Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Dunlop Ardit Crack Filler

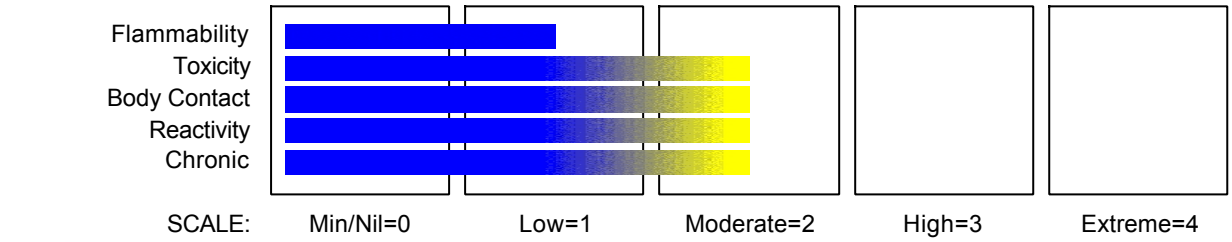
PRODUCT USE
Used according to manufacturer's directions.

SUPPLIER
Company: Ardex Australia Pty Ltd
Address:
20 Powers Road
Seven Hills
NSW, 2147
Australia
Telephone: 1800 224 070
Emergency Tel:**1800 222 841**
Fax: +61 2 9838 7817

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS



RISK
■ Harmful by inhalation.
■ Irritating to eyes, respiratory system and skin.
■ Limited evidence of a carcinogenic effect.
■ May cause SENSITISATION by inhalation and skin contact.
■ Harmful: danger of serious damage to health by prolonged exposure through inhalation.
■ Possible risk of irreversible effects.
■ Skin contact may produce health damage*.
■ Ingestion may produce serious health damage*.
■ Cumulative effects may result following exposure*.
■ Repeated exposure potentially causes skin dryness and cracking*.

SAFETY
• Do not breathe gas/fumes/vapour/spray.
• Avoid contact with skin.

• Avoid contact with eyes.
• Wear suitable protective clothing.

• Wear suitable gloves.

• Wear eye/face protection.
• Use only in well ventilated areas.
• Keep container in a well ventilated place.

• To clean the floor and all objects contaminated by this material, use water and detergent.
• Keep container tightly closed.

continued...

■ Vapours potentially cause drowsiness and dizziness*.
* (limited evidence).

• Keep away from food, drink and animal feeding stuffs.
• Take off immediately all contaminated clothing.
• In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
• If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).
• In case of accident by inhalation: remove casualty to fresh air and keep at rest.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
polymeric diphenylmethane diisocyanate	9016-87-9	<50
2, 2, 4- trimethyl- 1, 3- pentanediol diisobutyrate	6846-50-0	<40
4, 4' - diphenylmethane diisocyanate (MDI)	101-68-8	<20
2, 2, 4- trimethyl- 1, 3- pentanediol diisobutyrate	6846-50-0	<50
tetrahydroxypropyl ethylenediamine	102-60-3	<25
polypropylene glycol glyceryl ether	25791-96-2	<20
1, 4- butylene glycol	110-63-4	<6

Section 4 - FIRST AID MEASURES

SWALLOWED
• For advice, contact a Poisons Information Centre or a doctor at once.
• Urgent hospital treatment is likely to be needed.
• If swallowed do NOT induce vomiting.
• If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

EYE
■ If this product comes in contact with the eyes:
• Wash out immediately with fresh running water.
• Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
• Seek medical attention without delay; if pain persists or recurs seek medical attention.
• Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin contact occurs:
• Immediately remove all contaminated clothing, including footwear.
• Flush skin and hair with running water (and soap if available).
• Seek medical attention in event of irritation.

INHALED
• If fumes 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.
Following uptake by inhalation, move person to an area free from risk of further exposure. Oxygen or artificial respiration should be administered as needed.

NOTES TO PHYSICIAN
Treat symptomatically.
For sub-chronic and chronic exposures to isocyanates:
• This material may be a potent pulmonary sensitiser which causes bronchospasm even in patients without prior airway hyperreactivity.

continued...

- Clinical symptoms of exposure involve mucosal irritation of respiratory and gastrointestinal tracts.
- Conjunctival irritation, skin inflammation (erythema, pain vesiculation) and gastrointestinal disturbances occur soon after exposure.
- Pulmonary symptoms include cough, burning, substernal pain and dyspnoea.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
- Small quantities of water in contact with hot liquid may react violently with generation of a large volume of rapidly expanding hot sticky semi-solid foam.
- Presents additional hazard when fire fighting in a confined space.
- Cooling with flooding quantities of water reduces this risk.
- Water spray or fog may cause frothing and should be used in large quantities.
- Alcohol stable foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

FIRE FIGHTING
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.

FIRE/EXPLOSION HAZARD
- Combustible.
- Moderate fire hazard when exposed to heat or flame.
- 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.
- Burns with acrid black smoke and poisonous fumes.

Combustion products include: carbon dioxide (CO_2), isocyanates, and minor amounts of, hydrogen cyanide, nitrogen oxides (NOx), other pyrolysis products typical of burning organic material.
May emit corrosive fumes.
When heated at high temperatures many isocyanates decompose rapidly generating a vapour which pressurises containers, possibly to the point of rupture. Release of toxic and/or flammable isocyanate vapours may then occur.

FIRE INCOMPATIBILITY
- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

HAZCHEM
None

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
Slippery when spilt.
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.

MAJOR SPILLS
- Liquid Isocyanates and high isocyanate vapour concentrations will penetrate seals on self contained breathing apparatus - SCBA should be used inside encapsulating suit where this exposure may occur.

For isocyanate spills of less than 40 litres (2 m2):
- Evacuate area from everybody not dealing with the emergency, keep them upwind and prevent further access, remove ignition sources and, if inside building, ventilate area as well as possible.
- Notify supervision and others as necessary.
- Put on personal protective equipment (suitable respiratory protection, face and eye protection, protective suit, gloves and impermeable boots).
- Control source of leakage (where applicable).

continued...

Slippery when spilt.
• Avoid contamination with water, alkalies and detergent solutions.
• Material reacts with water and generates gas, pressurises containers with even drum rupture resulting.
• DO NOT reseal container if contamination is suspected.
• Open all containers with care.
• DO NOT touch the spill material.
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 MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
• DO NOT allow clothing wet with material to stay in contact with skin.
• 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.

SUITABLE CONTAINER
• Metal can or drum
• Packaging as recommended by manufacturer.
• Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY
• Avoid cross contamination between the two liquid parts of product (kit).
• If two part products are mixed or allowed to mix in proportions other than manufacturer's recommendation, polymerisation with gelation and evolution of heat (exotherm) may occur.
• This excess heat may generate toxic vapour.
• Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous.
• Esters react with acids to liberate heat along with alcohols and acids.
• Strong oxidising acids may cause a vigorous reaction with esters that is sufficiently exothermic to ignite the reaction products.
• Heat is also generated by the interaction of esters with caustic solutions.
• Flammable hydrogen is generated by mixing esters with alkali metals and hydrides.
• Avoid reaction with water, alcohols and detergent solutions.
• Isocyanates and thioisocyanates 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 polymerisation reactions in these materials.
• Isocyanates easily form adducts with carbodiimides, isothiocyanates, ketenes, or with substrates containing activated CC or CN bonds.
• Some isocyanates react with water to form amines and liberate carbon dioxide. This reaction may also generate large volumes of foam and heat. Foaming in confined spaces may produce pressure in confined spaces or containers. Gas generation may pressurise drums to the point of rupture.
• A range of exothermic decomposition energies for isocyanates is given as 20-30 kJ/mol.
• The relationship between energy of decomposition and processing hazards has been the subject of discussion; it is suggested that values of energy released per unit of mass, rather than on a molar basis (J/g) be used in the assessment.
• For example, in "open vessel processes" (with man-hole size openings, in an industrial setting), substances with exothermic decomposition energies below 500 J/g are unlikely to present a danger, whilst those in "closed vessel processes" (opening is a safety valve or bursting disk) present some danger where the decomposition energy exceeds 150 J/g.
BRETHERICK: Handbook of Reactive Chemical Hazards, 4th Edition.

STORAGE REQUIREMENTS
for commercial quantities of isocyanates:
• 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.
• Where isocyanates are stored at elevated temperatures to prevent solidifying, adequate controls should be installed to prevent

continued...

the high temperatures and precautions against fire should be taken.
• Where stored in tanks, the more reactive isocyanates should be blanketed with a non-reactive gas such as nitrogen and equipped with absorptive type breather valve (to prevent vapour emissions)..
• Transfer systems for isocyanates in bulk storage should be fully enclosed and use pump or vacuum systems. Warning signs, in appropriate languages, should be posted where necessary.
Rotate all stock to prevent ageing. Use on FIFO (First In-First Out) basis.
• Store in original containers.
• Keep containers securely sealed.
• No smoking, naked lights or ignition sources.
• Store in a cool, dry, well-ventilated area.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Australia Exposure Standards	polymeric diphenylmethane diisocyanate (Isocyanates, all (as- NCO))				0.07				See individual entries

The following materials had no OELs on our records
• 2, 2, 4- trimethyl- 1, 3- pentanediol diisobutyrate: CAS:6846- 50- 0
• tetrahydroxypropyl ethylenediamine: CAS:102- 60- 3
• polypropylene glycol glyceryl ether: CAS:25791- 96- 2 CAS:9062- 54- 8 CAS:37239- 38- 6 CAS:51938- 80- 8 CAS:68518- 66- 1
• 1, 4- butylene glycol: CAS:110- 63- 4 CAS:74829- 49- 5 CAS:38274- 25- 8

MATERIAL DATA
4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI):
POLYMERIC DIPHENYLMETHANE DIISOCYANATE:
for diphenylmethane diisocyanate (methylene bisphenyl isocyanate; MDI)
Odour Threshold Value: 0.39 ppm
IDLH Level: 10 mg/m3
Mean MDI exposures of less than 0.003 ppm appear to have no acute or chronic effect on pulmonary function.
MDI produces identical toxicological responses to those produced by TDI and the recommended TLV-TWA is identical for the two isocyanates.

1,4-BUTYLENE GLYCOL:
TETRAHYDROXYPROPYL ETHYLENEDIAMINE:
Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations.

DUNLOP ARDIT CRACK FILLER:
None assigned. Refer to individual constituents.

POLYMERIC DIPHENYLMETHANE DIISOCYANATE:
for isocyanates:
Some jurisdictions require that health surveillance be conducted on occupationally exposed workers. This should emphasise:
• demography, occupational and medical history and health advice
• completion of a standardised respiratory questionnaire
• physical examination of the respiratory system and skin
• standardised respiratory function tests such as FEV1, FVC and FEV1/FVC.

2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE:
No exposure limits set by NOHSC or ACGIH.

POLYPROPYLENE GLYCOL GLYCERYL ETHER:
None assigned.

continued...

PERSONAL PROTECTION




RESPIRATOR

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

EYE

• 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 lens 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. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET

■ NOTE:
• The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.
• Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

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.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:.
• Do NOT wear natural rubber (latex gloves).
• Isocyanate resistant materials include Teflon, Viton, nitrile rubber and some PVA gloves.
• Protective gloves and overalls should be worn as specified in the appropriate national standard.
• Contaminated garments should be removed promptly and should not be re-used until they have been decontaminated.
• NOTE: Natural rubber, neoprene, PVC can be affected by isocyanates.
• 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.
• Polyethylene gloves.

OTHER

■ All employees working with isocyanates must be informed of the hazards from exposure to the contaminant and the precautions necessary to prevent damage to their health. They should be made aware of the need to carry out their work so that as little contamination as possible is produced, and of the importance of the proper use of all safeguards against exposure to themselves and their fellow workers.
Employees exposed to contamination hazards should be educated in the need for, and proper use of, facilities, clothing and equipment and thereby maintain a high standard of personal cleanliness.
• Overalls.
• P.V.C. apron.
• Barrier cream.
• Skin cleansing cream.

ENGINEERING CONTROLS

• All processes in which isocyanates are used should be enclosed wherever possible.
• Total enclosure, accompanied by good general ventilation, should be used to keep atmospheric concentrations below the relevant exposure standards.
• If total enclosure of the process is not feasible, local exhaust ventilation may be necessary. Local exhaust ventilation is essential where lower molecular weight isocyanates (such as TDI or HDI) is used or where isocyanate or polyurethane is sprayed.
• Where other isocyanates or pre-polymers are used and aerosol formation cannot occur, local exhaust ventilation may not be necessary if the atmospheric concentration can be kept below the relevant exposure standards.

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:

continued...

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.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Part A: Amber liquid with a sweet odour; reacts slowly with water to liberate CO2 gas.
Part B: Bluish grey liquid with slight odour; does not mix with water.

PHYSICAL PROPERTIES
Liquid.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	<0 (MDI) (freezing point)	Viscosity	Not Available
Boiling Range (°C)	209	Solubility in water (g/L)	Reacts
Flash Point (°C)	>199	pH (1% solution)	Not Applicable
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Applicable
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	Negligible
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	1.069
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	8.5 (MDI)
Volatile Component (%vol)	Not Available	Evaporation Rate	Non- Volatile

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable.
• Hazardous polymerisation will not occur.
• Presence of elevated temperatures.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Accidental ingestion of the material may be damaging to the health of the individual.
Swallowing 1,4-butylene glycol may cause central nervous system depression characterised by headache, dizziness, drowsiness, nausea, vomiting, abdominal pain and inco-ordination. Severe over-exposure may lead to coma and possible death, due to failure of breathing. Ingestion may also cause kidney damage and peripheral neuropathy, a progressive disorder of the nervous system characterised by sensory and motor abnormalities, muscle spasms, weakness and pain in the arms and legs, numbness and tingling of the fingers and toes and paralysis.
Gamma-hydroxybutyric acid readily crosses the blood-brain barrier and may cause relaxation, loss of muscle tone and reduced inhibition at low doses, then at higher levels, drowsiness, speech and motor interference, increased libido and reduced rate of breathing, heart rate and blood pressure. There may be low blood potassium, twitching and seizures, nausea, vomiting, hallucinations, delirium and coma. The effects are enhanced with alcohol. It can be addictive with sustained use. Withdrawal symptoms may occur on discontinuation after 24 hours of repeated use and include anxiety, sleeplessness, tremors, fast heart rate, delirium and agitation. These may occur within 1 to 6 hours of the last dose but may last for many months.

EYE
■ This material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.

continued...

SKIN

■ The material may cause mild but significant inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.
Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.
Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
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.

INHALED

■ Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.
The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.
Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.
Inhalation hazard is increased at higher temperatures.
The vapour/mist may be highly irritating to the upper respiratory tract and lungs; the response may be severe enough to produce bronchitis and pulmonary oedema. Possible neurological symptoms arising from isocyanate exposure include headache, insomnia, euphoria, ataxia, anxiety neurosis, depression and paranoia.

CHRONIC HEALTH EFFECTS

■ 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.
Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.
Harmful: danger of serious damage to health by prolonged exposure through inhalation.
This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. This has been demonstrated via both short- and long-term experimentation.
Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
Gamma-butyrolactone is rapidly converted to gamma-hydroxybutyric acid by enzymes in the blood and liver. It has been linked with increasing incidence of kidney and adrenal gland tumors.
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. [CCTRADE-Bayer, APMF].
Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, inco-ordination, anxiety, depression and paranoia. Digestive effects include nausea and vomiting. Breathing difficulties may occur unpredictably after a period of tolerance and after skin contact. Allergic inflammation of the skin can occur, with rash, itching, blistering, and swelling of the hands and feet. Sensitive people can react to very low levels and should not be exposed to this material.

TOXICITY AND IRRITATION

■ No significant acute toxicological data identified in literature search.

CARCINOGEN

polymeric diphenylmethane diisocyanate	Australia Exposure Standards	Carcinogen Category	Sen	
polymeric diphenylmethane diisocyanate	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3	Not classifiable as to its carcinogenicity to humans
4, 4' - diphenylmethane diisocyanate (MDI)	Australia Exposure Standards	Carcinogen Category	Sen	
4, 4' - diphenylmethane diisocyanate (MDI)	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	3	Not classifiable as to its carcinogenicity to humans

SKIN

polymeric diphenylmethane diisocyanate	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2

continued...

4, 4' - diphenylmethane diisocyanate (MDI)	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2
2, 2, 4- trimethyl- 1, 3- pentanediol diisobutyrate	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	1
polypropylene glycol glyceryl ether	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	1
polypropylene glycol glyceryl ether	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	0
1, 4- butylene glycol	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	0

Section 12 - ECOLOGICAL INFORMATION

No data

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
polymeric diphenylmethane diisocyanate	No Data Available	No Data Available	No Data Available	No Data Available
4, 4' - diphenylmethane diisocyanate (MDI)	LOW	LOW	LOW	LOW
2, 2, 4- trimethyl- 1, 3- pentanediol diisobutyrate	HIGH	No Data Available	LOW	MED
tetrahydroxypropyl ethylenediamine	HIGH	No Data Available	LOW	HIGH
polypropylene glycol glyceryl ether	No Data Available	No Data Available	No Data Available	No Data Available
1, 4- butylene glycol	HIGH	No Data Available	LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

• Containers may still present a chemical hazard/ danger when empty.
• Return to supplier for reuse/ recycling if possible.
Otherwise:
• 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. Each user must refer to laws operating in their area.
A Hierarchy of Controls seems to be common - the user should investigate:
• Reduction.
• DO NOT allow wash water from cleaning or process equipment to enter drains.
• It may be necessary to collect all wash water for treatment before disposal.
• In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
• Where in doubt contact the responsible authority.
• DO NOT recycle spilled material.
• Consult State Land Waste Management Authority for disposal.
• Neutralise spill material carefully and decontaminate empty containers and spill residues with 10% ammonia solution plus detergent or a proprietary decontaminant prior to disposal.
• DO NOT seal or stopper drums being decontaminated as CO2 gas is generated and may pressurise containers.

continued...

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:
None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, IATA, IMDG

Section 15 - REGULATORY INFORMATION

Indications of Danger:
Xn Harmful

POISONS SCHEDULE
S6

REGULATIONS

Regulations for ingredients

polymeric diphenylmethane diisocyanate (CAS: 9016-87-9) is found on the following regulatory lists;
"Australia - New South Wales - Work Health and Safety Regulation 2011 - Requirements for health monitoring -Hazardous chemicals (other than lead) requiring health monitoring", "Australia - New South Wales Hazardous Substances Requiring Health Surveillance", "Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations- Requirements for health monitoring - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - Queensland Work Health and Safety Regulation - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - South Australia - Work Health and Safety Regulations 2012 - Requirements for health monitoring - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Requirements for Health Monitoring - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - Tasmania Hazardous Substances Requiring Health Surveillance", "Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2", "Australia - Western Australia Hazardous Substances Requiring Health Surveillance", "Australia Exposure Standards", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia Hazardous Substances Requiring Health Surveillance", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Occupational Health and Safety (Commonwealth Employment) (National Standards) Regulations 1994 - Hazardous Substances Requiring Health Surveillance", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6", "Australia Work Health and Safety Regulations 2011 - Hazardous chemicals (other than lead) requiring health monitoring", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "OECD List of High Production Volume (HPV) Chemicals"

4, 4'-diphenylmethane diisocyanate (MDI) (CAS: 101-68-8, 26447-40-5) is found on the following regulatory lists;
"Australia - New South Wales - Work Health and Safety Regulation 2011 - Requirements for health monitoring -Hazardous chemicals (other than lead) requiring health monitoring", "Australia - New South Wales Hazardous Substances Requiring Health Surveillance", "Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations- Requirements for health monitoring - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - Queensland Work Health and Safety Regulation - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - South Australia - Work Health and Safety Regulations 2012 - Requirements for health monitoring - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Requirements for Health Monitoring - Hazardous chemicals (other than lead) requiring health monitoring", "Australia - Tasmania Hazardous Substances Requiring Health Surveillance", "Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2", "Australia - Western Australia Hazardous Substances Requiring Health Surveillance", "Australia Exposure Standards", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia Hazardous Substances Requiring Health Surveillance", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Occupational Health and Safety (Commonwealth Employment) (National Standards) Regulations 1994 - Hazardous Substances Requiring Health Surveillance", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for

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the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6", "Australia Work Health and Safety Regulations 2011 - Hazardous chemicals (other than lead) requiring health monitoring", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Air Transport Association (IATA) Dangerous Goods Regulations", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

2, 2, 4-trimethyl-1, 3-pentanediol diisobutyrate (CAS: 6846-50-0) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

tetrahydroxypropyl ethylenediamine (CAS: 102-60-3) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "FisherTransport Information", "International Fragrance Association (IFRA) Survey: Transparency List", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

polypropylene glycol glyceryl ether (CAS: 25791-96-2, 9062-54-8, 37239-38-6, 51938-80-8, 68518-66-1) is found on the following regulatory lists;
"Australia Inventory of Chemical Substances (AICS)", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information"

1, 4-butylene glycol (CAS: 110-63-4, 74829-49-5, 38274-25-8) is found on the following regulatory lists;
"Acros Transport Information", "Australia - Queensland Drugs Misuse Act 1986 - Drugs Misuse Regulation 1987 - Schedule 6: Controlled substances", "Australia - Queensland Drugs Misuse Act 1986 - Drugs Misuse Regulation 1987 -Schedule 8 - Part 1", "Australia - South Australia Controlled Substances (Poisons) Regulations - Schedule BA - Certain substances declared as poisons - section 17B precursors", "Australia - Victoria Drugs, Poisons and Controlled Substances (Precursor Chemicals) Regs 2007 - Schedule 1 - Precursor Chemicals and Quantities", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Illicit Drug Precursors/Reagents - Category I", "Australia Inventory of Chemical Substances (AICS)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix C", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"

No data for Dunlop Ardit Crack Filler (CW: 4861-68)

Section 16 - OTHER INFORMATION

Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
4, 4' - diphenylmethane diisocyanate (MDI)	26447- 40- 5	R43
2, 2, 4- trimethyl- 1, 3- pentanediol diisobutyrate	6846- 50- 0	R43
tetrahydroxypropyl ethylenediamine	102- 60- 3	R43 Xi; R38
1, 4- butylene glycol	110- 63- 4	Mut3; R68 Xn; R22

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
4,4'-diphenylmethane diisocyanate (MDI)	101-68-8, 26447-40-5
polypropylene glycol glyceryl ether	25791-96-2, 9062-54-8, 37239-38-6, 51938-80-8, 68518-66-1
1,4-butylene glycol	110-63-4, 74829-49-5, 38274-25-8

■ 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:
www.chemwatch.net/references.

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■ 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.

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Issue Date: 19-Sep-2013
Print Date: 22-Nov-2013

This is the end of the MSDS.