

ULTRACOLOR WRITE 'N MARK FLUORESCENT AEROSOL PAINT

Chemwatch Material Safety Data Sheet

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NC317TCP

CHEMWATCH 47308

Version No:2.0

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

ULTRACOLOR WRITE 'N MARK FLUORESCENT AEROSOL PAINT

SYNONYMS

"spray paint"

PROPER SHIPPING NAME

AEROSOLS

PRODUCT USE

Spray paint.

SUPPLIER

Company: Zeus Chemical Products Pty Ltd

Address:

3 Anderson Place

South Windsor

NSW, 2756

AUS

Telephone: +61 2 4577 4866

Fax: +61 2 4577 6919

HAZARD RATINGS

Flammability	4
Toxicity	2
Body Contact	2
Reactivity	0
Chronic	2

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

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

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

POISONS SCHEDULE

None

RISK

Extremely flammable.

Harmful if swallowed.

Irritating to eyes and skin.

SAFETY

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.

Limited evidence of a carcinogenic effect.
Risk of explosion if heated under confinement.
Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Possible risk of harm to the unborn child.

Vapours may cause drowsiness and dizziness.

Inhalation and/or skin contact may produce health damage*.
Cumulative effects may result following exposure*.

May produce discomfort of the respiratory system*.

May affect fertility*.

* (limited evidence).

Keep container tightly closed.

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.

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	10-30
toluene	108-88-3	10-30
hydrocarbon resin (aromatic)		1-10
fluorescent pigments		1-10
hydrocarbon propellant	68476-85-7.	30-60

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

INHALED

- If 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.

NOTES TO PHYSICIAN

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 course.
- If safe, switch off electrical equipment until vapour fire hazard removed.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

FIRE/EXPLOSION HAZARD

- Liquid and vapour are highly flammable.
 - Severe fire hazard when exposed to heat or flame.
 - Vapour forms an explosive mixture with air.
 - Severe explosion hazard, in the form of vapour, when exposed to flame or spark.
 - Vapour may travel a considerable distance to source of ignition.
 - Heating may cause expansion or decomposition with violent container rupture.
 - Aerosol cans may explode on exposure to naked flames.
 - Rupturing containers may rocket and scatter burning materials.
 - Hazards may not be restricted to pressure effects.
 - May emit acrid, poisonous or corrosive fumes.
 - On combustion, may emit toxic fumes of carbon monoxide (CO).
- Other combustion products include: carbon dioxide (CO₂), hydrogen chloride and phosgene.

HAZCHEM: 2Y

Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS

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

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	4000 ppm
toluene	1000 ppm
hydrocarbon propellant	2000 ppm

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

protective action is:

methylene chloride	750 ppm
toluene	300 ppm
hydrocarbon propellant	2000 ppm

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

methylene chloride	200 ppm
toluene	50 ppm
hydrocarbon propellant	2000 ppm

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

methylene chloride	25 ppm
toluene	50 ppm
hydrocarbon propellant	1000 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

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

+ X X X X +

+: May be stored together

O: May be stored together with specific preventions

X: Must not be stored together

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 oxidising agents, strong acids and alkalis, organic peroxides, alkali metals, aluminium and magnesium powders.

STORAGE REQUIREMENTS

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

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source TWA	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³
F/CC							

Source TWA	Material	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³	Peak ppm	Peak mg/m ³
Australia Exposure Standards	methylene chloride (Methylene chloride)	50	174				
Australia Exposure Standards	toluene (Toluene)	50	191	150	574		
Australia Exposure Standards	hydrocarbon propellant (LPG (liquified petroleum gas))	1, 000	1, 800				

EMERGENCY EXPOSURE LIMITS

Material	Revised IDLH Value (mg/m ³)	Revised IDLH Value (ppm)
methylene chloride		2,000
toluene		500

hydrocarbon propellant

2,000 [LEL]

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

ODOUR SAFETY FACTOR (OSF)

OSF=0.16 (hydrocarbon propellant)

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

MATERIAL DATA

None assigned. Refer to individual constituents.

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

INGREDIENT DATA

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
7200 ppm (8-16 min)	Paraesthesia, tachycardia

>50000 ppm

Immediately life-threatening

TOLUENE:

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

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

NOTE: Detector tubes measuring in excess of 5 ppm, are available. High concentrations of toluene in the air produce depression of the central nervous system (CNS) in humans. Intentional toluene exposure (glue-sniffing) at maternally-intoxicating concentration has also produced birth defects. Foetotoxicity appears at levels associated with CNS narcosis and probably occurs only in those with chronic toluene-induced kidney failure. Exposure at or below the recommended TLV-TWA is thought to prevent transient headache and irritation, to provide a measure of safety for possible disturbances to human reproduction, the prevention of reductions in cognitive responses reported amongst humans inhaling greater than 40 ppm, and the significant risks of hepatotoxic, behavioural and nervous system effects (including impaired reaction time and incoordination). Although toluene/ethanol interactions are well recognised, the degree of protection afforded by the TLV-TWA among drinkers is not known.

HYDROCARBON PROPELLANT:
Not available

PERSONAL PROTECTION

EYE

No special equipment for minor exposure i.e. when handling small quantities.

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

HANDS/FEET

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	AX-AUS	-

1000	50	-	AX-AUS
5000	50	Airline *	-
5000	100	-	AX-2
10000	100	-	AX-3
	100+		Airline**

* - Continuous Flow ** - Continuous-flow or positive pressure demand. The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required. For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate ventilation in warehouse or closed storage areas. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air)	0.25-0.5 m/s (50-100 f/min)
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)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min)
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	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood - local control only

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

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Yellow liquid with solvent odour; does not mix with water. Supplied in aerosol pack containing hydrocarbon propellant.

PHYSICAL PROPERTIES

Liquid.

Gas.

Does not mix with water.

Molecular weight: Not applicable.
Melting Range (?C): Not available.
Solubility in water (g/L): Immiscible
pH (1% solution): Not applicable.
Volatile Component (%vol): Not available
Relative Vapour Density (air=1): >1
Lower Explosive Limit (%): Not available.
Autoignition Temp (?C): Not available.
State: Liquid

Boiling Range (?C): Not available.
Specific Gravity (water=1): Not available.
pH (as supplied): Not applicable
Vapour Pressure (kPa): Not available.
Evaporation Rate: Not available
Flash Point (?C): -81 propellant
Upper Explosive Limit (%): Not available.
Decomposition Temp (?C): Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

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

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

The liquid is toxic and discomforting to the gastro-intestinal tract. Ingestion may result in nausea, pain, vomiting. Vomit entering the lungs by aspiration may cause potentially lethal chemical pneumonitis. Considered an unlikely route of entry in commercial/industrial environments.

EYE

The vapour is discomforting to the eyes. The liquid is highly discomforting 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 material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

SKIN

The liquid is discomforting to the skin, it is slowly absorbed and is capable of causing skin reactions which may lead to dermatitis from repeated exposures over long periods. Toxic effects may result from skin absorption. Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard. 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.

INHALED

The vapour/mist is 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.
 Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.
 If exposure to highly concentrated solvent atmosphere is prolonged this may lead to narcosis, unconsciousness, even coma and possible death.
 WARNING: Intentional misuse by concentrating/inhaling contents may be lethal.

CHRONIC HEALTH EFFECTS

Chronic solvent inhalation exposures may result in nervous system impairment and liver and blood changes. [PATTYS].
 Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following.
 Dichloromethane is stored in body fat and metabolised to carbon monoxide, which reduces the oxygen carrying capacity of blood.
 WARNING: Aerosol containers may present pressure related hazards.

TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

METHYLENE CHLORIDE:

TOXICITY
 Oral (human) LDLo: 357 mg/kg
 Skin (rabbit): 810 mg/24hr- SEVERE
 Skin (rabbit): 100mg/24hr- Moderate
 Eye(rabbit): 162 mg - m
 Eye(rabbit): 500 mg/24hr - Mild
 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

Moderate

TOLUENE:

TOXICITY
 Oral (human) LDLo: 50 mg/kg
 Oral (rat) LD50: 636 mg/kg
 Inhalation (human) TCLo: 100 ppm
 Inhalation (man) TCLo: 200 ppm
 Inhalation (rat) LC50: >26700 ppm/1h
 Dermal (rabbit) LD50: 12124 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/24h- Moderate
 Skin (rabbit): 500 mg - Moderate
 Eye (rabbit): 0.87 mg - Mild
 Eye (rabbit): 2 mg/24h - SEVERE
 Eye (rabbit): 100 mg/30sec - Mild

HYDROCARBON PROPELLANT:

Not available. Refer to individual constituents.

MATERIAL SKIN	CARCINOGEN	REPROTOXIN	SENSITISER
methylene chloride	IARC:2B NOHSC NTPB	ILOE1	
toluene	IARC:3	ILOE1	

CARCINOGEN

IARC: International Agency for Research on Cancer (IARC) Carcinogens: methylene chloride Category: 2B

CARCINOGEN

NOHSC: Australia Exposure Standards - Carcinogens: methylene chloride Carcinogen Category: 3

CARCINOGEN

NTPB: US National Toxicology Program (NTP) 11th Report Part B. Reasonably Anticipated to be a Human Carcinogen: methylene chloride Category:

REPROTOXIN

ILOE1: ILO Chemicals in the electronics industry that have toxic effects on reproduction: methylene chloride

CARCINOGEN

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

3

REPROTOXIN

ILOE1: ILO Chemicals in the electronics industry that have toxic effects on reproduction: toluene

Section 12 - ECOLOGICAL INFORMATION

Marine Pollutant: Not Determined

No data for Zeus 5027 Ultracolor Aerosol write N Mark Yellow.
Refer to data for ingredients, which follows:

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

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).
log Kow: 1.25
log Koc: 1.68
log Kom: 1.44
Henry's atm m³ /mol: 2.68E-03
BCF: 5

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

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

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

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

Based on test results, as well as theoretical considerations, the potential for bioaccumulation may be high. Toxic effects are often observed in species such as blue mussel, daphnia, freshwater green algae, marine copepods and amphipods.
DO NOT discharge into sewer or waterways.

log Kow: 2.1-3
log Koc: 1.12-2.85
Koc: 37-250
log Kom: 1.39-2.89
Half-life (hr) air: 2.4-104
Half-life (hr) H2O surface water: 5.55-528
Half-life (hr) H2O ground: 168-2628
Half-life (hr) soil: <48-240
Henry's Pa m³ /mol: 518-694
Henry's atm m³ /mol: 5.94E-03
BOD 5 if unstated: 0.86-2.12,5%
COD: 0.7-2.52,21-27%
ThOD: 3.13
BCF: 1.67-380
Log BCF: 0.22-3.28

Section 13 - DISPOSAL CONSIDERATIONS

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

Section 14 - TRANSPORTATION INFORMATION

Labels Required: FLAMMABLE GAS
HAZCHEM: 2Y

UNDG:
Dangerous Goods Class: 2.1 Subrisk: None
UN Number: 1950 Packing Group: None
Shipping Name: AEROSOLS

Air Transport IATA:

ICAO/IATA Class: 2.1 ICAO/IATA Subrisk: None
UN/ID Number: 1950 Packing Group: None
ERG Code: 10L
Shipping Name: AEROSOLS, FLAMMABLE

Maritime Transport IMDG:

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

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: None

REGULATIONS

methylene chloride (CAS: 75-09-2) is found on the following regulatory lists;
Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted extraction solvents
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)
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 - Agricultural uses (Stock)
Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
Australia Exposure Standards
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
Australia National Pollutant Inventory
Australia Poisons Schedule
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
International Agency for Research on Cancer (IARC) Carcinogens
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals
WHO Guidelines for Drinking-water Quality - 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

toluene (CAS: 108-88-3) is found on the following regulatory lists;
Australia - Australia New Zealand Food Standards Code - Processing Aids - Permitted extraction solvents
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - organic compounds)
Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)
Australia - Australian Capital Territory Environment Protection Regulation Ecosystem maintenance - Organic chemicals - Non-pesticide anthropogenic organics
Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
Australia Exposure Standards
Australia High Volume Industrial Chemical List (HVICL)
Australia Illicit Drug Reagents/Essential Chemicals - Category III
Australia Inventory of Chemical Substances (AICS)
Australia National Pollutant Inventory
Australia Poisons Schedule
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk
International Agency for Research on Cancer (IARC) Carcinogens
OECD Representative List of High Production Volume (HPV) Chemicals
United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances - Table II
United Nations List of Precursors and Chemicals Frequently used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances Under International Control - Table II (English)
WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water

hydrocarbon propellant (CAS: 68476-85-7) is found on the following regulatory lists;
Australia Exposure Standards
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
OECD Representative List of High Production Volume (HPV) Chemicals
hydrocarbon propellant (CAS: 68476-86-8) is found on the following regulatory lists;
Australia Inventory of Chemical Substances (AICS)
OECD Representative List of High Production Volume (HPV) Chemicals

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
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REPRODUCTIVE HEALTH GUIDELINES

#32orgr

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 ³	100	R	14	-
toluene	9.6 mg/m ³	10	D	NA	-

These exposure guidelines have been derived from a screening level of risk assessment and

should not be construed as unequivocally safe limits. ORGs represent an 8-hour time-weighted average unless specified otherwise.

CR = Cancer Risk/10000; UF = Uncertainty factor:

TLV believed to be adequate to protect reproductive health:

LOD: Limit of detection

Toxic endpoints have also been identified as:

D = Developmental; R = Reproductive; TC = Transplacental carcinogen

Jankovic J., Drake F.: A Screening Method for Occupational Reproductive

American Industrial Hygiene Association Journal 57: 641-649 (1996).

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