

GSB Spray Gun Cleaner

Chemwatch Material Safety Data Sheet
Issue Date: 3-Jul-2014
A317LP

Hazard Alert Code: HIGH

CHEMWATCH 23-0293
Version No:4.1.1.1
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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

GSB Spray Gun Cleaner

PROPER SHIPPING NAME

TOXIC LIQUID, ORGANIC, N.O.S.(contains methylene chloride and methanol)

PRODUCT USE

Used according to manufacturer's directions.

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. Used for the removal of dried paint and varnish from spray guns.

SUPPLIER

Company: GSB Chemical Co. Pty Ltd

Address:

84 Camp Road

Broadmeadows

VIC, 3047

Australia

Telephone: +61 3 9457 1125

Fax: +61 3 9459 7978

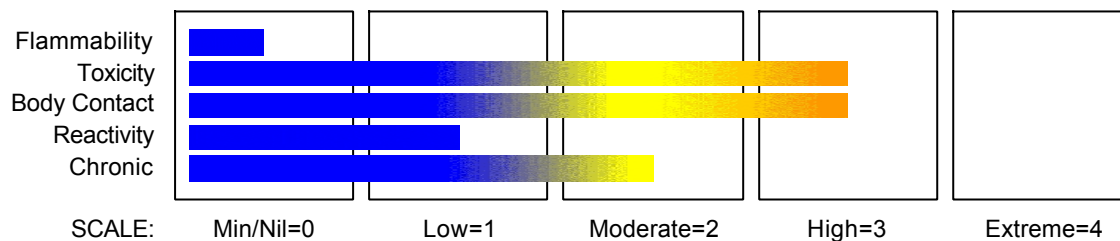
Email: info@gsbchem.com.au

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

CHEMWATCH HAZARD RATINGS



RISK

SAFETY

continued...

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Section 2 - HAZARDS IDENTIFICATION

- Toxic by inhalation, in contact with skin and if swallowed.
 - Irritating to skin.
 - Toxic: Danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.
 - Limited evidence of a carcinogenic effect.
 - Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 - Cumulative effects may result following exposure*.
 - May produce discomfort of the eyes and respiratory tract*.
 - May affect fertility*.
 - Repeated exposure potentially causes skin dryness and cracking*.
 - Vapours potentially cause drowsiness and dizziness*.
- * (limited evidence).

- Keep locked up.
- Do not breathe gas/fumes/vapour/spray.
- Avoid contact with skin.
- Avoid contact with eyes.
- Wear suitable protective clothing.
- In case of insufficient ventilation, wear suitable respiratory equipment.
- Wear suitable gloves.
- Wear eye/face protection.
- Use only in well ventilated areas.
- Keep container in a well ventilated place.
- Avoid exposure - obtain special instructions before use.
- To clean the floor and all objects contaminated by this material, use water and detergent.
- Keep container tightly closed.
- This material and its container must be disposed of in a safe way.
- Keep away from food, drink and animal feeding stuffs.
- Take off immediately all contaminated clothing.
- In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
- This material and its container must be disposed of as hazardous waste.
- If swallowed do not induce vomiting: seek medical advice immediately and show this container or label.
- In case of accident by inhalation: remove casualty to fresh air and keep at rest.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
methylene chloride	75-09-2	>60
methanol	67-56-1	10-<30
solvent naphtha petroleum, heavy aromatic	64742-94-5	<10
methyl ethyl ketone	78-93-3	<10
ammonium hydroxide	1336-21-6	NotSpec
surfactants		<10

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Section 4 - FIRST AID MEASURES

SWALLOWED

- IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

- INDUCE vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

NOTE: Wear a protective glove when inducing vomiting by mechanical means.

- Avoid giving milk or oils.
- Avoid giving alcohol.

EYE

- If this product comes in contact with the eyes:
 - Immediately hold eyelids apart and flush the eye continuously with running water.
 - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
 - Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
 - Transport to hospital or doctor without delay.
 - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin or hair contact occurs:
 - Quickly but gently, wipe material off skin with a dry, clean cloth.
 - Immediately remove all contaminated clothing, including footwear.
 - Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.
 - Transport to hospital, or doctor.

INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

NOTES TO PHYSICIAN

for intoxication due to Freons/ Halons;

A: Emergency and Supportive Measures

- Maintain an open airway and assist ventilation if necessary

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Section 4 - FIRST AID MEASURES

• Treat coma and arrhythmias if they occur. Avoid (adrenaline) epinephrine or other sympathomimetic amines that may precipitate ventricular arrhythmias. Tachyarrhythmias caused by increased myocardial sensitisation may be treated with propranolol, 1-2 mg IV or esmolol 25-100 microgm/kg/min IV.

• Monitor the ECG for 4-6 hours

B: Specific drugs and antidotes:

• There is no specific antidote

C: Decontamination

• Inhalation; remove victim from exposure, and give supplemental oxygen if available.

• Ingestion; (a) Prehospital: Administer activated charcoal, if available. DO NOT induce vomiting because of rapid absorption and the risk of abrupt onset CNS depression. (b) Hospital: Administer activated charcoal, although the efficacy of charcoal is unknown. Perform gastric lavage only if the ingestion was very large and recent (less than 30 minutes)

D: Enhanced elimination:

• There is no documented efficacy for diuresis, haemodialysis, haemoperfusion, or repeat-dose charcoal.

POISONING and DRUG OVERDOSE, Californian Poison Control System Ed. Kent R Olson; 3rd Edition

• Do not administer sympathomimetic drugs unless absolutely necessary as material may increase myocardial irritability.

• No specific antidote.

• Because rapid absorption may occur through lungs if aspirated and cause systematic effects, the decision of whether to induce vomiting or not should be made by an attending physician.

• If lavage is performed, suggest endotracheal and/or esophageal control.

• Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach.

• Treatment based on judgment of the physician in response to reactions of the patient.

For acute and short term repeated exposures to methanol:

• Toxicity results from accumulation of formaldehyde/formic acid.

• Clinical signs are usually limited to CNS, eyes and GI tract Severe metabolic acidosis may produce dyspnea and profound systemic effects which may become intractable. All symptomatic patients should have arterial pH measured. Evaluate airway, breathing and circulation.

• Stabilise obtunded patients by giving naloxone, glucose and thiamine.

• Decontaminate with Ipecac or lavage for patients presenting 2 hours post-ingestion. Charcoal does not absorb well; the usefulness of cathartic is not established.

• Forced diuresis is not effective; haemodialysis is recommended where peak methanol levels exceed 50 mg/dL (this correlates with serum bicarbonate levels below 18 mEq/L).

• Ethanol, maintained at levels between 100 and 150 mg/dL, inhibits formation of toxic metabolites and may be indicated when peak methanol levels exceed 20 mg/dL. An intravenous solution of ethanol in D5W is optimal.

• Folate, as leucovorin, may increase the oxidative removal of formic acid. 4-methylpyrazole may be an effective adjunct in the treatment. 8-Phenytoin may be preferable to diazepam for controlling seizure.

[Ellenhorn Barceloux: Medical Toxicology]

BIOLOGICAL EXPOSURE INDEX - BEI

Determinant	Index	Sampling Time	Comment
1. Methanol in urine	15 mg/l	End of shift	B, NS
2. Formic acid in urine	80 mg/gm creatinine	Before the shift at end of workweek	B, NS

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

NS: Non-specific determinant - observed following exposure to other materials.

For acute or short term repeated exposures to ammonia and its solutions:

• Mild to moderate inhalation exposures produce headache, cough, bronchospasm, nausea, vomiting, pharyngeal and retrosternal pain and conjunctivitis. Severe inhalation produces laryngospasm, signs of upper airway obstruction (stridor, hoarseness, difficulty in speaking) and, in excessively, high doses, pulmonary oedema.

• Warm humidified air may soothe bronchial irritation.

• Test all patients with conjunctival irritation for corneal abrasion (fluorescein stain, slit lamp exam)

• Dyspneic patients should receive a chest X-ray and arterial blood gases to detect pulmonary oedema.

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Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- Water spray or fog.
- Alcohol stable foam.
- Dry chemical powder.
- Carbon dioxide.

FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use fire fighting procedures suitable for surrounding 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.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 800 metres in all directions.

FIRE/EXPLOSION HAZARD

- Non flammable liquid.
- However vapour will burn when in contact with high temperature flame.
- Ignition ceases on removal of flame.
- May form a flammable / explosive mixture in an oxygen enriched atmosphere
- Heating may cause expansion/vapourisation with violent rupture of containers
- Decomposes on heating and produces corrosive fumes of hydrochloric acid, carbon monoxide and small amounts of toxic phosgene.

Decomposes on heating and produces toxic fumes of: carbon dioxide (CO₂), formaldehyde, hydrogen chloride, phosgene, other pyrolysis products typical of burning organic material.

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

May emit poisonous fumes.

FIRE INCOMPATIBILITY

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

HAZCHEM

2X

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact with the substance, by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable, labelled container for waste disposal.

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Section 6 - ACCIDENTAL RELEASE MEASURES

MAJOR SPILLS

Chemical Class: bases

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

SORBENT TYPE	RANK	APPLICATION	COLLECTION	LIMITATIONS
LAND SPILL - SMALL				
cross- linked polymer - particulate	1	shovel	shovel	R, W, SS
cross- linked polymer - pillow sorbent clay - particulate	1	throw	pitchfork	R, DGC, RT
foamed glass - pillow	2	shovel	shovel	R, I, P
expanded minerals - particulate	2	throw	pitchfork	R, P, DGC, RT
foamed glass - particulate	3	shovel	shovel	R, I, W, P, DGC
foamed glass - particulate	4	shovel	shovel	R, W, P, DGC,
LAND SPILL - MEDIUM				
cross- linked polymer - particulate	1	blower	skiploader	R, W, SS
sorbent clay - particulate	2	blower	skiploader	R, I, P
expanded mineral - particulate	3	blower	skiploader	R, I, W, P, DGC
cross- linked polymer - pillow	3	throw	skiploader	R, DGC, RT
foamed glass - particulate	4	blower	skiploader	R, W, P, DGC
foamed glass - pillow	4	throw	skiploader	R, P, DGC., RT

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.

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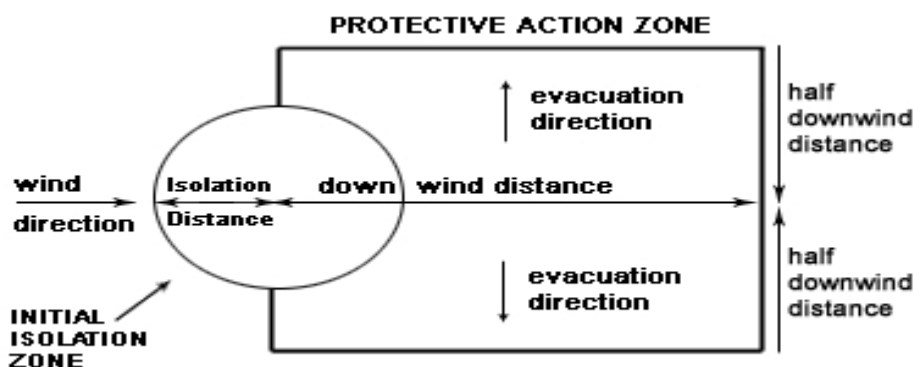
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Section 6 - ACCIDENTAL RELEASE MEASURES

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Neutralise/decontaminate residue (see Section 13 for specific agent).
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

PROTECTIVE ACTIONS FOR SPILL



From US Emergency Response Guide 2000
Guide 153

SMALL SPILLS

Name	Isolation Distance	Downwind Day	Protection Night
Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)	700 ft (215 m)	1.2 mile (1.9 km)	2.7 mile (4.3 km)
Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)	200 ft (60 m)	0.2 mile (0.3 km)	0.7 mile (1.1 km)
Toxic liquid, organic, n.o.s. (when Inhalation Hazard is on a package or shipping paper)	700 ft (215 m)	1.2 mile (1.9 km)	2.7 mile (4.3 km)

LARGE SPILLS

Name	Isolation Distance	Downwind Day	Protection Night
Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)	3000 ft (915 m)	(7.0+ mile (11.0+ km)	(7.0+ mile (11.0+ km)
Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)	600 ft (185 m)	1 mile (1.6 km)	2.5 mile (4 km)

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Section 6 - ACCIDENTAL RELEASE MEASURES

Toxic liquid, organic, n.o.s. (when Inhalation Hazard is on a package or shipping paper) From IERG (Canada/Australia)	3000 ft (915 m)	(7.0+ mile (11.0+ km)	(7.0+ mile (11.0+ km)
Isolation Distance	25 metres		
Downwind Protection Distance	250 metres		
IERG Number	36		

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 153 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:

methylene chloride 4000 ppm

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

methylene chloride 750 ppm

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

methylene chloride 300 ppm*

American Industrial Hygiene Association (AIHA)

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

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

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Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

■ Contains low boiling substance:

Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately.

- Check for bulging containers.
- Vent periodically
- Always release caps or seals slowly to ensure slow dissipation of vapours.
- DO NOT allow clothing wet with material to stay in contact with skin.
- Electrostatic discharge may be generated during pumping - this may result in fire.
- Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec).
- Avoid splash filling.
- Do NOT use compressed air for filling discharging or handling operations.
- 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.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately. Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

- DO NOT use aluminium or galvanised containers.
- Lined metal can, lined metal pail/ can.
- Plastic pail.
- Polyliner drum.
- Packing as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

For low viscosity materials

- Drums and jerricans must be of the non-removable head type.
- Where a can is to be used as an inner package, the can must have a screwed enclosure.

For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):

- Removable head packaging;
 - Cans with friction closures and
 - low pressure tubes and cartridges
- may be used.

-

Where combination packages are used, and the inner packages are of glass, there must be sufficient inert cushioning material in contact with inner and outer packages *.

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Section 7 - HANDLING AND STORAGE

In addition, where inner packagings are glass and contain liquids of packing group I and II there must be sufficient inert absorbent to absorb any spillage*.

* unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic.

STORAGE INCOMPATIBILITY

Methylene chloride

- is a combustible liquid under certain circumstances even though there is no measurable flash point and it is difficult to ignite
- its is flammable in ambient air in the range 12-23%; increased oxygen content can greatly enhance fire and explosion potential
- contact with hot surfaces and elevated temperatures can form fumes of hydrogen chloride and phosgene
- reacts violently with active metals, aluminium, lithium, methanol,, peroxydisulfuryl difluoride, potassium, potassium tert-butoxide, sodium
- forms explosive mixtures with nitric acid
- is incompatible with strong oxidisers, strong caustics, alkaline earths and alkali metals
- attacks some plastics, coatings and rubber
- may generate electrostatic charge due to low conductivity.
- Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



- +: *May be stored together*
O: *May be stored together with specific preventions*
X: *Must not be stored together*

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
Australia Exposure Standards	methylene chloride (Methylene chloride)	50							

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Source	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³	TWA F/CC	Notes
Australia Exposure Standards	methanol (Methyl alcohol)	200		250	328				
Australia Exposure Standards	methyl ethyl ketone (Methyl ethyl ketone (MEK))	150		300	890				
Australia Exposure Standards	ammonium hydroxide (Ammonia)	25		35	24				

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)	Revised IDLH Value (ppm)
methylene chloride	6947	2,000
methylene chloride	7989	2,300
methanol	7863	6,000
methyl ethyl ketone	8849	3,000 [Unch]
ammonium hydroxide	430	300

MATERIAL DATA

GSB SPRAY GUN CLEANER:

METHANOL:

For methanol:

Odour Threshold Value: 4.2-5960 ppm (detection), 53.0-8940 ppm (recognition)

NOTE: Detector tubes for methanol, measuring in excess of 50 ppm, are commercially available.

Exposure at or below the recommended TLV-TWA is thought to substantially reduce the significant risk of headache, blurred vision and other ocular and systemic effects.

Odour Safety Factor (OSF)

OSF=2 (METHANOL).

AMMONIUM HYDROXIDE:

GSB SPRAY GUN CLEANER:

for exposure to ammonia gas/ vapours:

Odour Threshold Value: Variously reported as 0.019 ppm and 55 ppm; AIHA Value 16.7 ppm (detection)

NOTE: Detector tubes for ammonia, measuring in excess of 1 ppm, are commercially available.

The TLV-TWA is thought to be protective against irritation of the eyes and respiratory tract and minimise discomfort among workers that are not inured to its effects and systemic damage. Acclimatised persons are able to tolerate prolonged exposures of up to 100 ppm without symptoms. Marked irritation has been seen in persons exposed to ammonia concentrations between 50 and 100 ppm only when the exposures involved sudden concentration peaks which do not permit short-term acclimatisation. The detoxification capacity of the liver is significant since the amount of ammonia formed endogenously in the intestines markedly exceeds that from external sources.

Human exposure effects, at vapour concentrations of about:

Concentration (ppm)	Possible Effects
5	minimal irritation

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9- 50	nasal dryness, olfactory fatigue and moderate irritation
125- 137	definite nose, throat and chest irritation
140	slight eye irritation
150	laryngeal spasm
500	30 minute exposures may produce cyclic hypernea, increased blood pressure and pulse rate, and upper respiratory tract irritation which may persist for 24 hours
700	immediate eye irritation
1, 500- 10, 000	dyspnea, convulsive coughing, chest pain, respiratory spasm, pink frothy sputum, rapid asphyxia and delayed pulmonary oedema which may be fatal. Other effects include runny nose, swelling of the lips, restlessness, headache, salivation, nausea, vomiting, glottal oedema, pharyngitis, tracheitis, and speech difficulties. Bronchopneumonia, asphyxiation due to spasms, inflammation, and oedema of the larynx, may be fatal. Residual effects include hoarseness, productive cough, and decreased respiratory function
>2, 500	severe eye irritation, with swelling of the eyelids, lachrymation, blepharospasm, palpebral oedema, increased intraocular pressure, oval semi- dilated, fixed pupils, corneal ulceration (often severe) and temporary blindness. Depending on duration of exposure, there may be destruction of the epithelium, corneal and lenticular opacification, and iritis accompanied by hypopyon or haemorrhage and possible loss of pigment from the posterior layer of the iris. Less severe damage is often resolved. In the case of severe damage, symptoms may be delayed; late complications including persistent oedema, vascularisation and corneal scarring, permanent opacity, acute angle glaucoma, staphyloma, cataract, and atrophy of the retina, iris, and symblepharon. Long- term exposure to sub- acute concentrations or single exposures to high concentrations may produce chronic airway dysfunction, alveolar disease, bronchiolitis, bronchiectasis, emphysema and anxiety neuroses

Odour Safety Factor(OSF)

OSF=3.8 (AMMONIA).

GSB SPRAY GUN CLEANER:

METHYLENE CHLORIDE:

For methylene chloride

Odour Threshold Value: 158 ppm (detection), 227 ppm (recognition)

NOTE: Detector tubes for methylene chloride, measuring in excess of 25 ppm are commercially available.

Long-term measurements (4 hrs) may be conducted to detect concentrations exceeding 13 ppm.

Exposure at or below the recommended TLV-TWA (and in the absence of occupational exposure to carbon monoxide) is thought to minimise the potential for liver injury and to provide protection against the possible weak carcinogenic effects which have been demonstrated in laboratory rats and mice. Enhancement of tumours of the lung, liver, salivary glands and mammary tissue in rodent studies has lead NIOSH to recommend a more conservative outcome. The ACGIH however concludes that in the absence of documentation of health-related injuries at higher exposures after a long history of methylene chloride use and a number of epidemiologic studies, the recommended TLV-TWA provides an adequate margin of safety.

Concentration effects:

Concentration	Clinical effects
>300 ppm	Sweet odour
500- 1000 ppm (1- 2 h)	Unpleasant odour, slight anaesthetic effects, headache, light- headedness, eye irritation and elevated COHb concentration
2300 ppm (5 min.)	Odour strong, intensely irritating; dizziness

continued...

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7200 ppm (8- 16 min)

>50000 ppm

Paraesthesia, tachycardia

Immediately life- threatening

GSB SPRAY GUN CLEANER:

For methyl ethyl ketone:

Odour Threshold Value: Variously reported as 2 ppm and 4.8 ppm

Odour threshold: 2 ppm (detection); 5 ppm (recognition) 25 ppm (easy recognition); 300 ppm IRRITATING

Exposures at or below the recommended TLV-TWA are thought to prevent injurious systemic effects and to minimise objections to odour and irritation. Where synergism or potentiation may occur stringent control of the primary toxin (e.g. n-hexane or methyl butyl ketone) is desirable and additional consideration should be given to lowering MEK exposures.

Odour Safety Factor(OSF)

OSF=28 (METHYL ETHYL KETONE).

SOLVENT NAPHTHA PETROLEUM, HEAVY AROMATIC:

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 no-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.

Odour threshold: 0.25 ppm.

The TLV-TWA is protective against ocular and upper respiratory tract irritation and is recommended for bulk handling of gasoline based on calculations of hydrocarbon content of gasoline vapour. A STEL is recommended to prevent mucous membrane and ocular irritation and prevention of acute depression of the central nervous system. Because of the wide variation in molecular weights of its components, the conversion of ppm to mg/m³ is approximate. Sweden recommends hexane type limits of 100 ppm and heptane and octane type limits of 300 ppm. Germany does not assign a value because of the widely differing compositions and resultant differences in toxic properties.

Odour Safety Factor (OSF)

OSF=0.042 (gasoline).

REL TWA: 100 ppm [Manufacturer]

CEL TWA: 100 ppm, 550 mg/m³

METHYL ETHYL KETONE:

Exposed individuals are reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.

Odour Safety Factor (OSF) is determined to fall into either Class A or B.

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The Odour Safety Factor (OSF) is defined as:

$OSF = \text{Exposure Standard (TWA) ppm} / \text{Odour Threshold Value (OTV) ppm}$

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

Odour Threshold Value: Variously reported as 2 ppm and 4.8 ppm

Odour threshold: 2 ppm (detection); 5 ppm (recognition)

25 ppm (easy recognition); 300 ppm IRRITATING

Exposures at or below the recommended TLV-TWA are thought to prevent injurious systemic effects and to minimise objections to odour and irritation. Where synergism or potentiation may occur stringent control of the primary toxin (e.g. n-hexane or methyl butyl ketone) is desirable and additional consideration should be given to lowering MEK exposures.

PERSONAL PROTECTION



EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

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HANDS/FEET

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber.

The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:

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

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.
- Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

OTHER

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.

RESPIRATOR

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

■ Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.

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

■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

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Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.

Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Yellow liquid with a characteristic pungent odour; not miscible with water.

PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Sinks in water.

Toxic or noxious vapours/gas.

State	Liquid	Molecular Weight	Not Applicable
Melting Range (°C)	Not Available	Viscosity	Not Available
Boiling Range (°C)	33- 102	Solubility in water (g/L)	Immiscible
Flash Point (°C)	Not Applicable	pH (1% solution)	Not Available
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Available
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	50 @20C
Upper Explosive Limit (%)	Not Applicable	Specific Gravity (water=1)	1.02
Lower Explosive Limit (%)	Not Applicable	Relative Vapour Density (air=1)	2.9
Volatile Component (%vol)	>90	Evaporation Rate	Not Available

Section 10 - STABILITY AND REACTIVITY

CONDITIONS CONTRIBUTING TO INSTABILITY

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

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

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Section 11 - TOXICOLOGICAL INFORMATION

ACUTE HEALTH EFFECTS

SWALLOWED

■ Strong evidence exists that exposure to the material may produce serious irreversible damage (other than carcinogenesis, mutagenesis and teratogenesis) following a single exposure by swallowing.

Large doses of ammonia or injected ammonium salts may produce diarrhoea and may be sufficiently absorbed to produce increased production of urine and systemic poisoning. Symptoms include weakening of facial muscle, tremor, anxiety, reduced muscle and limb control.

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

Methanol may produce a burning or painful sensation in the mouth, throat, chest, and stomach. This may be accompanied by nausea, vomiting, headache, dizziness, shortness of breath, weakness, fatigue, leg cramps, restlessness, confusion, drunken behaviour, visual disturbance, drowsiness, coma and death. These symptoms may not occur until several hours after exposure. Visual impairment produces blurring, double vision, colour distortion, reduced visual field, and blindness. In higher doses, the liver, kidney, heart and muscle can all be damaged. 10mL can cause blindness, and 60-200mL will cause death in adults.

EYE

■ There is some evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.

SKIN

■ There is strong evidence to suggest that this material, on a single contact with skin, can cause serious, irreversible damage of organs.

The material may cause severe 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.

Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.

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

Mild skin reaction is seen with contact of the vapour of this material on moist skin. High concentrations or direct contact with solutions produces severe pain, a stinging sensation, burns and blisters and possible brown stains. Death could result from extensive burning. Vapour exposure may rarely, produce an itchy rash.

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

INHALED

■ Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects.

There is strong evidence to suggest that this material can cause, if inhaled once, serious, irreversible damage of organs.

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.

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 hazard is increased at higher temperatures.

Minor but regular methanol exposures may effect the central nervous system, optic nerves and retinae.

Symptoms may be delayed, with headache, fatigue, nausea, blurring of vision and double vision. Continued or severe exposures may cause damage to optic nerves, which may become severe with permanent visual impairment even blindness resulting.

WARNING: Methanol is only slowly eliminated from the body and should be regarded as a cumulative poison which cannot be made non-harmful [CCINFO].

The highly irritant properties of ammonia vapour result as the gas dissolves in mucous fluids and forms irritant, even corrosive solutions.

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Inhalation of the ammonia fumes causes coughing, vomiting, reddening of lips, mouth, nose, throat and conjunctiva while higher concentrations can cause temporary blindness, restlessness, tightness in the chest, pulmonary oedema (lung damage), weak pulse and cyanosis.

Inhalation of high concentrations of vapour may cause breathing difficulty, tightness in chest, pulmonary oedema and lung damage. Brief exposure to high concentrations > 5000 ppm may cause death due to asphyxiation (suffocation) or fluid in the lungs.

Prolonged or regular minor exposure to the vapour may cause persistent irritation of the eyes, nose and upper respiratory tract. Massive ammonia exposures may produce chronic airway hyperactivity and asthma with associated pulmonary function changes. The average nasal retention of ammonia by human subjects was found to be 83%.

Easy odour recognition and irritant properties of methyl ethyl ketone means that high vapour levels are readily detected and should be avoided by application of control measures; however odour fatigue may occur with loss of warning of exposure.

Inhalation exposure may cause susceptible individuals to show change in heart beat rhythm i.e. cardiac arrhythmia. Exposures must be terminated.

Acute intoxication by halogenated aliphatic hydrocarbons appears to take place over two stages. Signs of a reversible narcosis are evident in the first stage and in the second stage signs of injury to organs may become evident, a single organ alone is (almost) never involved.

CHRONIC HEALTH EFFECTS

■ There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment.

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

There is some evidence from animal testing that exposure to this material may result in reduced fertility.

Long-term exposure to methanol vapour, at concentrations exceeding 3000 ppm, may produce cumulative effects characterised by gastrointestinal disturbances (nausea, vomiting), headache, ringing in the ears, insomnia, trembling, unsteady gait, vertigo, conjunctivitis and clouded or double vision. Liver and/or kidney injury may also result. Some individuals show severe eye damage following prolonged exposure to 800 ppm of the vapour.

Prolonged or repeated minor exposure to ammonia gas/vapour may cause long-term irritation to the eyes, nose and upper respiratory tract. Repeated exposure or prolonged contact may produce dermatitis, and conjunctivitis.

Other effects may include ulcerative changes to the mouth and bronchial and gastrointestinal disturbances.

Adaptation to usually irritating concentrations may result in tolerance. In animals, repeated exposures to sub-lethal levels produces adverse effects on the respiratory tract, liver, kidneys and spleen. Exposure at 675 ppm for several weeks produced eye irritation in dogs and rabbits; corneal opacity, covering between a quarter to one half of the total surface area, was evident in rabbits.

Dichloromethane exposures cause liver and kidney damage in animals and this justifies consideration before exposing persons with a history of impaired liver function and/or renal disorders.

TOXICITY AND IRRITATION

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

METHYLENE CHLORIDE:

GSB SPRAY GUN CLEANER:

■ The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.

■ The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

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Section 11 - TOXICOLOGICAL INFORMATION

METHYLENE CHLORIDE:

TOXICITY

Oral (human) LDLo:357 mg/kg

Oral (rat) LD50:1600 mg/kg

Inhalation (human) TClO:500 ppm/ 8 hr

Inhalation (rat) LC50:88000 mg/m³/30 m

■ WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.

Inhalation (human) TClO: 500 ppm/ 1 y - I Eye(rabbit): 10 mg - mild

IRRITATION

Skin (rabbit):810 mg/24hr- SEVERE

Skin (rabbit):100mg/24hr- Moderate

Eye(rabbit):162 mg - Moderate

Eye(rabbit):500 mg/24hr - Mild

METHANOL:

TOXICITY

Oral (human) LDLo:143 mg/kg

Oral (man) LDLo:6422 mg/kg

Oral (man) TDLo:3429 mg/kg

Oral (rat) LD50:5628 mg/kg

Inhalation (human) TClO:86000 mg/m³

Inhalation (human) TClO:300 ppm

Inhalation (rat) LC50:64000 ppm/4h

Dermal (rabbit) LD50:15800 mg/kg

■ The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

IRRITATION

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

Eye (rabbit):40 mg- Moderate

Eye (rabbit):100 mg/24h- Moderate

SOLVENT NAPHTHA PETROLEUM, HEAVY AROMATIC:

TOXICITY

Oral (rat) LD50:3200 mg/kg

Dermal (rabbit) LD50:>3160 mg/kg [PETROFIN]

■ for petroleum:

This product contains benzene which is known to cause acute myeloid leukaemia and n-hexane which has been shown to metabolize to compounds which are neuropathic.

This product contains toluene. There are indications from animal studies that prolonged exposure to high concentrations of toluene may lead to hearing loss.

This product contains ethyl benzene and naphthalene from which there is evidence of tumours in rodents

Carcinogenicity: Inhalation exposure to mice causes liver tumours, which are not considered relevant to humans. Inhalation exposure to rats causes kidney tumours which are not considered relevant to humans.

Mutagenicity: There is a large database of mutagenicity studies on gasoline and gasoline blending streams, which use a wide variety of endpoints and give predominantly negative results. All in vivo studies in animals and recent studies in exposed humans (e.g. petrol service station attendants) have shown negative results in mutagenicity assays.

Reproductive Toxicity: Repeated exposure of pregnant rats to high concentrations of toluene (around or exceeding 1000 ppm) can cause developmental effects, such as lower birth weight and developmental neurotoxicity, on the foetus. However, in a two-generation reproductive study in rats exposed to gasoline vapour condensate, no adverse effects on the foetus were observed.

Human Effects: Prolonged/ repeated contact may cause defatting of the skin which can lead to dermatitis and may make the skin more susceptible to irritation and penetration by other materials.

IRRITATION

Eye (rabbit):Irritating

Lifetime exposure of rodents to gasoline produces carcinogenicity although the relevance to humans has been questioned. Gasoline induces kidney cancer in male rats as a consequence of accumulation of the alpha2-microglobulin protein in hyaline droplets in the male (but not female) rat kidney. Such abnormal accumulation represents lysosomal overload and leads to chronic renal tubular cell degeneration, accumulation of cell debris, mineralisation of renal medullary tubules and necrosis. A sustained regenerative proliferation occurs in epithelial cells with subsequent neoplastic transformation with continued exposure. The alpha2-microglobulin is produced under the influence of hormonal controls in male rats but not in females and, more importantly, not in humans.

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METHYL ETHYL KETONE:

TOXICITY

Oral (rat) LD50:2737 mg/kg
 Inhalation (human) TClO:100 ppm/5 m
 Inhalation (rat) LD50:23500 mg/m³/8 hr
 Dermal (rabbit) LD50:6480 mg/kg
 Inhalation (man) TClO:10 mg/m³/6 hr - Mild
 Inhalation (rat) LC50:50100 mg/m³/8 hr
 Dermal (rabbit) LD50:20000 mg/kg

IRRITATION

Eye (human):350 ppm - Irritant
 Eye (rabbit):80 mg - Irritant
 Skin (rabbit):402 mg/24 hr - Mild
 Skin (rabbit):13.78mg/24 hr Open

AMMONIUM HYDROXIDE:

TOXICITY

Oral (rat) LD50:350 mg/kg
 Oral (human) LDLo:43 mg/kg
 Inhalation (human) LCLo:5000 ppm/5m
 Inhalation (human) TClO:20 ppm
 Inhalation (rat) LC50:2000 ppm/4h
 Unreported (man) LDLo:132 mg/kg

IRRITATION

Eye (rabbit):0.25 mg SEVERE
 Eye (rabbit):1 mg/30s SEVERE

■ The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

CARCINOGEN

methylene chloride	Australia Exposure Standards	Carcinogen Category	Sk	
methylene chloride	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	2B	Possibly carcinogenic to humans
methylene chloride	Australia Exposure Standards - Carcinogens	Carcinogen Category	3	
methylene chloride	Australia Hazardous Substances Information System - Consolidated Lists	Carcinogen Category	3	
methanol	Australia Exposure Standards	Carcinogen Category	Sk	

SKIN

methylene chloride	Australia Exposure Standards - Skin	Notes	Sk
methylene chloride	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2
methanol	Australia Exposure Standards - Skin	Notes	Sk

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methanol	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2
methyl ethyl ketone	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2
ammonium hydroxide	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	3

Section 12 - ECOLOGICAL INFORMATION

AMMONIUM HYDROXIDE:

SOLVENT NAPHTHA PETROLEUM, HEAVY AROMATIC:

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

METHANOL:

SOLVENT NAPHTHA PETROLEUM, HEAVY AROMATIC:

METHYL ETHYL KETONE:

AMMONIUM HYDROXIDE:

METHYLENE CHLORIDE:

DO NOT discharge into sewer or waterways.

METHYLENE CHLORIDE:

Fish LC50 (96hr.) (mg/l): 147.6- 193

Daphnia magna EC50 (48hr.) (mg/l): 224

BCF<100: 5

log Kow (Prager 1995): 1.25

Half- life Soil - High (hours): 672

Half- life Soil - Low (hours): 168

Half- life Air - High (hours): 4584

Half- life Air - Low (hours): 458

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

Aqueous biodegradation - Removal secondary treatment - High (hours): 94.50%

Photolysis maximum light absorption - High (nano- m): 250

Photolysis maximum light absorption - Low (nano- m): 220

Photooxidation half- life air - High (hours): 4584

Photooxidation half- life air - Low (hours): 458

First order hydrolysis half- life (hours): 704 YR

For Methylene Chloride: Log Kow: 1.25; Log Koc: 1.68; Log Kom: 1.44; Henry's atm m³/mol: 2.68E-03; Henry's Law Constant: 0.002 atm/m³/mol; BCF: 5.

Atmospheric Fate: Methylene chloride is a volatile liquid that tends to evaporate to the atmosphere from water and soil. The main degradation pathway for methylene chloride in air is via reactions with hydroxyl radicals – the average atmospheric lifetime is estimated to be 130 days. Because this degradation pathway is relatively slow, methylene chloride may become widely dispersed but, is not likely to accumulate in the atmosphere. The small amount of methylene chloride which reaches the stratosphere, (about 1%), may undergo

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direct breakdown by sunlight; however, this is not expected to occur in the troposphere. Reactions of methylene chloride with ozone or other common atmospheric species, (e.g., oxygen atoms, chlorine atoms, and nitrate radicals), are not believed to contribute to its breakdown.

Terrestrial Fate: The substance will evaporate rapidly from moist soil and does not sorb strongly to soil or sediment. Methylene chloride is likely to be highly mobile in soil and is expected to leach to groundwater.

Biological breakdown is dependent on soil type, substrate concentration, and if the chemical gains or loses electrons, (redox reactions). The substance has been reported to be degraded in both oxygenated and low oxygen soils and degradation appears to accelerate in the presence of elevated levels of organic carbon.

Methylene chloride has a low tendency to absorb to soil; therefore, there is a potential for leaching to groundwater. The substance is expected to evaporate from dry/moist soil.

Aquatic Fate: Methylene chloride will evaporate rapidly from water, however; evaporation rates vary with rate of mixing, wind speed, temperature, and other factors. The substance slowly breaks down in neutral pH water, with an experimental half-life of 18 months @ 25 C. This reaction rate varies greatly with changes in temperature and pH – it has been estimated that the same reaction in acidic solutions would take 700 years.

Oxygenated and non-oxygenated biological breakdown may be important fate processes for methylene chloride in water. Methylene chloride has been observed to undergo degradation at a rapid rate in the presence of oxygen.

Ecotoxicity: Only a few valid acute toxicity data, and no results from long-term studies in marine species, are available for this substance. Available data in marine species do not indicate a marked difference in the sensitivity of marine and freshwater species to this substance. Methylene chloride is moderately toxic to the common mummichog, daggerblade grass shrimp, and fathead minnow. The substance has low toxicity to Daphnia magna water fleas. Methylene chloride is not expected to accumulate/concentrate in aquatic organisms.

The UK Department of Environment have established that methylene chloride is not a greenhouse gas and the Organisation for Economic Cooperation and Development (OECD) in a Monograph have affirmed that there was no single international view that risk reduction measures are required for the solvent. The Monograph suggests that alternatives may pose a greater risk to the environment.

In the atmosphere methylene chloride degrades by reaction with photochemically produced hydroxy radicals (half-life 6 months). Methylene chloride rapidly volatilises from water and soil to the atmosphere (estimated half-life for volatilisation from water 3-5.6 hours). In soil methylene chloride may partially leach to ground water. It is not expected to bioaccumulate or bioconcentrate in the food chain.

Drinking Water Standards:

hydrocarbon total: 10 ug/l (UK max)

dichloromethane: 20 ug/l (WHO guideline)

Soil Guidelines: Dutch Criteria: detection threshold (target)

20 mg/kg (intervention)

Air Quality Standards:

3 mg/m³ averaging time 24 hours (WHO guideline).

METHANOL:

For Methanol: Log Kow: -0.82 to -0.66; Koc: 1; Henry's Law Constant: 4.55x10⁻⁶ atm-cu m/mole; Vapor Pressure: 127 mm Hg; BCF: < 10.

Atmospheric Fate: Methanol is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase methanol is broken down in the atmosphere by reactions with hydroxyl radicals; the half-life for this reaction in air is estimated to be 17 days.

Terrestrial Fate: Methanol is expected to have very high mobility in soil. Evaporation of methanol from moist/dry soil surfaces is expected to be an important fate process. Biological breakdown in soil is expected to be an important fate process for methanol based on half-lives of 1 day, in sandy silt loam, and 3.2 days in sandy loam.

Aquatic Fate: Methanol is not expected to adsorb to suspended solids and sediment and the substance mixes in water. The substance is expected to evaporate from water surfaces with half-lives, for a model river, of 3 days, and 35 days, for a model lake. Concentration of the substance in aquatic organisms is expected to be low. Breakdown by water and sunlight are not expected to be an important environmental fate processes. The substance is expected to be broken down by microorganisms in water.

Ecotoxicity: Methanol is non-toxic to fish, including fathead minnow, rainbow trout, bluegill sunfish, and guppy. The substance is also non-toxic to aquatic invertebrates, including Daphnia pulex water fleas, brine

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and brown shrimp. The substances are non-toxic to shellfish, including mussels, marine bacterium, including Photobacterium phosphoreum, and the protozoan Tetrahymena pyriformis.

SOLVENT NAPHTHA PETROLEUM, HEAVY AROMATIC:

Marine Pollutant Yes

Toxic to aquatic organisms.

May cause long-term adverse effects in the aquatic environment.

For Petroleum Derivatives:

Environmental Fate: Chemical analysis for all individual compounds in a petroleum bulk product released to the environment is generally unrealistic due to the complexity of these mixtures and the laboratory expense. This is further complicated by differences in behavior of the substances in water, and biological/non-biological processes.

Atmospheric Fate: Petroleum derivatives with high vapor pressures are expected to evaporate and become a vapor. The exact composition of these vapors depends on the composition of the original product. Compounds such as butane, propane, benzene, toluene, ethylbenzene and xylene are preferentially evaporated from gasoline.

Terrestrial Fate: Petroleum products migrate through soil as bulk flow or by the separation of individual compounds from the bulk flow. Bulk flow results in rapid soil infiltration. Factors affecting the rate of bulk oil infiltration include soil moisture content, vegetation, terrain, climate, rate of release, soil particle size, (e.g., sand versus clay), and oil viscosity, (e.g., gasoline versus motor oil). These substances can persist in soil for years, which can lead to contamination of groundwater. As the bulk product migrates through the soil column, individual compounds may separate from the mixture and migrate independently. Light-fraction hydrocarbons tend to migrate readily through soil and heavier weight petroleum is generally more persistent in soil. The presence of oil should increase soil temperature, particularly at the surface.

Aquatic Fate: Almost all motor and heating oils are less dense than water. Solubility of these substances generally decreases with increasing molecular weight. Many compounds that are insoluble/immobile in water are soluble in bulk oil and will migrate along with the bulk oil flow.

Biodegradation: Microbes found in many natural settings have been shown to degrade organic compounds; however, low rates of breakdown are expected and are limited by environmental factors and chemical composition of the product released. The final products of microbial degradation are carbon dioxide, water, and microbial biomass. In almost all cases, the presence of oxygen is essential for effective biodegradation of oil.

Petroleum hydrocarbons in low oxygen environments have extremely low rates of degradation. The ideal pH range to promote biodegradation is close to neutral, (6-8). Soil moisture content will affect biodegradation of oils. Biodegradation rates in soils are also affected by the volume of product released to the environment.

All biological transformations are affected by temperature. Generally, as the temperature increases, biological activity tends to increase up to a temperature where enzyme denaturation occurs. The optimal temperature for biodegradation to occur ranges from 18 C to 30C.

Ecotoxicity: Large amounts of petroleum derivatives that enter the environment are expected to cause serious long-term damage. Each oil spill will have a different impact on wildlife and the surrounding environment, depending on type of substance released, location, species affected, weather, etc. These substances can coat the bodies of wildlife with a thick layer which inhibits their activities. Ingestion of these substances by wildlife will lead to movement up the food chain.

METHYL ETHYL KETONE:

Hazardous Air Pollutant:	Yes
Fish LC50 (96hr.) (mg/l):	1690- 5640
Algae IC50 (72hr.) (mg/l):	110- 4300
log Kow (Prager 1995):	0.26- 0.29
log Kow (Sangster 1997):	0.29
log Pow (Verschueren 1983):	0.26
BOD5:	1.92
COD:	2.2

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ThOD:	2.44
Half- life Soil - High (hours):	168
Half- life Soil - Low (hours):	24
Half- life Air - High (hours):	642
Half- life Air - Low (hours):	64.2
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):	100%
Aqueous biodegradation - Removal secondary treatment - Low (hours):	86%
Photooxidation half- life water - High (hours):	7.10E+05
Photooxidation half- life water - Low (hours):	1.80E+04
Photooxidation half- life air - High (hours):	642
Photooxidation half- life air - Low (hours):	64.2
First order hydrolysis half- life (hours):	>50 YR

log Kow: 0.26-0.69

log Koc: 0.69

Koc: 34

Half-life (hr) air: 2.3

Half-life (hr) H2O surface water: 72-288

Henry's atm m³ /mol: 1.05E-05

BOD 5 if unstated: 1.5-2.24,46%

COD: 2.2-2.31,100%

ThOD: 2.44

BCF: 1

Toxicity Fish: LC50(96)13.16-277.8mg/L

Toxicity invertebrate: LD0 1g/L

Bioaccumulation: not sig

Anaerobic effects: some degrad

Effects on algae and plankton: algae LD0 125mg/L

Degradation Biological: sig

processes Abiotic: photox,RxnOH*,hydl photol/deg notsig

AMMONIUM HYDROXIDE:

Marine Pollutant

Yes

Fish LC50 (96hr.) (mg/l):

8.2

Very toxic to aquatic organisms.

For Ammonia:

Atmospheric Fate: Ammonia reacts rapidly with available acids (mainly sulfuric, nitric, and sometimes hydrochloric acid) to form the corresponding salts. Ammonia is persistent in the air.

Aquatic Fate: Biodegrades rapidly to nitrate, producing a high oxygen demand. Non-persistent in water (half-life 2 days).

Ecotoxicity: Moderately toxic to fish under normal temperature and pH conditions and harmful to aquatic life at low concentrations. Does not concentrate in food chain.

Prevent, by any means available, spillage from entering drains or water courses.

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Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
methylene chloride	LOW	HIGH	LOW	HIGH
methanol	HIGH	No Data Available	LOW	HIGH
solvent naphtha petroleum, heavy aromatic	No Data Available	No Data Available	No Data Available	No Data Available
methyl ethyl ketone	LOW	HIGH	LOW	HIGH
ammonium hydroxide	LOW	No Data Available	LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible.

Otherwise:

- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
- Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

- DO NOT allow wash water from cleaning or process equipment to enter drains.
- It may be necessary to collect all wash water for treatment before disposal.
- In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
- Where in doubt contact the responsible authority.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

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Section 14 - TRANSPORTATION INFORMATION



Labels Required: TOXIC

HAZCHEM:

2X (ADG7)

ADG7:

Class or Division:	6.1	Subsidiary Risk1:	None
UN No.:	2810	Packing Group:	III
Special Provision:	223 274	Limited Quantity:	5 L
Portable Tanks & Bulk Containers - Instruction:	T7	Portable Tanks & Bulk Containers - Special Provision:	TP1 TP28
Packagings & IBCs - Packing Instruction:	P001 IBC03 LP01	Packagings & IBCs - Special Packing Provision:	None

Name and Description: TOXIC LIQUID, ORGANIC, N.O.S. (see 3.2.5 for relevant [AUST.] entries) (contains methylene chloride and methanol)

Air Transport IATA:

ICAO/IATA Class:	6.1	ICAO/IATA Subrisk:	None
UN/ID Number:	2810	Packing Group:	III
Special provisions:	A3A4A137		
Cargo Only			
Packing Instructions:	663	Maximum Qty/Pack:	220 L
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	655	Maximum Qty/Pack:	60 L
Passenger and Cargo Limited Quantity		Passenger and Cargo Limited Quantity	
Packing Instructions:	Y642	Maximum Qty/Pack:	2 L

Shipping name: TOXIC LIQUID, ORGANIC, N.O.S. (contains methylene chloride and methanol)

Maritime Transport IMDG:

IMDG Class:	6.1	IMDG Subrisk:	None
UN Number:	2810	Packing Group:	III
EMS Number:	F-A,S-A	Special provisions:	223 274
Limited Quantities:	5 L		

Shipping name: TOXIC LIQUID, ORGANIC, N.O.S. (contains methylene chloride and methanol)

Section 15 - REGULATORY INFORMATION

Indications of Danger:

T Toxic

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Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

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REGULATIONS

Regulations for ingredients

methylene chloride (CAS: 75-09-2) is found on the following regulatory lists;

"Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (AQUA/1 to 6 - non-pesticide anthropogenic organics)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - organic compounds)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (STOCK)", "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics", "Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix I", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution - Norway", "Sigma-AldrichTransport Information", "United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments", "WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established", "WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water"

methanol (CAS: 67-56-1) is found on the following regulatory lists;

"Acros Transport Information", "Australia - New South Wales - Work Health and Safety Regulation 2011 Restricted hazardous chemicals", "Australia - New South Wales Hazardous Substances Prohibited for Specific Uses", "Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations- Restricted hazardous chemicals", "Australia - Queensland Work Health and Safety Regulation - Restricted hazardous chemicals", "Australia - South Australia - Work Health and Safety Regulations 2012 - Restricted hazardous chemicals", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Restricted hazardous chemicals", "Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6", "Australia Work Health and Safety Regulations 2011 - Restricted

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hazardous chemicals", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information", "United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments"

solvent naphtha petroleum, heavy aromatic (CAS: 64742-94-5) is found on the following regulatory lists;

"Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2", "Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO Provisional Categorization of Liquid Substances - List 3: (Trade-named) mixtures containing at least 99% by weight of components already assessed by IMO, presenting safety hazards", "International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs", "International Chemical Secretariat (ChemSec) SIN List (*Substitute It Now!)", "International Council of Chemical Associations (ICCA) - High Production Volume List", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR List of Chemicals for Priority Action", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information"

methyl ethyl ketone (CAS: 78-93-3) is found on the following regulatory lists;

"Australia Customs (Prohibited Exports) Regulations 1958 - Schedule 9 Precursor substances - Part 2", "Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "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 Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "FisherTransport Information", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Fragrance Association (IFRA) Survey: Transparency List", "IOFI Global Reference List of Chemically Defined Substances", "OECD List of High Production Volume (HPV) Chemicals", "OSPAR National List of Candidates for Substitution – Norway", "Sigma-AldrichTransport Information", "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 (Red List) - Table II"

ammonium hydroxide (CAS: 1336-21-6) is found on the following regulatory lists;

"Acros Transport Information", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (AQUA/1 to 6 - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)", "Australia - Queensland Work Health and Safety Regulation - Hazardous chemicals at major hazard facilities (and their threshold quantity)", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Hazardous Chemicals at Major Hazard Facilities (and their Threshold Quantity) - Table 15.1", "Australia - Victoria Drugs, Poisons and Controlled Substances (Precursor

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Chemicals) Regs 2007 - Schedule 1 - Precursor Chemicals and Quantities", "Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 2", "Australia Council of Australian Governments (COAG) Chemicals of Security Concern", "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics", "Australia Exposure Standards", "Australia FAISD Handbook - First Aid Instructions, Warning Statements, and General Safety Precautions", "Australia Hazardous Substances Information System - Consolidated Lists", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "Australia National Pollutant Inventory", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix F (Part 3)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6", "Australia Work Health and Safety Regulations 2011 - Hazardous chemicals at major hazard facilities and their threshold quantity", "CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless Otherwise Specified, in Accordance with GMP", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "IMO IBC Code Chapter 17: Summary of minimum requirements", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "International Council of Chemical Associations (ICCA) - High Production Volume List", "International Fragrance Association (IFRA) Survey: Transparency List", "International Numbering System for Food Additives", "IOFI Global Reference List of Chemically Defined Substances", "OECD List of High Production Volume (HPV) Chemicals", "Sigma-Aldrich Transport Information", "WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established"

No data for GSB Spray Gun Cleaner (CW: 23-0293)

Section 16 - OTHER INFORMATION

REPRODUCTIVE HEALTH GUIDELINES

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
methylene chloride	2.4 mg/m ³	100	R	14	-
methanol	262 mg/m ³	NA	NA	NA	Yes
methyl ethyl ketone	590 mg/m ³	NA	NA	NA	Yes

■ 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).

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering

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controls must be considered.

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This is the end of the MSDS.