | Slightly soluble |

Section 10. Stability and Reactivity

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| Stability of Substance | Stable under normal conditions |
| Incompatible Materials | Avoid contact with isocyanates and other substances that will react with Hydroxyl groups. |
| Hazardous Decomposition Products | aliphatic fragments, CO, NH ₃ , CO ₂ . |

Section 11 Toxicological Information

HEALTH EFFECTS

ACUTE:

Skin and Eyes: this product contains amine catalyst and will cause irritation to the skin after prolonged contact. Some individuals may be more sensitive to exposure. This product contains Freon which can cause dermatitis.

This product may cause eye irritation. Protective goggles should be worn.

Ingestion: This is not considered a common occupational route of exposure, and no observable effects have been demonstrated.

Inhaled: At room temperatures, vapour inhalation is not considered hazardous. This product contains Freon, at elevated temperatures, Freon gas may escape. Vapours may cause dizziness, tremors, cardiac arrhythmias and cardiac arrest.

CHRONIC

Human Effects of Over Exposure: At room temperatures, vapour inhalation is not considered hazardous. This product contains Freon, at elevated temperatures, Freon gas may escape. Vapours may cause dizziness, tremors, cardiac arrhythmias and cardiac arrest.

Section 12. Ecotoxicological Information

No data available.

Section 13. Disposal Considerations

Recycle where possible.

Bury residue in an authorised landfill.

Recycle containers if possible. If not possible, dispose of in an authorised landfill.

Containers may still present a chemical hazard/danger when empty.

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.

Contact appropriate Waste Management Company for guidance and disposal options in your area. Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Section 14 Transport Information

The manufacturer has stated that this product is **Not** classified as a Dangerous Good for transport in NZ ; NZS 5433:2007

Section 15 Regulatory Information

According to the manufacturer there is no Regulatory requirements for this product.

Section 16 Other Information

1. HSNO Approved Code of Practice: Preparation of Safety Data Sheets, September 2006.

Disclaimer

This document has been issued by Realcold Limited and serves as their Safety Data Sheet ('SDS'). It is based on information concerning the product which has been provided to Realcold Limited or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer. While Realcold Limited have taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, Realcold Limited accept no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS

The information herein is given in good faith, but no warranty, express or implied is made.

Please contact the New Zealand distributor, Realcold Ltd, if further information is required.

Issue Date: 10 January 2012 Review Date: 10 January 2017

Product Name: Endurathane3245N&Suprasec5005 Item No: N0197&8 Issued by: Realcold Ltd
Date of MSDS: 10 January 2012 Tel: 64 9 526 5700

SAFETY DATA SHEET

Item Code: N0197 & N0198 Part B

Section 1. Identification of the material and the supplier

Item Code: N0197 & N0198 Part B
Product: Suprasec® 5005
Product Use: Polyurethane

New Zealand Supplier: Realcold Ltd
Address: 9 Prescott Street
Penrose, Auckland
Telephone: 09 526 5700
Fax Number: 09 526 5721
Emergency Telephone: 09 526 5700
0800 766 764 (National Poison Centre)

Manufacturer: Huntsman Polyurethanes (Australia) Pty Ltd, 3 Ballarat Rd,
Deer Park, Australia

Date of MSDS Preparation: 9 January 2012 – ver 1

Section 2. Hazards Identification

The manufacturer has stated that this substance is hazardous according to the *HSNO (Minimum Degrees of Hazard) Regulations 2001*

Group Standard & ERMA Approval Code: **Polymers (Toxic [6.1]) HSR 002645**
Pictograms



Toxic



Chronic

| HSNO Class. | Hazard Code | Hazard Statement | EU Risk Phrases |
|-------------|-------------|------------------|-----------------|
|-------------|-------------|------------------|-----------------|

| | | | |
|-------------------|------|--|-----|
| 6.1D (inhalation) | H332 | Harmful if inhaled. | R20 |
| 6.3B | H316 | Causes mild skin irritation. | R38 |
| 6.4A | H320 | Causes eye irritation. | R36 |
| 6.5A | H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. | R42 |
| 6.9B | H373 | May cause damage to lungs through prolonged or repeated exposure | R48 |

| Prevention Code | Prevention Statement |
|-----------------|----------------------|
|-----------------|----------------------|

Product Name: Endurathane3245N&Suprasec5005 Item No: N0197&8 Issued by: Realcold Ltd
Date of MSDS: 10 January 2012 Tel: 64 9 526 5700

assume most comfortable position and keep warm. Keep at rest until fully recovered. If breathing laboured and patient cyanotic (blue), ensure airways are clear and have qualified person give oxygen through a face mask. If breathing has stopped apply artificial respiration ant once. In event of cardiac arrest, apply external cardiac massage. Seek medical advice.

First Aid Facilities:

Provide eye baths and safety showers close to areas where there is potential for eye and skin contact.

Medical attention and special treatment:

Treat symptomatically. Effects may be delayed. Following severe exposures the patient should be kept under medical supervision for at least 48 hours. (1)

Section 5. Fire Fighting Measures

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| Hazard Type | Non-Combustible Liquid |
| Hazards from decomposition products | On burning will emit toxic fumes including those of carbon monoxide and carbon dioxide, nitrogen oxides, isocyanate vapours and hydrogen cyanide. |
| Suitable Extinguishing media | Foam, dry agent (carbon dioxide, dry chemical powder).Water fog (or if unavailable fine water spray) |
| Precautions for firefighters and special protective clothing | Prevent washings from entering water courses, keep fire exposed containers cool by spraying with water. Fire fighters to wear self-contained breathing apparatus if risk of exposure to vapour or products of combustion. Due to the reaction with water producing carbon dioxide gas, a hazardous build-up of pressure could result if contaminated drums are resealed |
| HAZCHEM CODE | Not applicable |

Section 6. Accidental Release Measures

Emergency procedures:. Evacuate the area. Keep upwind to avoid inhalation of vapours. Clean-up should only be performed by trained personnel. Splash goggles. Full suit, Boots, Gloves to prevent skin and eye contamination. Self contained breathing apparatus should be used to avoid inhalation of the product.

Methods and materials for containment and clean up procedures:. Prevent further leakage, spillage or entry into drains. Absorb spillages onto sand, earth or any suitable adsorbent material. Leave to react for at least 30 minutes. Do not absorb onto sawdust or other combustible materials. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for MDI vapour. Neutralise small spillages with decontaminant. Remove and dispose of residues. The compositions of liquid decontaminants are given in Section 16.{

Section 7. Handling and Storage

Handling

Precautions for safe handling:

Do not breathe vapour/spray. Avoid contact with skin and eyes. Atmospheric concentrations should be minimised and kept as low as reasonably practicable below the occupational exposure limit. The efficiency of the ventilation system must be monitored regularly because of the possibility of blockage. When the product is sprayed or heated, suitable

respiratory protection equipment with positive air supply may be required. Keep equipment clean. A basic essential in sampling, handling and storage is the prevention of contact with water. Keep stocks of decontaminant readily available. The compositions of liquid decontaminants are given in Section 16. See also brochure PU 193-1 (see section 16).

Storage

Keep containers properly sealed and store indoors in a well ventilated area. Keep away from frost. Keep away from moisture. If a container is contaminated, do not reseal it. Due to reaction with water producing CO₂-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Unsuitable containers: Copper, copper alloy and galvanised surfaces. Suitable containers: stainless steel or mild steel.

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| Section 8 | Exposure Controls / Personal Protection |
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WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

| Substance | CAS # | TWA | | STEL | |
|-------------------------------------|-------|-----|-------------------|------|-------------------|
| | | ppm | mg/m ³ | ppm | mg/m ³ |
| Isocyanates, all (<u>as -NCO</u>) | | - | 0.07 | | |

Workplace Exposure Standard – Time Weighted Average (WES-TWA). *The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure.* Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). *The 15-minute average exposure standard.* Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply.

Engineering Controls

Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Exposure Standards. Use with local exhaust ventilation or while wearing air supplied mask. Vapour heavier than air - prevent concentration in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use.

MDI can only be smelt if the occupational exposure limit has been exceeded considerably.

Personal Protection

Overalls, safety shoes, face shield or air mask, gloves (long).

Wear suitable protective clothing, gloves and eye/face protection.

Respirators : Suitable respiratory equipment with positive air supply should be used in cases of insufficient ventilation or where operational procedures demand it.

Eye Protection : Chemical safety glasses. Full face shield if splashing is possible.

Gloves : The following protective materials are recommended:

- Neoprene
- Nitrile butadiene rubber
- Butyl rubber
- PVC (Heavy duty.)

Thin disposable gloves should be avoided for repeated or long term use.

Other : Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C', Tyvek-Pro 'F' disposable coverall.

Contaminated clothing should be thoroughly cleaned before re-use.

Section 9 Physical and Chemical Properties

| | |
|--|--|
| Appearance | Dark Brown Liquid |
| Odour | Earthy |
| Flash Point | 200-250°C |
| Boiling Point | Not Available |
| Lower & Upper Flammability Limits | Not Available |
| Auto-ignition Temperature | Not Available |
| Rel Vapour Density (air= 1) : | >1 |
| Vapour Pressure at 20°C (mmHg): | 1x10 ⁻⁶ kPa |
| Specific Gravity | 1.24 |
| Solubility in Water | Insoluble in water. Soluble in many organic solvents |

Section 10. Stability and Reactivity

Stability of Substance

Stable at room temperature. Reacts with water (moisture) produces CO₂-gas. Reacts exothermically with water and all organic compounds containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.

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| Conditions to Avoid | Avoid high temperatures |
| Incompatible Materials | Water, alcohols, amines, bases and acids |
| Hazardous Decomposition Products | Carbon monoxide and carbon dioxide |

Section 11 Toxicological Information

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

Acute Effects

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|----------------------|---|
| Ingestion: | Swallowing may result in irritation of the gastrointestinal tract. Eye contact: Both vapour and liquid are eye irritants. |
| Skin contact: | Contact with skin will result in moderate irritation. Repeated or prolonged contact may cause skin sensitisation. Animal studies have shown that respiratory sensitisation can be induced by skin contact with known respiratory sensitisers including diisocyanates. These results emphasise the need for protective clothing including gloves to be worn when handling these chemicals or in maintenance work. |
| Inhalation: | A respiratory irritant and potential respiratory sensitiser; repeated inhalation of vapour or aerosol at levels above the occupational exposure standard could cause respiratory sensitisation. Symptoms may include irritation of the eyes, nose, throat and lungs, possibly with dryness of the throat, tightness of the chest and difficulty in breathing. Onset of respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response may develop to even minimal concentrations of MDI in sensitised individuals. |

Long Term Effects:

There are reports that chronic exposure by inhalation may result in a permanent decrease in lung function.

Acute toxicity / Chronic toxicity

Based on information available on similar products; (1)

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|------------------------|---|
| Oral LD50 (rat): | >5000 mg/kg. |
| Dermal LD50 (rabbit): | >5000 mg/kg. |
| Inhalation LC50 (rat): | 0.49 mg/l (4 hour/hours) (respirable aerosol). EYES (rabbit): 100 ug - Draize - MILD. (2) |

Rats were exposed for two years to a respirable aerosol of polymeric MDI. Chronic pulmonary irritation was observed where rats were exposed to high levels of MDI. Only at the 6mg/m³ was there a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m³ and no effects at 0.2 mg/m³. The increased incidence of lung tumours was associated with prolonged respiratory irritation and a concurrent accumulation of yellow material in the lung.

In the absence of prolonged, high levels of exposure causing chronic irritation and lung damage, it is highly unlikely that tumour formation could occur. Industrial experience in humans has not shown a correlation between MDI exposure and cancer development. No birth defects were seen in two independent animal (rat) studies.

Foetotoxicity was observed, only at maternally toxic doses. The doses used in these studies were maximal, respirable concentrations, which were well in excess of defined occupational exposure limits.

There is no substantial evidence of a mutagenic potential for MDI. Respiratory hypersensitivity in guinea pigs has resulted from dermal exposure to MDI.

Section 12. Ecotoxicological Information

Ecotoxicity

By comparison with an analogous product, the following values are anticipated. The measured ecotoxicity is that of the hydrolysed product, generally under conditions maximising production of soluble species. Even so, the observed ecotoxicity is low/very low. A pond study showed gross contamination caused no significant toxic effects on a wide variety of flora in all trophic levels (including fish), no detectable diaminodiphenylmethane (MDA), and no evidence of the bioaccumulation of MDI nor MDA.

| Ingredient Name | Species | Period | Result |
|---------------------------------|----------------------|----------|------------|
| Diphenylmethane 4, diisocyanate | Zebra Fish (LC50) | 96 hours | >1000 mg/l |
| | Daphnia magna (EC50) | 48 hours | >1000 mg/l |

Persistence/degradability

Immiscible with water, but will react with water to produce inert and non-biodegradable solids. Conversion to soluble products, including diamino- diphenylmethane (MDA), is very low under the optimal laboratory conditions of good dispersion and low concentration. In air, the predominant degradation process is predicted to be a relatively rapid OH radical attack, by calculation and by analogy with related diisocyanates.

Mobility

By considering the production and use of the substance, it is unlikely that significant environmental exposure in the air or water will arise.

Section 13. Disposal Considerations

Disposal method

Refer to Local or Regional Council Waste Management Authority. Empty containers MUST BE decontaminated. Dispose of material through a licensed waste contractor.

The generation of waste should be avoided or minimised wherever possible. Untreated material is not suitable for disposal. Waste, even small quantities, should never be poured down drains, sewers or water courses. Small quantities and empty drums - pretreat to neutralise prior to disposal. Large quantities - incinerate under approved controlled conditions, using incinerators suitable for the disposal of hazardous chemical waste. Empty drums should be decontaminated and either passed to an approved drum reconditioner or destroyed.

Special precautions for landfill or incineration: Small quantities and empty drums – pretreat to neutralise prior to disposal. Large quantities - incinerate under approved controlled conditions, using incinerators suitable for the disposal of hazardous chemical waste

Section 14 Transport Information

The manufacturer has stated that this product is Not Classified as a Dangerous Good for transport by the criteria of the New Zealand Standard 5433:2007 Transport of Dangerous Goods on Land

Section 15 Regulatory Information

ERMA Approval Code: Polymers (Toxic [6.1]) Group Standard 2006 HSR002645

HSNO Classification: 6.1D, 6.3B, 6.4A, 6.5A, 6.9B

HSNO Controls:

Trigger quantities for this substance:

| | Trigger Quantity |
|--|------------------|
| Approved Handler | Not Required |
| Location Certificate | Not Applicable |
| Tracking Trigger Quantities | Not Required |
| Signage Trigger Quantities | Not Required |
| Emergency Response Plan trigger Quantities | 1000L (6.1D) |

Section 16 Other Information

1. HSNO Approved Code of Practice: Preparation of Safety Data Sheets, September 2006.

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Issue Date: 9 January 2012
Review Date: 9 January 2017