

**DY-MARK SPRAY & MARK AEROSOL LEAD FREE COLOURS**Chemwatch Material Safety Data Sheet  
Issue Date: 22-Aug-2006

Revision No: 2

**Hazard Alert Code:  
EXTREME**Chemwatch 43757  
CD 2007/1**Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME:** DY-MARK SPRAY & MARK AEROSOL LEAD FREE COLOURS**SYNONYMS**

"spray paint"

**PROPER SHIPPING NAME**

AEROSOLS






**PRODUCT USE**

Application is by spray atomisation from a hand held aerosol pack. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation. The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing. Before starting consider control of exposure by mechanical ventilation. Application is by spray atomisation from a hand held aerosol pack. Aerosol spray paint.

**SUPPLIER**

Company: Dy-Mark Pty Ltd  
Address:  
89 Formation Street  
Wacol  
QLD, 4076  
AUS  
Telephone: +61 7 3271 2222  
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**HAZARD RATINGS**

	Min	Max	
Flammability:	4		
Toxicity:	2		
Body Contact:	2		
Reactivity:	1		
Chronic:	3		

Min/Nil=0  
Low=1  
Moderate=2  
High=3  
Extreme=4

**Section 2 - HAZARDS IDENTIFICATION****STATEMENT OF HAZARDOUS NATURE****HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.****POISONS SCHEDULE**

None

<b>RISK</b>	<b>SAFETY</b>
Extremely flammable.	Keep locked up.
Harmful if swallowed.	Keep container in a well ventilated place.
Irritating to eyes and skin.	Avoid exposure - obtain special instructions before use.
Limited evidence of a carcinogenic effect.	To clean the floor and all objects contaminated by this material, use water and detergent.
Risk of explosion if heated under confinement.	Keep container tightly closed.
Harmful: danger of serious damage to health by prolonged exposure through inhalation.	This material and its container must be disposed of in a safe way.
May cause harm to the unborn child.	Keep away from food, drink and animal feeding stuffs.
Vapours may cause drowsiness and dizziness.	Take off immediately all contaminated clothing.
Inhalation and/or skin contact may produce health damage*.	In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
Cumulative effects may result following exposure*.	This material and its container must be disposed of as hazardous waste.
May produce discomfort of the respiratory system*.	
May possibly affect fertility*.	

\* (limited evidence).

**Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

NAME	CAS RN	%
toluene	108-88-3	10-30
propylene glycol monomethyl ether	107-98-2	1-10
methyl methacrylate/ n-BMA/ MAA copolymer	28262-63-7	1-10
xylene	1330-20-7	1-10
acetone	67-64-1	1-10

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dimethyl ether	115-10-6	10-30
hydrocarbon propellant	68476-85-7.	10-30

**Section 4 - FIRST AID MEASURES****SWALLOWED**

Not considered a normal route of entry. If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. Avoid giving milk or oils. Avoid giving alcohol.

**EYE**

If aerosols come in contact with the eyes:

- Immediately hold the eyelids apart and flush the eye continuously for at least 15 minutes with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

**SKIN**

If solids or aerosol mists are deposited upon the skin:

- Flush skin and hair with running water (and soap if available).
- Remove any adhering solids with industrial skin cleansing cream.
- DO NOT use solvents.
- Seek medical attention in the event of irritation.

**INHALED**

If aerosols, fumes or combustion products are inhaled:

- Remove to fresh air.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor.

**NOTES TO PHYSICIAN**

Treat symptomatically.  
for lower alkyl ethers:

**BASIC TREATMENT**

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- A low-stimulus environment must be maintained.
- Monitor and treat, where necessary, for shock.
- Anticipate and treat, where necessary, for seizures.
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.

**ADVANCED TREATMENT**

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension without signs of hypovolaemia may require vasopressors.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

**EMERGENCY DEPARTMENT**

- Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime. Other useful analyses include anion and osmolar gaps, arterial blood gases (ABGs), chest radiographs and electrocardiograph.
- Ethers may produce anion gap acidosis. Hyperventilation and bicarbonate therapy might be indicated.
- Haemodialysis might be considered in patients with impaired renal function.

BRONSTEIN, A.C. and CURRANCE, P.L.  
EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994.

Following acute or short term repeated exposures to toluene:

- Toluene is absorbed across the alveolar barrier, the blood/air mixture being 11.2/15.6 (at 37 degrees C.) The concentration of toluene, in expired breath, is of the order of 18 ppm following sustained exposure to 100 ppm. The tissue/blood proportion is 1/3 except in adipose where the proportion is 8/10.
- Metabolism by microsomal mono-oxygenation, results in the production of hippuric acid. This may be detected in the urine in amounts between 0.5 and 2.5 g/24 hr which represents, on average 0.8 gm/gm of creatinine. The biological half-life of hippuric acid is in the order of 1-2 hours.

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- Primary threat to life from ingestion and/or inhalation is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (eg cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases ( $pO_2 < 50$  mm Hg or  $pCO_2 > 50$  mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial damage has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenaline) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- Lavage is indicated in patients who require decontamination; ensure use.

**BIOLOGICAL EXPOSURE INDEX - BEI**

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

Determinant	Index	Sampling Time	Comments
o-Cresol in urine	0.5 mg/L	End of shift	B
Hippuric acid in urine	1.6 g/g creatinine	End of shift	B, NS
Toluene in blood	0.05 mg/L	Prior to last shift of workweek	

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

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

**Section 5 - FIRE FIGHTING MEASURES****EXTINGUISHING MEDIA****SMALL FIRE:**

- Water spray, dry chemical or CO<sub>2</sub>

**LARGE FIRE:**

- Water spray or fog.

**FIRE FIGHTING**

- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- If safe, switch off electrical equipment until vapour fire hazard removed.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

**FIRE/EXPLOSION HAZARD**

- Liquid and vapour are highly flammable.
- Severe fire hazard when exposed to heat or flame.
- Vapour forms an explosive mixture with air.
- Severe explosion hazard, in the form of vapour, when exposed to flame or spark.
- Vapour may travel a considerable distance to source of ignition.
- Heating may cause expansion or decomposition with violent container rupture.
- Aerosol cans may explode on exposure to naked flames.
- Rupturing containers may rocket and scatter burning materials.
- Hazards may not be restricted to pressure effects.
- May emit acrid, poisonous or corrosive fumes.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), aldehydes, other pyrolysis products typical of burning organic material.

Contains low boiling substance: Closed containers may rupture due to pressure buildup under fire conditions.

**FIRE INCOMPATIBILITY**

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

**HAZCHEM**

2Y

**Personal Protective Equipment**

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

**Section 6 - ACCIDENTAL RELEASE MEASURES****EMERGENCY PROCEDURES****MINOR SPILLS**

- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.

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- Wear protective clothing, impervious gloves and safety glasses.
- Shut off all possible sources of ignition and increase ventilation.
- Wipe up.
- If safe, damaged cans should be placed in a container outdoors, away from all ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.

**MAJOR SPILLS**

Chemical Class: aromatic hydrocarbons

For release onto land: recommended sorbents listed in order of priority.

SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS
<b>LAND SPILL - SMALL</b>				
Feathers - pillow	1	throw	pitchfork	DGC, RT
cross-linked polymer - particulate	2	shovel	shovel	R,W,SS
cross-linked polymer-pillow	2	throw	pitchfork	R, DGC, RT
sorbent clay - particulate	3	shovel	shovel	R, I, P,
treated clay/ treated natural organic - particulate	3	shovel	shovel	R, I
wood fibre - pillow	4	throw	pitchfork	R, P, DGC, RT
<b>LAND SPILL - MEDIUM</b>				
cross-linked polymer - particulate	1	blower	skiloader	R, W, SS
treated clay/ treated natural organic - particulate	2	blower	skiloader	R, I
sorbent clay - particulate	3	blower	skiloader	R, I, P
polypropylene - particulate	3	blower	skiloader	W, SS, DGC
feathers - pillow	3	throw	skiloader	DGC, RT
expanded mineral - particulate	4	blower	skiloader	R, I, W, P, DGC

**Legend**

DGC: Not effective where ground cover is dense

R; Not reusable

I: Not incinerable

P: Effectiveness reduced when rainy

RT: Not effective where terrain is rugged

SS: Not for use within environmentally sensitive sites

W: Effectiveness reduced when windy

Reference: Sorbents for Liquid Hazardous Substance Cleanup and Control;

R.W Melvold et al: Pollution Technology Review No. 150: Noyes Data Corporation 1988.

- Remove leaking cylinders to a safe place.
- Fit vent pipes. Release pressure under safe, controlled conditions
- Burn issuing gas at vent pipes.

DO NOT exert excessive pressure on valve; DO NOT attempt to operate damaged valve.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water courses
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Absorb or cover spill with sand, earth, inert materials or vermiculite.
- If safe, damaged cans should be placed in a container outdoors, away from ignition sources, until pressure has dissipated.
- Undamaged cans should be gathered and stowed safely.
- Collect residues and seal in labelled drums for disposal.

**PROTECTIVE ACTIONS FOR SPILL**

From IERG (Canada/Australia)

Isolation Distance -

Downwind Protection Distance 8 metres

IERG Number

49

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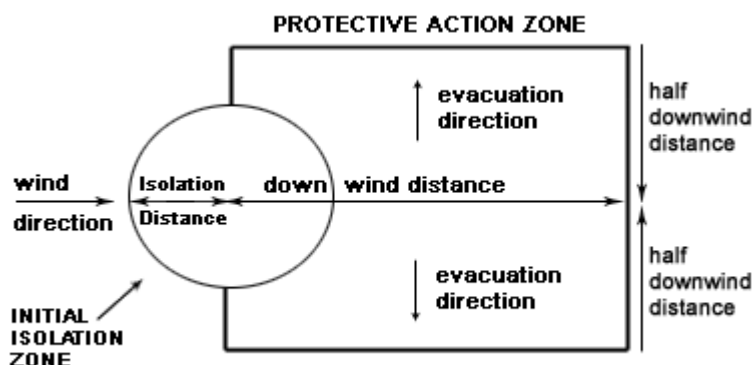
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**FOOTNOTES**

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.

2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.

3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills". LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.

5 Guide 126 is taken from the US DOT emergency response guide book.

6 IERG information is derived from CANUTEC - Transport Canada.

**EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)**

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:

toluene	1000 ppm
propylene glycol monomethyl ether	750 ppm
xylene	900 ppm
acetone	8500 ppm
dimethyl ether	60000 ppm
hydrocarbon propellant	2000 ppm

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:

toluene	300 ppm
propylene glycol monomethyl ether	300 ppm
xylene	200 ppm
acetone	8500 ppm
dimethyl ether	50000 ppm
hydrocarbon propellant	2000 ppm

other than mild, transient adverse effects without perceiving a clearly defined odour is:

toluene	50 ppm
propylene glycol monomethyl ether	150 ppm
xylene	150 ppm
acetone	1000 ppm
dimethyl ether	3000 ppm
hydrocarbon propellant	2000 ppm

The threshold concentration below which most people will experience no appreciable risk of health effects:

toluene	50 ppm
propylene glycol monomethyl ether	100 ppm
xylene	100 ppm
acetone	1000 ppm
dimethyl ether	1000 ppm
hydrocarbon propellant	1000 ppm

American Industrial Hygiene Association (AIHA)

Ingredients considered exceed the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Toxic (T)	>= 3.0%

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R51                     $\geq 2.5\%$             Corrosive (C)             $\geq 5.0\%$   
 else                     $\geq 10\%$

where percentage is percentage of ingredient found in the mixture

**SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS***X: Must not be stored together**O: May be stored together with specific preventions**+: May be stored together***Personal Protective Equipment advice is contained in Section 8 of the MSDS.****Section 7 - HANDLING AND STORAGE****PROCEDURE FOR HANDLING**

DO NOT allow clothing wet with material to stay in contact with skin.

Atmospheres must be tested and O.K. before work resumes after leakage.

Obtain a work permit before attempting any repairs. Do not attempt repair work on lines, vessels under pressure.

Avoid generation of static electricity. Earth all lines and equipment.

DO NOT transfer gas from one cylinder to another.

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- Avoid smoking, naked lights or ignition sources.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- DO NOT incinerate or puncture aerosol cans.
- DO NOT spray directly on humans, exposed food or food utensils.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

**SUITABLE CONTAINER**

- Aerosol dispenser.
- Check that containers are clearly labelled.

**STORAGE INCOMPATIBILITY**

Ethers may react violently with strong oxidising agents and acids.

The tendency of many ethers to form explosive peroxides is well documented. Ethers lacking non-methyl hydrogen atoms adjacent to the ether link are thought to be relatively safe. When solvents have been freed from peroxides (by percolation through a column of activated alumina for example), the absorbed peroxides must promptly be desorbed by treatment with the polar solvents methanol or water, which should be discarded safely.

Avoid reaction with oxidising agents.

**STORAGE REQUIREMENTS**

Keep dry to avoid corrosion of cans. Corrosion may result in container perforation and internal pressure may eject contents of can.

- Store in original containers in approved flammable liquid storage area.
- DO NOT store in pits, depressions, basements or areas where vapours may be trapped.
- No smoking, naked lights, heat or ignition sources.
- Keep containers securely sealed. Contents under pressure.
- Store away from incompatible materials.
- Store in a cool, dry, well ventilated area.
- Avoid storage at temperatures higher than 40 deg C.
- Store in an upright position.
- Protect containers against physical damage.
- Check regularly for spills and leaks.
- Observe manufacturer's storing and handling recommendations.

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION****EXPOSURE CONTROLS**

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC
Australia Exposure								



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Standards	toluene (Toluene)	50	191	150	574			
Australia Exposure Standards	propylene glycol monomethyl ether (Propylene glycol monomethyl ether)	100	369	150	553			
Australia Exposure Standards	methyl methacrylate/ n-BMA/ MAA copolymer (Inspirable dust (Not specified))		10					
Australia Exposure Standards	xylene (Xylene (o-, m-, p- isomers))	80	350	150	655			
Australia Exposure Standards	acetone (Acetone)	500	1185	1000	2375			
Australia Exposure Standards	dimethyl ether (Dimethyl ether)	400	760	500	950			
Australia Exposure Standards	hydrocarbon propellant (LPG (liquified petroleum gas))	1,000	1,800					

**EMERGENCY EXPOSURE LIMITS**

Material	Revised IDLH Value (mg/m3)	Revised IDLH Value (ppm)
toluene		500
xylene		900
acetone		2,500 [LEL]
hydrocarbon propellant		2,000 [LEL]

**NOTES**

Values marked LEL indicate that the IDLH was based on 10% of the lower explosive limit for safety considerations even though the relevant toxicological data indicated that irreversible health effects or impairment of escape existed only at higher concentrations.

**MATERIAL DATA**

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal non-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

**INGREDIENT DATA****TOLUENE:****XYLENE:**

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.

**TOLUENE:**

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

NOTE: Detector tubes 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 reductions 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.

**PROPYLENE GLYCOL MONOMETHYL ETHER:**

Odour Threshold: 10 ppm.

The TLV-TWA is protective against discomfort caused by odour, against eye and skin irritation, and chronic effects (including possible liver and kidney damage).

Individuals exposed to 100 ppm reported a transient unpleasant odour with slight eye irritation after about 1 or 2 hours. At 300 ppm, mild irritation of the eyes and nose developed within 5 minutes; some individuals found the irritation hardly bearable after about an hour. A concentration of 750 ppm was highly irritating. Signs of central nervous system depression developed at 1000 ppm. Neurological, clinical chemical

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and general medical examinations showed no other conspicuous toxicity. Concentrations of the beta-isomer, 2-methoxy-1-propyl acetate are low in commercial grades of PGME and teratogenic effects associated with this isomer are expected to be absent.

**XYLENE:**

IDLH Level: 900 ppm

Odour Threshold Value: 20 ppm (detection), 40 ppm (recognition)

NOTE: 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. Exposure to doses sufficiently high to produce intoxication and unconsciousness also produces transient liver and kidney toxicity. Neurologic 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.

**ACETONE:**

Odour Threshold Value: 3.6 ppm (detection), 699 ppm (recognition)

Saturation vapour concentration: 237000 ppm @ 20 C

NOTE: Detector tubes measuring in excess of 40 ppm, are available.

Exposure at or below the recommended TLV-TWA is thought to protect the worker against mild irritation associated with brief exposures and the bioaccumulation, chronic irritation of the respiratory tract and headaches associated with long-term acetone exposures. The NIOSH REL-TWA is substantially lower and has taken into account slight irritation experienced by volunteer subjects at 300 ppm. Mild irritation to acclimatised workers begins at about 750 ppm - unacclimatised subjects will experience irritation at about 350-500 ppm but acclimatisation can occur rapidly. Disagreement between the peak bodies is based largely on the view by ACGIH that widespread use of acetone, without evidence of significant adverse health effects at higher concentrations, allows acceptance of a higher limit.

Half-life of acetone in blood is 3 hours which means that no adjustment for shift-length has to be made with reference to the standard 8 hour/day, 40 hours per week because body clearance occurs within any shift with low potential for accumulation.

A STEL has been established to prevent excursions of acetone vapours that could cause depression of the central nervous system.

**DIMETHYL ETHER:**

The no-effect-level for dimethyl ether is somewhere between 2000 ppm (rabbits) and 50,000 ppm (humans) with possible cardiac sensitisation occurring around 200,000 ppm (dogs). The AIHA has adopted a safety factor of 100 in respect to the 50,000 ppm level in its recommendation for a workplace environmental exposure level (WEEL) which is thought to protect against both narcotic and sensitising effects. This level is consistent with the TLV-TWA of 400 ppm for diethyl ether and should be easily achievable using current technologies. The use of the traditionally allowable excursion of 1.25 to the level of 6.25 ppm is felt to be more than adequate as an upper safe limit of exposure.

**Human data:**

50,000 ppm (12 mins): Feelings of mild intoxication.

75,000 ppm (12 mins): As above plus slight lack of attenuation.

82,000 ppm (12 mins): Some incoordination, slight blurring of vision

(30 mins): As above plus analgesia of the face and rushing of blood to the face.

100,000 ppm (10-20 mins): Narcotic symptoms

(64 mins) : Sickness (assumed to be nausea)

144,000 ppm (36 mins): Unconsciousness

**HYDROCARBON PROPELLANT:**

Not available

**PERSONAL PROTECTION****EYE**

- Safety glasses with side shields.
- Chemical goggles.



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- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59]

**HANDS/FEET**

Suitability and durability of glove type is dependent on usage. Factors such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity,

are important in the selection of gloves.

No special equipment needed when handling small quantities.

OTHERWISE:

For potentially moderate exposures:

Wear general protective gloves, eg. light weight rubber gloves.

For potentially heavy exposures:

Wear chemical protective gloves, eg. PVC. and safety footwear.

**OTHER**

The clothing worn by process operators insulated from earth may develop static charges far higher (up to 100 times) than the minimum ignition energies for various flammable gas-air mixtures. This holds true for a wide range of clothing materials including cotton. Avoid dangerous levels of charge by ensuring a low resistivity of the surface material worn outermost.

BREITHERICK: Handbook of Reactive Chemical Hazards.

No special equipment needed when handling small quantities.

OTHERWISE:

- Overalls.
- Skin cleansing cream.
- Eyewash unit.
- Do not spray on hot surfaces.

**RESPIRATOR**

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half-face Respirator	Full-Face Respirator
1000	10	AX-AUS	-
1000	50	-	AX-AUS
5000	50	Airline *	-
5000	100	-	AX-2
10000	100	-	AX-3
	100+		Airline**

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand.

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

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

**ENGINEERING CONTROLS**

General exhaust is adequate under normal conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection.

Provide adequate ventilation in warehouse or closed storage areas.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Speed:
aerosols, (released at low velocity into zone of active generation)	0.5-1 m/s
direct spray, spray painting in shallow booths, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
Within each range the appropriate value depends on:	
Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min.) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES****APPEARANCE**

**DY-MARK SPRAY & MARK AEROSOL LEAD FREE COLOURS****Hazard Alert Code:  
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Supplied as an aerosol pack. Contents under PRESSURE. Contains highly flammable hydrocarbon propellant. Coloured flammable liquid with solvent odour; does not mix with water. Supplied in aerosol pack containing dimethyl ether and hydrocarbon propellant.

**PHYSICAL PROPERTIES**

Liquid.

Gas.

Does not mix with water.

Molecular Weight: Not applicable.	Boiling Range (°C): Not available.
Melting Range (°C): Not available.	Specific Gravity (water=1): Not available.
Solubility in water (g/L): Immiscible	pH (as supplied): Not applicable
pH (1% solution): Not applicable.	Vapour Pressure (kPa): Not available.
Volatile Component (%vol): > 50	Evaporation Rate: Not available
Relative Vapour Density (air=1): Not available.	Flash Point (°C): < 0
Lower Explosive Limit (%): Not available.	Upper Explosive Limit (%): Not available.
Autoignition Temp (°C): Not available.	Decomposition Temp (°C): Not available
State: Liquid	Viscosity: Not available

**Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION****CONDITIONS CONTRIBUTING TO INSTABILITY**

- Elevated temperatures.
- Presence of open flame.
- Product is considered stable.
- Hazardous polymerisation will not occur.

**Section 11 - TOXICOLOGICAL INFORMATION****POTENTIAL HEALTH EFFECTS****ACUTE HEALTH EFFECTS****SWALLOWED**

Not normally a hazard due to physical form of product.

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

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Not a likely route of entry into the body in commercial or industrial environments. The liquid may produce considerable gastrointestinal discomfort and be harmful or toxic if swallowed. Ingestion may cause nausea, pain and vomiting. Vomit entering the lungs by aspiration can cause inflammation of the lungs, which can lead to death.

**EYE**

The liquid produces a high level of eye discomfort and is capable of causing pain and severe conjunctivitis. Corneal injury may develop, with possible permanent impairment of vision, if not promptly and adequately treated.

There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain. There may be damage to the cornea. Unless treatment is prompt and adequate there may be permanent loss of vision. Conjunctivitis can occur following repeated exposure.

Eye contact with alkyl ethers (vapour or liquid) may produce irritation, redness and tears.

**SKIN**

The material may accentuate any pre-existing dermatitis condition.

Spray mist may produce discomfort.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.

Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation.

Skin contact with the material may be harmful; systemic effects may result following absorption.

The material may cause moderate inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.

**INHALED**

There is some evidence to suggest that the material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

Inhalation of toxic gases may cause:

- Central Nervous System effects including depression, headache, confusion, dizziness, stupor, coma and seizures;
- respiratory: acute lung swellings, shortness of breath, wheezing, rapid breathing, other symptoms and respiratory arrest;
- heart: collapse, irregular heartbeats and cardiac arrest;
- gastrointestinal: irritation, ulcers, nausea and vomiting (may be bloody), and abdominal pain.

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.

Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. Serious poisonings may result in respiratory depression and may be fatal.

Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. Vapour is heavier than air and may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure.

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

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**WARNING:** Intentional misuse by concentrating/inhaling contents may be lethal.

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.

Xylene is a central nervous system depressant.

**CHRONIC HEALTH EFFECTS**

Principal route of occupational exposure to the gas is by inhalation.

Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

Harmful: danger of serious damage to health

by prolonged exposure through inhalation.

This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. This has been demonstrated via both short- and long-term experimentation.

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS].

Intentional abuse (glue sniffing) or occupational exposure to toluene can result in chronic habituation. Chronic abuse has caused inco-ordination, tremors of the extremities (due to widespread cerebrum withering), headache, abnormal speech, temporary memory loss, convulsions, coma, drowsiness, reduced colour perception, blindness, nystagmus (rapid, involuntary eye movements), hearing loss leading to deafness and mild dementia. Toluene addicts often display a range of disease phenomena in their nervous systems. Toluene abuse can cause kidney disease but occupational toluene exposures usually do not cause it. Chronic exposure to toluene can damage the heart and the blood, especially causing heartbeat irregularities. High concentrations of toluene can harm the unborn baby and the developing infant.

**TOXICITY AND IRRITATION**

Not available. Refer to individual constituents.

**TOXICITY****IRRITATION****TOLUENE:**

Oral (human) LDLo: 50 mg/kg

Skin (rabbit): 20 mg/24h - Moderate

Oral (rat) LD50: 636 mg/kg

Skin (rabbit): 500 mg - Moderate

Inhalation (human) TLo: 100 ppm

Eye (rabbit): 0.87 mg - Mild

Inhalation (man) TLo: 200 ppm

Eye (rabbit): 2 mg/24h - SEVERE

Inhalation (rat) LC50: &gt;26700 ppm/1h

Eye (rabbit): 100 mg/30sec - Mild

Dermal (rabbit) LD50: 12124 mg/kg

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

**PROPYLENE GLYCOL MONOMETHYL ETHER:**

Oral (rat) LD50: 3739 mg/kg

Skin (rabbit) 500 mg Open - Mild

Inhalation (human) TLo: 3000 ppm

Eye (rabbit) 230 mg Mild

Inhalation (rat) LC50: 10000 ppm/5 h.

Eye (rabbit) 500 mg/24 h. - Mild

Dermal (rabbit) LD50: 13000 mg/kg

NOTE: Exposure of pregnant rats and rabbits to the substance did not

give rise to teratogenic effects at concentrations up to 3000 ppm.

Fetotoxic effects were seen in rats but not in rabbits at this concentration; maternal toxicity was noted in both species.

**METHYL METHACRYLATE/ N-BMA/ MAA COPOLYMER:**

No significant acute toxicological data identified in literature search.

**XYLENE:**

Oral (human) LDLo: 50 mg/kg

Skin (rabbit): 500 mg/24h Moderate

Oral (rat) LD50: 4300 mg/kg

Eye (human): 200 ppm Irritant

Inhalation (human) TLo: 200 ppm

Eye (rabbit): 87 mg Mild

Inhalation (man) LLo: 10000 ppm/6h

Eye (rabbit): 5 mg/24h SEVERE

Inhalation (rat) LC50: 5000 ppm/4h

Oral (Human) LD: 50 mg/kg

Inhalation (Human) TLo: 200 ppm/4h

Intraperitoneal (Rat) LD50: 2459 mg/kg

Subcutaneous (Rat) LD50: 1700 mg/kg

Oral (Mouse) LD50: 2119 mg/kg

Intraperitoneal (Mouse) LD50: 1548 mg/kg

Intravenous (Rabbit) LD: 129 mg/kg

Inhalation (Guinea pig) LC: 450 ppm/4h

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling the epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Reproductive effector in rats

**ACETONE:**

Oral (man) TDLo: 2857 mg/kg

Eye (human): 500 ppm - Irritant

Oral (rat) LD50: 5800 mg/kg

Eye (rabbit): 3.95 mg - SEVERE

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Inhalation (human) TClO: 500 ppm	Eye (rabbit): 20mg/24hr - Moderate
Inhalation (man) TClO: 12000 ppm/4 hr	Skin (rabbit):395mg (open) - Mild
Inhalation (man) TClO: 10 mg/m <sup>3</sup> /6 hr	Skin (rabbit): 500 mg/24hr - Mild
Inhalation (rat) LC50: 50100 mg/m <sup>3</sup> /8 hr	
Dermal (rabbit) LD50: 20000 mg/kg	

**DIMETHYL ETHER:**Inhalation (rat) LC50: 308000 mg/m<sup>3</sup> Nil Reported**HYDROCARBON PROPELLANT:**

Not available. Refer to individual constituents.

MATERIAL	CARCINOGEN	REPROTOXIN	SENSITISER	SKIN
toluene	IARC:3	ILOEI		
xylene	IARC:3	ILOEI		

**CARCINOGEN**

IARC: International Agency for Research on Cancer (IARC) Carcinogens: toluene Category:

3

**REPROTOXIN**

ILOEI: ILO Chemicals in the electronics industry that have toxic effects on reproduction: toluene

**CARCINOGEN**

IARC: International Agency for Research on Cancer (IARC) Carcinogens: xylene Category:

3

**REPROTOXIN**

ILOEI: ILO Chemicals in the electronics industry that have toxic effects on reproduction: xylene

**Section 12 - ECOLOGICAL INFORMATION**

Marine Pollutant:Not Determined

The lower molecular weight hydrocarbons are expected to form a "slick" on the surface of waters after release in calm sea conditions. This is expected to evaporate and enter the atmosphere where it will be degraded through reaction with hydroxy radicals.

Some of the material will become associated with benthic sediments, and it is likely to be spread over a fairly wide area of sea floor. Marine sediments may be either aerobic or anaerobic. The material, in probability, is biodegradable, under aerobic conditions (isomerised olefins and alkenes show variable results). Evidence also suggests that the hydrocarbons may be degradable under anaerobic conditions although such degradation in benthic sediments may be a relatively slow process.

Under aerobic conditions the material will degrade to water and carbon dioxide, while under anaerobic processes it will produce water, methane and carbon dioxide.

Based on test results, as well as theoretical considerations, the potential for bioaccumulation may be high. Toxic effects are often observed in species such as blue mussel, daphnia, freshwater green algae, marine copepods and amphipods.

Drinking Water Standards:

hydrocarbon total: 10 ug/l (UK max.).

DO NOT discharge into sewer or waterways.

Refer to data for ingredients, which follows:

**TOLUENE:**

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	7.3- 22.8
BCF<100:	13.2 (EELS)
log Kow (Sangster 1997):	2.73
log Pow (Verschuereen 1983):	2.69
BOD5:	5%
COD:	21%
ThOD:	3.13
Half- life Soil - High (hours):	528
Half- life Soil - Low (hours):	96
Half- life Air - High (hours):	104
Half- life Air - Low (hours):	10
Half- life Surface water - High (hours):	528
Half- life Surface water - Low (hours):	96
Half- life Ground water - High (hours):	672
Half- life Ground water - Low (hours):	168
Aqueous biodegradation - Aerobic - High (hours):	528
Aqueous biodegradation - Aerobic - Low (hours):	96
Aqueous biodegradation - Anaerobic - High (hours):	5040
Aqueous biodegradation - Anaerobic - Low (hours):	1344
Aqueous biodegradation - Removal secondary treatment - High (hours):	75%
Photolysis maximum light absorption - High (nano- m):	268
Photolysis maximum light absorption - Low (nano- m):	253.5
Photooxidation half- life water - High (hours):	1284
Photooxidation half- life water - Low (hours):	321
Photooxidation half- life air - High (hours):	104
Photooxidation half- life air - Low (hours):	10

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The lower molecular weight hydrocarbons are expected to form a "slick" on the surface of waters after release in calm sea conditions. This is expected to evaporate and enter the atmosphere where it will be degraded through reaction with hydroxy radicals.

Some of the material will become associated with benthic sediments, and it is likely to be spread over a fairly wide area of sea floor. Marine sediments may be either aerobic or anaerobic. The material, in probability, is biodegradable, under aerobic conditions (isomerised olefins and alkenes show variable results). Evidence also suggests that the hydrocarbons may be degradable under anaerobic conditions although such degradation in benthic sediments may be a relatively slow process.

Under aerobic conditions the material will degrade to water and carbon dioxide, while under anaerobic processes it will produce water, methane and carbon dioxide.

Based on test results, as well as theoretical considerations, the potential for bioaccumulation may be high. Toxic effects are often observed in species such as blue mussel, daphnia, freshwater green algae, marine copepods and amphipods.

DO NOT discharge into sewer or waterways.

log Kow: 2.1-3

log Koc: 1.12-2.85

Koc: 37-250

log Kom: 1.39-2.89

Half-life (hr) air: 2.4-104

Half-life (hr) H2O surface water: 5.55-528

Half-life (hr) H2O ground: 168-2628

Half-life (hr) soil: <48-240

Henry's Pa m<sup>3</sup> /mol: 518-694

Henry's atm m<sup>3</sup> /mol: 5.94E-03

BOD 5 if unstated: 0.86-2.12,5%

COD: 0.7-2.52,21-27%

ThOD: 3.13

BCF: 1.67-380

Log BCF: 0.22-3.28

PROPYLENE GLYCOL MONOMETHYL ETHER:

Hazardous Air Pollutant:	Yes
Half- life Soil - High (hours):	672
Half- life Soil - Low (hours):	168
Half- life Air - High (hours):	40.8
Half- life Air - Low (hours):	4.08
Half- life Surface water - High (hours):	672
Half- life Surface water - Low (hours):	168
Half- life Ground water - High (hours):	1344
Half- life Ground water - Low (hours):	336
Aqueous biodegradation - Aerobic - High (hours):	672
Aqueous biodegradation - Aerobic - Low (hours):	168
Aqueous biodegradation - Anaerobic - High (hours):	2688
Aqueous biodegradation - Anaerobic - Low (hours):	672
Photooxidation half- life air - High (hours):	40.8
Photooxidation half- life air - Low (hours):	4.08

XYLENE:

Fish LC50 (96hr.) (mg/l):	13.5
BCF<100:	2.14- 2.20
log Kow (Prager 1995):	3.12- 3.20
Half- life Soil - High (hours):	672
Half- life Soil - Low (hours):	168
Half- life Air - High (hours):	44
Half- life Air - Low (hours):	2.6
Half- life Surface water - High (hours):	672
Half- life Surface water - Low (hours):	168
Half- life Ground water - High (hours):	8640
Half- life Ground water - Low (hours):	336
Aqueous biodegradation - Aerobic - High (hours):	672
Aqueous biodegradation - Aerobic - Low (hours):	168
Aqueous biodegradation - Anaerobic - High (hours):	8640
Aqueous biodegradation - Anaerobic - Low (hours):	4320
Photolysis maximum light absorption - High (nano- m):	269.5
Photolysis maximum light absorption - Low (nano- m):	265
Photooxidation half- life water - High (hours):	2.70E+08
Photooxidation half- life water - Low (hours):	3.90E+05
Photooxidation half- life air - High (hours):	44
Photooxidation half- life air - Low (hours):	2.6

The lower molecular weight hydrocarbons are expected to form a "slick" on the surface of waters after release in calm sea conditions. This is expected to evaporate and enter the atmosphere where it will be degraded through reaction with hydroxy radicals.

Some of the material will become associated with benthic sediments, and it is likely to be spread over a fairly wide area of sea floor. Marine sediments may be either aerobic or anaerobic. The material, in probability, is biodegradable, under aerobic conditions (isomerised olefins and alkenes show variable results). Evidence also suggests that the hydrocarbons may be degradable under anaerobic conditions although such degradation in benthic sediments may be a relatively slow process.

Under aerobic conditions the material will degrade to water and carbon dioxide, while under anaerobic processes it will produce water, methane and carbon dioxide.

Based on test results, as well as theoretical considerations, the potential for bioaccumulation may be high. Toxic effects are often

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observed in species such as blue mussel, daphnia, freshwater green algae, marine copepods and amphipods.

Drinking Water Standards:

hydrocarbon total: 10 ug/l (UK max.).

DO NOT discharge into sewer or waterways.

The material is classified as an ecotoxin\* because the Fish LC50 (96 hours) is less than or equal to 0.1 mg/l

\* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993 Commission of the European Communities.

ACETONE:

Fish LC50 (96hr.) (mg/l):	8300- 40000
Daphnia magna EC50 (48hr.) (mg/l):	10
log Kow (Prager 1995):	- 0.24
log Kow (Sangster 1997):	- 0.24
log Pow (Verschuereen 1983):	- 0.24
BOD5:	122%
ThOD:	72
Half- life Soil - High (hours):	168
Half- life Soil - Low (hours):	24
Half- life Air - High (hours):	2790
Half- life Air - Low (hours):	279
Half- life Surface water - High (hours):	168
Half- life Surface water - Low (hours):	24
Half- life Ground water - High (hours):	336
Half- life Ground water - Low (hours):	48
Aqueous biodegradation - Aerobic - High (hours):	168
Aqueous biodegradation - Aerobic - Low (hours):	24
Aqueous biodegradation - Anaerobic - High (hours):	672
Aqueous biodegradation - Anaerobic - Low (hours):	96
Aqueous biodegradation - Removal secondary treatment - High (hours):	75%
Aqueous biodegradation - Removal secondary treatment - Low (hours):	54%
Aqueous photolysis half- life - High (hours):	270
Photooxidation half- life water - High (hours):	3.97E+06
Photooxidation half- life water - Low (hours):	9.92E+04
Photooxidation half- life air - High (hours):	2790
Photooxidation half- life air - Low (hours):	279

DO NOT discharge into sewer or waterways.

log Kow: -0.24

Half-life (hr) air: 312-1896

Half-life (hr) H<sub>2</sub>O surface water: 20

Henry's atm m<sup>3</sup> /mol: 3.67E-05

BOD 5 if unstated: 0.31-1.76,46-55%

COD: 1.12-2.07

ThOD: 2.2

BCF: 0.69

Toxicity Fish: LC50(96) 5540-13000mg/L

Toxicity invertebrate: cell mult. inhib. 28-7500mg/L

Bioaccumulation: not sig

Nitrif. inhib.: 75% decr. at 840mg/L

Anaerobic effects: sig degrad

Degradation Biological: sig

processes Abiotic: Rxn OH\*, photodissoc

In air, acetone is lost by photolysis and reaction with photochemically produced hydroxyl radicals; the estimated half-life of these combined processes is about 22 days. The relatively long half-life allows acetone to be transported long distances from its emission source.

Acetone is highly soluble and slightly persistent in water, with a half-life of about 20 hours; it is minimally toxic to aquatic life.

Acetone released to soil volatilises although some may leach into the ground where it rapidly biodegrades.

Acetone does not concentrate in the food chain.

Drinking Water Standard: none available.

Soil Guidelines: none available.

Air Quality Standards: none available.

DIMETHYL ETHER:

Water solubility (mg/l):	35300
log Kow (Sangster 1997):	0.1

log Kow: 0.1-0.12

Koc: 14

Half-life (hr) air: 528

Half-life (hr) H<sub>2</sub>O surface water: 2.6-30

Henry's atm m<sup>3</sup> /mol: 9.78E-04

BCF: 1.7

Bioaccumulation: not sig

processes Abiotic: RxnOH\*



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CD 2007/1**Section 13 - DISPOSAL CONSIDERATIONS**

- Consult State Land Waste Management Authority for disposal.
- Discharge contents of damaged aerosol cans at an approved site.
- Allow small quantities to evaporate.
- DO NOT incinerate or puncture aerosol cans.
- Bury residues and emptied aerosol cans at an approved site.

**Section 14 - TRANSPORTATION INFORMATION**Labels Required: FLAMMABLE GAS  
HAZCHEM: 2Y**UNDG:**

Dangerous Goods Class:	2.1	Subrisk:	None
UN Number:	1950	Packing Group:	None

Shipping Name: AEROSOLS

**Air Transport IATA:**

ICAO/IATA Class:	2.1	ICAO/IATA Subrisk:	None
UN/ID Number:	1950	Packing Group:	None
ERG Code:	10L		

Shipping Name: AEROSOLS, FLAMMABLE

**Maritime Transport IMDG:**

IMDG Class:	2	IMDG Subrisk:	SP63
UN Number:	1950	Packing Group:	None
EMS Number:	F-D,S-U	Marine Pollutant:	Not Determined

Shipping Name: AEROSOLS

**Section 15 - REGULATORY INFORMATION****POISONS SCHEDULE**

None

**REGULATIONS**

toluene (CAS: 108- 88- 3) is found on the following regulatory lists;

Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted extraction solvents

Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - organic compounds)

Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)

Australia - Australian Capital Territory Environment Protection Regulation Ecosystem maintenance - Organic chemicals - Non- pesticide anthropogenic organics

Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality

Australia Exposure Standards

Australia High Volume Industrial Chemical List (HVICL)

Australia Illicit Drug Reagents/Essential Chemicals - Category III

Australia Inventory of Chemical Substances (AICS)

Australia National Pollutant Inventory

Australia Poisons Schedule

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6

IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk

International Agency for Research on Cancer (IARC) Carcinogens

OECD Representative List of High Production Volume (HPV) Chemicals

United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II

United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control - Table II (English)

WHO Guidelines for Drinking- water Quality - Guideline values for chemicals that are of health significance in drinking- water

propylene glycol monomethyl ether (CAS: 107- 98- 2) is found on the following regulatory lists;

Australia Exposure Standards

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Australia Inventory of Chemical Substances (AICS)  
 Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
 IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk  
 International Council of Chemical Associations (ICCA) - High Production Volume List  
 OECD Representative List of High Production Volume (HPV) Chemicals  
 propylene glycol monomethyl ether (CAS: 1320- 67- 8) is found on the following regulatory lists;  
 Australia Inventory of Chemical Substances (AICS)  
 Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
 methyl methacrylate/ n- BMA/ MAA copolymer (CAS: 28262- 63- 7) is found on the following regulatory lists;  
 Australia Exposure Standards  
 Australia Inventory of Chemical Substances (AICS)  
 xylene (CAS: 1330- 20- 7) is found on the following regulatory lists;  
 Australia - Australian Capital Territory - Environment Protection Regulation:  
 Ambient environmental standards (Domestic water supply - organic compounds)  
 Australia - Australian Capital Territory Environment Protection Regulation  
 Pollutants entering waterways - Domestic water quality  
 Australia Exposure Standards  
 Australia High Volume Industrial Chemical List (HVICL)  
 Australia Inventory of Chemical Substances (AICS)  
 Australia National Pollutant Inventory  
 Australia Poisons Schedule  
 Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
 IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk  
 International Agency for Research on Cancer (IARC) Carcinogens  
 International Council of Chemical Associations (ICCA) - High Production Volume List  
 OECD Representative List of High Production Volume (HPV) Chemicals  
 WHO Guidelines for Drinking- water Quality - Guideline values for chemicals that are of health significance in drinking- water  
 acetone (CAS: 67- 64- 1) is found on the following regulatory lists;  
 Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted extraction solvents  
 Australia Exposure Standards  
 Australia High Volume Industrial Chemical List (HVICL)  
 Australia Illicit Drug Reagents/Essential Chemicals - Category III  
 Australia Inventory of Chemical Substances (AICS)  
 Australia National Pollutant Inventory  
 Australia Poisons Schedule  
 Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5  
 IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances  
 OECD Representative List of High Production Volume (HPV) Chemicals  
 United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II  
 United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control - Table II (English)  
 dimethyl ether (CAS: 115- 10- 6) is found on the following regulatory lists;  
 Australia Exposure Standards  
 Australia Inventory of Chemical Substances (AICS)  
 Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6  
 International Council of Chemical Associations (ICCA) - High Production Volume List  
 OECD Representative List of High Production Volume (HPV) Chemicals  
 hydrocarbon propellant (CAS: 68476- 85- 7) is found on the following regulatory lists;  
 Australia Exposure Standards  
 Australia High Volume Industrial Chemical List (HVICL)  
 Australia Inventory of Chemical Substances (AICS)  
 OECD Representative List of High Production Volume (HPV) Chemicals  
 hydrocarbon propellant (CAS: 68476- 86- 8) is found on the following regulatory lists;  
 Australia Inventory of Chemical Substances (AICS)  
 OECD Representative List of High Production Volume (HPV) Chemicals  
 No data available for propylene glycol monomethyl ether as CAS: 28677- 93- 2.

**Section 16 - OTHER INFORMATION****Ingredients with multiple CAS Nos**

Ingredient Name	CAS
propylene glycol monomethyl ether	107-98-2, 1320-67-8, 28677-93-2
hydrocarbon propellant	68476-85-7, 68476-86-8

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**REPRODUCTIVE HEALTH GUIDELINES**

Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These have been established after a literature search for reproductive no -observed-adverse effect-level (NOAEL) and the lowest-observed-adverse-effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated. Ingredient ORG UF Endpoi CR Adeq nt TLV toluene 9.6 mg/m<sup>3</sup> 10 D NA - xylene 1.5 mg/m<sup>3</sup> 10 D NA - These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivocally safe limits. ORGS represent an 8-hour time -weighted average unless specified otherwise. CR = Cancer Risk/10000; UF = Uncertainty factor: TLV believed to be adequate to protect reproductive health: LOD: Limit of detection Toxic endpoints have also been identified as: D = Developmental; R = Reproductive; TC = Transplacental carcinogen Jankovic J., Drake F.: A Screening Method for Occupational Reproductive American Industrial Hygiene Association Journal 57: 641-649 (1996).

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