



Manufacturers of UTHANE Polyurethane Coatings
2 Hume Road, Smithfield, N.S.W., 2164
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Date Of Issue : 18/10/11

Emergency Telephone No. +612 9634-5560

MATERIAL SAFETY DATA SHEET

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UT925 / UT935 SUMMER UTHANE HARDENER - PART "B"

Ref msds 00131E

Hazardous according to criteria of Worksafe Australia

1. IDENTIFICATION

PRODUCT NAME : UT925 / UT935 SUMMER UTHANE HARDENER - PART "B"
AVAILABLE COLORS : 8100 CLEAR
OTHER NAMES : UT925 / UT935 SUMMER HARDENER
PROPER SHIPPING NAME : Resin Solution, Flammable
UN NUMBER : 1866
DANGEROUS GOODS CLASS : 3 (Flammable liquid)
PACKAGING GROUP : II
SUBSIDIARY RISK : Not available
HAZCHEM CODE : •3YE
POISONS SCHEDULE : S6
EPG : 3A2
USE : Chemical curing agent for reactive urethane spraying finishes to provide rapid air dry or force dried finishes with the properties of baked enamels.

For industrial use only in spray areas complying with relevant regulations.

This product is one component of a two component system.

Both components must be mixed together immediately prior to use.

COMPANY / UNDERTAKING

BC COATINGS
2 Hume Road, Smithfield, N.S.W. 2164
Phone +612 9729-2000, FAX +612 9729-2279
Emergency Telephone No. +612 9634-5560

The following personnel should be contacted depending on the nature of the inquiry.

TECHNICAL MANAGER	PRODUCTION MANAGER
MANAGING DIRECTOR	SALES MANAGER

AUSTRALIAN POISONS INFORMATION CENTRE 24 HOUR SERVICE : 13 11 26

POLICE OR FIRE BRIGADE : 000 (exchange) : 1100

This Fact Sheet is a summary of potential and the most severe health hazards that may result from exposure.

Always read the Material Safety Data Sheets (MSDS) for any products you use at work.

They contain useful information on hazards and control measures.

Safety Data Sheets are current for a maximum of three years but may be updated more frequently.

Please ensure that you have a current copy.

The information given in this bulletin and by the company's technical staff is provided as a general guide only to facilitate the adoption of appropriate measures in relation to handling, storage and disposal of the product.

Although BC Coatings has taken all reasonable care to ensure that the information is accurate, it accepts no responsibility for any loss or damage however caused that results there from and does not warrant such accuracy whether or not the information originated with BC Coatings.

BC Coatings urges each recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product.

The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety.

Users of the product are requested to contact BC Coatings technical section for detailed information regarding the qualities and characteristics of the product before it is used.

We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.

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Ref msds 00131E

2. HAZARDS IDENTIFICATION**Hazardous according to criteria of Worksafe Australia****CLASSIFICATION AND LABELLING ACCORDING TO NOHSC CODES**

CLASSIFICATION / SYMBOL : FLAMABLE / F

CLASSIFICATION / SYMBOL : HARMFUL

GOVERNING DIRECTIVE : National Code of practice for the Labelling of Hazardous Substances.

CLASSIFIED AS DANGEROUS GOODS ACCORDING TO THE CRITERIA OF THE ADG CODE**HAZARDS IDENTIFICATION**

Leaks of gas or spills of liquid can readily form flammable mixtures at temperatures at or above flash point.

SYMBOLS

Xi	Irritant
Xn	Harmful
N	Dangerous for the environment

RISK PHRASES

R11	Highly flammable.
R18	In use, may form flammable/explosive vapor-air mixture.
R20/2122	Harmful by inhalation, in contact with skin and if swallowed.
R33	Danger of cumulative effects.
R36/37/38	Irritating to eyes, respiratory system and skin.
R40	Limited evidence of carcinogenic effect.
R42/43	May cause sensitisation by inhalation and skin contact.
R51/53	Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.
R65	May cause lung damage if swallowed.
R67	Vapors may cause drowsiness and dizziness.

SAFETY ADVICE

S02	Keep out of the reach of children.
S3/7/9	Keep container tightly closed in a cool, well ventilated place.
S16	Keep away from sources of ignition - No smoking.
S20/21	When using, do not eat, drink or smoke.
S23	Do not breathe fumes/vapour/spray
S24/25	Avoid contact with skin and eyes.
S29	Do not empty into drains.
S33	Take precautionary measures against static discharges.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S43B	In case of fire use sand, earth, chemical powder or alcohol type foam
S45	In case of accident or if you feel unwell, seek medical advice immediately. (Show label or MSDS where possible).
S51	Use only in well ventilated areas.
S61	Avoid release into the environment.
S62	If swallowed, do NOT induce vomiting.



2. HAZARDS IDENTIFICATION - continued

HEALTH EFFECTS - ACUTE EXPOSURE

The following acute (short term) health effects may occur immediately or shortly after exposure to this product:

High vapor concentrations are irritating to the eyes and the respiratory tract, may cause coughing, headaches and dizziness, are anaesthetic and may have other central nervous system effects.

Very high levels can cause death.

Narcotic effects occur at levels below the exposure standard.

If a large amount (> 1 ml/kg) is ingested and retained, symptoms of CNS depression and irritation occur and include weakness, dizziness, unconsciousness and convulsions.

TARGET ORGANS : Central nervous system, eyes, skin, gastro-intestinal tract, blood, liver and kidneys

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE : None identified

ROUTES OF ENTRY : Ingestion, inhalation, skin contact, eye contact, absorption

SWALLOWED

Considered an unlikely route of entry in commercial/industrial environments.

The liquid is irritating and may be toxic if swallowed.

Tends to break into a foam if the patient vomits.

Ingestion can result in nausea, cramps, pain, vomiting, diarrhoea and central nervous system depression.

Small amounts of liquid aspirated into respiratory system during ingestion or from vomiting may cause broncho-pneumonia or pulmonary oedema.

If the victim is uncoordinated there is a greater likelihood of vomit entering the lungs and causing subsequent complications.

EYE

The vapour and the liquid are both severe eye irritants if exposure is prolonged.

The liquid is capable of causing severe damage with loss of sight if not promptly and adequately treated.

Corneal changes have been reported in furniture polishers exposed to xylene.

SKIN

Contact with the skin may result in severe irritation and drying of the skin which may lead to dermatitis if contact is prolonged.

Toxic effects may result from skin absorption.

Capable of causing skin sensitisation and allergic skin reactions.

Open cuts, abraded or irritated skin should not be exposed to this material.

The material may accentuate any pre-existing skin condition.



2. HAZARDS IDENTIFICATION - continued

INHALED

This product is a central nervous system depressant.

CNS depression characterised by dizziness and headache.

Vapor/mist is extremely irritating to mucous membranes, upper respiratory tract and lungs.

Inhalation hazard is increased at higher temperatures.

Toxic effects are increased by consumption of alcohol.

Repeated exposure may cause sensitisation and/or allergic reactions.

Acute effects from inhalation of high concentrations of vapour are pulmonary irritation, including coughing, with nausea; central nervous system depression - characterized by headache, dizziness, increased reaction time, loss or co-ordination, fatigue, lassitude, irritability and gastrointestinal disturbances (e.g. nausea, anorexia and flatulence).

If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.

Volunteers inhaling xylene at 100 ppm for 5 to 6 hours showed changes in manual co-ordination, reaction time and slight ataxia.

Tolerance developed during the work week but was lost over the weekend. Physical exercise may antagonize this effect.

Xylene body burden in humans exposed to 100 or 200 ppm xylene in air depends on the amount of body fat with 4% to 8% of total absorbed xylene accumulating in human adipose tissues.

HEALTH EFFECTS - CHRONIC EXPOSURE

Principal routes of exposure are usually by skin contact/absorption and inhalation of vapour.

Chronic (long term) health effects can occur at some time after exposure to liquid hydrocarbons and can last for months or years.

Evidence from animal tests indicate that repeated or prolonged solvent inhalation exposures could result in kidney disorders, nervous system impairment, liver and blood changes. [PATTYS].

Repeated exposure to this product can cause poor memory, difficulty in concentration and other brain effects.

SKIN : Prolonged or repeated skin contact causes severe irritation and may lead to de-fatting and dermatitis.
Capable of causing skin sensitisation and allergic skin reactions.

MIXED EXPOSURES

Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure.

Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Because more than light alcohol consumption can cause liver damage, drinking alcohol can increase the liver damage caused by liquid hydrocarbons.

3. COMPOSITION

<u>CHEMICAL ENTITY</u>	<u>CAS No.</u>	<u>Index No.</u>	<u>EINECS No.</u>	<u>PROPORTION (%w/w)</u>
XYLENE *	1330-20-7	601-022-00-9	203-576-3	10 - 30
ETHYL BENZENE	100-41-4	601-023-00-4	202-849-4	< 10
SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC	64742-95-6	649-356-00-4	265-199-0	< 10
n-BUTYL ACETATE	123-86-4	607-025-00-1	204-658-1	10 - 30
ETHYL ACETATE	141-78-6	607-022-00-5	205-500-4	< 10
PROPYLENE GLYCOL MONO-METHYL ETHER ACETATE	108-65-6	607-195-00-7	203-603-9	< 10
HEXAMETHYLENE DI-ISOCYANATE ISOCYANURATE	28182-81-2	-	-	30 - 60
FREE MONOMERIC HEXAMETHYLENE-1, 6-DIISOCYANATE	822-06-0	615-011-00-1	212-485-8	< 0.50
AROMATIC/ALIPHATIC POLYISOCYANATE (Proprietary Blend)	N/A	-	-	10 - 30
FREE MONOMERIC 2,4-/2,6-ISOCYANATOTOLUENE	26471-62-5 (584-84-9/91-08-7)	615-006-00-4 (209-544-5 / -)	-	< 0.50
			TOTAL	100

* Xylenes may be a common name for any combination of the following:

- 1,2-Dimethylbenzene (ortho Xylene), CAS # 95-47-6
- 1,3-Dimethylbenzene (meta Xylene), CAS # 108-38-3
- 1,4-Dimethylbenzene (para Xylene), CAS # 106-42-3

More detailed information available to medical staff in case of an emergency.
All components are registered in accordance with Australian Inventory of Chemical Substances.



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4. FIRST AID MEASURES

Poison Information Centres in each State capital city can provide additional assistance for scheduled poisons.

SWALLOWED

Harmful if swallowed.

Give milk or water to rinse out mouth.

Do **NOT** give anything by mouth to an unconscious person.

If swallowed, do **NOT** induce vomiting due to the hazard of solvent aspiration into the lungs which may cause mild to severe pulmonary injury and possibly death.

Tends to break into a foam if the patient vomits.

Should vomiting occur, place patient's head downwards, head lower than hips, to prevent vomit entering the lungs.

This is especially important as aspiration of this material into the lungs can cause chemical pneumonia, which can be fatal.

Call a doctor and/or transport to an emergency facility or hospital **IMMEDIATELY**.

EYE

Immediately and continuously irrigate with copious quantities of low pressure, fresh water for at least 15 minutes.

Eyelids should be held open.

Ensure irrigation under the eyelids by occasionally lifting upper and lower lids.

Remove any contaminated clothing.

Seek **IMMEDIATE** medical attention.

Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

Soak contaminated clothing, including footwear, with water and then remove.

Gently wash the affected areas thoroughly with water, then mild soap and water.

If exposure has been prolonged or severe or if swelling, redness or irritation occur seek medical advice.

Launder contaminated clothing before re-use.

Thoroughly dry contaminated shoes before re-use.

Discard internally contaminated gloves and shoes.

INHALED

If fumes or combustion products are inhaled :

Remove affected person(s) to fresh air, taking care not to become affected yourself.

Remove any contaminated clothing and loosen remaining clothing.

If breathing is normal, allow the patient to assume the most comfortable position and keep warm.

Keep at rest until fully recovered.

If breathing is difficult and patient is cyanotic (blue), ensure airways are clear and have a qualified person give oxygen through a face mask.

If breathing has stopped, commence Expired Air Resuscitation (E.A.R.).

In the event of cardiac arrest, commence Cardio-Pulmonary Resuscitation (C.P.R.).

Seek **IMMEDIATE** medical attention or transport to hospital, or doctor, without delay.

4. FIRST AID MEASURES - continued**ADVICE TO DOCTOR**

There is no specific antidote.

Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

Principal routes of exposure are skin contact/absorption and inhalation of the vapor/spray mist.

Primary threat to life from ingestion and/or inhalation, is respiratory failure.

Any material aspirated during vomiting may cause lung injury.

Pulmonary oedema is a possible complication following aspiration.

Extreme care must be taken to prevent aspiration.

If vomiting occurs, hold patient with head below the hips to prevent pulmonary aspiration.

If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g. gastric lavage after endotracheal intubation).

When vomiting occurs, hold patient with head below the hips to prevent pulmonary aspiration.

Product contains free organic isocyanate which may cause respiratory and skin sensitisation.

Sensitised people can react to very low levels of airborne isocyanates.

Skin sensitisation may result from a single acute exposure.

Sensitisation may cause difficulty in breathing similar to asthma.

Onset of symptoms may be delayed several hours after exposure.

Individuals experiencing breathing difficulties after exposure to vapor generated in aerosol applications should be observed for at least 48 hours in case delayed respiratory complications develop.

MEDICAL TESTING

For those with frequent or potentially high exposure (half the TLV or greater, or significant skin contact) to hydrocarbon solvents, the following is recommended before beginning work and at regular times after that:

Exam of the eyes by slit lamp.

If symptoms develop or overexposure is suspected, the following may be useful:

Liver and kidney function tests.

Complete blood count to include at least a red cell count, a white cell count, haemoglobin and haematocrit.

Urine concentration of Methylhippuric Acid (at the end of work-shift) as an index of overexposure.

Interview for brain effects, including recent memory, mood (irritability, withdrawal), concentration, headaches, malaise and altered sleep patterns.

Consider cerebellar, autonomic and peripheral nervous system evaluation.

Positive and borderline individuals should be referred for neuropsychological testing.

Comprehensive medical, work and reproductive histories with special emphasis directed to the haematological system and symptoms related to pulmonary and mucous membrane irritation.

A comprehensive physical examination with emphasis given to haematological and pulmonary systems, mucous membranes, skin and eyes.

In addition, the physician should determine the worker's suitability for respirator use.

Workers or job applicants who have medical conditions that would be aggravated by the use of a respirator need to receive counselling on the increased risk of impairment of their health.

In certain cases, to provide sound medical advice to the employer and the employee, the physician must evaluate situations not directly related to components contained in this product.

For example, employees with skin diseases, whether or not they are product related, may be unable to tolerate wearing protective clothing.

In addition, those with chronic respiratory diseases may not tolerate the wearing of respirators.

Additional tests and procedures that will help the physician determine which employees are medically unable to wear respirators must include a pulmonary function test with measurement of the employee's forced vital capacity (FVC), and forced expiratory volume at one second (FEV1).

Ratios of FEV1 to FVC as well as measured FVC and measured FEV1 to their expected values corrected for variations due to age, sex, race, and height must be calculated. Whether a chest X-ray will provide useful information should be considered.

Any evaluation should include a careful history of past and present symptoms with an exam.

Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information.

5. FIRE FIGHTING MEASURES

FOR LARGE SPILLS AND FIRES IMMEDIATELY CALL YOUR FIRE DEPARTMENT.

FIRE AND EXPLOSION HAZARD

Flammable liquid, can release vapors that form flammable mixtures at temperatures at or above the flash point.

Liquid and vapour are highly flammable.

Severe fire hazard when exposed to heat, flame and/or oxidisers.

Burns very rapidly and explosively.

When burning may form toxic materials such as carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides, isocyanates, various hydrocarbons, fumes and smoke and traces of hydrogen cyanide possible.

Vapour forms and explosive mixture with air.

Severe explosion hazard, in the form of vapour, when exposed to flame or spark.

Vapor / air mixtures may ignite explosively and flashback a considerable distance along the vapor trail to source of ignition.

Do not store or mix with strong oxidants (such as chlorine, bromine and fluorine) since violent reactions occur.

Heating may cause expansion or decomposition leading to violent rupture of containers.

Product can accumulate static charges which can cause an incendiary electrical discharge.

Methyl isobutyl ketone can react violently with peroxides, nitrates and perchlorates, reducing agents and potassium t-butoxide.

Shut off any leak if safe to do so and remove sources of re-ignition.

If safe to do so, remove containers from the path of the fire and keep cool with water spray.

Firefighters should wear self-contained breathing apparatus with a full face piece and operated in positive pressure mode.

FIRE FIGHTING MEASURES

Shut off any leak if safe to do so and remove sources of re-ignition.

If a leak or spill has not ignited, use water spray to disperse the vapours and to protect personnel attempting to stop leak.

If safe to do so, remove containers from the path of the fire and keep cool with water spray.

Keep storage tanks, pipelines, fire exposed surfaces etc. cool with water spray.

Minimize breathing gases, vapour, fumes or decomposition products.

Firefighters should wear self-contained breathing apparatus with a full face piece and operated in positive pressure mode.

Water spray may be used to flush spills away from exposures.

Prevent run off from fire control or dilution from entering waterways, sewers or drinking water supply.

This product may form a floating fire hazard on water.

If employees are expected to fight fires, they must be trained and equipped as stated in the appropriate regulations.

FIRE FIGHTING MEDIA

Either allow fire to burn under controlled conditions or extinguish with alcohol stable foam, carbon dioxide (CO₂), or dry chemical.

Try to cover liquid spills with foam.

Water spray may be ineffective, but should be used in case of larger fires, water spray be used to keep fire exposed containers cooled.

Avoid spraying water directly into storage containers due to danger of boilover.

In case of fire, formation of carbon monoxide, nitrogen oxide, isocyanate vapour, and traces of hydrogen cyanide is possible.

Fire-men have to wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES**SPILLS****FOR LARGE SPILLS AND FIRES IMMEDIATELY CALL YOUR FIRE DEPARTMENT.**

Keep unauthorized persons away at a safe distance and move upwind until clean up is complete.

Shut off all possible sources of ignition ensure adequate ventilation / exhaust ventilation.

Stop liquid at the source if safe to do so.

No smoking, naked lights or ignition sources. Increase ventilation.

May be violently or explosively reactive.

Keep solvents out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build up of explosive concentrations.

Do not empty into drains.

Use only spark-free and/or explosion proof equipment.

Avoid breathing vapours and contact with skin and eyes.

Control personal contact by using protective equipment.

If a leak or spill has not ignited, use water spray or fog to disperse/absorb the vapours and to protect men attempting to stop leak.

Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas.

MINOR SPILLS

Clean up spills immediately.

Small spills may be absorbed onto any absorbent material such as sand, soil or vermiculite or other absorbent material.

Collect residues and place in sealed, labelled, flammable waste container.

MAJOR SPILLS

Consider evacuation.

Alert Fire Brigade and tell them location and nature of hazard.

Avoid breathing vapors and contact with skin and eyes.

Wear breathing apparatus, protective gloves and full protective clothing.

Dyke the area with sand, earth or vermiculite, to prevent spreading and to prevent it entering sewers, drains or natural waterways.

Advise authorities product has entered or may enter sewers, watercourses or extensive land areas.

Water spray or fog may be used to disperse /absorb vapour.

Water spray may be used to flush spills away from exposures.

Use only spark-free and/or explosion proof equipment.

Pump the liquid to a labelled salvage tank for recycling or later disposal.

Remove mechanically; cover remainders with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand).

After approximately one hour transfer to waste container and do not seal (evolution of CO₂).

Keep damp in a safe ventilated area for several days. Further disposal by incineration.

Ventilate area well to evaporate remaining liquid and to dispel vapor.

Clean area with detergent and water - do not allow product to enter drains, sewers or water courses - inform the local authorities or emergency services if this occurs.

7. HANDLING and STORAGE**HANDLING**

Prior to working with this product, you should be trained on its proper handling and storage.

Observe manufacturer's storing and handling recommendations.

Packing as supplied by manufacturer. (Metal can / Metal drum / Metal safety cans).

Explosion protection required.

Sources of ignition, such as smoking, open flames, or ignition sources are prohibited where this product is used, handled, or stored in a manner that could create a potential fire or explosion hazard.

Use non-sparking tools and equipment especially when opening and closing containers.

Avoid exposure to temperatures above 50 °C.

Protect containers against physical damage and check regularly for leaks.

Open containers slowly in order to control possible pressure release.

Ensure adequate ventilation (equivalent to outdoors), or exhaust ventilation in the working area to prevent build up of explosive atmosphere.

Exhaust ventilation necessary if product is sprayed.

To prevent fire or explosion risk from static accumulation and discharge, effectively ground and bond product, transfer system and all process equipment, including tanks and drums.

Irritating to eyes, skin and mucous membranes.

Avoid prolonged, repeated contact with eyes, skin contact and breathing vapours or mists.

Intense smelling. Keep away from foodstuffs and clothing.

Refer to AS 1940 (Storage and handling of flammable and combustible liquids) and AS 2865 (Safe working in a confined space), for more specific information on these subjects.

STORAGE REQUIREMENT

Keep container dry and securely sealed when not in use.

Check all containers are clearly labelled and check regularly for leaks.

Store in original containers in a cool, dry, well-ventilated, approved flammable liquid storage area away from direct sunlight.

Do NOT store in pits, depressions, basements or areas where vapours may be trapped.

Materials are stable on storage, but should be stored in a cool and well ventilated place away from sources of ignition, strong oxidizing agents (liquid chlorine, bromine, fluorine, concentrated oxygen, sodium hypochlorite), acids, alkalis (since violent reactions occur) and odor sensitive materials.

Protect containers against physical damage and check regularly for leaks.

Avoid exposure to temperatures above 50 °C.

Do NOT pressurise, cut, heat, or weld containers.

Empty product containers may contain product residue.

Do NOT reuse empty containers without commercial cleaning or reconditioning.

PROCESS HAZARD

Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperatures and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources.

Published "autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without analysis of the actual process conditions.

Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

Further information is available in a technical bulletin entitled "Ignition Hazards of Organic Chemical Vapors".

8. EXPOSURE CONTROLS**ENGINEERING CONTROLS :**

None required when handling small quantities.

OTHERWISE :

Unless a less toxic chemical can be substituted for a hazardous substance, ENGINEERING CONTROLS are the most effective way of reducing exposure.

The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release.

Isolating operations can also reduce exposure.

Respirators serve as supplemental protection to reduce employee exposures when engineering and work practice controls are not sufficient to achieve the necessary reduction to or below the TWAs.

Use away from all ignition sources.

Ensure sufficient ventilation to maintain concentration below exposure standard in warehouse or closed storage areas.

Where rapid build up of vapors or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flame proof exhaust ventilation system is required.

Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS 2430 - Explosive gas atmospheres for further information concerning ventilation requirements.

Use with local exhaust ventilation or while wearing organic vapor /acid mist respirator (meeting the requirements of AS1715 & AS1716) or dust respirator/air supplied mask.

The effectiveness of an air purifying respirator is limited. Use it only for a single, short term exposure.

Refer also to protective measures for the other components used with this product.

Keep containers closed when not in use.

Equipment MUST be explosion proof.

NOTE : Vapor is heavier than air and may collect in hollows, pits storage tanks or sumps.

Do **NOT** enter confined spaces where vapor may have collected without using an approved, positive pressure, self-contained breathing apparatus (meeting the requirements of AS1715 and AS1716) and an observer present for assistance.

LOCAL EXHAUST : Face velocity > 20 m/min.

FLAMMABILITY

Highly flammable liquid.

Can readily form flammable mixture with air.

May form explosive mixtures with air.

Avoid direct sources of heat, naked lights, sparks, all ignition sources and oxidising materials.

Prevent build up of flammable vapors.

Vapour may travel a considerable distance to source of ignition and flash back.

Explosion proof equipment necessary in areas where this product is being used.

Earth and bond all process equipment, including tanks, hoses and drums to avoid static charge build up.

Nearby equipment should be earthed.

Ensure ventilation is adequate to prevent build up of explosive atmosphere.

Refer to AS 1940 - Storage and handling of flammable and combustible liquids and AS 2865 - Safe working in a confined space, for more specific information on these subjects.

8. EXPOSURE CONTROLS - continued**EXPOSURE LIMITS**

No value has been assigned for this specific material by the N.H.M.R.C.

However, the Threshold Limit Value (TLV-TWA), as published by WORKSAFE [1991], for some of the individual constituents is listed below.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin.

XYLENE (all isomers)

TLV-TWA	: 100 ppm, 434 mg/m ³	SKIN A4
ES -TWA	: 80 ppm, 350 mg/m ³	
STEL	: 150 ppm, 655 mg/m ³	(Under review)
IDLH Level	: 900 ppm	
Odour Threshold Value	: 20 ppm (detection), 40 ppm (recognition)	

The odor threshold only serves as a warning of exposure. Not smelling it does not mean you are not being exposed.

NOTE :

This substance has been classified by the ACGIH as A4. NOT classifiable as causing Cancer in humans.

Peak concentration limit according to Category II 1, i.e. German MAK-value may be exceeded for no more than 30 minutes by a factor of no more than 2 (i.e. may rise to no more than 200 ml/m³ up to 4 times per shift (half life period < 2 hours).

Xylene vapour is an irritant to the eyes, mucous membranes and skin and causes narcosis at high concentrations.

Exposure to doses sufficiently high to produce intoxication and unconsciousness also produce transient liver and kidney toxicity. Neurological impairment is NOT evident amongst volunteers inhaling up to 400 ppm, though complaints of ocular and upper respiratory tract irritation occur at 200 ppm for 3 to 5 minutes.

Exposure to xylene at or below the recommended TLV-TWA and STEL is thought to minimise the risk of irritant effects and to produce neither significant narcosis or chronic injury. An earlier skin notation was deleted because percutaneous absorption is gradual and protracted and does not substantially contribute to the dose received by inhalation.

Detector tubes for o-xylene, measuring in excess of 10 ppm, are available commercially.

(m-xylene and p-xylene give almost the same response).

Xylene vapour is an irritant to the eyes, mucous membranes and skin and causes narcosis at high concentrations.

n-BUTYL ACETATE

TLV-TWA	: 150 ppm (713 mg/m ³) / STEL 200 ppm (950 mg/m ³)	A4
ES TWA	: 150 ppm (713 mg/m ³) / STEL 200 ppm (950 mg/m ³)	
PEL (PERMISSIBLE EXPOSURE LIMIT)	: 710 mg/m ³ (150 ppm)	
NOTE	: This substance has been classified by the ACGIH as A4 NOT classifiable as causing Cancer in humans.	

IDLH Level : 10,000 ppm

Odour Threshold Value : 0.0063 ppm (detection), 0.038 - 12 ppm (recognition)

Exposure at or below the recommended TLV-TWA is thought to prevent significant irritation of the eyes and respiratory passages as well as narcotic effects.

ETHYL ACETATE

ES TWA	: 200 ppm (720 mg/m ³)	
TLV-TWA	: 400 ppm (1440 mg/m ³)	(Proposed change)
STEL	: Not Available	

In the light of the lack of substantive evidence regarding teratogenicity and a review of acute oral data a STEL is considered inappropriate.

PEL (Permissible Exposure Level) (OSHA) : 400 ppm (1400 mg/m³)

Odour Threshold Value : 6.4 - 50 ppm (detection), 13.3 - 75 ppm (recognition)

As with chemical, ingestion, inhalation of vapor, prolonged or repeated skin contact should be avoided by good occupational work practice.

Exposure at or below the recommended TLV-TWA is thought to prevent significant irritation of the eyes and respiratory passages as well as narcotic effects.

8. EXPOSURE CONTROLS - continued**EXPOSURE LIMITS - continued****PROPYLENE GLYCOL MONO-METHYL ETHER ACETATE**weel-TWA : 100 ppm, 541 mg/m³
Cel-TWA : 50 ppm, 275 mg/m³**AROMATIC PETROLEUM HYDROCARBONS MIXTURE (CAS No. 64742-95-6)**TLV-TWA : 100 mg/m³ / 8 hours**ETHYL BENZENE (CAS 100-41-4)**TLV-TWA : 100 ppm (434 mg/m³)
STEL : 125 ppm (543 mg/m³)**ISO-CYANATES (as NCO) - ALL : 0.02 mg/m³ / STEL 0.07 mg/m³ [SENSITISER]**German MAK-value (TRGS 900) hexamethylene-1, 6-diisocyanate
: 0.01 ml/m³ (ppm) corresponding to 0.07 mg/m³ (eight hours average value)

Peak concentration limit according to Category II 1, i.e. German MAK-value may be exceeded for short periods (not more than 5 minutes) by a factor of no more than 2 (i.e. may rise to no more than 0.02 ml/m³) up to eight times per shift. Sensitization possible.

Many iso-cyanate compounds cause respiratory and skin sensitisation.

Sensitised people can react to very low levels of airborne iso-cyanates and should not work with this material. [APMF]

Worker exposure by all routes should be carefully controlled and kept to a minimum when handling/mixing components and during spray application.

The European Committee of Paint, Printing Inks and Artists' Colours Manufacturer's Association (CEPE) provides the following information on coatings containing isocyanates :

Ready-to-use paints may have an irritant effect on mucous membranes - especially on breathing organs - and cause hypersensitivity reactions. Inhalation of vapour or spray mist may cause sensitisation.

When handling paints containing isocyanates all precautions required for solvent-containing paints must be followed.

Vapour and spray mist in particular should not be inhaled.

Allergics and asthmatics as well as people prone to respiratory ailments should not work with isocyanate containing paints.

Any existing national regulations for handling of isocyanates and solvents must be observed.

Airborne emissions must be controlled within local and national limits, in accordance with the appropriate legislation.

NOTE

The above TLV's are issued as guidelines only and should not be interpreted as the fine line between safe and dangerous conditions. The above exposure limits are for air levels only.

When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

Follow applicable regulations. (refer WORKSAFE Australia Exposure Standards)

All atmospheric contamination should be kept to as low a level as is practically possible.

SENSITIZER

Many isocyanate compounds can cause respiratory and skin sensitisation.

Exposure to a sensitizer, once sensitization has occurred, may manifest itself as a skin rash or inflammation or as an asthmatic condition, and, in some individuals, this reaction can be extremely severe.

Sensitised people can react to very low levels of airborne isocyanates and should not work with this material. [APMF]

Worker exposure by all routes should be carefully controlled and kept to a minimum when handling/mixing components and during spray application.

This notation indicates that caution should be exercised in the industrial use of this substance.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and air samples.

You have a legal right to obtain copies of sampling results from your employer.

If you think you are experiencing any work related health problems, see a doctor trained to recognize occupational diseases.

Take this MSDS with you.



8. EXPOSURE CONTROLS - continued

EXPOSURE LIMITS - continued

TLV-TWA is the time weighted average concentration of the workplace atmosphere for a normal 8 hour work day and a 40 hour work week, to which nearly all workers may be repeatedly exposed day after day without adverse effect. These TLV's are issued as guidelines only and should not be interpreted as the fine line between safe and dangerous conditions. All atmospheric contamination should be kept to as low a level as is practically possible.

STEL's are expressed as airborne concentrations of substances, averaged over a period of 30 minutes.

This short term TWA concentration should not be exceeded at any time during a normal 8 hour working day.

Workers should not be exposed at the STEL concentration continuously for longer than 15 minutes, or for more than four such periods per working day.

A minimum of 250 minutes should be allowed between successive exposures at the STEL concentration.

STEL is the concentration to which workers can be exposed continuously for a short period of time without suffering from :

- irritation
- chronic or irreversible tissue damage, or
- narcosis of a sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency, and provided that the daily TLV-TWA is not exceeded.

Sk NOTICE - absorption through the skin, mucous membranes and eye may be a significant source of exposure.

The exposure standard is invalidated if such contact should occur.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin.

Absorption by skin may readily exceed vapour inhalation exposure.

Symptoms for skin absorption are the same as for inhalation.

Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

PEAK LIMITATION - a ceiling concentration which should not be exceeded over a measurement period which should be as short as possible but not exceeding 15 minutes.

ODOR THRESHOLD

When considering the odor threshold of a substance, one finds that reported values are widely divergent.

Two major factors which influence odor detection are differences between individuals in the ability to perceive a particular odor and the methodology employed in conducting the odor threshold determination.

In their "Guide to Industrial Respiratory Protection - Appendix C" , NIOSH states:

Amoore and Hautala (33) found that on average, 95% of a population will have a personal odor threshold that lies within the range from about one-sixteenth to sixteen times the reported mean "odor threshold" for a substance.

In further explanation, Amoore and Hautala state:

The ability of members of the population to detect a given odor is strongly influenced by the innate variability of different persons' olfactory powers, their prior experience with that odor, and by the degree of attention they accord the matter.

8. EXPOSURE CONTROLS - continued**PERSONAL PROTECTION****WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT.**

However, for some jobs personal protective equipment may be appropriate.

Eye wash fountains and safety showers should be available for emergency use.

In case of hypersensitivity of the respiratory tract and skin (e.g. asthmatics and those who suffer from chronic bronchitis and chronic skin complaint) it is inadvisable to work with the product.

Use adequate general or local exhaust ventilation to meet TLV requirements.

Skin contact should be avoided by wearing chemically resistant work clothing, boots and gloves.

All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Contact lenses should not be worn in areas where eye contact with this product can occur.

Observe good personal hygiene.

Keep away from foodstuffs, drinks and tobacco.

Keep working clothes separate.

Take off immediately all contaminated clothing.

Launder contaminated clothing and other protective equipment before storing or re-using, and discard internally contaminated gloves and footwear.

ALWAYS wash hands before eating, drinking, smoking, using the toilet, before breaks and at end of work.

Do not eat, smoke, or drink where this product is handled, processed, or stored, since the chemical can be swallowed.

Personal protective equipment should not be worn in lunch areas to prevent migration of this product to an area where other employees may be unknowingly exposed.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult your Occupational Health and Safety Adviser.

For detailed advice on Personal Protective Equipment, refer to the following Australian Standards :-

HB 9 (Handbook 9)	Manual of industrial personal protection.
AS 1377	Eye protectors for industrial applications.
AS 1715	Selection, use and maintenance of respiratory protective devices.
AS 1716	Respiratory protective devices.

When exposure is likely, personal protective equipment in combination appropriate to the degree and nature of exposure, should be selected from the following lists :-

SKIN

Skin contact should be avoided by wearing chemically resistant apron or other work clothing, safety boots and chemical protective gloves if needed to avoid repeated or prolonged skin contact.

Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing for your operation.

All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Do NOT use solvent to clean the skin but use skin cleansing cream.

Ensure that there is ready access to an emergency shower.

If contamination occurs, immediately remove all contaminated clothing, wash or shower to remove the chemical and change into clean clothing.

Clothing wet with product should be soaked with water before removal to prevent the possibility of ignition by static electricity discharges.

At the end of the work shift, wash any areas of the body that may have contacted this product, whether or not known skin contact has occurred.

Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to this product.



8. EXPOSURE CONTROLS - continued

PERSONAL PROTECTION - continued

RESPIRATORY

Avoid breathing vapors.

Enclose operations and use local exhaust ventilation to meet TLV requirements.

If local exhaust ventilation or enclosure is not used, respirators should be worn.

Respiratory protection required if airborne concentration exceeds TLV.

Respiratory protection required in insufficiently ventilated working areas and during spraying.

A self-contained breathing apparatus (meeting the requirements of AS1715 and AS1716) with a full facepiece operated in continuous flow or other positive pressure mode is recommended.

IMPROPER USE OF RESPIRATORS IS DANGEROUS.

<u>Breathing Zone Level</u> <u>ppm (volume)</u>	<u>Maximum Protection</u> <u>Factor</u>	<u>Half-Face</u> <u>Respirator</u>	<u>Full-Face</u> <u>Respirator</u>
1,000	10	AB-AUS P-	
1,000	50	-	AB-AUS P-
5,000	50	AIRLINE *	-
5,000	100	-	AB-2 P-
10,000	100	-	AB-3 P-
10,000	100+	-	AIRLINE **

* - Continuous Flow

** - Continuous Flow or Positive Pressure Demand

If vapor causes eye irritation or if an inhalation risk for higher exposures exists an approved air supplied breathing apparatus (meeting the requirements of AS1715 and AS1716) operated in pressure demand or other positive pressure mode should be used. Correct respirator fit is essential to obtain adequate protection.

If while wearing a filter, cartridge or canister respirator, you can smell, taste, or otherwise detect this product, or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately.

Check to make sure the respirator to face seal is still good. If it is, replace the filter, cartridge, or canister.

If the seal is no longer good, you may need a new respirator.

NOTE : Isocyanate vapours will not be adequately absorbed by organic vapor respirators. [NSW D.I.R. 3-1982].

Where the concentration of vapor or mist is unknown or expected to approach or exceed the Worksafe Exposure Standards limit, the following additional equipment is recommended :-

- (1) Short elevated exposures, e.g. spillage - goggles and correct respiratory equipment should be worn.

N.B.

if the vapor/mist concentration exceeds the exposure limit by more than 10 times, air supplied apparatus should be used.

- (2) For prolonged elevated exposures - Full face air supplied or self contained breathing apparatus should be worn.

NOTE : Make sure the correct cartridges are used for the potential air contamination.

The effectiveness of an air purifying respirator is limited.

Use it only for a single, short term exposure.

For emergency and other conditions where the exposure guide line may be greatly exceeded, use an approved, positive pressure, self-contained breathing apparatus and an observer present for assistance.

For further information consult your Occupational Health and Safety Adviser.

EYES

Eyes should be protected by chemical splash goggles, safety glasses fitted with side shields or full face shield.

Contact lenses should **NOT** be worn; soft lenses may absorb irritants and all lenses concentrate irritants.

If vapor causes eye irritation or if an inhalation risk exists a full-face, organic vapor respirator (meeting the requirements of AS1715 & AS1716) should be used.

Eye wash fountains (capable of maintaining an appropriate water pressure for an appropriate length of time to remove the product from the eyes) and safety showers should be available for emergency use.



9. PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL DESCRIPTION / PROPERTIES

APPEARANCE		: Pale yellowish liquid.	
ODOR		: Strong lacquer odor.	
pH VALUE		: Not applicable	
SOLUBILITY		: Completely miscible many organic solvents.	
VAPOR PRESSURE	(kPa @ 20°C)	: 1.33	(Butyl Acetate)
RELATIVE VAPOR DENSITY		: 4.0	(Air = 1) (Butyl Acetate)
BOILING POINT	(°C)	: 126.0	(Butyl Acetate)
SETTING POINT		: approx. - 48 °C	
SPECIFIC GRAVITY	(@ 25°C)	: 1.047 ± 0.005	(Water = 1)
FLASH POINT	(°C)	: 24.0	(Closed Cup) (Butyl Acetate)
EXPLOSIVE LIMITS	(% Volume)	: 1.0 LEL / 10.8 UEL	
VOC CONTENT		: 415 ± 5.0 gm / Litre	
% VOLATILES	(by volume)	: 63.5 ± 1.0	
SOLUBILITY IN WATER		: Insoluble as resin (reacts as described in Ecological Information)	
EVAPORATION RATE		: 6.2	(Butyl Acetate = 1) (Ethyl Acetate)
AUTO-IGNITION TEMPERATURE	(°C)	: 425.0	(Butyl Acetate)
SOLUBILITY IN WATER		: Insoluble as resin (reacts as described in Ecological Information)	

OTHER PROPERTIES

Flammable, vapors can readily form explosive mixture with air
Contains free organic isocyanate ($\approx 0.2\%$ w/w).
Mixed and thinned material require special precautions and use of protective gear for application. [APMF]
Long term storage or storage at higher than normal temperatures will increase free organic isocyanate content to 0.90% maximum.
Reacts with water, may generate a large volume of foam, carbon dioxide gas & heat.

10. STABILITY and REACTIVITY**REACTIVITY / COMPATIBILITY**

- Hazardous polymerization : Cannot occur
- Stability : Stable under normal conditions
- Conditions to Avoid : Heat, sparks, flame and build up of static electricity.
- Incompatibility (materials to avoid for purpose of transport, handling & storage only)
: Avoid contact with water, strong alkalis, mineral acids, halogens, strong oxidizers (liquid chlorine, concentrated oxygen, sodium hypochlorite), alcohols, amines, metal compounds, detergent solutions, rubber, polyethylene and PVC, and most tank linings.
- Hazardous reactions : Exothermic reaction with amines and alcohols; reacts slowly with water forming CO₂ ; foaming in confined spaces / closed containers - risk of bursting owing to increase of pressure.
Reacts with water, may generate a large volume of foam, carbon dioxide gas and heat.
Iso-cyanates will attack and embrittle some plastics and rubbers.
Forms toxic fumes when thermally decomposed.
- Hazardous decomposition products : No hazardous decomposition products when stored and handled correctly.
- Hazardous combustion products : In case of fire, formation of fumes, smoke, carbon monoxide, nitrogen oxide, isocyanate vapour, and traces of hydrogen cyanide is possible.

HAZARDOUS COMPONENTS OF MIXTURES

The presence of approximately 0.1 % of Benzene in this product poses chronic toxic problems. The most serious of the hazards is the gradual undetectable destruction of various components of the blood-forming organs. This occurs as a consequence of prolonged or repeated inhalation of Benzene vapor at concentrations greater than 10 ppm TLV. If these excessive exposures continue and if diagnosis is delayed, death may occur.

All components are registered in accordance with Australian Inventory of Chemical Substances(ACIS).

11. TOXICOLOGICAL INFORMATION**TOXICITY**

Evidence from animal tests is available to indicate that repeated or prolonged exposure to hydrocarbon solvents could result in liver, kidney and central nervous disorders as well as anaemia and leukopenia (lowered white cell count).

Aromatic hydrocarbons, such as those contained in this product, irritate the skin and mucous membranes and are narcotic if inhaled in high concentrations.

Do NOT induce vomiting if swallowed

Prolonged, repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.

Limits shown for guidance only.

Follow applicable regulations (refer WORKSAFE Australia Exposure Standards).

No LD₅₀ data available for this specific product. Data for principal ingredients only.

XYLENE

Oral	LD ₅₀	(rat) : 4,300 mg/kg
Oral	LD ₅₀	(human) : 50 mg/kg
Inhalation	LC ₅₀	(rat) : 5,000 ppm/4 hours
Inhalation	TCLO	(human) : 200 ppm Irritant (CNS recording changes, hallucinations)
Inhalation	LCLO	(human) : 10,000 ppm / 6hrs
Dermal	LD ₅₀	(rabbit) : > 2,000 mg/kg
Skin Irritation		(rabbit) : 500 mg / 24 hr. Moderate irritant on prolonged or repeated contact.
Eye Irritation		(human) : 200 ppm - moderate
Eye Irritation		(rabbit) : 5 mg/24hr May cause severe irritation on prolonged or repeated contact.

Evidence from animal tests is available to indicate that repeated or prolonged exposure to hydrocarbon solvents could result in liver, kidney and central nervous disorders as well as anaemia and leucopenia (lowered white cell count).

Aromatic hydrocarbons, such as xylene, irritate the skin and mucous membranes and are narcotic if inhaled in high concentrations.

Chronic exposure to high concentrations of BENZENE have been associated with blood abnormalities and leukaemia in a small percentage of exposed workers.

GENETIC TOXICOLOGY

Negative Ames test.

REPRODUCTIVE TOXICOLOGY

Teratogenic studies (rats) : Negative.

CHRONIC TOXICOLOGY

No evidence of skin carcinogenic activity in laboratory tests.

No health effects in animals treated with this material in US NTP 2 -year bioassay.

ETHYL BENZENE

Oral	LD ₅₀	(rat) : 3,500 mg/kg
Dermal	LD ₅₀	(rabbit) : 17,800 mg/kg
Inhalation	LCLO	(human) : 1,000 ppm

PROPYLENE GLYCOL MONO-METHYL ETHER ACETATE

Oral	LD ₅₀	(rat) : 8,532 mg/kg
Dermal	LD ₅₀	(rabbit) : > 5,000 mg/kg
Skin Irritation		(rabbit) : Moderate irritant on prolonged or repeated contact.
Eye Irritation		(human) : Moderate irritant.
Inhalation	TCLO	(human) : 1,000 ppm Irritant (CNS impairment, upper respiratory tract & eye irritation)

11. TOXICOLOGICAL INFORMATION - continued**TOXICITY – continued****n-BUTYL ACETATE**

Oral	LD ₅₀	(rat)	: 13,100 mg/kg
Oral	LD ₅₀	(mouse)	: 7,060 mg/kg
Oral	LD ₅₀	(rabbit)	: 3,020 mg/kg
Dermal	LD ₅₀	(rabbit)	: > 5,000 mg/kg
Inspired	LD ₅₀	(mouse)	: 1,230 mg/kg
Inhalation	LC ₅₀	(rat)	: 2,000 ppm/4 hours
Inhalation	LC ₅₀	(rat)	: < 391 ppm/4 hr (aerosol)
Inhalation	TLCO	(human)	: Not Available (CNS recording changes, hallucinations)
Eyes		(rabbit)	: 20-100 mg - Moderate to severe irritant
Skin		(rabbit)	: 500 mg/24 hr - Mild to moderate irritant
Other			: Do NOT induce vomiting if swallowed

Vapor at concentrations above the exposure standard has an anaesthetic effect, which may lead to headache, dizziness and loss of consciousness.

AROMATIC PETROLEUM HYDROCARBONS

Oral	LD ₅₀	(rat)	: 2,900 mg/kg
		Aspiration into the lungs may cause chemical pneumonitis which can be fatal.	
Dermal	LD ₅₀	(rabbit)	: 10,500 mg/kg
Inhalation	LC ₅₀	(rat)	: 12,100 mg/m ³ /8 hours
Eyes		(rabbit)	: Moderate Irritant
Skin			: Harmful
Other			: Harmful if swallowed or by inhalation.

Evidence from animal tests is available to indicate that repeated or prolonged exposure to hydrocarbon solvents could result in liver, kidney and central nervous disorders as well as anaemia and leukopenia (lowered white cell count).

Aromatic hydrocarbons irritate the skin and mucous membranes and are narcotic if inhaled in high concentrations.

Prolonged/repeated contact may cause de-fatting of the skin which can lead to dermatitis.

Repeated inhalation of vapors and mists is expected to cause irritation of the respiratory tract.

Not a skin sensitizer.

Not mutagenic.

Limited evidence of carcinogenic effect. (Ethylbenzene)

Causes foetotoxicity in animals at doses which are maternally toxic.

Does not impair fertility.

ALIPHATIC POLYISOCYANATE

Toxicological studies of a comparable product

Oral	LD ₅₀	(rat)	: > 5,000 mg/kg
Eye		(rabbit)	: Non-irritant (24 hours exposure)
Skin		(rabbit)	: Slight reddening.

Investigations of subacute and subchronic toxicity were carried out using a similar and solvent free product.

Subacute inhalation toxicity, rat:

All the changes were unspecific and are therefore attributed to the primary irritation potential of the product.

AROMATIC/ALIPHATIC POLYISOCYANATE

Toxicological studies of a comparable product

Oral	LD ₅₀	(rat)	: > 5,000 mg/kg
Inhalation	LC ₅₀	(rat)	: > 3,003 mg/m ³ /4 hr (aerosol)
Eye		(rabbit)	: Moderate reddening
Skin		(rabbit)	: Slight reddening for a short time / 4 hours

11. TOXICOLOGICAL INFORMATION - continued**TOXICITY – continued****ETHYL ACETATE**

Oral	LD ₅₀	(rat)	: 5,500 mg/kg	
Oral	LD ₅₀	(rabbit)	: 4,935 mg/kg	- Practically non-toxic.
IPR	LD ₅₀	(mouse)	: 709 mg/kg	
Dermal	LD ₅₀	(rabbit)	: >2,000 mg/kg	- Practically non-toxic.
Inhalation	LC ₅₀	(rat)	: 1,600 ppm/8 hours	- Practically non-toxic.
Inhalation	TLCO	(human)	: 400 ppm – olfaction effects; conjunctiva irritation.	
Eye		(human)	: Irritant	
Eye Irritation		(rabbit)	: Practically non-irritating	
			Draize score : >15 but 35 or less	
Skin Irritation		(rabbit)	: Irritant	
			Primary Irritation Index : >3 but < 5.	

There is some indication that this chemical may cause allergic response in some individuals.

Vapour at concentrations above the exposure standard has an anaesthetic effect, which may lead to headache, dizziness and loss of consciousness.

CARCINOGENICITY : NTP : NO IARC : NO Z LIST : NO OSHA REG : NO

CHRONIC TOXICOLOGY (SUMMARY)

Certain straight run middle distillates have been found to produce skin tumours in laboratory studies, but these have usually been associated with a high level of irritation.

Some suppliers have conducted tests that determined the irritation produced the tumours.

Therefore, if precautions outlined in this bulletin are followed to minimise repeated or prolonged skin contact which could cause irritation, these oils should pose no carcinogenic hazard to humans.

Prolonged, repeated skin contact with low viscosity materials may de-fat the skin resulting in possible irritation and dermatitis.

SPECIAL PROPERTIES / EFFECTS

Over-exposure, especially when spraying coatings containing isocyanate, without the necessary precautions entails the risk of concentration-dependent irritating effects on eyes, nose, throat, and respiratory tract.

Delayed appearance of the complaints and development of hyper-sensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations including concentrations below the TWA-limit.

In case of longer contact with skin, tanning and irritating effects are possible.

12. ECOLOGICAL INFORMATION

This product may enter the environment from industrial discharges, municipal waste treatment plant discharges, or spills. It is a colorless liquid at room temperature and is flammable. Do not allow to escape into waters, waste water or soil.

ACUTE (SHORT-TERM) ECOLOGICAL EFFECTS

Acute toxic effects may include the death of animals, birds, or fish, and death or low growth rate in plants. Acute effects are seen two to four days after animals or plants come in contact with a toxic chemical substance. This product has high acute toxicity to aquatic life and causes injury to various agricultural and ornamental crops. Insufficient data are available to evaluate or predict the short-term effects of this product to birds or land animals.

CHRONIC (LONG-TERM) ECOLOGICAL EFFECTS

Chronic toxic effects may include shortened lifespan, reproductive problems, lower fertility, and changes in appearance or behaviour. Chronic effects can be seen long after first exposure(s) to a toxic chemical. This product has high chronic toxicity to aquatic life. Insufficient data are available to evaluate or predict the long-term effects of this product to plants, birds, or land animals.

WATER SOLUBILITY

This product is moderately soluble in water. Concentrations of between 1 to 1,000 milligrams will mix with a litre of water.

DISTRIBUTION AND PERSISTENCE IN THE ENVIRONMENT

This product is non-persistent in water, with a half-life of less than 2 days. The half-life of a pollutant is the amount of time it takes for one-half of the chemical to be degraded. About 99.3% of the solvents in this product will eventually end up in the air; about 0.5% will end up in water; about 0.1%, respectively will end up in terrestrial soils and in aquatic sediments.

BIOACCUMULATION IN AQUATIC ORGANISMS

Some substances increase in concentration, or bio-accumulate, in living organisms as they breathe contaminated air, drink contaminated water, or eat contaminated food. These chemicals can become concentrated in the tissues and internal organs of animals and humans. The concentration of this product found in fish tissues is expected to be somewhat higher than the average concentration of this product in the water from which the fish was taken.

BIOLOGICAL EXPOSURE INDEX - BEI**XYLENE**

These represent the determinants observed in specimens collected from a healthy worker exposed to Xylene at Exposure Standards (ES or TLV)

<u>Determinant</u>	<u>Index</u>	<u>Sampling Time</u>	<u>Comment</u>
Methyl hippuric acid	1.5 gm/gm	End of shift	Acids in urine
creatinine	2.0 mg/min	Last 4 hrs. of shift	



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UT925 / UT935 SUMMER UTHANE HARDENER - PART "B" Ref msds 00131E

13. DISPOSAL CONSIDERATIONS

This product is NOT suitable for disposal by either landfill or via municipal sewers, drains, natural streams or rivers.

Consult an expert on disposal of any recovered material and ensure conformity to local disposal regulations.

It may be necessary to contain and dispose of this product as a HAZARDOUS WASTE.

Contact your state Environmental Program for specific recommendations.

Refer to State Land Waste Management Authority for specific recommendations.

Advise of flammable/chemical nature.

Recycle product where possible.

Do NOT reuse empty containers without commercial cleaning or reconditioning.

Empty containers may be disposed of after neutralizing any product remaining on the walls of the container with a mixture of isopropanol, ammonia and water. Afterwards, remove warning labels.

Do NOT pressurise, cut, heat, or weld containers.

Empty product containers may contain product residue.

14. TRANSPORT INFORMATION

Classified as a Dangerous Good (Class 3) (Flammable Liquid) Dangerous Substance for the purpose of transport.
Refer to relevant regulations for storage and transport requirements.

STORAGE AND TRANSPORT

Classified as a Dangerous Good (Class 3) for transport purposes.

SHIPPING NAME	: Resin Solution, Flammab	PACKAGING GROUP	: II
UN No.	: 1866	ICAO / IATA-DGR	: 3 1866 II
CLASS	: 3 (Flammable Liquid)	HAZCHEM CODE	: •3YE
AS 1940 Class	: PG II	EPG	: 3A2
SUBSIDIARY RISK	: NOT ASSIGNED		
IMO HAZARD CLASS	: INFLAMMABLE LIQUID/3.2		
DECLARATION FOR LAND SHIPMENT	: 1866, Resin solution		
DECLARATION FOR SEA SHIPMENT	: Resin solution		
DECLARATION FOR SHIPMENT BY AIR	: Resin solution	EMS	: F-E,S-E
STORAGE TEMPERATURE	(°C) : Ambient		
TRANSPORT TEMPERATURE	(°C) : Ambient		
LOADING / UNLOADING TEMPERATURE	(°C) : Ambient		
STORAGE / TRANSPORTATION PRESSURE (kPa)	: Atmospheric		
ELECTROSTATIC ACCUMULATION HAZARD ?	: Yes, use proper grounding procedure.		
USUAL SHIPPING CONTAINERS	: Drums, pails.		
MATERIALS AND COATINGS SUITABLE	: Carbon Steel / Stainless Steel.		
MATERIALS AND COATINGS UNSUITABLE	: Natural Rubber / Butyl Rubber / E P D M / Polystyrene / Polyethylene / Polypropylene / Polyvinyl chloride / Polyvinyl alcohol / Polyacrylonitrile		

Class 3 flammable liquids shall NOT be loaded in the same vehicle with :-

- Class 1 Explosives
- Class 2.1 Flammable gases (when both in bulk)
- Class 2.3 Poisonous gases
- Class 4.2 Spontaneously combustible substances
- Class 5.1 Oxidizing agents
- Class 5.2 Organic peroxides
- Class 7 Radioactive substances
- Halogens (chlorinated compounds & etc.)
- Foodstuffs and foodstuff empties.
- Detergent solutions

Refer to Australian Code for the Transport of Dangerous Goods By Road and Rail (7th Edition) for transport regulations and state Dangerous Goods regulations for storage requirements.

This material is a Scheduled Poison (S6) and must be stored, maintained and used in accordance with the relevant regulations.

15. REGULATORY INFORMATION**Hazardous according to criteria of Worksafe Australia****CLASSIFICATION AND LABELLING ACCORDING TO NOHSC CODES****CLASSIFICATION / SYMBOL** : FLAMABLE / F**CLASSIFICATION / SYMBOL** : HARMFUL**GOVERNING DIRECTIVE** : National Code of practice for the Labelling of Hazardous Substances.**CLASSIFIED AS DANGEROUS GOODS ACCORDING TO THE CRITERIA OF THE ADG CODE****HAZARDS IDENTIFICATION**

Leaks of gas or spills of liquid can readily form flammable mixtures at temperatures at or above flash point.

SYMBOLS

Xi	Irritant
Xn	Harmful
N	Dangerous for the environment

RISK PHRASES

R11	Highly flammable.
R18	In use, may form flammable/explosive vapor-air mixture.
R20/2122	Harmful by inhalation, in contact with skin and if swallowed.
R33	Danger of cumulative effects.
R36/37/38	Irritating to eyes, respiratory system and skin.
R40	Limited evidence of carcinogenic effect.
R42/43	May cause sensitisation by inhalation and skin contact.
R51/53	Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.
R61	May cause harm to the unborn child.
R62	Possible risk of impaired fertility.
R65	May cause lung damage if swallowed.
R67	Vapors may cause drowsiness and dizziness.

SAFETY ADVICE

S02	Keep out of the reach of children.
S3/7/9	Keep container tightly closed in a cool, well ventilated place.
S16	Keep away from sources of ignition - No smoking.
S20/21	When using, do not eat, drink or smoke.
S23	Do not breathe fumes/vapour/spray
S24/25	Avoid contact with skin and eyes.
S29	Do not empty into drains.
S33	Take precautionary measures against static discharges.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S43B	In case of fire use sand, earth, chemical powder or alcohol type foam
S45	In case of accident or if you feel unwell, seek medical advice immediately. (Show label or MSDS where possible).
S51	Use only in well ventilated areas.
S61	Avoid release into the environment.
S62	If swallowed, do NOT induce vomiting.



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16. OTHER INFORMATION

DATE OF PREPARATION / LAST REVISION : 18/10/11

PRINCIPAL REFERENCES

Supplier's Material Safety Data Sheet

Australian Atmospheric Exposure Standards, Commonwealth of Australia (1991).

In "Registry of Toxic Effects of Chemical Substances 1995" (Ed. D. Sweet),
(US Dept. of Health & Human Services: Cincinnati 1995)

Components of this chemical are listed on the Australian Inventory of Chemical Substances (ACIS).

END OF MSDS