

# BOC WELD-GUARD HEAVY DUTY ANTI-SPATTER SPRAY

Chemwatch Independent Material Safety Data Sheet

Issue Date: 19-Jun-2009

NA317TC

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Version No:2.0  
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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

BOC WELD-GUARD HEAVY DUTY ANTI-SPATTER SPRAY

### SYNONYMS

"Manufacturer's Code 1477", "release agent", "Callington Haven"

### PROPER SHIPPING NAME

AEROSOLS

### PRODUCT USE

Liquid release agent to prevent weld spatter from adhering to metal.  
» Application is by spray atomisation from a hand held aerosol pack.

### SUPPLIER

Company: BOC

Address:

Riverside Corporate Park

10 Julius Avenue

North Ryde NSW 2113

Telephone: +61 2 8874 4400

Emergency Tel: Chemwatch 1800 039 008

Emergency Tel: Aust Poisons Information Centre 131

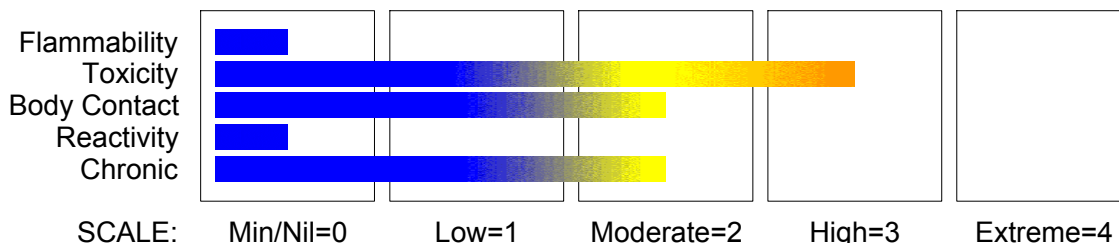
126 (24 hrs)

## 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



### POISONS SCHEDULE

None

RISK

SAFETY

continued...

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### Section 2 - HAZARDS IDENTIFICATION

- » Harmful if swallowed.
- » Irritating to skin.
- » Limited evidence of a carcinogenic effect.
- » Risk of explosion if heated under confinement.
- » Inhalation and/or skin contact may produce health damage\*.
- » Cumulative effects may result following exposure\*.
- » May produce discomfort of the eyes and respiratory tract\*.
- » May affect fertility\*.
- » Vapours potentially cause drowsiness and dizziness\*.
- \* (limited evidence).
- » Do not breathe gas/fumes/vapour/spray.
- » 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.
- » Keep container tightly closed.
- » Keep away from food drink and animal feeding stuffs.
- » In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.
- » If swallowed IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).
- » This material and its container must be disposed of as hazardous waste.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
methylene chloride	75-09-2	>60
performance additives		<30
carbon dioxide	124-38-9	1-10

### Section 4 - FIRST AID MEASURES

#### SWALLOWED

- For advice, contact a Poisons Information Centre or a doctor.
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.
- 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 contact occurs:
  - Immediately remove all contaminated clothing, including footwear.

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Section 4 - FIRST AID MEASURES

- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

### INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis 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.

### NOTES TO PHYSICIAN

» Treat symptomatically.

DO NOT administer sympathomimetic drugs as they may cause ventricular arrhythmias.

For acute or short term repeated exposures to methylene chloride:

- Methylene chloride is well absorbed by the lung. An 8 hour exposure to 250 ppm causes carboxyhaemoglobin levels to exceed 8%. Physical exertion and smoke produce an additive effect.
- The lungs exhale most of the absorbed dose unchanged. Between 1/4 and 1/3 is metabolised to carbon monoxide / dioxide. 5 hours of 100% oxygen is required, typically, to reduce the carboxyhaemoglobin level from 13% to 7.5%.
- As with inhalation and ingestion of the hydrocarbons support of respiration and monitoring for dysrhythmias are the first steps toward stabilisation.
- Small ingestions require only dilution with water or milk. Patients who have ingested more than several swallows may benefit from Ipecac Syrup/lavage, charcoal or cathartics. No data is available to support the efficacy of these treatments.

[Ellenhorn and Barceloux: Medical Toxicology]

BIOLOGICAL EXPOSURE INDEX - BEI

Determinant	Index	Sampling Time	Comments
1. Methaemoglobin in blood	1.5% of haemoglobin	During or end of shift	B, NS, SQ

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

NS: Non-specific determinant; Also seen after exposure to other materials

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

## Section 5 - FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

- Water spray or fog.
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

### 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 courses.
- Use fire fighting procedures suitable for surrounding area.

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## Section 5 - FIRE FIGHTING MEASURES

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- 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

- Non combustible.
  - Not considered to be a significant fire risk.
  - Heating may cause expansion or decomposition leading to violent rupture of containers.
  - 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.
  - Decomposes on heating and may emit toxic fumes of carbon monoxide (CO).
- Emits toxic fumes of phosgene and hydrogen chloride if involved in fire.

**HAZCHEM: None**

### Personal Protective Equipment

Gas tight chemical resistant suit.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### MINOR SPILLS

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

- 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

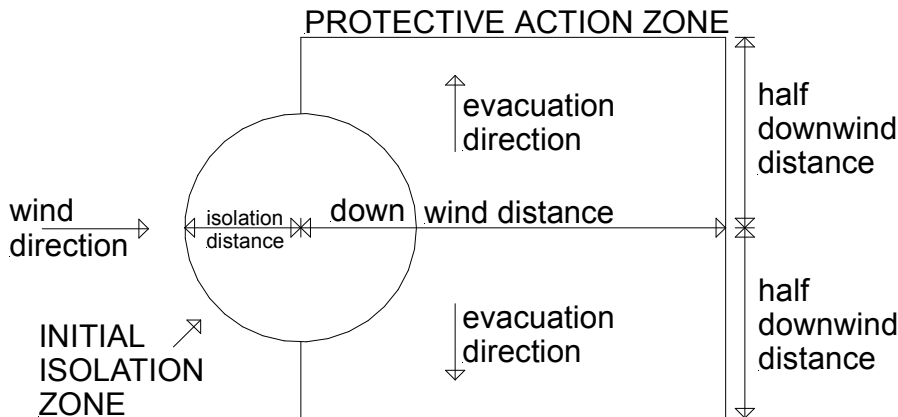
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## Section 6 - ACCIDENTAL RELEASE MEASURES



From IERG (Canada/Australia)

Isolation Distance	-
Downwind Protection Distance	8 metres
IERG Number	49

### 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:

methylene chloride 4000ppm

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

methylene chloride 750ppm

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

methylene chloride 200ppm

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%

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Section 6 - ACCIDENTAL RELEASE MEASURES

R51                       $\geq 2.5\%$   
else                       $\geq 10\%$   
where percentage is percentage of ingredient found in the mixture

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

## Section 7 - HANDLING AND STORAGE

### PROCEDURE FOR HANDLING

- 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

Avoid storage with strong acids, strong alkalis, oxidisers, alkali metals and powdered aluminium and magnesium.

### STORAGE REQUIREMENTS

- Store in original containers.
- Store in an upright position.
- 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 in a cool, dry, well ventilated area; away from incompatible materials.
- Avoid storage at temperatures higher than 40 deg C.
- Protect containers against physical damage.
- Check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



+: May be stored together

O: May be stored together with specific preventions

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Section 7 - HANDLING AND STORAGE

X: *Must not be stored together*

## 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>
Australia Exposure Standards	methylene chloride (Methylene chloride)	50	174		
Australia Exposure Standards	carbon dioxide (Carbon dioxide in coal mines)	12500	22500	30000	54000
Australia Exposure Standards	carbon dioxide (Carbon dioxide)	5000	9000	30000	54000

### EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m <sup>3</sup> )	Revised IDLH Value (ppm)
methylene chloride		2, 000
carbon dioxide		40, 000

### ODOUR SAFETY FACTOR (OSF)

OSF=0.068 (CARBON DIOXIDE)

» Exposed individuals are NOT 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 C, D or E.

The Odour Safety Factor (OSF) is defined as:

OSF= Exposure Standard (TWA) ppm/ 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

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### MATERIAL DATA

» None assigned. Refer to individual constituents.

### INGREDIENT DATA

CARBON DIOXIDE:

METHYLENE CHLORIDE:

» 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).

CARBON DIOXIDE:

» May act as a simple asphyxiants; these are gases which, when present in high concentrations, reduce the oxygen content in air below that required to support breathing, consciousness and life; loss of consciousness, with death by suffocation may rapidly occur in an oxygen deficient atmosphere.

CARE: Most simple asphyxiants are odourless or possess low odour and there is no warning on entry into an oxygen deficient atmosphere. If there is any doubt, oxygen content can be checked simply and quickly. It may not be appropriate to only recommend an exposure standard for simple asphyxiants rather it is essential that sufficient oxygen be maintained. Air normally has 21 percent oxygen by volume, with 18 percent regarded as minimum under normal atmospheric pressure to maintain consciousness / life. At pressures significantly higher or lower than normal atmospheric pressure, expert guidance should be sought.

For carbon dioxide:

NOTE: Detector tubes for carbon dioxide, measuring in excess of 0.01 % vol., are commercially available. Long-term measurements (4 hrs) may be conducted to detect concentrations exceeding 250 ppm.

Studies using physically fit males in confined spaces indicate the TLV-TWA and STEL provides a wide margin of safety against asphyxiation and from undue metabolic stress, provided normal amounts of oxygen are present in inhaled air. Lowered oxygen content, increased physical activity and prolonged exposures each impact on systemic and respiratory effects.

Stimulation of the respiratory centre is produced at 50,000 ppm (5%). The gas is weakly narcotic at 30,000 ppm giving rise to reduced acuity of hearing and increasing blood pressure and pulse, Persons exposed a 20,000 ppm for several hours developed headaches and dyspnea on mild exertion, Acidosis and adrenal cortical exhaustion occurred as a result of prolonged continuous exposure at 10,000-20,000 ppm.

Intoxication occurs after a 30 minute exposure at 50,000 ppm whilst exposure at 70,000-100,000 ppm produces unconsciousness within a few minutes.

Odour Safety Factor (OSF)

OSF=0.068 (CARBON DIOXIDE).

### PERSONAL PROTECTION



### EYE

- Safety glasses with side shields; or as required,
- 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 lens or restrictions on use, should be created for each

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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

- No special equipment needed when handling small quantities.
- OTHERWISE: Wear general protective gloves, eg. light weight rubber gloves. Or as required: Wear chemical protective gloves, eg. PVC. Wear safety footwear.

### OTHER

» 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	AXNO- AUS	-
1000	50	-	AXNO- AUS
5000	50	Airline *	-
5000	100	-	AXNO- 2
10000	100	-	AXNO- 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

» Use in a well-ventilated area.

General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, wear 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:  
solvent, vapours, degreasing etc., evaporating from tank (in still air).  
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)  
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of

Air Speed:  
0.25- 0.5 m/s (50- 100 f/min)  
0.5- 1 m/s (100- 200 f/min.)  
1- 2.5 m/s (200- 500 f/min.)

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rapid air motion)  
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion). 2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range

1: Room air currents minimal or favourable to capture

2: Contaminants of low toxicity or of nuisance value only.

3: Intermittent, low production.

4: Large hood or large air mass in motion

Upper end of the range

1: Disturbing room air currents

2: Contaminants of high toxicity

3: High production, heavy use

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

Clear yellow liquid with a penetrating, ether-like odour; dispersible in water.

Supplied in aerosol pack containing carbon dioxide propellant.

### PHYSICAL PROPERTIES

Liquid.

Gas.

Mixes with water.

Molecular Weight: Not applicable

Melting Range (°C): Not available

Solubility in water (g/L): Miscible

pH (1% solution): Not applicable.

Volatile Component (%vol): >60

Relative Vapour Density (air=1): 2.93

Lower Explosive Limit (%): Not applicable

Autoignition Temp (°C): Not available

State: Liquid

Boiling Range (°C): 39 initial

Specific Gravity (water=1): 1.25 approx.

pH (as supplied): Not applicable

Vapour Pressure (kPa): 50.6 @ 22 degC

Evaporation Rate: Not available

Flash Point (°C): Not applicable.

Upper Explosive Limit (%): Not applicable

Decomposition Temp (°C): Not available

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Elevated temperatures.
- Presence of open flame.

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

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- Product is considered stable.
  - Hazardous polymerisation will not occur.
- For incompatible materials - refer to Section 7 - Handling and Storage.*
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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

» The liquid is highly discomforting and toxic if swallowed.  
Ingestion may result in nausea, abdominal irritation, pain and vomiting.  
Considered an unlikely route of entry in commercial/industrial environments.

##### EYE

» The mist is highly discomforting to the eyes 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.  
The vapour is discomforting to the eyes.  
The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

##### SKIN

» The liquid is highly discomforting to the skin and may cause drying of the skin, which may lead to dermatitis and and it is absorbed by skin.  
Toxic effects may result from skin absorption.  
Bare unprotected skin should not be exposed to this material The material may accentuate any pre-existing skin condition.  
The material may produce severe 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) thickening of the epidermis.  
Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

##### INHALED

» The vapour is highly discomforting to the upper respiratory tract.  
Inhalation hazard is increased at higher temperatures.  
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.  
Depression of the central nervous system is the most outstanding effect of most halogenated aliphatic hydrocarbons. Inebriation and excitation, passing into narcosis, is a typical reaction. In severe acute exposures there is always a danger of death from respiratory failure or cardiac arrest due to a tendency to make the heart more susceptible to catecholamines (adrenalin).  
WARNING: Intentional misuse by concentrating/inhaling contents may be lethal.

#### CHRONIC HEALTH EFFECTS

» Methylene chloride is stored in body fat and is metabolised to carbon monoxide which increases and sustains carboxyhaemoglobin levels in the blood, reducing its oxygen carrying capacity. Smokers with already high carboxyhaemoglobin levels may show increased effects of exposure.  
WARNING: Aerosol containers may present pressure related hazards.

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## Section 11 - TOXICOLOGICAL INFORMATION

### TOXICITY AND IRRITATION

» Not available. Refer to individual constituents.

#### METHYLENE CHLORIDE:

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

#### 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/m<sup>3</sup>/30 m

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

The material may produce severe 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) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

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

#### CARBON DIOXIDE:

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

#### TOXICITY

Inhalation (rat) LCLo: 657190 ppm/15 m

Inhalation (human) TClO: 2000 ppm

Inhalation (human) LCLo: 9 pph/5 m (9%)

- pulmonary effects

IDLH: 50,000 ppm

#### IRRITATION

### CARCINOGEN

methylene chloride	International Agency for Research on Cancer (IARC) Carcinogens	Group	2B
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methylene chloride	Australia Exposure Standards - Carcinogens	Carcinogen Category	3
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### REPROTOXIN

methylene chloride	ILO Chemicals in the electronics industry that have toxic effects on reproduction	Reduced fertility or sterility
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carbon dioxide	ILO Chemicals in the electronics industry that have toxic effects on reproduction	Reduced fertility or sterility
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### SKIN

methylene chloride	Australia Exposure Standards - Skin	Notes	Sk
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## Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined

Refer to data for ingredients, which follows:

#### METHYLENE CHLORIDE:

» Fish LC50 (96hr.) (mg/l):

147.6- 193

continued...

# BOC WELD-GUARD HEAVY DUTY ANTI-SPATTER SPRAY

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## Section 12 - ECOLOGICAL INFORMATION

» 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

BCF : 5

Environmental fate:

Methylene chloride is a volatile liquid, and tends to volatilise to the atmosphere from water and soil. The half-life of methylene chloride volatilisation from water has been found to be 21 minutes under experimental conditions but actual volatilisation from natural waters will depend on the rate of mixing, wind speed, temperature, and other factors. The Henry's law constant value (H) of 0.002 atm/m<sup>3</sup>/mol indicates that methylene chloride will volatilise rapidly from moist soil and water surfaces.

Methylene chloride is not strongly sorbed to soils or sediments. Based on its low soil organic carbon partitioning coefficient (Koc) of 25, methylene chloride is likely to be very highly mobile in soils and may be expected to leach from soils into groundwater.

Based on a reported log octanol/water partition coefficient (Kow) of 1.3 an estimated bioconcentration factor (BCF) of 2.3 was derived. There is no evidence of biomagnification, but because the estimated BCF is low, significant biomagnification of methylene chloride in aquatic food chains is not expected.

Air: The main degradation pathway for methylene chloride in air is its reaction with photochemically generated hydroxyl radicals. Thus, the atmospheric lifetime of methylene chloride may be predicted from the hydroxyl radical concentration in air and the rate of reaction. Most reported rates for hydroxyl radical reaction with methylene chloride range from 1.0 x10<sup>-13</sup> to 1.5 x10<sup>-13</sup> cm<sup>3</sup>/mol/sec, and estimates of average atmospheric hydroxyl radical concentration range from 2.5 x10<sup>+5</sup> to 1x10<sup>+6</sup> mol/cm<sup>3</sup>. Using this information, the average atmospheric lifetime for methylene chloride may be calculated 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 direct photolytic degradation; however, photolysis in the troposphere is not expected. 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.

Water: Methylene chloride undergoes slow hydrolysis in water. The experimental half-life reported for the hydrolysis reaction, at neutral conditions, is approximately 18 months at 25 C. However, the rate of reaction varies greatly with changes in temperature and pH. A hydrolytic half-life of 14 days was reported for methylene chloride in acidic solutions at 80-150 C. This experimental value, when extrapolated to 25 C, is about 700 years. Different mechanisms of hydrolyses may be responsible for these two widely different values.

Both aerobic and anaerobic biodegradation may be an important fate process for methylene chloride in water. Methylene chloride has been observed to undergo degradation at a rapid rate under aerobic conditions.

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## Section 12 - ECOLOGICAL INFORMATION

Reported total methylene

chloride loss was 100% after 7 days in a static culture flask biodegradability screening test

Sediment and Soil: The rate of biodegradation was found to be dependent on soil type, substrate concentration, and redox state of the soil. Methylene chloride biodegradation has been reported to occur under both aerobic conditions and anaerobic conditions. The biodegradation of methylene chloride appears to be accelerated by 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. Also, because of the high vapor pressure, volatilisation to air is also a likely fate process from dry soil. Its high Henry's law constant (0.002 atm/m<sup>3</sup>/mol) indicates that volatilization from moist soil is also likely.

» 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/m<sup>3</sup> averaging time 24 hours (WHO guideline).

CARBON DIOXIDE:

» log Kow (Sangster 1997): 0.83

» For carbon dioxide:

Environmental fate:

Carbon dioxide in earth's atmosphere is considered a trace gas currently occurring at an average concentration of about 385 parts per million by volume or 582 parts per million by mass. The mass of the Earth atmosphere is  $5.14 \times 10^{18}$  kg, so the total mass of atmospheric carbon dioxide is  $3.0 \times 10^{15}$  kg (3,000 gigatonnes). Atmospheric concentrations of carbon dioxide fluctuate slightly with the change of the seasons, driven primarily by seasonal plant growth.

Due to human activities such as the combustion of fossil fuels and deforestation, the concentration of atmospheric carbon dioxide has increased by about 35% since preindustrial times. In 1999, 2,244,804,000 (=  $\sim 2.2 \times 10^9$ ) metric tons of CO<sub>2</sub> were produced in the U.S. as a result of electric energy generation. This is an output rate of 0.6083 kg (1.341 pounds) per kWh.

There is about 50 times as much carbon dissolved in the oceans in the form of CO<sub>2</sub> and CO<sub>2</sub> hydration products as exists in the atmosphere. The oceans act as an enormous carbon sink, having "absorbed about one-third of all human-generated CO<sub>2</sub> emissions to date." Generally, gas solubility decreases as water temperature increases. Accordingly the ability of the oceans to absorb carbon dioxide from the atmosphere decreases as ocean temperatures rise.

Carbon dioxide is soluble in water, in which it spontaneously interconverts between CO<sub>2</sub> and H<sub>2</sub>CO<sub>3</sub> (carbonic acid). The relative concentrations of CO<sub>2</sub>, H<sub>2</sub>CO<sub>3</sub>, and the deprotonated forms HCO<sub>3</sub><sup>-</sup> (bicarbonate) and CO<sub>3</sub><sup>2-</sup> (carbonate) depend on the pH. In neutral or slightly alkaline water (pH > 6.5), the bicarbonate form predominates (>50%) becoming the most prevalent (>95%) at the pH of seawater, while in very alkaline water (pH > 10.4) the predominant (>50%) form is carbonate. The bicarbonate and carbonate forms are very soluble, such that air-equilibrated ocean water (mildly alkaline with typical pH = 8.2 - 8.5) contains about 120 mg of bicarbonate per liter.

Most of the CO<sub>2</sub> taken up by the ocean forms carbonic acid. Some is consumed in photosynthesis by organisms in the water, and a small proportion of that sinks and leaves the carbon cycle. There is considerable concern that as a result of increased CO<sub>2</sub> in the atmosphere the acidity of seawater has been increasing and may adversely affect organisms living in the water. In particular, with increasing acidity, the availability of carbonates for forming shells decreases.

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### Section 12 - ECOLOGICAL INFORMATION

#### Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
BOC Weld- Guard Heavy Duty Anti- Spatter Spray		No data		
methylene chloride	LOW	HIGH	LOW	HIGH
carbon dioxide	LOW	No data	LOW	HIGH

### 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: NON-FLAMMABLE COMPRESSED GAS, TOXIC

HAZCHEM: None (ADG6)

#### Land Transport UNDG:

Class or division:	2	Subsidiary risk:	None
UN No.:	1950	UN packing group:	None
Shipping Name:	AEROSOLS		

#### Air Transport IATA:

ICAO/IATA Class:	2.2	ICAO/IATA Subrisk:	6.1
UN/ID Number:	1950	Packing Group:	None
Special provisions:	A1 A145 A153		
Cargo Only			
Packing Instructions:	212	Maximum Qty/Pack:	50 kg
Passenger and Cargo		Passenger and Cargo	
Packing Instructions:	Forbidden	Maximum Qty/Pack:	Forbidden
Passenger and Cargo		Passenger and Cargo	
Limited Quantity		Limited Quantity	
Packing Instructions:	-	Maximum Qty/Pack:	-
Shipping Name:	AEROSOLS, NON-FLAMMABLE (TEAR GAS DEVICES)		

#### Maritime Transport IMDG:

IMDG Class:	2.2	IMDG Subrisk:	SP63
UN Number:	1950	Packing Group:	None
EMS Number:	F- D, S- U	Special provisions:	63 190 277 327 959
Limited Quantities:	See SP277	Marine Pollutant:	Not Determined
Shipping Name:	AEROSOLS		

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## Section 15 - REGULATORY INFORMATION

### POISONS SCHEDULE: None

### REGULATIONS

BOC Weld-Guard Heavy Duty Anti-Spatter Spray (CAS: None):

No regulations applicable

#### 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 (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: Pollutants entering waterways taken to cause environmental harm (IRRIG)

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 Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

Australia National Pollutant Inventory

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix E (Part 2)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix F (Part 3)

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Appendix I

Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5

GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships

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

IMO Provisional Categorization of Liquid Substances - List 1: Pure or technically pure products

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

carbon dioxide (CAS: 124-38-9) is found on the following regulatory lists;

Australia Exposure Standards

Australia Hazardous Substances

Australia High Volume Industrial Chemical List (HVICL)

Australia Inventory of Chemical Substances (AICS)

CODEX General Standard for Food Additives (GSFA) - Additives Permitted for Use in Food in General, Unless

Otherwise Specified, in Accordance with GMP

OECD Representative List of High Production Volume (HPV) Chemicals

## Section 16 - OTHER INFORMATION

### 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	Endpoint	CR	Adeq TLV
methylene chloride	2.4 mg/m <sup>3</sup>	100	R	14	-
carbon dioxide	1800 mg/m <sup>3</sup>	10	D/R	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

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Section 16 - OTHER INFORMATION

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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](http://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 controls must be considered.

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*This is the end of the MSDS.*