



Emergency Telephone No. +612 9634-5560
MATERIAL SAFETY DATA SHEET
BC307 1K ETCH THINNER

Date of Issue: 17/02/13

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Ref msds 00030

1. IDENTIFICATION

PRODUCT NAME	: BC307 1K ETCH THINNER		
CORRECT SHIPPING NAME	: Paint Related Material, Thinners, LFP		
OTHER NAMES	: Not Applicable		
UN NUMBER	: 1263		
CAS No.	: Not Available		
AICS STATUS	: All Components Listed		
DANGEROUS GOODS CLASS	: 3.1 (Highly Flammable Liquid)		
IMO HAZARD CLASS	: INFLAMMABLE LIQUID/3.1		
PACKAGING GROUP	: II	AS 1940 CLASS	: PG II
SUBSIDIARY RISK	: Not Applicable	HAZCHEM CODE	: •3YE
POISONS SCHEDULE	: S5	EPG	: 3A1
EMS No.	: F-E, S-D		
USE	: Reduction of single pack etch finishes to consistency suitable for use through conventional spray gun systems.		

For Industrial Or Automotive Use Only In Spray Areas Complying With Relevant Regulations.

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 five 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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2. HAZARDS IDENTIFICATION

Hazardous according to the criteria of Worksafe Australia

CLASSIFICATION AND LABELLING ACCORDING TO NOHSC CODES

CLASSIFICATION / SYMBOL : HIGHLY FLAMMABLE / F
CLASSIFICATION / SYMBOL : HARMFUL / Xn - IRRITANT / Xi
CLASSIFICATION / SYMBOL : TOXIC / T
CLASSIFICATION / SYMBOL : DANGEROUS FOR THE ENVIRONMENT / N
CLASSIFICATION : Dangerous Goods according to the Australian Dangerous Goods Code
GOVERNING DIRECTIVE : National Code of practice for the Labelling of Hazardous Substances.
LABEL NAME : Paint related material, Thinners, LFP

Leaks of gas or spills of liquid can readily form flammable mixtures at temperatures at or above flash point.
Product can accumulate static charges which can cause an incendiary electrical discharge.
Electrostatic charges may be generated during pumping.
Electrostatic discharge may cause fire.
In use, may form flammable/explosive vapour-air mixture.

HEALTH HAZARDS

Vapors may cause drowsiness and dizziness.
May cause moderate irritation to skin.
Repeated exposure may cause skin dryness or cracking.
Harmful: may cause lung damage if swallowed.
Possibility of organ or organ system damage from prolonged exposure (Central nervous system (CNS)).
Risk of injury is dependent on the duration and level of exposure.
The risk of lung disease is increased if smoking is combined with use of this product.

RISK PHRASES

R11 Highly flammable.
R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R36/37/38 Irritating to eyes, skin and respiratory system.
R42/43 May cause sensitization by inhalation and skin contact.
R48/20 Harmful : danger of serious damage to health by prolonged exposure through inhalation.
R51/53 Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.
R63 Possible risk of harm to the unborn child.
R65 Harmful : may cause lung damage if swallowed
R66 Repeated exposure may cause skin dryness or cracking
R67 Vapors may cause drowsiness and dizziness

SAFETY ADVICE

S2 Keep out of 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.
S22/23 Do not breathe dust/gas/fumes/vapour/spray
S24/25 Avoid contact with skin and eyes.
S29 Do not empty into drains.
S33 Take precautionary measures against static discharges.
S36/37/38/39 Wear suitable protective clothing, gloves, eye/face protection, respiratory equipment.
S43B In case of fire use sand, earth, chemical powder or alcohol type foam
S46 If swallowed, seek medical advice immediately and show this container or label.
S51 Use only in well ventilated areas.
S61 Avoid release to the environment. Refer to special instructions / Safety data sheets
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label



2. HAZARDS IDENTIFICATION - continued

HEALTH EFFECTS - ACUTE EXPOSURE

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label.

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

Exposure to this product can occur in the workplace or in the environment following releases to air, water, land, or groundwater.

This product can enter the body when breathed in with contaminated air or when consumed with contaminated food or water.

It can also be absorbed through skin contact.

Effects of this product on human health and the environment depend on how much of the product is present and the length and frequency of exposure.

Effects also depend on the health of a person or the condition of the environment when exposure occurs.

Studies show that repeat exposure to large amounts of hydrocarbon solvents adversely affects the nervous system, the kidneys, and the liver of animals.

Narcotic effects occur at levels below the exposure standard.

Breathing air which contains solvents, resulting from its use in spraying applications, may cause delayed lung damage.

The liquid is toxic if aspirated.

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, nose, mouth, and throat, mucous membranes and the respiratory tract, may cause sore throat, insomnia coughing, headaches, tiredness, dizziness, a burning sensation to the eyes, blurred vision, mental sluggishness, lethargy, weakness, tremor, nausea and vomiting, unconsciousness, are anaesthetic and may have other central nervous system effects.

Gastroenteritis, heartburn and intestinal pain, diarrhoea, loss of appetite and anorexia, may also occur.

Acute exposure may also result in narcosis, pulmonary oedema and severe kidney and liver damage.

Exposure to very high concentrations can be fatal.

Lower levels may cause trouble concentrating, headaches, and slowed reflexes.

If a large amount (>1 ml/kg) is ingested and retained can cause gastrointestinal irritation, kidney damage and central nervous system effects occur and include weakness, dizziness, unconsciousness and convulsions.

Systemic effects from short-term high exposures may include lung, kidney and brain damage.

Vapor may cause conjunctivitis.

Temporary corneal clouding may also result and may last several hours.

The liquid can severely burn the eyes.

Corneal damage will occur after prolonged contact.

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

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

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

: Skin disorders, damaged skin, respiratory system disease, kidney, liver, or blood disorders.

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

SWALLOWED

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

Harmful if swallowed.

The liquid is highly irritating to mouth, throat and the gastrointestinal tract and may be harmful if swallowed in quantity.

Swallowing may cause breathing difficulty, abdominal discomfort, headache, dizziness, drowsiness, pain, cramps, nausea, vomiting, diarrhoea, upper respiratory tract irritation, mucous membrane irritation, central nervous system depression.

Ingestion in large quantities may lead to unconsciousness and is expected to cause central nervous system depression and severe poisoning and may lead to kidney injury.

Tends to break into a foam if the patient vomits.

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

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



2. HAZARDS IDENTIFICATION - continued
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HEALTH EFFECTS - ACUTE EXPOSURE (continued)

EYE

The vapour and the liquid are both severe eye irritants (experienced as discomfort or pain, excess blinking and tear production) and are capable of causing pain and severe conjunctivitis (marked excess redness and swelling of the conjunctiva).

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

SKIN

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

The liquid is irritating to the skin if contact is prolonged and may cause de-fatting and drying of the skin which may lead to dermatitis from repeated exposures over long periods.

Brief contact may cause slight irritation with itching and local redness.

Capable of being absorbed by the skin and may cause central nervous system depression.

Toxic effects may result from skin absorption.

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.

Capable of causing skin sensitization and allergic skin reactions.

Bare unprotected skin, abraded or irritated skin, open cuts and etc., should not be exposed to this material.

The material may accentuate any pre-existing skin condition.

INHALED

Acute effects from inhalation of vapor/mist concentrations above recommended exposure levels produce dryness of the mouth and throat, are irritating to the eyes, mucous membranes and the upper respiratory tract (with coughing and sneezing), could be anaesthetic and may have other central nervous system effects (characterized by headache, drowsiness, dizziness, nausea, vomiting, increased reaction time, fatigue, loss of co-ordination, impaired judgement, lassitude, irritability, tingling in fingers and toes and in extreme cases coma), gastrointestinal disturbances (e.g. nausea, anorexia and flatulence), low blood pressure and rapid and irregular pulse as well as affecting the kidneys, liver, and the heart.

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

Inhalation hazard is increased at higher temperatures.

Toxic effects are increased by consumption of alcohol.

Repeated exposure may cause sensitization and/or allergic reactions.

Central nervous system (CNS) depression may be evident early.

Aspiration of liquid into lungs can cause serious (even fatal) pneumonitis.

Significant exposure to this chemical may adversely affect people with chronic disease of the respiratory system, skin and/or eyes.

Physical exercise may antagonize this effect.



2. HAZARDS IDENTIFICATION - continued

HEALTH EFFECTS - CHRONIC EXPOSURE

Chronic (long term) health effects can occur at some time after exposure to this product and can last for months or years. Principal routes of exposure are usually by skin contact/absorption and inhalation of vapour.

Symptoms of chronic exposure may include headaches, weakness, loss of appetite, burning eyes, stomach-ache, nausea, vomiting, sore throat, tiredness, insomnia, heart burn, intestinal pain, liver and kidney damage, colitis, dermatitis, poor memory and difficulty in concentration.

The vapors may cause smarting of the eyes and respiratory tract.

Inhalation of material may aggravate asthma and inflammatory or fibrotic pulmonary diseases.

This chemical has not been adequately evaluated to determine whether brain or other nerve damage could occur with repeated exposure.

However, many solvents and other petroleum based chemicals have been shown to cause such damage.

Effects may include reduced memory and concentration, personality changes (withdrawal, irritability), fatigue, sleep disturbances, reduced coordination, and/or effects on nerves supplying internal organs (autonomic nerves) and/or nerves to the arms and legs (weakness, "pins and needles").

n-Butanol can damage the hearing and sense of balance.

Chronic toluene habituation occurs following intentional abuse (glue sniffing) or from occupational exposure.

Ataxia, incoordination and tremors of the hands and feet (as a consequence of diffuse cerebral atrophy), headache, abnormal speech, transient memory loss, convulsions, coma, drowsiness, reduced colour perception, frank blindness, nystagmus (rapid, involuntary eye movements), decreased hearing leading to deafness and mild dementia have all been associated with chronic abuse.

Peripheral nerve damage, encephalopathy, giant axonopathy, electrolyte disturbances in the cerebrospinal fluid and abnormal computer tomographic (CT) scans are common amongst toluene addicts. although toluene abuse has been linked with kidney disease, this does not commonly appear in the cases of occupational toluene exposures. cardiac and haematological toxicity are however associated with chronic toluene exposure. cardiac arrhythmia, multifocal and premature ventricular contractions and tachycardia are present in 20% off patients who abused toluene-containing paints.

SKIN

Prolonged or repeated skin contact can cause irritation and may lead to de-fatting and dermatitis.

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

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

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 this product.



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3. COMPOSITION

<u>CHEMICAL ENTITY</u>	<u>CAS No.</u>	<u>ANNEX I INDEX No.</u>	<u>EINECS No.</u>	<u>PROPORTION (% w/w)</u>
Toluene	108-88-3	601-021-00-3	203-625-9	30 - 60
Denatured Ethanol	64-17-5	603-002-00-5	200-578-6	30 - 60
n-Butanol	71-36-3	603-004-00-6	200-751-6	10 - 30
			<u>TOTAL</u>	<u>100</u>

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

More detailed information available to medical staff in case of an emergency.

4. FIRST AID MEASURES

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

SWALLOWED

Harmful if swallowed.

If the victim is conscious and not convulsing, rinse mouth out with plenty of water and give 1 or 2 glasses of water to drink to dilute the chemical and **IMMEDIATELY** call a doctor or hospital or Poisons Information Centre.

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.

If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body.

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

EYE

IMMEDIATELY and continuously irrigate with copious quantities of fresh, low pressure water or normal saline solution for at least 15 minutes while simultaneously calling a hospital or Poisons Information Centre.

Eyelids should be held open.

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

Check the victim for contact lenses and remove if present.

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

Remove any contaminated clothing and gently flush area with water until irritation subsides.

Do **NOT** put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician.

IMMEDIATELY after flushing eyes transport the victim to a hospital even if no symptoms (such as redness or irritation) develop.

SKIN

IMMEDIATELY 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 **IMMEDIATELY** seek medical advice and be prepared to transport the victim to a hospital for treatment.

Launder contaminated clothing before re-use.

Allow contaminated footwear to dry thoroughly before re-using.

Discard internally contaminated gloves and footwear.

Can be absorbed through the skin with resultant toxic effects.

INHALED

If fumes or combustion products are inhaled -

Provide proper respiratory protection to rescuers entering an unknown atmosphere.

Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used.

If not available, use a level of protection greater than or equal to that advised under Respirator Recommendation.

IMMEDIATELY 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 rapid recovery does not occur, or if symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital.

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

Treat symptomatically.

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

Onset of symptoms may be delayed several hours after exposure.

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

Extreme care must be taken to prevent aspiration.

Material if aspirated into lungs may cause chemical pneumonitis.

Gastric lavage with a cuffed endotracheal tube to prevent further aspiration should be done.

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

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

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.

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 this product.

For example, employees with skin diseases may be unable to tolerate wearing protective clothing.

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

5. FIRE FIGHTING MEASURES**FOR LARGE SPILLS AND FIRES IMMEDIATELY CALL YOUR FIRE DEPARTMENT.****FIRE AND EXPLOSION HAZARD**

Material is stable under normal conditions of use.

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

Liquid and vapour are EXTREMELY flammable.

Leaks of gas or spills of liquid can readily form flammable/explosive mixtures at temperatures at or above flash point when exposed to flame or spark.

Burns very rapidly and explosively.

In the case of incomplete combustion may form toxic materials such as carbon monoxide (CO), carbon dioxide (CO₂), various hydrocarbons, fumes and smoke.

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

Do not store or mix with caustics, amines, alkanolamines, aldehydes, strong oxidants (such as chlorine, bromine and fluorine) and chlorinated compounds since violent reactions occur and may cause fire.

Vapour/leaks of gas or spills of liquid form readily flammable/explosive mixtures at temperatures at or above flash point.

Vapor/air mixtures may ignite explosively when exposed to flame or spark and flashback along the vapor trail may occur.

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

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

Decomposes on heating and produces toxic fumes of carbon monoxide (CO), carbon dioxide (CO₂).

FIRE FIGHTING PROCEDURES

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

Stop liquid at the source if safe to do so. Try to cover liquid spills with foam.

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

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

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.

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

Minimize breathing gases, vapour, fumes or decomposition products.

Firefighters must work from the windward side.

Minimize breathing gases, vapour, fumes or decomposition products.

Use supplied-air breathing equipment for enclosed areas.

Firefighters to wear self-contained breathing apparatus with a full face piece and operated in positive pressure mode and protective clothing if risk of exposure to vapour or products of combustion.

Persons who have inhaled combustion gases should lie down and keep still.

Call doctor **IMMEDIATELY**.

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

After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.

FIRE FIGHTING MEDIA

For small fires use water spray or fog in large quantities, foam, dry agent (carbon dioxide, dry chemical powder), sand or earth.

For large fires either allow fire to burn under controlled conditions or extinguish with alcohol stable foam (by manufacturer's recommended techniques), carbon dioxide (CO₂), dry chemical, or water fog.

Water spray may be ineffective, but should be used to keep fire-exposed containers cool.

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

Fire-men have to wear full protective clothing and self-contained breathing apparatus.

FIRE FIGHTING HAZARDS

Do **NOT** use water in a jet.

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

Carbon monoxide may be evolved if incomplete combustion occurs.

This material may produce a floating fire hazard and can be re-ignited on surface water.

The vapour is heavier than air, spreads along the ground and distant ignition is possible.

6. ACCIDENTAL RELEASE MEASURES

For LARGE spills and fires IMMEDIATELY call your fire department and tell them location and nature of hazard.

There should a written emergency plan developed for each workplace or work operation.

Pollutant - contain spillage.

Clean up spills **IMMEDIATELY**.

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.

Slippery when spilt.

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.

May be violently or explosively reactive.

Increase ventilation. Ventilate confined spaces. Open all windows and doors.

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

Tools made of plastic must NOT be used because of their tendency to produce static electricity.

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

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

Avoid breathing vapors and contact with skin and eyes.

Control personal contact by using protective equipment.

Advise authorities product has entered or may enter sewers, watercourses, low areas, or has contaminated soil or vegetation.

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

Take measures to minimize the effect on ground water.

MINOR SPILLS

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

Collect residues in suitable sealed, labelled, flammable waste containers and follow state or local authority regulations and guidelines for disposal of the waste.

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

MAJOR SPILLS

May be violently or explosively reactive.

Consider evacuation.

Warn occupants of down wind areas of fire and explosion hazard.

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 by any means available to prevent spreading and to prevent it entering sewers, drains or natural waterways.

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

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

Take measures to minimize the effect on ground water.

Pump (use explosion proof or hand pump) the liquid to a salvage tank for recycling or later disposal.

Dilute contained spill with water.

Absorb remaining material with suitable absorbent (sand, soil, fire retardant treated sawdust, vermiculite, diatomaceous earth & etc.).

Collect solid residues and seal in labelled, flammable waste containers for later disposal.

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.

Do not re-enter the contaminated area until the Safety Officer (or other responsible person) has verified that the area is safe.

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

Dispose of at an appropriate licensed waste disposal site or facility in accordance with current applicable laws and regulations and product characteristics at time of disposal.

7. HANDLING and STORAGE

STORAGE	TEMPERATURE	(° C)	: Ambient
TRANSPORT	TEMPERATURE	(° C)	: Ambient
LOADING/UNLOADING	TEMPERATURE	(° C)	: Ambient
STORAGE/TRANSPORT	PRESSURE	(kPa)	: Atmospheric
ELECTROSTATIC ACCUMULATION HAZARD			: Yes, use proper grounding procedure.
USUAL SHIPPING CONTAINERS			: Tanks, drums, cans.
MATERIALS AND COATINGS SUITABLE			: Carbon Steel, Stainless Steel.
MATERIALS AND COATINGS UNSUITABLE			: Natural Rubbers, Butyl Rubber, E P D M, Polystyrene, Polyethylene, Polypropylene, Polyvinyl chloride, Polyvinyl Alcohol, Polyacrylonitrile

HANDLING AND STORAGE, GENERAL NOTES

Observe manufacturer's storing and handling recommendations.

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

Explosion protection required.

Store in dry, upright, tightly closed, properly grounded original metal containers in an approved cool, banded, flame-proof area out of direct sunlight.

Many plastics are unsuitable as storage and handling materials

Aluminium containers should be avoided as aluminium alcoholates may be formed.

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

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

Avoid exposure to temperatures above 50 °C.

Use non-sparking tools and equipment especially when opening and closing containers of this product

Do not handle, store or open near an open flame, sources of heat or sources of ignition. No smoking, naked lights or heat.

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.

Handle containers with care. Protect containers against physical damage.

Open slowly in order to control possible pressure release.

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

Do not open or empty containers within the storage area.

Materials are stable on storage, but should be stored in a cool, dry, well ventilated place away from sources of ignition, amines, alkanolamines, aldehydes, strong oxidizing agents (liquid chlorine, concentrated oxygen, sodium hypochlorite), strong acids and alkalis, and chlorinated compounds since violent reactions may occur.

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

A flammable atmosphere can be produced in storage container headspaces even when stored at a temperature below the flashpoint.

Monitor and maintain headspace gas concentrations below flammable limits.

Exhaust ventilation necessary if product is sprayed.

Irritating to eyes, skin and mucous membranes.

Harmful in contact with or absorbed through the skin.

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

Intense smelling.

Keep away from, food, drink, animal feeding stuffs clothing and odor sensitive materials.

The product may be narcotic in high concentrations.

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.

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.

Using respirators or protective equipment is less effective than the controls mentioned above.

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.

In evaluating the controls present in your workplace, consider how hazardous the substance is, how much of the substance is released into the workplace and whether harmful skin or eye contact could occur.

Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

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

No smoking or open lights.

Use away from all ignition sources.

Keep containers closed when not in use.

Use in a well ventilated area sufficient to maintain airborne concentration levels below exposure standard .

General exhaust is adequate under normal operating conditions.

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

In confined areas where there is inadequate ventilation, or if risk of overexposure exists, wear SAA (supplied air type) respirator meeting the requirements of AS1715 & AS1716.

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

Correct fit is essential to ensure adequate protection.

Keep containers closed when not in use.

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.

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/second

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 oxidizing materials.

Prevent build up of flammable vapors.

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

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**

This Fact Sheet is a summary of potential and the most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

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.

The following exposure limits are guides to be used in the control of occupational health hazards and are for air levels only. They are not a measure of relative toxicity.

These TLV's should not be interpreted as the fine line between safe and dangerous conditions.

The listed 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 below.

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.

All contact with this chemical should be reduced to the lowest possible level.

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

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

Follow applicable regulations. (refer WORKSAFE Australia Exposure Standards)

No value has been assigned for this specific material by the ACGIH (Worksafe Australia).

Limits shown for guidance only. Follow applicable regulations (refer WORKSAFE Australia Exposure Standards).

Threshold Limit Value (TLV) as recommended by the National Occupational Health & Safety Commission (N.H.M.R.C.) (Worksafe Australia [1991]) for some of the components is :-

TOLUENE (108-88-3)

ES TWA	:	100 ppm (377 mg/m ³)
STEL	:	150 ppm (565 mg/m ³) as recommended by Worksafe Australia (1991) (UNDER REVIEW)
TLV TWA	:	50 ppm (188 mg/m ³) SKIN A4
Threshold Limit Value (TLV)	:	100 ppm (377 mg/m ³) as recommended by Worksafe Australia (1991) SKIN A4

IDLH Level : 2,000 ppm

Odour Threshold Value : 0.16 - 6.7 (detection), 1.9 - 69 (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.

Detector tubes for toluene measuring in excess of 5 ppm, are available.

High concentrations of toluene in the air produce depression of the central nervous system (CNS) in humans.

Intentional toluene exposure (glue sniffing) at maternally-intoxicating concentration has also produced birth defects.

Foetotoxicity appears at levels associated with CNS narcosis and probably occurs only in those with chronic toluene induced kidney failure.

Exposure at or below the recommended TLV-TWA is thought to prevent transient headache and irritation, to provide a measure of safety for possible disturbances to human reproduction, the prevention of reduction in cognitive responses reported amongst humans inhaling greater than 40 ppm, and the significant risks of hepatotoxic, behavioural and nervous system effects (including impaired reaction time and incoordination).

Although toluene/ethanol interactions are well recognised, the degree of protection afforded by the TLV-TWA among drinkers is not known.



8. EXPOSURE CONTROLS - continued

n-BUTANOL

TLV C / TLV-TWA	:	50 ppm (152 mg/m ³) CEILING / PEAK LIMITATION	Sk
		NOTICE OF INTENDED CHANGE	
TLV C	:	25 ppm (76 mg/m ³)	(skin)
ES Peak	:	50 ppm (150 mg/m ³)	(skin)
IDLH Level	:	8,000 ppm	
Odour Threshold Value	:	0.12 - 3.4 ppm (detection), 1.0 - 3.5 ppm (recognition)	

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

There is evidence to suggest that long-term repeated exposure to Butanol vapor concentrations > 50 ppm may result in some loss of hearing.

Evidence from animal tests is available to indicate that repeated or prolonged exposure to n-Butanol could result in liver and kidney damage.

NOTE : Detector tubes for n-Butanol, measuring in excess of 5 ppm are commercially available.

Exposure at or below the recommended TLV-TWA is thought to provide protection against hearing loss due to vestibular and auditory nerve damage in younger workers and to protect against the significant risk of headache and irritation.

ETHANOL

TLV-TWA : 1,000 ppm (1880 mg/m³) A4 (Proposed)

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

Odour Threshold Value : 49 - 716 ppm (detection), 101 ppm (recognition)

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



8. EXPOSURE CONTROLS - continued

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.

TLV-TWA (Threshold Limit Value – Time Weighted Average) 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 270 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 vapor and liquid may be absorbed through intact skin.

Absorption by skin may readily exceed vapor 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.

IDLH - Immediate Danger to Life and Health.

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.

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.

Avoid contact with the skin and eyes, and avoid breathing vapors or mists.

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

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.

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

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 carefully before breaks, eating, drinking, smoking, using the toilet 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.

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

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

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****EYES**

Eyes should be protected by chemical splash goggles, safety glasses fitted with side shields or full face shield unless full facepiece respiratory protection is worn.

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.

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.

Use hydrocarbon vapor canister or supplied-air respiratory protection in confined or enclosed spaces.

Respiratory protection required in insufficiently ventilated working areas and during spraying where airborne concentration exceeds TLV.

IMPROPER USE OF RESPIRATORS IS DANGEROUS.

An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.

If vapor causes eye irritation or if an inhalation risk exists an air supplied breathing apparatus (meeting the requirements of AS1715 and AS1716) 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.

If the possibility of exposures above TLV requirements exists, use an approved self-contained breathing apparatus (meeting the requirements of AS1715 and AS1716) with a full facepiece operated in continuous flow or other positive pressure mode.

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.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE		: Low viscosity, clear, water white, highly flammable liquid. Mixes with many organic solvents.	
ODOUR		: Strong alcoholic odour.	
pH VALUE		: Not applicable	
VAPOR PRESSURE	(kPa @ 20°C)	: 5.81	(Ethanol)
VAPOR PRESSURE	(kPa @ 38°C)	: 7.3	(Toluene)
BOILING POINT	(°C)	: 78.3	(Ethanol)
FREEZING POINT	(°C)	: Not Available	
RELATIVE VAPOR DENSITY	(@ 15°C)	: 3.14	(Air = 1) (Toluene)
SOLUBILITY IN WATER	(% by weight)	: > 45 %	(Appreciable)
SPECIFIC GRAVITY	(@ 15°C)	: 0.820 ± 0.005 g/cm ³	(Water =1)
FLASH POINT	(°C)	: 5.0 - 7.0	(Tag Closed Cup) (Toluene)
FLAMMABILITY LIMITS	(% Volume)	: 1.4 LEL / 15.0 UEL	
AUTOIGNITION TEMPERATURE	(°C)	: 355 - 365	(Butanol)
VOC CONTENT		: 820 ± 1.0 gm / Litre	
EVAPORATION RATE		: 2.31 - 2.40	(Butyl Acetate =1) (Toluene)
% VOLATILES	(by volume)	: 100.0	
IS MATERIAL HYGROSCOPIC ?		: Yes	
OTHER PROPERTIES		: Can readily form flammable mixture. Contact with strong oxidizers may cause fire and explosion. Aluminium containers should be avoided as aluminium alcoholates may be formed.	

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

Hazardous Polymerisation : Will not occur.

Conditions To Avoid Polymerization : Not Applicable

Hazardous Reactions : None known

Stability (Thermal, Light, etc.) : Stable

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 strong alkalis, alkali metals, mineral acids, halogens, strong oxidizers (liquid chlorine, concentrated oxygen, sodium hypochlorite, peroxides, perchloric acid, chromium trioxide, chlorates, perchlorates, nitrates & permanganates), silver salts, acid chlorides, metal hydrides, hydrazine, amines, rubber, polyethylene, PVC and most tank linings.

Avoid prolonged contact with natural, butyl or nitrile rubbers

Aluminium containers should be avoided as aluminium alcoholates may be formed.

Hazardous.

Hazardous composition products : No unusual.

Hazardous decomposition products : No hazardous decomposition products when stored and handled correctly.
Carbon monoxide, carbon dioxide, fumes and smoke in the case of incomplete combustion.

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

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

High vapor concentrations are irritating to the respiratory tract may cause nausea, vomiting, headache, dizziness anaesthetic and may have other central nervous system effects.

Do NOT induce vomiting if swallowed

TOLUENE

Oral	LD ₅₀	(rat)	:	636 mg/kg
Dermal	LD ₅₀	(rabbit)	:	14,100 µL/kg
Intraperitoneal	LD ₅₀	(rat)	:	1,332 mg/kg
Intraperitoneal	LD ₅₀	(mouse)	:	59 mg/kg
Inhalation	LC ₅₀	(mouse)	:	5,320 ppm/8H / 440 ppm/24H / 30,000 mg/m ³ /2H / 19,900 mg/m ³ /7H
Inhalation	LC ₅₀	(rat)	:	49 gm/m ³ /4H
Inhalation	LC ₅₀	(mammal)	:	30 gm/m ³
Oral	LDLO	(human)	:	50 mg/kg
Inhalation Lowest Toxic Concentration		(human)	:	200 ppm (CNS recording changes, hallucinations)
Inhalation	LCLO	(rabbit)	:	5,500 ppm / 40 minutes
Skin Irritation		(rabbit)	:	435 mg - May cause slight irritation on prolonged or repeated contact.
Eye Irritation		(rabbit)	:	870 µg - Draize test - May cause slight irritation. 2 mg/24H - Draize test - Severe
Eye Irritation		(human)	:	300 ppm

GENETIC TOXICOLOGY (SUMMARY) : Negative in a series of assays on similar substances.

NEUROTOXICOLOGY (SUMMARY) :

Inhalation studies with toluene (1,500 ppm), 6 hours/day, 5 days /week for 6 months in rats showed no neurotoxicity.

CHRONIC TOXICOLOGY (SUMMARY) : Chronic exposure to high concentrations of BENZENE have been associated with blood abnormalities and leukaemia in a small percentage of exposed workers.

No evidence of skin carcinogenic activity in laboratory tests with Toluene.

2 -year inhalation toxicity (rats) : 300 ppm resulted in tissue changes.

US-NTP bioassay for TOLUENE - negative

REPRODUCTIVE TOXICOLOGY (SUMMARY) : No adverse effects observed in developing embryos when pregnant rats were exposed to 400 ppm of similar materials.

BIOLOGICAL EXPOSURE INDEX - BEI - TOLUENE

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

Determinant	Index	Sampling Time	Comment	Reference
1. Hippuric acid in urine	1.6 gm/gm creatinine	End of shift Last 4 hrs. of shift	B, NS	ACGIH (2003)
1. o-Cresol in urine	0.5 mg/L	End of shift		ACGIH (2003)
3. Toluene in venous blood	1 mg/L	End of shift	SQ	
4. Toluene in end-exhaled air		End of shift	SQ	

NS : Non-specific determinant; also observed after exposure to other material.

SQ : Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

B : Background levels occur in specimens collected from subjects NOT exposed.

11. TOXICOLOGICAL INFORMATION - continued**TOXICITY - continued****BUTANOL**

Oral	LD ₅₀	Range	(rat)	:	790 - 2,500 mg / kg
Oral	LD ₅₀	Range	(mouse)	:	1,200 - 2,680 mg / kg
Oral	LD ₅₀		(rabbit)	:	3,400 mg / kg
Inter-peritoneal	LD ₅₀	Range	(rat)	:	200 - 1,122 mg / kg
Inter-peritoneal	LD ₅₀		(mouse)	:	254 mg / kg
Intravenous	LD ₅₀		(rat)	:	310 mg / kg
Intravenous	LD ₅₀		(mouse)	:	377 mg / kg
Subcutaneous	LD ₅₀		(mouse)	:	3,200 mg / kg
Inhalation	LC ₅₀		(rat)	:	8,000 ppm / 4 hour
Inhalation	LC ₅₀		(mouse)	:	28,400 mg / m ³
Inhalation	LC ₅₀		(mammal)	:	3,360 ppm / 4 hour
Dermal	LD ₅₀	Range	(rabbit)	:	3,400 - 5,300 mg / kg
Skin			(rabbit)	:	20 - 500 mg / 24 hour - caused moderate irritation
Eye			(rabbit)	:	0.005 ml instilled in eye - caused severe irritation
Eye			(human)	:	50 ppm - IRRITATION

SWALLOWED : Harmful if swallowed, may cause gastric irritation and narcosis.
OTHER : Material may be harmful by skin absorption.

Injury to auditory systems from inhaling vapors has been reported.

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

CHRONIC TOXICOLOGY (SUMMARY) - Prolonged, repeated skin contact with low viscosity materials may De-fat the skin resulting in possible irritation and dermatitis.

ETHYL ALCOHOL

Oral	LD ₅₀	(rat)	:	7,060 mg / kg
Oral	LD ₅₀	(mouse)	:	3,450 mg / kg
Oral	LD ₅₀	(rabbit)	:	6,300 mg / kg
Oral	LD ₅₀	(human)	:	1,400 mg / kg
Inhalation	LC ₅₀	(rat)	:	20,000 ppm / 10 hour
Inhalation	LC ₅₀	(mouse)	:	39,000 ppm / 4 hour
Eye Irritation		(rabbit)	:	500 mg / 24 hour - Severe Irritant
Oral	LDLO	(child)	:	2,000 mg / kg (Lowest published Lethal Dose)

Investigated as a tumorigen, mutagen, reproductive effector.

Reproductive Toxicity : Ethanol has been linked to birth defects in humans.

Carcinogenicity : Ethanol has been linked to cancer in humans.

Chronic alcohol ingestion is associated with liver cancer.

Most industrial ethanol contains denaturants that render it undesirable to drink.

Toxicology : Causes skin and eye irritation. Ingestion can cause nausea, vomiting and inebriation; chronic use can cause serious liver damage.

Note that "absolute" alcohol, which is close to 100% ethanol, may nevertheless contain traces of 2-propanol, together with methanol or benzene.

The latter two are very toxic, while "denatured" alcohol has substances added to it which make it unpleasant and possibly hazardous to consume. Typical OEL 1,000 mg/m³.

SPECIAL PROPERTIES / EFFECTS

Over-exposure, especially during spraying operations 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 concentrations including concentrations below the TWA-limit.

12. ECOLOGICAL INFORMATION

Do not allow to escape into waters, waste water or soil.

This chemical is a colorless, flammable liquid with a strong lacquer odor.

It may enter the environment from industrial or municipal waste treatment plant discharges or spills.

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 is expected to have slight acute toxicity to aquatic life.

No data are available on the short-term effects of this product on plants, 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 is expected to have a slight chronic toxicity to aquatic life.

No data are available on the long-term effects of this product on plants, birds, or land animals.

DISTRIBUTION AND PERSISTENCE IN THE ENVIRONMENT

This chemical is slightly persistent in water, with a half-life of between 2 to 20 days.

The half-life of a pollutant is the amount of time it takes for one-half of the chemical to be degraded.

Abiotic Effects

No information on abiotic effects of this product.

According to the definition provided in the Federal Register (1992), this product is a volatile organic compound (VOC) substance.

As a VOC, this product can contribute to the formation of photochemical smog in the presence of other VOCs.

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 slightly higher than the average concentration than the water from which the fish was taken.



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Date of Issue: 17/02/13

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13. DISPOSAL CONSIDERATIONS

Recycle product where possible.

Recycle containers where possible, or dispose of in an authorised landfill.

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

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.

Advise of flammable/chemical nature.

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

This product is ashless and can be burned directly in appropriate equipment by an approved agent provided local regulations are observed.

Do NOT reuse empty containers without commercial cleaning or reconditioning.

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.

PROPER SHIPPING NAME	: Paint Related Material, Thinners, LFP		
UN NUMBER	: 1263	PACKAGING GROUP	: II
HAZCHEM CODE	: •3YE	SUBSIDIARY RISK	: NOT ASSIGNED
POISONS	: S5	EPG	: 3A1
EMS No.	: F-E, S-D		
CLASS	: 3.1 (Flammable Liquid)	AS 1940 Class	: PG II
IMO HAZARD CLASS	: INFLAMMABLE LIQUID/3.3	ADG CLASS	: 3
ICAO / IATA CLASS	: 3		
PASSENGER PACKING INSTRUCTION	: 3	PASSENGER MAX. QUANTITY / PACK	: 5L / 1L
CARGO MAX. QUANTITY	: 60L		
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	: Closed head drums, pails, cans.		
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 / Aluminium containers should be avoided as aluminium alcoholates may be formed.		

Class 3 flammable liquids shall NOT be loaded in the same vehicle or packed in the same freight containers 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.

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 (S5) and must be stored, maintained and used in accordance with the relevant regulations.

15. REGULATORY INFORMATION**Hazardous according to the criteria of Worksafe Australia****CLASSIFICATION AND LABELLING ACCORDING TO NOHSC CODES**

CLASSIFICATION / SYMBOL : HIGHLY FLAMMABLE / F
CLASSIFICATION / SYMBOL : HARMFUL / X_n - IRRITANT / Xi
CLASSIFICATION / SYMBOL : TOXIC / T
CLASSIFICATION / SYMBOL : DANGEROUS FOR THE ENVIRONMENT / N
CLASSIFICATION : Dangerous Goods according to the Australian Dangerous Goods Code
GOVERNING DIRECTIVE : National Code of practice for the Labelling of Hazardous Substances.
LABEL NAME : Paint related material, Thinners, LFP

Leaks of gas or spills of liquid can readily form flammable mixtures at temperatures at or above flash point.
Product can accumulate static charges which can cause an incendiary electrical discharge.
Electrostatic charges may be generated during pumping.
Electrostatic discharge may cause fire.
In use, may form flammable/explosive vapour-air mixture.

HEALTH HAZARDS

Vapors may cause drowsiness and dizziness.
May cause moderate irritation to skin.
Repeated exposure may cause skin dryness or cracking.
Harmful: may cause lung damage if swallowed.
Possibility of organ or organ system damage from prolonged exposure (Central nervous system (CNS)).
Risk of injury is dependent on the duration and level of exposure.
The risk of lung disease is increased if smoking is combined with use of this product.

RISK PHRASES

R11 Highly flammable.
R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R36/37/38 Irritating to eyes, skin and respiratory system.
R42/43 May cause sensitization by inhalation and skin contact.
R48/20 Harmful : danger of serious damage to health by prolonged exposure through inhalation.
R51/53 Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.
R63 Possible risk of harm to the unborn child.
R65 Harmful : may cause lung damage if swallowed
R66 Repeated exposure may cause skin dryness or cracking
R67 Vapors may cause drowsiness an dizziness

SAFETY ADVICE

S2 Keep out of 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.
S22/23 Do not breathe dust/gas/fumes/vapour/spray
S24/25 Avoid contact with skin and eyes.
S29 Do not empty into drains.
S33 Take precautionary measures against static discharges.
S36/37/38/39 Wear suitable protective clothing, gloves, eye/face protection, respiratory equipment.
S43B In case of fire use sand, earth, chemical powder or alcohol type foam
S46 If swallowed, seek medical advice immediately and show this container or label.
S51 Use only in well ventilated areas.
S61 Avoid release to the environment. Refer to special instructions / Safety data sheets
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label

16. OTHER INFORMATION**LD₅₀** (Lethal Dose, 50 %)

LD₅₀ is the amount of a material, given all at once, which causes the death of 50 % (one half) of a group of test animals.

The LD₅₀ is one way to measure the short-term poisoning potential (acute toxicity) of a material.

The LD₅₀ can be found for any route of entry or administration but dermal (applied to the skin) and oral (given by mouth) administration methods are the most common.

LC₅₀ (Lethal Concentration, 50 %)

LC values usually refer to the concentration of a chemical in air but in environmental studies it can also mean the concentration of a chemical in water.

For inhalation experiments, the concentration of the chemical in air that kills 50 % of the test animals in a given time (usually four hours) is the LC₅₀ value.

EC₅₀ (half maximal effective concentration)

refers to the concentration of a drug, antibody or toxicant which induces a response halfway between the baseline and maximum after some specified exposure time. It is commonly used as a measure of drug's potency.

IC₅₀ (half maximal inhibitory concentration)

is a measure of the effectiveness of a compound in inhibiting biological or biochemical function.

This quantitative measure indicates how much of a particular drug or other substance (inhibitor) is needed to inhibit a given biological process (or component of a process, i.e. an enzyme, cell, cell receptor or micro-organism) by half.

TL_M (Median Tolerance Limit)

the concentration of toxicant or substance at which 50% of the test organisms survive over the test period.

log Pow / log P(o/w)

in chemistry and the pharmaceutical sciences, a partition- (P) or distribution coefficient (D) is the ratio of concentrations of a compound in the two phases of a mixture of two immiscible solvents at equilibrium. Hence these coefficients are a measure of differential solubility of the compound between these two solvents. The phrase "Partition Coefficient" is now considered obsolete by IUPAC, and the appropriate alternative ("partition constant", "partition ratio" or "distribution ratio") should be used as appropriate. Normally one of the solvents chosen is water while the second is hydrophobic such as octanol. Hence both the partition and distribution coefficient are measures of how hydrophilic ("water loving") or hydrophobic ("water fearing") a chemical substance is. A partition coefficient can also be used when one or both solvents is a solid though.

THEORETICAL OXYGEN DEMAND (ThOD)

is the calculated amount of oxygen required to oxidize a compound to its final oxidation products.

or

the amount of oxygen that theoretically can be consumed if the test substance is completely oxidized by micro-organisms.

Calculated from the test substance's chemical structure; units mg O₂ per mg of test substance.

CHEMICAL OXYGEN DEMAND (COD) test is commonly used to indirectly measure the amount of organic compounds in water. Most applications of COD determine the amount of organic pollutants found in surface water (e.g. lakes and rivers), making COD a useful measure of water quality.

It is expressed in milligrams per litre (mg/L), which indicates the mass of oxygen consumed per litre of solution.

Older references may express the units as parts per million (ppm).

BIOCHEMICAL OXYGEN DEMAND (BOD) is a chemical procedure for determining the amount of dissolved oxygen needed by aerobic biological organisms in a body of water to break down organic material present in a given water sample at certain temperature over a specific time period.

It is not a precise quantitative test, although it is widely used as an indication of the organic quality of water.

It is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C and is often used as a robust surrogate of the degree of organic pollution of water.

BOD can be used as a gauge of the effectiveness of wastewater treatment plants.



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16. OTHER INFORMATION - continued

PRINCIPAL REFERENCES

DATE OF LAST REVISION : 17/02/13

Supplier's Material Safety Data Sheet

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

All components in this product are listed on the Australian Inventory of Chemical Substances (AICS).

END OF MSDS