

Safety Data Sheet

Hazardous, NON-Dangerous Goods

1. MATERIAL AND SUPPLY COMPANY IDENTIFICATION

Product name: TREMproof 211

Recommended use: Polyurethane waterproofing membrane for non-exposed areas. Use according to manufacturer's directions.

Supplier: Tremco CPG Australia Pty Ltd
ABN: 25 000 024 064
Street Address: 12/4 Southridge Street
Eastern Creek NSW 2766
Telephone: 02 9638 2755
Facsimile: 02 9638 2955

Emergency Telephone number: 02 9037 2994 (Aus) +1 703-741-5500 (Worldwide)

2. HAZARDS IDENTIFICATION

This material is hazardous according to the criteria of Safe Work Australia GHS 7.



Signal Word

Danger

Hazard Classifications

Flammable Liquids - Category 4
Skin Corrosion/Irritation - Category 2
Eye Damage/Irritation - Category 2A
Sensitisation - Respiratory - Category 1
Sensitisation - Skin - Category 1
Germ Cell Mutagenicity - Category 2
Carcinogenicity - Category 2
Reproductive Toxicity - Category 2
Specific Target Organ Toxicity (Single Exposure) - Category 3 Respiratory Tract Irritation
Chronic Hazard to the Aquatic Environment - Category 3

Hazard Statements

H227 Combustible liquid.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H341 Suspected of causing genetic defects .
H351 Suspected of causing cancer .
H361 Suspected of damaging fertility or the unborn child .
H412 Harmful to aquatic life with long lasting effects.

Prevention Precautionary Statements

P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.

Safety Data Sheet



- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P261 Avoid breathing dust, fume, gas, mist, vapours or spray.
- P264 Wash hands, face and all exposed skin thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing including eye/face protection.
- P284 In case of inadequate ventilation wear respiratory protection.

Response Precautionary Statements

- P101 If medical advice is needed, have product container or label at hand.
- P302+P352 IF ON SKIN: Wash with plenty of water and soap.
- P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTER/doctor if you feel unwell.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P342+P311 If experiencing respiratory symptoms: Call a POISON CENTRE or doctor/physician.
- P362+P364 Take off contaminated clothing and wash it before reuse
- P370+P378 In case of fire: Use (insert appropriate media) to extinguish.

Storage Precautionary Statements

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.

Disposal Precautionary Statement

- P501 Dispose of contents/container in accordance with local, regional, national and international regulations.

Poison Schedule:

DANGEROUS GOOD CLASSIFICATION

Not classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

3. COMPOSITION INFORMATION

CHEMICAL ENTITY	CAS NO	PROPORTION
Limestone	1317-65-3	30-60 %
diisononyl phthalate	68515-48-0	10-30 %
MDI/ castor oil/ glycerol, propoxylated	154099-10-2	10-30 %
4,4'-Methylenediphenyl Diisocyanate	101-68-8	<10 %
Aromatic hydrocarbons, C9-11	70693-06-0	<10 %
Calcium oxide	1305-78-8	<5 %
Solvent naphtha, petroleum, light aromatic	64742-95-6	<5 %
Benzene, 1,1'-methylenebis[4-isocyanato-, homopolymer	25686-28-6	<5 %
Benzene, 1-isocyanato-2-[(4-isocyanatophenyl)methyl]-	5873-54-1	<5 %
Benzene, 1,2,4-trimethyl-	95-63-6	<5 %
Benzenesulfonyl isocyanate, 4-methyl-	4083-64-1	<0.5 %
4-Heptanone, 2,6-dimethyl-	108-83-8	<0.5 %
Ingredients determined to be Non-Hazardous		Balance
		100%

4. FIRST AID MEASURES

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126, New Zealand 0800 764 766).

Inhalation: • 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. • Transport to hospital, or doctor, without delay. 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.

Skin Contact: 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.

Eye contact: If this product comes in contact with the eyes: • Immediately hold eyelids apart and flush the eye continuously with 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. • Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. • Transport to hospital or doctor without delay. • Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Ingestion: 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. • Observe the patient carefully. • Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. • Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. • Seek medical advice.

PPE for First Aiders: Wear safety shoes, overalls, gloves, safety glasses, respirator. Use with adequate ventilation. If inhalation risk exists wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from nitrile rubber, polyvinyl alcohol (PVA), teflon should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Notes to physician: Treat symptomatically. Effects may be delayed. 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. • 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. • Some cross-sensitivity occurs between different isocyanates. • Noncardiogenic pulmonary oedema and bronchospasm are the most serious consequences of exposure. Markedly symptomatic patients should receive oxygen, ventilatory support and an intravenous line. • Treatment for asthma includes inhaled sympathomimetics (epinephrine [adrenalin], terbutaline) and steroids. • Activated charcoal (1 g/kg) and a cathartic (sorbitol, magnesium citrate) may be useful for ingestion. • Mydriatics, systemic analgesics and topical antibiotics (Sulamyd) may be used for corneal abrasions. • There is no effective therapy for sensitised workers. [Ellenhorn and Barceloux; Medical Toxicology] NOTE: 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. [Karol & Jin, Frontiers in Molecular Toxicology, pp 56-61, 1992] 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 examined by a physician. Further exposure must be avoided if a sensitivity to isocyanates or polyisocyanates has developed.

5. FIRE FIGHTING MEASURES

Hazchem Code: Not applicable.

Suitable extinguishing media: If material is involved in a fire use water fog (or if unavailable fine water spray), alcohol resistant foam, standard foam, dry agent (carbon dioxide, dry chemical powder).

Specific hazards: Combustible liquid.

Fire fighting further advice: On burning or decomposing may emit toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion or decomposition.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS

Environmental hazard - contain spillage. • 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. • Contain and absorb spill with sand, earth, inert material or vermiculite. • Wipe up. • Place in a suitable, labelled container for waste disposal.

LARGE SPILLS

Environmental hazard - contain spillage. • 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). • Dike the spill to prevent spreading and to contain additions of decontaminating solution. • Prevent the material from entering drains. • Estimate spill pool volume or area. • Absorb and decontaminate. - Completely cover the spill with wet sand, wet earth, vermiculite or other similar absorbent. - Add neutraliser (for suitable formulations: see below) to the adsorbent materials (equal to that of estimated spill pool volume). Intensify contact between spill, absorbent and neutraliser by carefully mixing with a rake and allow to react for 15 minutes • Shovel absorbent/decontaminant solution mixture into a steel drum. • Decontaminate surface. - Pour an equal amount of neutraliser solution over contaminated surface. - Scrub area with a stiff bristle brush, using moderate pressure. - Completely cover decontaminant with vermiculite or other similar absorbent. - After 5 minutes, shovel absorbent/decontamination solution mixture into the same steel drum used above. • Monitor for residual isocyanate. If surface is decontaminated, proceed to next step. If contamination persists, repeat decontaminate procedure immediately above • Place loosely covered drum (release of carbon dioxide) outside for at least 72 hours. Label waste-containing drum appropriately. Remove waste materials for incineration. • Decontaminate and remove personal protective equipment. • Return to normal operation. • Conduct accident investigation and consider measures to prevent reoccurrence. Decontamination: Treat isocyanate spills with sufficient amounts of isocyanate decontaminant preparation ("neutralising fluid"). Isocyanates and polyisocyanates are generally not miscible with water. Liquid surfactants are necessary to allow better dispersion of isocyanate and neutralising fluids/preparations. Alkaline neutralisers react faster than water/surfactant mixtures alone. Typically, such a preparation may consist of: Sawdust: 20 parts by weight Kieselguhr 40 parts by weight plus a mixture of {ammonia (s.g. 0.880) 8% v/v non-ionic surfactant 2% v/v water 90% v/v}. Let stand for 24 hours Three commonly used neutralising fluids each exhibit advantages in different situations. Formulation A :liquid surfactant 0.2-2% sodium carbonate 5-10% water to 100% Formulation B liquid surfactant 0.2-2% concentrated ammonia 3-8% water to 100% Formulation C ethanol, isopropanol or butanol 50% concentrated ammonia 5% water to 100% After application of any of these formulae, let stand for 24 hours. Formulation B reacts faster than Formulation A. However, ammonia-based neutralisers should be used only under well-ventilated conditions to avoid overexposure to ammonia or if members of the emergency team wear suitable respiratory protection. Formulation C is especially suitable for cleaning of equipment from unreacted isocyanate and neutralizing under freezing conditions. Regard has to be taken to the flammability of the alcoholic solution. • Avoid contamination with water, alkalis 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. • Moderate hazard. • Clear area of personnel and move upwind. • Alert Fire Brigade and tell them location and nature of hazard. • Wear breathing apparatus plus

Safety Data Sheet



protective gloves. • Prevent, by any means available, spillage from entering drains or water course. • No smoking, naked lights or ignition sources. • Increase ventilation. • Stop leak if safe to do so. • Contain spill with sand, earth or vermiculite. • Collect recoverable product into labelled containers for recycling. • Absorb remaining product with sand, earth or vermiculite. • Collect solid residues and seal in labelled drums for disposal. • Wash area and prevent runoff into drains. • If contamination of drains or waterways occurs, advise emergency services.

Dangerous Goods - Initial Emergency Response Guide No: Not applicable

7. HANDLING AND STORAGE

Handling: Safe handling • DO NOT allow clothing wet with material to stay in contact with skin • Overheating of ethoxylates/ alkoxyates in air should be avoided. When some ethoxylates are heated vigorously in the presence of air or oxygen, at temperatures exceeding 160 C, they may undergo exothermic oxidative degeneration resulting in self-heating and autoignition. • Nitrogen blanketing will minimise the potential for ethoxylate oxidation. Prolonged storage in the presence of air or oxygen may cause product degradation. Oxidation is not expected when stored under a nitrogen atmosphere. Inert gas blanket and breathing system needed to maintain color stability. Use dry inert gas having at least -40 C dew point. • Trace quantities of ethylene oxide may be present in the material. Although these may accumulate in the headspace of storage and transport vessels, concentrations are not expected to exceed levels which might produce a flammability or worker exposure hazard. • Avoid all personal contact, including inhalation. • Wear protective clothing when risk of exposure occurs. • Use in a well-ventilated area. • Prevent concentration in hollows and sumps. • DO NOT enter confined spaces until atmosphere has been checked. • Avoid smoking, naked lights or ignition sources. • Avoid contact with incompatible materials. • When handling, DO NOT eat, drink or smoke. • Keep containers securely sealed when not in use. • Avoid physical damage to containers. • Always wash hands with soap and water after handling. • Work clothes should be laundered separately. • Use good occupational work practice. • Observe manufacturer's storage and handling recommendations contained within this SDS. • Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions. Other information Ethoxylates/ alkoxyates react slowly with air or oxygen and may generate potentially sensitising intermediates (haptens).. Storage under heated conditions in the presence of air or oxygen increases reaction rate. For example, after storing at 95 F/ 35 C for 30 days in the presence of air, there is measurable oxidation of the ethoxylate. Lower temperatures will allow for longer storage time and higher temperatures will shorten the storage time if stored under an air or oxygen atmosphere. 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 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. • Areas in which polyurethane foam products are stored should be supplied with good general ventilation. Residual amounts of unreacted isocyanate may be present in the finished foam, resulting in hazardous atmospheric concentrations. • Ideal storage temperature range is dependent on the specific polymer due to viscosity and melting point differences between the polymers. Use 25 deg C (77 deg F) to 30 deg C (86 deg F) as a guideline to most liquid isocyanates for optimum storage temperature. If some isocyanates are stored at or below a temperature of 25 deg C (77 deg F), crystallization and settling of the isocyanate may occur. Storage in a cold warehouse can cause crystals to form. These crystals can settle to the bottom of the container. If crystals do form, they can be melted easily with moderate heat. It is suggested that a container the size of a drum be warmed for 16-24 hours at sufficient temperature to melt the crystals. When the crystals are melted, the container should be agitated by rolling or stirring, until the contents are homogenous. Since heated isocyanate will generate vapors more rapidly than product stored at 25 deg C (77 deg F), be sure to follow the precautions under the Personal Protection. Store in original containers. • Keep containers securely sealed. • No smoking, naked lights or ignition sources. • Store in a cool, dry, well-ventilated area. • Store away from incompatible materials and foodstuff containers. • Protect containers against physical damage and check regularly for leaks. • Observe manufacturer's storage and handling recommendations contained within this SDS.

Storage: Suitable container • Pails. • Metal can or drum • Packaging as recommended by manufacturer. • Check all containers are clearly labelled and free from leaks. Storage incompatibility • Avoid reaction with oxidising agents • Avoid strong acids, bases. Phthalates: react with strong acids, strong oxidisers, permanganates and nitrates • attack some form of plastics • Avoid reaction with water, alcohols and detergent solutions. Isocyanates are

Safety Data Sheet



electrophiles, and as such they are reactive toward a variety of nucleophiles including alcohols, amines, and even water. Upon treatment with an alcohol, an isocyanate forms a urethane linkage. If diisocyanate is treated with a compound containing two or more hydroxyl groups, such as a diol or a polyol, polymer chains are formed, which are known as polyurethanes. Reaction between a diisocyanate and a compound containing two or more amine groups, produces long polymer chains known as polyureas. Isocyanates and thiocyanates 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 also can react with themselves. Aliphatic diisocyanates can form trimers, which are structurally related to cyanuric acid. Isocyanates participate in Diels-Alder reactions, functioning as dienophiles. 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 spaces may produce pressure in confined spaces or containers. Gas generation may pressurise drums to the point of rupture. Do NOT reseal container if contamination is expected. Open all containers with care. Base-catalysed reactions of isocyanates with alcohols should be carried out in inert solvents. Such reactions in the absence of solvent often occur with explosive violence. Isocyanates will attack and embrittle some plastics and rubbers. The isocyanate anion is a pseudohalide (syn pseudohalogen) whose chemistry, resembling that of the true halogens, allows it to substitute for halogens in several classes of chemical compounds. The behavior and chemical properties of the several pseudohalides are identical to that of the true halide ions. 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. BREITHERICK: Handbook of Reactive Chemical Hazards, 4th Edition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National occupational exposure limits:

	TWA		STEL		NOTICES
	ppm	mg/m ³	ppm	mg/m ³	
Calcium oxide	-	2	-	-	-
Diisobutyl ketone	25	145	-	-	-
Methylene bisphenyl isocyanate (MDI)					

As published by Safe Work Australia.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

Biological Limit Values: As per the "National Model Regulations for the Control of Workplace Hazardous Substances (Safe Work Australia)" the following ingredients in this material requires Health Surveillance:

Isocyanates

Product Name: TREMproof 211

Reference No: 215314 801

Issued: 2023-03-15

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Page 6 of 15

Safety Data Sheet



For detailed information see "Guidelines for Health Surveillance (Safe Work Australia)"

Engineering Measures: Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use only in well ventilated areas. Use with local exhaust ventilation or while wearing appropriate respirator.

Personal Protection Equipment: SAFETY SHOES, OVERALLS, GLOVES, SAFETY GLASSES, RESPIRATOR.

Personal protective equipment (PPE) must be suitable for the nature of the work and any hazard associated with the work as identified by the risk assessment conducted.

Wear safety shoes, overalls, gloves, safety glasses, respirator. Use with adequate ventilation. If inhalation risk exists wear organic vapour/particulate respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716. Available information suggests that gloves made from nitrile rubber, polyvinyl alcohol (PVA), teflon should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

RECOMMENDATIONS FOR CONSUMER USE:

Respiratory Protection: Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate. Cartridge performance is affected by humidity. Cartridges should be changed after 2hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used. For spraying or operations which might generate aerosols: Full face respirator with supplied air. In certain circumstances, personal protection of the individual employee is necessary. Personal protective devices should be regarded as being supplementary to substitution and engineering control and should not be used in preference to them as they do nothing to eliminate the hazard. However, in some situations, minimising exposure to isocyanates by enclosure and ventilation is not possible, and occupational exposure standards may be exceeded, particularly during on-site mixing of paints, spray-painting, foaming and maintenance of machine and ventilation systems. In these situations, air-line respirators or self-contained breathing apparatus complying with the appropriate national standard must be used. Organic vapour respirators with particulate pre-filters and powered, air-purifying respirators are NOT suitable. Personal protective equipment must be appropriately selected, individually fitted and workers trained in their correct use and maintenance. Personal protective equipment must be regularly checked and maintained to ensure that the worker is being protected. Air-line respirators or self-contained breathing apparatus complying with the appropriate national standard should be used during the clean-up of spills and the repair or clean-up of contaminated equipment and similar situations which cause emergency exposures to hazardous atmospheric concentrations of isocyanate.

Eye and Face Protection: • Safety glasses with side shields. • Chemical goggles. • Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. 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 ornational equivalent]

Hands/feet protection: 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. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. Suitability and durability of glove type is dependent on usage. Important factors in the selection of

Safety Data Sheet



gloves include:- frequency and duration of contact,- chemical resistance of glove material,- glove thickness and dexterity>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.- Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.- Contaminated gloves should be replaced.As defined in ASTM F-739-96 in any application, gloves are rated as:- Excellent when breakthrough time > 480 min- Good when breakthrough time > 20 min- Fair when breakthrough time < 20 min- Poor when glove material degradesFor general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:- Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.- Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potentialGloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.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 isocyanatesDO NOT use skin cream unless necessary and then use only minimum amount.Isocyanate vapour may be absorbed into skin cream and this increases hazard.Appropriate engineering controlsAll 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.Where local exhaust ventilation is installed, exhaust vapours should not be vented to the exterior in such a manner as to create a hazard.Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.The basic types of engineering controls are:Process controls which involve changing the way a job activity or process is done to reduce the risk.Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.Employers may need to use multiple types of controls to prevent employee overexposure.Spraying of material or material in admixture with other components must be carried out in conditions conforming to local state regulations (AS/NZS 4114, UNI EN 12215:2010, ANSI/AIHA Z9.3-2007 or national equivalent).Local exhaust ventilation with full face positive-pressure air supplied breathing apparatus (hood or helmet type) is required.Spraying should be performed in a spray booth fitted with an effective exhaust system which complies with local environmental legislation.The spray booth area must be isolated from unprotected personnel whilst spraying is in progress and until all spraying mist has cleared.NOTE: Isocyanate vapours will not be adequately absorbed by organic vapour respirators. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant. Type of Contaminant:direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion) 1-2.5 m/s (200-500f/min.)Within each range the appropriate value depends on:Lower end of the range 1: Room air currents minimal or favourable to capture Upper end of the range 1: Disturbing room air currentsLower end of the range 2: Contaminants of low toxicity or of nuisance value only Upper end of the range 2: Contaminants of high toxicityLower end of the range 3: Intermittent, low production. Upper end of the range 3: High production, heavy useLower end of the range 4: Large hood or large air mass in motion Upper end of the range 4: Small hood-local control onlySimple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the

Safety Data Sheet



extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min.) for extraction of solvents generated by spraying at a point 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed. 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. 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. Special attention should be given to ensuring that all personnel understand instructions, especially newly recruited employees and those with local-language difficulties, where they are known. Overalls. P.V.C apron. Barrier cream. Skin cleansing cream. Eye wash unit.

Hygiene measures: Keep away from food, drink and animal feeding stuffs. When using do not eat, drink or smoke. Wash hands prior to eating, drinking or smoking. Avoid contact with clothing. Avoid eye contact and skin contact. Avoid inhalation of vapour, mist or aerosols. Ensure that eyewash stations and safety showers are close to the workstation location.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquid
Colour: Coloured liquid; does not mix with water.
Odour: Not Available

Solubility: Not Available
Solubility in water: Immiscible
Specific Gravity: Not Available
Density: 1.39 (water = 1)
Relative Vapour Density (air=1): Not Available
Vapour Pressure: Not Available
Flash Point (°C): 78
Flammability Limits (%): Not Available
Autoignition Temperature (°C): Not Available
Melting Point/Range (°C): Not Available
Pour Point/Range (°C): Not Available
Boiling Point/Range (°C): Not Available
Decomposition Point (°C): Not Available
Sublimation Point (°C): Not Available
Dropping Point (°C): Not Available
pH: Not Applicable
Viscosity: Not Available
Surface Tension: Not Available
Evaporation Rate (n-Butyl acetate=1): Not Available
Partition Coefficient: Not Available
Total VOC (g/Litre): Not Available
Odour Threshold: Not Available
Explosive properties: Not Available
Oxidising properties: Not Available
% Volatile by Volume: Not Available
Molecular Weight: Not Applicable

(Typical values only - consult specification sheet)
N Av = Not available, N App = Not applicable

10. STABILITY AND REACTIVITY

Safety Data Sheet



Chemical stability: Unstable in the presence of incompatible materials. Product is considered stable. Hazardous polymerisation will not occur.

Conditions to avoid: Refer Section 7

Incompatible materials: • Avoid reaction with oxidising agents • Avoid strong acids, bases. Phthalates: • react with strong acids, strong oxidisers, permanganates and nitrates attack some form of plastics • Avoid reaction with water, alcohols and detergent solutions. Isocyanates are electrophiles, and as such they are reactive toward a variety of nucleophiles including alcohols, amines, and even water. • Upon treatment with an alcohol, an isocyanate forms a urethane linkage. If a di-isocyanate is treated with a compound containing two or more hydroxyl groups, such as a diol or a polyol, polymer chains are formed, which are known as polyurethanes. Reaction between a di-isocyanate and a compound containing two or more amine groups, produces long polymer chains known as polyureas. • 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 also can react with themselves. Aliphatic di-isocyanates can form trimers, which are structurally related to cyanuric acid. • Isocyanates participate in Diels-Alder reactions, functioning as dienophiles • 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 spaces may produce pressure in confined spaces or containers. Gas generation may pressurise drums to the point of rupture. Refer Section 7

Hazardous decomposition products: • 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. Refer Section 7

Hazardous reactions: Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result. Combustible. - Moderate fire hazard when exposed to heat or flame. - When heated to high temperatures decomposes rapidly generating vapour which pressurises and may then rupture containers with release of flammable and highly toxic isocyanate vapour. - Burns with acrid black smoke and poisonous fumes. - Due to reaction with water producing CO₂-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. - Combustion yields traces of highly toxic hydrogen cyanide HCN, plus toxic nitrogen oxides NO_x and carbon monoxide. Combustion products include: • carbon dioxide (CO₂) • isocyanates and minor amounts of • hydrogen cyanide • nitrogen oxides (NO_x) • 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. Refer Section 5

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 or effects that may arise if the product is mishandled and overexposure occurs are:

Acute Effects

Inhalation: 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. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual. 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,

Safety Data Sheet



insomnia, euphoria, ataxia, anxiety neurosis, depression and paranoia. Gastrointestinal disturbances are characterised by nausea and vomiting. Pulmonary sensitisation may produce asthmatic reactions ranging from minor breathing difficulties to severe allergic attacks; this may occur following a single acute exposure or may develop without warning for several hours after exposure. Sensitized people can react to very low doses, and should not be allowed to work in situations allowing exposure to this material. Continued exposure of sensitised persons may lead to possible long term respiratory impairment. Inhalation hazard is increased at higher temperatures. A respiratory sensitiser. Can cause possible allergic reactions.

Skin contact: The material produces moderate skin irritation; evidence exists, or practical experience predicts, that the material either produces moderate inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant, but moderate, 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. 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) 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. Open cuts, abraded or irritated skin should not be exposed to this material. Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds 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. 4,4'-diphenylmethane diisocyanate (MDI): IRRITANT: Skin: adverse effect observed (irritating)[1] calcium oxide: IRRITANT: Skin: adverse effect observed (irritating)[1] naphtha petroleum, light aromatic solvent: IRRITANT: Skin: adverse effect observed (irritating)[1] MDI homopolymer: IRRITANT: Skin: adverse effect observed (irritating)[1] A skin sensitiser. Repeated or prolonged skin contact may lead to allergic contact dermatitis.

Ingestion: Accidental ingestion of the material may be damaging to the health of the individual

Eye contact: 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 temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur. calcium oxide: IRRITATION: Eye: adverse effect observed (irreversible damage)[1] diisobutyl ketone: IRRITATION: Eye (human): 25 ppm/15min - mild

Acute toxicity

Inhalation: This material has been classified as not hazardous for acute inhalation exposure. Acute toxicity estimate (based on ingredients): LC₅₀ > 20.0 mg/L for vapours or LC₅₀ > 5.0 mg/L for dust and mist.

diisobutyl ketone LC₅₀ (Guinea pig): >14.5 mg/l4h[1] (Method: Inhalation)
diisononyl phthalate LC₅₀ (Rat): >4.4 mg/l4h[1] (Method: Inhalation)
4,4'-diphenylmethane diisocyanate (MDI) LC₅₀ (Rat): 0.368 mg/L4h[1] (Method: Inhalation)
calcium oxide LC₅₀ (Rat): >3 mg/l4h[1] (Method: Inhalation)
naphtha petroleum, light aromatic solvent LC₅₀ (Rat): >4.42 mg/L4h[1] (Method: Inhalation)
MDI homopolymer LC₅₀ (Rat): 0.368 mg/L4h[1] (Method: Inhalation)
2,4'-diphenylmethane diisocyanate LC₅₀ (Rat): 0.368 mg/L4h[1] (Method: Inhalation)
1,2,4-trimethyl benzene LC₅₀ (Rat): 10.2 mg/L4h[1] (Method: Inhalation)
p-toluenesulfonyl isocyanate LC₅₀ (Rat): >320 ppm4h[2] (Method: Inhalation)

Skin contact: This material has been classified as not hazardous for acute dermal exposure. Acute toxicity estimate (based on ingredients): LD₅₀ > 2,000 mg/Kg bw

diisononyl phthalate LD₅₀ (Rabbit): >3160 mg/kg[2] (Method: Dermal)
4,4'-diphenylmethane diisocyanate (MDI) LD₅₀ (Rabbit): >6200 mg/kg[2] (Method: Dermal)
naphtha petroleum, light aromatic solvent LD₅₀ (Rabbit): >1900 mg/kg[1] (Method: Dermal)
MDI homopolymer LD₅₀ (Rabbit): >9400 mg/kg[1] (Method: Dermal)
2,4'-diphenylmethane diisocyanate LD₅₀ (Rabbit): >9400 mg/kg[1] (Method: Dermal)
1,2,4-trimethyl benzene LD₅₀ (Rabbit): >3160 mg/kg[2] (Method: Dermal)
calcium oxide LD₅₀ (Rat): >2000 mg/kg[1] (Method: Dermal)
p-toluenesulfonyl isocyanate LD₅₀ (Rat): >2000 mg/kg[1] (Method: Dermal)

Safety Data Sheet

diisobutyl ketone LD50 (Rat): >2000 mg/kg[1] (Method: Dermal)

Ingestion: This material has been classified as not hazardous for acute ingestion exposure. Acute toxicity estimate (based on ingredients): LD₅₀ > 2,000 mg/Kg bw

limestone LD50 (Rat): 6450 mg/kg[2] (Method: Oral)
diisononyl phthalate LD50 (Rat): 2550 mg/kg[2] (Method: Oral)
4,4'-diphenylmethane diisocyanate (MDI) LD50 (Rat): >2000 mg/kg[1] (Method: Oral)
calcium oxide LD50 (Rat): >2000 mg/kg[1] (Method: Oral)
naphtha petroleum, light aromatic solvent LD50 (Rat): >4500 mg/kg[1] (Method: Oral)
MDI homopolymer LD50 (Rat): >2000 mg/kg[1] (Method: Oral)
2,4'-diphenylmethane diisocyanate LD50 (Rat): >2000 mg/kg[1] (Method: Oral)
1,2,4-trimethyl benzene LD50 (Rat): 6000 mg/kg[1] (Method: Oral)
p-toluenesulfonyl isocyanate LD50 (Rat): 2234 mg/kg[2] (Method: Oral)
diisobutyl ketone LD50 (Rat): >2000 mg/kg[1] (Method: Oral)

Corrosion/Irritancy: Eye: this material has been classified as a Category 2A Hazard (reversible effects to eyes).
Skin: this material has been classified as a Category 2 Hazard (reversible effects to skin).

diisobutyl ketone Eye irritant (Rabbit): 500 mg
diisobutyl ketone Skin irritant (Guinea pig): repeated - SEVERE
diisobutyl ketone Skin irritant (Guinea pig): Strong
limestone Skin irritant (Rabbit): 500 mg (Method: /24h-moderate)
4,4'-diphenylmethane diisocyanate (MDI) Skin irritant (Rabbit): 500 mg (Method: 24 hours)
diisobutyl ketone Skin irritant (Rabbit): 10 mg/24h - mild
diisobutyl ketone Skin irritant (Rabbit): 500 mg - mild

Sensitisation: Inhalation: this material has been classified as a Category 1 Hazard (respiratory sensitiser). Skin: this material has been classified as a Category 1 Hazard (skin sensitiser).

Aspiration hazard: This material has been classified as not an aspiration hazard.

Specific target organ toxicity (single exposure): This material has been classified as a Category 3 Hazard. Exposure via inhalation may result in respiratory irritation.

Chronic Toxicity

Mutagenicity: This material has been classified as a Category 2 Hazard.

Carcinogenicity: This material has been classified as a Category 2 Hazard.

Reproductive toxicity (including via lactation): This material has been classified as a Category 2 Hazard.

Specific target organ toxicity (repeat exposure): This material has been classified as not a specific hazard to target organs by repeat exposure.

12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

Acute aquatic hazard: This material has been classified as not hazardous for acute aquatic exposure. Acute toxicity estimate (based on ingredients): > 100 mg/L

diisononyl phthalate 48hr EC50 (crustacea): >0.086mg/l (Method: Refer Notes [1])
calcium oxide 48hr EC50 (crustacea): 49.1mg/l (Method: Refer Notes [2])
naphtha petroleum, light aromatic solvent 48hr EC50 (crustacea): 6.14mg/l (Method: Refer Notes [1])
1,2,4-trimethyl benzene 48hr EC50 (crustacea): ca.6.14mg/l (Method: Refer Notes [1])
p-toluenesulfonyl isocyanate 48hr EC50 (crustacea): >100mg/l (Method: Refer Notes [2])
diisobutyl ketone 48hr EC50 (crustacea): 250mg/l (Method: Refer Notes [1])
limestone 72hr EC50 (algae): >14mg/l (Method: Refer Notes [2])

Safety Data Sheet



diisononyl phthalate 72hr EC50 (algae): >88mg/l (Method: Refer Notes [2])
4,4'-diphenylmethane diisocyanate (MDI) 72hr EC50 (algae): >1640mg/l (Method: Refer Notes [2])
calcium oxide 72hr EC50 (algae): >14mg/l (Method: Refer Notes [2])
naphtha petroleum, light aromatic solvent 72hr EC50 (algae): 19mg/l (Method: Refer Notes [1])
MDI homopolymer 72hr EC50 (algae): >1640mg/l (Method: Refer Notes [2])
2,4'-diphenylmethane diisocyanate 72hr EC50 (algae): >1640mg/l (Method: Refer Notes [2])
p-toluenesulfonyl isocyanate 72hr EC50 (algae): 25mg/l (Method: Refer Notes [2])
diisobutyl ketone 72hr EC50 (algae): 26.3mg/l (Method: Refer Notes [2])
diisononyl phthalate 96hr EC50 (algae): >2.8mg/l (Method: Refer Notes [1])
naphtha petroleum, light aromatic solvent 96hr EC50 (algae): 64mg/l (Method: Refer Notes [2])
1,2,4-trimethyl benzene 96hr EC50 (algae): 2.356mg/l (Method: Refer Notes [2])
diisobutyl ketone 96hr EC50 (algae): 100mg/l (Method: Refer Notes [1])
limestone 96hr LC50 (fish): >165200mg/L (Method: Refer Notes [4])
diisononyl phthalate 96hr LC50 (fish): >0.1mg/l (Method: Refer Notes [2])
4,4'-diphenylmethane diisocyanate (MDI) 96hr LC50 (fish): >1000mg/l (Method: Refer Notes [2])
calcium oxide 96hr LC50 (fish): 50.6mg/l (Method: Refer Notes [2])
MDI homopolymer 96hr LC50 (fish): >1000mg/l (Method: Refer Notes [2])
2,4'-diphenylmethane diisocyanate 96hr LC50 (fish): >1000mg/l (Method: Refer Notes [2])
1,2,4-trimethyl benzene 96hr LC50 (fish): 3.41mg/l (Method: Refer Notes [2])
p-toluenesulfonyl isocyanate 96hr LC50 (fish): >45mg/l (Method: Refer Notes [2])
diisobutyl ketone 96hr LC50 (fish): 30mg/l (Method: Refer Notes [2])

Long-term aquatic hazard: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters. Wastes resulting from use of the product must be disposed of on site or at approved waste sites. DO NOT discharge into sewer or waterways.

Ecotoxicity: Material: limestone EndPoint: NOEC(ECx) Test Duration (hr): 6h Species: Fish Value: 4-320mg/l Source: Refer Notes 4 Material: diisononyl phthalate EndPoint: NOEC(ECx) Test Duration (hr): 504h Species: Crustacea Value: >0.034mg/l Source: Refer Notes 1 Material: 4,4'-diphenylmethane diisocyanate (MDI) EndPoint: NOEC(ECx) Test Duration (hr): 504h Species: Crustacea Value: >=10mg/l Source: Refer Notes 2 Material: 4,4'-diphenylmethane diisocyanate (MDI) EndPoint: BCFT Test Duration (hr): 672h Species: Fish Value: 61-150 Source: Refer Notes 7 Material: calcium oxide EndPoint: EC10(ECx) Test Duration (hr): 72h Species: Algae or other aquatic plants Value: >14mg/l Source: Refer Notes 2 Material: naphtha petroleum, light aromatic solvent EndPoint: NOEC(ECx) Test Duration (hr): 72h Species: Algae or other aquatic plants Value: 1mg/l Source: Refer Notes 1 Material: MDI homopolymer EndPoint: NOEC(ECx) Test Duration (hr): 504h Species: Crustacea Value: >=10mg/l Source: Refer Notes 2 Material: 2,4'-diphenylmethane diisocyanate EndPoint: NOEC(ECx) Test Duration (hr): 504h Species: Crustacea Value: >=10mg/l Source: Refer Notes 2 Material: 1,2,4-trimethyl benzene EndPoint: BCFT Test Duration (hr): 1344h Species: Fish Value: 31-207 Source: Refer Notes 7 Material: p-toluenesulfonyl isocyanate EndPoint: NOEC(ECx) Test Duration (hr): 72h Species: Algae or other aquatic plants Value: 10mg/l Source: Refer Notes 2 Material: diisobutyl ketone EndPoint: NOEC(ECx) Test Duration (hr): 96h Species: Algae or other aquatic plants Value: 46mg/l Source: Refer Notes 1 NOTES: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Persistence and degradability: Persistence and degradability Ingredient: diisononyl phthalate Persistence: Water/Soil - High Persistence: Air - HIGH Ingredient: 4,4'-diphenylmethane diisocyanate (MDI) Persistence: Water/Soil - LOW (Half-life = 1 days) Persistence: Air - LOW (Half-life = 0.24 days) Ingredient: 2,4'-diphenylmethane diisocyanate Persistence: Water/Soil - High Persistence: Air - HIGH Ingredient: 1,2,4-trimethyl benzene Persistence: Water/Soil - LOW (Half-life = 56 days) Persistence: Air - LOW (Half-life = 0.67 days) Ingredient: p-toluenesulfonyl isocyanate Persistence: Water/Soil - High Persistence: Air - HIGH Ingredient: diisobutyl ketone Persistence: Water/Soil - High Persistence: Air - HIGH

Bioaccumulative potential: Bioaccumulative potential Ingredient: diisononyl phthalate Bioaccumulation: LOW (BCF = 183.8) Ingredient: 4,4'-diphenylmethane diisocyanate (MDI) Bioaccumulation: LOW (BCF = 15) Ingredient: 2,4'-diphenylmethane diisocyanate Bioaccumulation: HIGH (LogKOW = 5.4481) Ingredient: 1,2,4-trimethyl benzene Bioaccumulation: LOW (BCF = 275) Ingredient: p-toluenesulfonyl isocyanate Bioaccumulation: LOW (LogKOW = 2.3424) Ingredient: diisobutyl ketone Bioaccumulation: LOW (LogKOW = 2.5646)

Safety Data Sheet



Mobility: Mobility in soil
Ingredient: diisononyl phthalate Mobility: LOW (KOC = 467200)
Ingredient: 4,4'-diphenylmethane diisocyanate (MDI) Mobility: LOW (KOC = 376200)
Ingredient: 2,4'-diphenylmethane diisocyanate Mobility: LOW (KOC = 384000)
Ingredient: 1,2,4-trimethyl benzene Mobility: LOW (KOC = 717.6)
Ingredient: p-toluenesulfonyl isocyanate Mobility: LOW (KOC = 882.1)
Ingredient: diisobutyl ketone Mobility: LOW (KOC = 60.12)

13. DISPOSAL CONSIDERATIONS

Product/Packaging 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 SDS 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. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate: • Reduction • Reuse • Recycling • Disposal (if all else fails) • This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. • 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. • Puncture containers to prevent re-use. • Bury or incinerate residues at an approved site.

14. TRANSPORT INFORMATION

ROAD AND RAIL TRANSPORT

Not classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

MARINE TRANSPORT

Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

AIR TRANSPORT

Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

15. REGULATORY INFORMATION

This material is not subject to the following international agreements:

Montreal Protocol (Ozone depleting substances)
The Stockholm Convention (Persistent Organic Pollutants)
The Rotterdam Convention (Prior Informed Consent)
Basel Convention (Hazardous Waste)
International Convention for the Prevention of Pollution from Ships (MARPOL)

This material/constituent(s) is covered by the following requirements:

The Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) established under the Therapeutic Goods Act (Commonwealth): .

Safety Data Sheet



16. OTHER INFORMATION

Reason for issue: First Issue

This information was prepared in good faith from the best information available at the time of issue. It is based on the present level of research and to this extent we believe it is accurate. However, no guarantee of accuracy is made or implied and since conditions of use are beyond our control, all information relevant to usage is offered without warranty. The manufacturer will not be held responsible for any unauthorised use of this information or for any modified or altered versions.

If you are an employer it is your duty to tell your employees, and any others that may be affected, of any hazards described in this sheet and of any precautions that should be taken.

Safety Data Sheets are updated frequently. Please ensure you have a current copy.