

# Dunlop Ardit Crack Filler

## Ardex (Ardex NZ)

Chemwatch: 4861-68

Version No: 2.1.1.1

Safety Data Sheet according to HSNO Regulations

Chemwatch Hazard Alert Code: 2

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Initial Date: Not Available

S.GHS.NZLEN

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

### Product Identifier

<b>Product name</b>	Dunlop Ardit Crack Filler
<b>Chemical Name</b>	Not Applicable
<b>Synonyms</b>	Not Available
<b>Proper shipping name</b>	Not Applicable
<b>Chemical formula</b>	Not Applicable
<b>Other means of identification</b>	Not Available
<b>CAS number</b>	Not Applicable

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

<b>Relevant identified uses</b>	Use according to manufacturer's directions.
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### Details of the supplier of the safety data sheet

<b>Registered company name</b>	Ardex (Ardex NZ)	Ardex (Ardex Australia)
<b>Address</b>	32 Lane Street Woolston Christchurch New Zealand	20 Powers Road Seven Hills 2147 NSW Australia
<b>Telephone</b>	+64 3384 3029	1800 224 070
<b>Fax</b>	+64 3384 9779	+61 2 9838 7817
<b>Website</b>	Not Available	Not Available
<b>Email</b>	Not Available	Not Available

### Emergency telephone number

<b>Association / Organisation</b>	Not Available	Not Available
<b>Emergency telephone numbers</b>	1800 222 841 (General information)	1800 222 841
<b>Other emergency telephone numbers</b>	1800 222 841 (General information)	1800 222 841

## SECTION 2 HAZARDS IDENTIFICATION

### Classification of the substance or mixture

**Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation. Not regulated for transport of Dangerous Goods.**

#### CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability	1	2
Toxicity	2	3
Body Contact	2	3
Reactivity	2	3
Chronic	2	3

0 = Minimum  
1 = Low  
2 = Moderate  
3 = High  
4 = Extreme

#### GHS Classification <sup>[1]</sup>

Acute Toxicity (Inhalation) Category 4, Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Respiratory Sensitizer Category 1, Skin Sensitizer Category 1, Germ Cell Mutagen Category 2, Carcinogen Category 2, STOT - SE (Resp. Irr.) Category 3, STOT - RE Category 2

**Dunlop Ardit Crack Filler**

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from CCID EPA NZ ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

**Determined by Chemwatch using GHS/HSNO criteria** 6.1D (inhalation), 6.3A, 6.4A, 6.5A (respiratory), 6.5B (contact), 6.6B, 6.7B, 6.9 (respiratory), 6.9B (inhalation)

**Label elements**

GHS label elements



SIGNAL WORD

**DANGER**

**Hazard statement(s)**

<b>H332</b>	Harmful if inhaled
<b>H315</b>	Causes skin irritation
<b>H319</b>	Causes serious eye irritation
<b>H334</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled
<b>H317</b>	May cause an allergic skin reaction
<b>H341</b>	Suspected of causing genetic defects
<b>H351</b>	Suspected of causing cancer
<b>H335</b>	May cause respiratory irritation
<b>H373</b>	May cause damage to organs through prolonged or repeated exposure

**Precautionary statement(s): Prevention**

<b>P201</b>	Obtain special instructions before use.
<b>P260</b>	Do not breathe dust/fume/gas/mist/vapours/spray.
<b>P271</b>	Use only outdoors or in a well-ventilated area.
<b>P280</b>	Wear protective gloves/protective clothing/eye protection/face protection.

**Precautionary statement(s): Response**

<b>P304+P340</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
<b>P308+P313</b>	IF exposed or concerned: Get medical advice/attention.
<b>P321</b>	Specific treatment (see advice on this label).
<b>P342+P311</b>	If experiencing respiratory symptoms: Call a POISON CENTER/doctor/physician/first aider

**Precautionary statement(s): Storage**

<b>P405</b>	Store locked up.
<b>P403+P233</b>	Store in a well-ventilated place. Keep container tightly closed.

**Precautionary statement(s): Disposal**

<b>P501</b>	Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration
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**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**

**Substances**

See section below for composition of Mixtures

**Mixtures**

CAS No	%[weight]	Name
9016-87-9	<50	<a href="#">polymeric diphenylmethane diisocyanate</a>
6846-50-0	<40	<a href="#">2,2,4-trimethyl-1,3-pentanediol diisobutyrate</a>
101-68-8	<20	<a href="#">4,4'-diphenylmethane diisocyanate (MDI)</a>
6846-50-0	<50	<a href="#">2,2,4-trimethyl-1,3-pentanediol diisobutyrate</a>
102-60-3	<25	<a href="#">tetrahydroxypropyl ethylenediamine</a>

25791-96-2	<20	<a href="#">polypropylene glycol glyceryl ether</a>
110-63-4	<6	<a href="#">1,4-butylene glycol</a>

## SECTION 4 FIRST AID MEASURES

NZ Poisons Centre 0800 POISON (0800 764 766) | NZ Emergency Services: 111

### Description of first aid measures

<b>Eye Contact</b>	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with fresh running water.</li> <li>▶ 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.</li> <li>▶ Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ 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.</li> <li>▶ Transport to hospital, or doctor, without delay.</li> </ul> <p>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.</p>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>▶ For advice, contact a Poisons Information Centre or a doctor at once.</li> <li>▶ Urgent hospital treatment is likely to be needed.</li> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Transport to hospital or doctor without delay.</li> </ul>

### Indication of any immediate medical attention and special treatment needed

<b>Indication of any immediate medical attention and special treatment needed</b>	<p>Treat symptomatically.</p> <p>For sub-chronic and chronic exposures to isocyanates:</p> <ul style="list-style-type: none"> <li>▶ This material may be a potent pulmonary sensitiser which causes bronchospasm even in patients without prior airway hyperreactivity.</li> <li>▶ Clinical symptoms of exposure involve mucosal irritation of respiratory and gastrointestinal tracts.</li> <li>▶ Conjunctival irritation, skin inflammation (erythema, pain vesiculation) and gastrointestinal disturbances occur soon after exposure.</li> <li>▶ Pulmonary symptoms include cough, burning, substernal pain and dyspnoea.</li> <li>▶ Some cross-sensitivity occurs between different isocyanates.</li> <li>▶ Noncardiogenic pulmonary oedema and bronchospasm are the most serious consequences of exposure. Markedly symptomatic patients should receive oxygen, ventilatory support and an intravenous line.</li> <li>▶ Treatment for asthma includes inhaled sympathomimetics (epinephrine [adrenalin], terbutaline) and steroids.</li> <li>▶ Activated charcoal (1 g/kg) and a cathartic (sorbitol, magnesium citrate) may be useful for ingestion.</li> <li>▶ Mydriatics, systemic analgesics and topical antibiotics (Sulamyd) may be used for corneal abrasions.</li> <li>▶ There is no effective therapy for sensitised workers.</li> </ul> <p style="text-align: center;">[Ellenhorn and Barceloux; Medical Toxicology]</p> <p><b>NOTE:</b> Isocyanates cause airway restriction in naive individuals with the degree of response dependant on the concentration and duration of exposure. They induce smooth muscle contraction which leads to bronchoconstrictive episodes. Acute changes in lung function, such as decreased FEV1, may not represent sensitivity.</p> <p>[Karol &amp; Jin, Frontiers in Molecular Toxicology, pp 56-61, 1992]</p> <p>Personnel who work with isocyanates, isocyanate prepolymers or polyisocyanates should have a pre-placement medical examination and periodic examinations thereafter, including a pulmonary function test. Anyone with a medical history of chronic respiratory disease, asthmatic or bronchial attacks, indications of allergic responses, recurrent eczema or sensitisation conditions of the skin should not handle or work with isocyanates. Anyone who develops chronic respiratory distress when working with isocyanates should be removed from exposure and</p>
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examined by a physician. Further exposure must be avoided if a sensitivity to isocyanates or polyisocyanates has developed.

## SECTION 5 FIREFIGHTING 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.

### Special hazards arising from the substrate or mixture

#### Fire Incompatibility

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

### Advice for firefighters

#### 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.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

#### Minor Spills

- Slippery when spilt.
- ▶ Remove all ignition sources.
  - ▶ Clean up all spills immediately.
  - ▶ Avoid breathing vapours and contact with skin and eyes.

#### 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 m<sup>2</sup>):
- ▶ 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).

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

## SECTION 7 HANDLING AND STORAGE

### Precautions for safe handling

#### Safe 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.

#### Other information

for commercial quantities of isocyanates:

- ▶ Isocyanates should be stored in adequately banded areas. Nothing else should be kept within the same banding. 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.

### Conditions for safe storage, including any incompatibilities

#### Suitable container

- ▶ Metal can or drum
- ▶ Packaging as recommended by manufacturer.

<b>Storage incompatibility</b>	<ul style="list-style-type: none"> <li>▶ Check all containers are clearly labelled and free from leaks.</li> <li>▶ Avoid cross contamination between the two liquid parts of product (kit).</li> <li>▶ 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.</li> <li>▶ This excess heat may generate toxic vapour</li> <li>▶ Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous</li> <li>▶ Esters react with acids to liberate heat along with alcohols and acids.</li> <li>▶ Strong oxidising acids may cause a vigorous reaction with esters that is sufficiently exothermic to ignite the reaction products.</li> </ul>
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**PACKAGE MATERIAL INCOMPATIBILITIES**

Not Available

**SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION****Control parameters****OCCUPATIONAL EXPOSURE LIMITS (OEL)****INGREDIENT DATA**

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
New Zealand Workplace Exposure Standards (WES)	polymeric diphenylmethane diisocyanate	Isocyanates, all, (as -NCO)	0.02 mg/m3	0.07 mg/m3	Not Available	Sensitiser; These values apply to all isocyanates, including prepolymers, present in the workplace air as vapours, mist or dust.
New Zealand Workplace Exposure Standards (WES)	4,4'-diphenylmethane diisocyanate (MDI)	Isocyanates, all, (as -NCO)	0.02 mg/m3	0.07 mg/m3	Not Available	Sensitiser; These values apply to all isocyanates, including prepolymers, present in the workplace air as vapours, mist or dust.

**EMERGENCY LIMITS**


Ingredient	TEEL-0	TEEL-1	TEEL-2	TEEL-3
polymeric diphenylmethane diisocyanate	2 ppm	6 ppm	40 ppm	200 ppm
4,4'-diphenylmethane diisocyanate (MDI)	0.05 / 5 ppm	0.2 / 15 ppm	25 / 2 ppm	25 / 125 ppm
tetrahydroxypropyl ethylenediamine	15 ppm	50 ppm	350 ppm	500 ppm
polypropylene glycol glyceryl ether	10 ppm	30 ppm	200 ppm	500 ppm
1,4-butylene glycol	1.25 ppm	3.5 ppm	25 ppm	250 ppm

Ingredient	Original IDLH	Revised IDLH
polymeric diphenylmethane diisocyanate	Not Available	Not Available
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	Not Available	Not Available
4,4'-diphenylmethane diisocyanate (MDI)	100 mg/m3	75 mg/m3
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	Not Available	Not Available
tetrahydroxypropyl ethylenediamine	Not Available	Not Available
polypropylene glycol glyceryl ether	Not Available	Not Available
1,4-butylene glycol	Not Available	Not Available

**Exposure controls**

<b>Appropriate engineering controls</b>	<ul style="list-style-type: none"> <li>▶ All processes in which isocyanates are used should be enclosed wherever possible.</li> <li>▶ Total enclosure, accompanied by good general ventilation, should be used to keep atmospheric</li> </ul>
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	<ul style="list-style-type: none"> <li>▶ concentrations below the relevant exposure standards.</li> <li>▶ 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.</li> </ul>
<b>Personal protection</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>▶ Safety glasses with side shields.</li> <li>▶ Chemical goggles.</li> <li>▶ 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.</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	<p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>▶ 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.</li> <li>▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.</li> </ul> <p>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.</p>
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<p>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. Adequate training, both in the proper execution of the task and in the use of all associated engineering controls, as well as of any personal protective equipment, is essential.</p> <p>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.</p>
<b>Thermal hazards</b>	Not Available

## Recommended material(s)

## GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

**"Forsberg Clothing Performance Index".**

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

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Material	CPI
PE/EVAL/PE	A

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

## Respiratory protection

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	A-AUS P2	-	A-PAPR-AUS / Class 1 P2
up to 50 x ES	-	A-AUS / Class 1 P2	-
up to 100 x ES	-	A-2 P2	A-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

## Information on basic physical and chemical properties

<b>Appearance</b>	Part A: Amber liquid with a sweet odour; reacts slowly with water to liberate CO <sub>2</sub> gas.   Part B: Bluish grey liquid with
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	slight odour; does not mix with water.		
<b>Physical state</b>	Liquid	<b>Relative density (Water = 1)</b>	1.069
<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	Not Available
<b>pH (as supplied)</b>	Not Applicable	<b>Decomposition temperature</b>	Not Available
<b>Melting point / freezing point (°C)</b>	<0 (MDI) (freezing point)	<b>Viscosity (cSt)</b>	Not Available
<b>Initial boiling point and boiling range (°C)</b>	209	<b>Molecular weight (g/mol)</b>	Not Applicable
<b>Flash point (°C)</b>	>199	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Non-Volatile	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Available	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Available	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Available
<b>Lower Explosive Limit (%)</b>	Not Available	<b>Volatile Component (%vol)</b>	Not Available
<b>Vapour pressure (kPa)</b>	Negligible	<b>Gas group</b>	Not Available
<b>Solubility in water (g/L)</b>	Reacts	<b>pH as a solution(1%)</b>	Not Applicable
<b>Vapour density (Air = 1)</b>	8.5 (MDI)	<b>VOC g/L</b>	Not Available

## SECTION 10 STABILITY AND REACTIVITY

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	<p>Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur.</p> <p>► Presence of elevated temperatures.</p>
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7
<b>Incompatible materials</b>	See section 7
<b>Hazardous decomposition products</b>	See section 5

## SECTION 11 TOXICOLOGICAL INFORMATION

### Information on toxicological effects

<b>Inhaled</b>	<p>Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.</p> <p>Evidence shows, or practical experience predicts, that the material produces irritation of the respiratory system, in a substantial number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs.</p>
<b>Ingestion</b>	<p>Accidental ingestion of the material may be damaging to the health of the individual.</p> <p>Ingestion of 1,4-butylene glycol may cause central nervous system depression characterised by headache, dizziness, drowsiness, nausea, vomiting, abdominal pain and incoordination. Severe over-exposure may lead to coma and possible death due to respiratory failure. 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.</p>
<b>Skin Contact</b>	<p>The material produces mild skin irritation; evidence exists, or practical experience predicts, that the material either</p> <ul style="list-style-type: none"> <li>► produces mild inflammation of the skin in a substantial number of individuals following direct contact, and/or</li> <li>► produces significant, but mild, inflammation when applied to the healthy intact skin of animals (for up to four hours), such inflammation being present twenty-four hours or more after the end of the exposure period.</li> </ul> <p>Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema)</p>

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	which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.
<b>Eye</b>	Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals. Repeated or prolonged eye contact may cause inflammation characterised by a temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.
<b>Chronic</b>	On the basis, primarily, of animal experiments, concern has been expressed that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment. Practical evidence shows that inhalation of the material is capable of inducing a sensitisation reaction in a substantial number of individuals at a greater frequency than would be expected from the response of a normal population. Pulmonary sensitisation, resulting in hyperactive airway dysfunction and pulmonary allergy may be accompanied by fatigue, malaise and aching. Significant symptoms of exposure may persist for extended periods, even after exposure ceases.

Dunlop Ardit Crack Filler	TOXICITY	IRRITATION
		Not Available
polymeric diphenylmethane diisocyanate	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >9400 mg/kg	Eye (rabbit): 100 mg - mild
	Inhalation (rat) LC50: 490 mg/m <sup>3</sup> /4h	
	Oral (rat) LD50: 43000 mg/kg	
	Not Available	Not Available
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	TOXICITY	IRRITATION
	Dermal (Guinea pig) LD50: >20 ml/kg ***	**[Eastman] *[Patty]
	Inhalation (rat) LC50: >5.3 mg/l/6h**	Eye (rabbit): very slight**
	Oral (Mouse) LD50: >6400 mg/kg ***	Skin (guinea pig): 5000mg/kg-mild
	Oral (rat) LD50: >3200 mg/kg*	
Not Available	Not Available	
4,4'-diphenylmethane diisocyanate (MDI)	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: >6200 mg/kg *	[* = Bayer CCINFO 2133615]
	Inhalation (Rat) LC50: 178 mg/m <sup>3</sup>	Dermal Sensitiser *
	Oral (mouse) LD50: 2200 mg/kg	Respiratory Sensitiser (g.pig) *
	Oral (Rat) LD50: 9200 mg/kg	Skin (rabbit): 500 mg /24 hours
Not Available	Not Available	
2,2,4-trimethyl-1,3-pentanediol diisobutyrate	TOXICITY	IRRITATION
	Dermal (Guinea pig) LD50: >20 ml/kg ***	**[Eastman] *[Patty]
	Inhalation (rat) LC50: >5.3 mg/l/6h**	Eye (rabbit): very slight**
	Oral (Mouse) LD50: >6400 mg/kg ***	Skin (guinea pig): 5000mg/kg-mild
	Oral (rat) LD50: >3200 mg/kg*	
Not Available	Not Available	



<b>tetrahydroxypropyl ethylenediamine</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: 3280 mg/kg *	Eye (rabbit): Non irritant *
	Not Available	Skin (rabbit): Non irritant *
	Not Available	Not Available
<b>polypropylene glycol glyceryl ether</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Dermal (rabbit) LD50: >16000 mg/kg	Eye: non-irritant *
	Dermal (rabbit) LD50: >20000 mg/kg	Skin (rabbit): 500 mg (open)-mild
	Inhalation (Rat) LC50: >200000 mg/m <sup>3</sup> /h *	
	Oral (mouse) LD50: 10000 mg/kg	
	Oral (rat) LD50: >64000 mg/kg	
	Oral (rat) LD50: 2830 mg/kg	
	Oral (Rat) LD50: 4000 mg/kg *	
	Not Available	Not Available
<b>1,4-butylene glycol</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Intraperitoneal (mouse) LD50: 1650 mg/kg	
	Intraperitoneal (rat) LD50: 1070 mg/kg	
	Oral (g.pig) LD50: 1200 mg/kg	
	Oral (mouse) LD50: 2062 mg/kg	
	Oral (rabbit) LD50: 2531 mg/kg	
	Oral (rat) LD50: 1525 mg/kg	
Not Available	Not Available	

\* Value obtained from manufacturer's msds

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

<b>Dunlop Ardit Crack Filler</b>	No significant acute toxicological data identified in literature search.
<b>POLYMERIC DIPHENYLMETHANE DIISOCYANATE</b>	product
<b>4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI)</b>	Inhalation (human) TClO: 0.13 ppm/30 mins Eye (rabbit): 0.10 mg moderate
<b>TETRAHYDROXYPROPYL ETHYLENEDIAMINE</b>	Non mutagenic by Ames test * [BASF]
<b>POLYPROPYLENE GLYCOL GLYCERYL ETHER</b>	The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Data for Niax Polyol L-56 Data for Niax Polyol LG-168 * BASF Multtranol 9175 SDS
<b>POLYMERIC DIPHENYLMETHANE DIISOCYANATE, 4,4'-DIPHENYLMETHANE DIISOCYANATE (MDI)</b>	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 antibody-mediated immune reactions.
<b>2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE</b>	The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. For 2,2,4-trimethyl-1,3-pentanediol diisobutyrate (TXIB)

	TXIB showed no genotoxic effects in bacteria and chromosomal aberration test <i>in vitro</i> .
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	NOAEL oral (rat), 103 days = 1% in diet ***
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	NOEL oral (dog), 90 days = 1% in diet ***
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	Mutagenicity/Genotoxicity Data: ***
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	Chromosomal aberration assay: Negative ( , /- activation)
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	CHO/HGPRT assay: Negative ( , /- activation)
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	Salmonella-E.coli reverse mutation assay (Ames test): Negative ( , /- activation)
2,2,4-TRIMETHYL-1,3-PENTANEDIOL DIISOBUTYRATE	*,**,*** Various suppliers MSDS
TETRAHYDROXYPROPYL ETHYLENEDIAMINE, 1,4-BUTYLENE GLYCOL	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS.

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

**CMR STATUS**

Not Applicable

**SECTION 12 ECOLOGICAL INFORMATION****Toxicity****DO NOT** discharge into sewer or waterways.**Persistence and degradability**

Ingredient	Persistence: Water/Soil	Persistence: Air
Not Available	Not Available	Not Available

**Bioaccumulative potential**

Ingredient	Bioaccumulation
Not Available	Not Available

**Mobility in soil**

Ingredient	Mobility
Not Available	Not Available

**SECTION 13 DISPOSAL CONSIDERATIONS****Waste treatment methods**

<b>Product / Packaging disposal</b>	<ul style="list-style-type: none"> <li>▶ Containers may still present a chemical hazard/ danger when empty.</li> <li>▶ Return to supplier for reuse/ recycling if possible.</li> </ul> <p>Otherwise:</p> <ul style="list-style-type: none"> <li>▶ 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.</li> <li>▶ Where possible retain label warnings and MSDS and observe all notices pertaining to the product.</li> </ul>
	Insure that the disposal of material is carried out in accordance with Hazardous Substances (Disposal) Regulations 2001.

**SECTION 14 TRANSPORT INFORMATION****Labels Required**

<b>Marine Pollutant</b>	NO
<b>HAZCHEM</b>	Not Applicable

**Land transport (UN): 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	Residual Concentration - Outside Special Area (% w/w)	Residual Concentration
40-7-4-9-0-0-MK-20041022	1,4-butylene glycol	Not Available	Not Available	Not Available

**SECTION 15 REGULATORY INFORMATION****Safety, health and environmental regulations / legislation specific for the substance or mixture**

This substance is to be managed using the conditions specified in an applicable Group Standard

HSR Number	Group Standard
HSR002596	Laboratory Chemicals and Reagent Kits Group Standard 2006
HSR002531	Cleaning Products (Toxic [6.7]) Group Standard 2006
HSR002607	Lubricants (Toxic [6.7]) Group Standard 2006
HSR002520	Aerosols (Toxic [6.7]) Group Standard 2006
HSR002521	Animal Nutritional and Animal Care Products Group Standard 2006
HSR002586	Fuel Additives (Toxic [6.7]) Group Standard 2006
HSR002646	Polymers (Toxic [6.7]) Group Standard 2006
HSR002647	Reagent Kits Group Standard 2006
HSR002616	Metal Industry Products (Toxic [6.7]) Group Standard 2006
HSR002625	N.O.S. (Toxic [6.1, 6.7]) Group Standard 2006
HSR002639	Photographic Chemicals (Toxic [6.7]) Group Standard 2006
HSR002512	Additives, Process Chemicals and Raw Materials (Toxic [6.7]) Group Standard 2006
HSR002560	Dental Products (Toxic [6.7]) Group Standard 2006
HSR002568	Embalming Products (Toxic [6.7]) Group Standard 2006
HSR002679	Surface Coatings and Colourants (Toxic [6.7]) Group Standard 2006
HSR002687	Water Treatment Chemicals (Toxic [6.7]) Group Standard 2006
HSR100425	Pharmaceutical Active Ingredients Group Standard 2010
HSR002601	Leather and Textile Products (Toxic [6.7]) Group Standard 2006
HSR002551	Corrosion Inhibitors (Toxic [6.7]) Group Standard 2006

HSR002552	Cosmetic Products Group Standard 2006
HSR002648	Refining Catalysts Group Standard 2006
HSR002655	Solvents (Toxic [6.7]) Group Standard 2006

<b>polymeric diphenylmethane diisocyanate(9016-87-9) is found on the following regulatory lists</b>	"New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data", "New Zealand Inventory of Chemicals (NZIoC)", "OECD List of High Production Volume (HPV) Chemicals", "International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs", "New Zealand Workplace Exposure Standards (WES)", "OECD Existing Chemicals Database", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals", "IMO IBC Code Chapter 17: Summary of minimum requirements", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Chemicals (single components)"
<b>2,2,4-trimethyl-1,3-pentanediol diisobutyrate(6846-50-0) is found on the following regulatory lists</b>	"New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data", "New Zealand Inventory of Chemicals (NZIoC)", "FisherTransport Information", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information", "OECD Existing Chemicals Database", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals", "IMO IBC Code Chapter 17: Summary of minimum requirements", "International Fragrance Association (IFRA) Survey: Transparency List", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Chemicals (single components)"
<b>4,4'-diphenylmethane diisocyanate (MDI)(101-68-8) is found on the following regulatory lists</b>	"New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data", "New Zealand Inventory of Chemicals (NZIoC)", "FisherTransport Information", "OECD List of High Production Volume (HPV) Chemicals", "International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs", "New Zealand Workplace Exposure Standards (WES)", "Sigma-AldrichTransport Information", "OECD Existing Chemicals Database", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "International Air Transport Association (IATA) Dangerous Goods Regulations", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals", "IMO IBC Code Chapter 17: Summary of minimum requirements", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Chemicals (single components)"
<b>2,2,4-trimethyl-1,3-pentanediol diisobutyrate(6846-50-0) is found on the following regulatory lists</b>	"New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data", "New Zealand Inventory of Chemicals (NZIoC)", "FisherTransport Information", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information", "OECD Existing Chemicals Database", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals", "IMO IBC Code Chapter 17: Summary of minimum requirements", "International Fragrance Association (IFRA) Survey: Transparency List", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Chemicals (single components)"
<b>tetrahydroxypropyl ethylenediamine(102-60-3) is found on the following regulatory lists</b>	"New Zealand Inventory of Chemicals (NZIoC)", "FisherTransport Information", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information"
<b>polypropylene glycol glyceryl ether(25791-96-2) is found on the following regulatory lists</b>	"New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data", "New Zealand Inventory of Chemicals (NZIoC)", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals", "IMO IBC Code Chapter 17: Summary of minimum requirements", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Chemicals (single components)"
<b>1,4-butylene glycol(110-63-4) is found on the following regulatory lists</b>	"New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals - Classification Data", "New Zealand Inventory of Chemicals (NZIoC)", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-AldrichTransport Information", "OECD Existing Chemicals Database", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Classification of Chemicals", "IMO IBC Code Chapter 17: Summary of minimum requirements", "Acros Transport Information", "New Zealand Hazardous Substances and New Organisms (HSNO) Act - Chemicals (single components)"

## 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:

[www.chemwatch.net/references](http://www.chemwatch.net/references)

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.

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