Semi-Volatile by Capillary Column GC/MS Mix 3

Novachem Pty Ltd

Chemwatch Hazard Alert Code: **4**

Version No: **1.8**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **16/06/2023**
Print Date: **16/06/2023**
S.GHS.AUS.EN

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	Semi-Volatile by Capillary Column GC/MS Mix 3
Synonyms	Not Available
Proper shipping name	DICHLOROMETHANE
Other means of identification	M-8270-03

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Laboratory Chemical Reference Material

Details of the manufacturer or supplier of the safety data sheet

Registered company name	**Novachem Pty Ltd**	**Novachem Pty Ltd**
Address	25 Crissane Road, Heidelberg West Victoria 3081 Australia	25 Crissane Road, Heidelberg West Victoria 3081 Australia
Telephone	+61384151255	+61384151255
Fax	+61386250088	+61386250088
Website	www.novachem.com.au	www.novachem.com.au
Email	novachem@novachem.com.au	novachem@novachem.com.au

Emergency telephone number

Association / Organisation	**Victorian Poisons Information Centre**	**Victorian Poisons Information Centre**
Emergency telephone numbers	13 11 26	13 11 26
Other emergency telephone numbers	Not Available	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification [1]	Serious Eye Damage/Eye Irritation Category 2A, Acute Toxicity (Inhalation) Category 4, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 2, Carcinogenicity Category 1A, Hazardous to the Aquatic Environment Long-Term Hazard Category 3
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)	
Signal word	**Danger**

Hazard statement(s)

H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H302	Harmful if swallowed.
H315	Causes skin irritation.

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H350	May cause cancer.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s) Prevention

P201	Obtain special instructions before use.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves, protective clothing, eye protection and face protection.
P261	Avoid breathing mist/vapours/spray.

Precautionary statement(s) Response

P308+P313	IF exposed or concerned: Get medical advice/ attention.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell.

Precautionary statement(s) Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
83-32-9	0.2	acenaphthene
208-96-8	0.2	acenaphthylene
90-13-1	0.2	1-chloronaphthalene
91-58-7	0.2	2-chloronaphthalene
7005-72-3	0.2	p-chlorodiphenyl oxide
132-64-9	0.2	dibenzofuran
84-66-2	0.2	diethyl phthalate
131-11-3	0.2	dimethyl phthalate
51-28-5	0.2	2,4-dinitrophenol
121-14-2	0.2	2,4-dinitrotoluene
606-20-2	0.2	2,6-dinitrotoluene
86-73-7	0.2	fluorene
77-47-4	0.2	hexachlorocyclopentadiene
134-32-7	0.2	alpha-naphthylamine
91-59-8	0.2	beta-naphthylamine
88-74-4	0.2	o-nitroaniline
99-09-2	0.2	m-nitroaniline
100-01-6	0.2	p-nitroaniline
100-02-7	0.2	p-nitrophenol
608-93-5	0.2	pentachlorobenzene
95-94-3	0.2	1,2,4,5-tetrachlorobenzene
58-90-2	0.2	2,3,4,6-tetrachlorophenol
88-06-2	0.2	2,4,6-trichlorophenol
95-95-4	0.2	2,4,5-trichlorophenol
75-09-2	95.2	methylene chloride
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available*	

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ▸ Wash out immediately with fresh running water.

Continued...

	▸ 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. ▸ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▸ Immediately remove all contaminated clothing, including footwear. ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ 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.
Ingestion	▸ 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.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
for intoxication due to Freons/ Halons;
A: Emergency and Supportive Measures
- Maintain an open airway and assist ventilation if necessary
- 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

As in all cases of suspected poisoning, follow the ABCDEs of emergency medicine (airway, breathing, circulation, disability, exposure), then the ABCDEs of toxicology (antidotes, basics, change absorption, change distribution, change elimination).
For poisons (where specific treatment regime is absent):

BASIC TREATMENT

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

ADVANCED TREATMENT

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary oedema.
- Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

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

SECTION 5 Firefighting measures

Extinguishing media

Continued...

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

Special hazards arising from the substrate or mixture

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

Advice for firefighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear breathing apparatus plus protective gloves in the event of a fire. ▸ Prevent, by any means available, spillage from entering drains or water courses. ▸ Use fire fighting procedures suitable for surrounding area.
Fire/Explosion Hazard	Combustion products include: carbon dioxide (CO_2) 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. ▸ 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.
HAZCHEM	2Z

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	Environmental hazard - contain spillage. ▸ 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.
Major Spills	Environmental hazard - contain spillage. ▸ 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 all means available, spillage from entering drains or water courses.

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

SECTION 7 Handling and storage

Precautions for safe handling

Safe 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
Other information	▸ Store in original containers. ▸ Keep containers securely sealed. ▸ Store in a cool, dry, well-ventilated area. ▸ Store away from incompatible materials and foodstuff containers.

Conditions for safe storage, including any incompatibilities

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.

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	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.
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 Phthalates: ▸ react with strong acids, strong oxidisers, permanganates and nitrates ▸ attack some form of plastics Segregate from: ▸ powdered metals such as aluminium, zinc and ▸ alkali metals such as sodium, potassium and lithium. May attack, soften or dissolve rubber, many plastics, paints and coatings ▸ Segregate from alcohol, water.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	diethyl phthalate	Diethyl phthalate	5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	dimethyl phthalate	Dimethylphthalate	5 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	hexachlorocyclopentadiene	Hexachlorocyclopentadiene	0.01 ppm / 0.11 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	o-nitroaniline	Aniline & homologues	2 ppm / 7.6 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	m-nitroaniline	Aniline & homologues	2 ppm / 7.6 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	p-nitroaniline	p-Nitroaniline	3 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	methylene chloride	Methylene chloride	50 ppm / 174 mg/m3	Not Available	Not Available	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
acenaphthene	3.6 mg/m3	40 mg/m3	240 mg/m3
acenaphthylene	10 mg/m3	110 mg/m3	660 mg/m3
1-chloronaphthalene	4.6 mg/m3	51 mg/m3	310 mg/m3
2-chloronaphthalene	6.2 mg/m3	69 mg/m3	410 mg/m3
p-chlorodiphenyl oxide	1.5 mg/m3	35 mg/m3	210 mg/m3
dibenzofuran	30 mg/m3	330 mg/m3	2,000 mg/m3
diethyl phthalate	15 mg/m3	300 mg/m3	1,800 mg/m3
dimethyl phthalate	15 mg/m3	1,600 mg/m3	9300* mg/m3
2,4-dinitrophenol	0.61 mg/m3	6.8 mg/m3	16 mg/m3
2,4-dinitrotoluene	0.6 mg/m3	12 mg/m3	200 mg/m3
2,6-dinitrotoluene	0.6 mg/m3	47 mg/m3	200 mg/m3
fluorene	6.6 mg/m3	72 mg/m3	430 mg/m3
hexachlorocyclopentadiene	0.03 ppm	0.55 ppm	1 ppm
alpha-naphthylamine	2 mg/m3	22 mg/m3	130 mg/m3
beta-naphthylamine	2.2 mg/m3	24 mg/m3	140 mg/m3
o-nitroaniline	6.2 mg/m3	68 mg/m3	410 mg/m3
m-nitroaniline	1.6 mg/m3	18 mg/m3	110 mg/m3
p-nitroaniline	9 mg/m3	71 mg/m3	300 mg/m3
p-nitrophenol	0.69 mg/m3	7.6 mg/m3	46 mg/m3
pentachlorobenzene	4.4 mg/m3	49 mg/m3	220 mg/m3
1,2,4,5-tetrachlorobenzene	0.66 mg/m3	7.2 mg/m3	340 mg/m3
2,4,6-trichlorophenol	2.5 mg/m3	27 mg/m3	160 mg/m3
2,4,5-trichlorophenol	2.5 mg/m3	27 mg/m3	160 mg/m3
methylene chloride	Not Available	Not Available	Not Available

Continued...

Ingredient	Original IDLH	Revised IDLH
acenaphthene	Not Available	Not Available
acenaphthylene	Not Available	Not Available
1-chloronaphthalene	Not Available	Not Available
2-chloronaphthalene	Not Available	Not Available
p-chlorodiphenyl oxide	Not Available	Not Available
dibenzofuran	Not Available	Not Available
diethyl phthalate	Not Available	Not Available
dimethyl phthalate	2,000 mg/m3	Not Available
2,4-dinitrophenol	Not Available	Not Available
2,4-dinitrotoluene	Not Available	Not Available
2,6-dinitrotoluene	Not Available	Not Available
fluorene	Not Available	Not Available
hexachlorocyclopentadiene	Not Available	Not Available
alpha-naphthylamine	Not Available	Not Available
beta-naphthylamine	Not Available	Not Available
o-nitroaniline	Not Available	Not Available
m-nitroaniline	Not Available	Not Available
p-nitroaniline	300 mg/m3	Not Available
p-nitrophenol	Not Available	Not Available
pentachlorobenzene	Not Available	Not Available
1,2,4,5-tetrachlorobenzene	Not Available	Not Available
2,3,4,6-tetrachlorophenol	Not Available	Not Available
2,4,6-trichlorophenol	Not Available	Not Available
2,4,5-trichlorophenol	Not Available	Not Available
methylene chloride	2,300 ppm	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
acenaphthene	E	≤ 0.01 mg/m³
acenaphthylene	E	≤ 0.01 mg/m³
1-chloronaphthalene	E	≤ 0.1 ppm
2-chloronaphthalene	D	> 0.01 to ≤ 0.1 mg/m³
p-chlorodiphenyl oxide	E	≤ 0.1 ppm
dibenzofuran	E	≤ 0.01 mg/m³
2,4-dinitrophenol	E	≤ 0.01 mg/m³
2,4-dinitrotoluene	E	≤ 0.01 mg/m³
2,6-dinitrotoluene	E	≤ 0.01 mg/m³
alpha-naphthylamine	E	≤ 0.01 mg/m³
beta-naphthylamine	E	≤ 0.01 mg/m³
p-nitrophenol	E	≤ 0.01 mg/m³
pentachlorobenzene	E	≤ 0.01 mg/m³
1,2,4,5-tetrachlorobenzene	E	≤ 0.01 mg/m³
2,3,4,6-tetrachlorophenol	E	≤ 0.01 mg/m³
2,4,6-trichlorophenol	E	≤ 0.01 mg/m³
2,4,5-trichlorophenol	E	≤ 0.01 mg/m³
Notes:	*Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.*	

Exposure controls

Appropriate 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. 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.
Individual protection measures, such as personal protective equipment	

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Eye and face protection	‣ Safety glasses with side shields. ‣ Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent] ‣ 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.
Skin protection	See Hand protection below
Hands/feet protection	‣ Wear chemical protective gloves, e.g. PVC. ‣ Wear safety footwear or safety gumboots, e.g. Rubber **NOTE:** ‣ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact. ‣ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed. 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. Personal hygiene is a key element of effective hand care.
Body protection	See Other protection below
Other protection	‣ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent] ‣ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent] ‣ Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely. ‣ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood. ‣ Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
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Material	CPI
BUTYL	C
CPE	C
NATURAL RUBBER	C
NEOPRENE	C
NITRILE	C
PE/EVAL/PE	C
PVA	C
SARANEX-23	C
TEFLON	C
VITON	C
VITON/BUTYL	C
VITON/CHLOROBUTYL	C

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

Respiratory protection

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

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	KAX-AUS P2	-	KAX-PAPR-AUS / Class 1 P2
up to 50 x ES	-	KAX-AUS / Class 1 P2	-
up to 100 x ES	-	KAX-2 P2	KAX-PAPR-2 P2 ^

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- 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.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

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.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator
up to 10	1000	AX-AUS / Class 1	-
up to 50	1000	-	AX-AUS / Class 1
up to 50	5000	Airline *	-

Continued...

up to 100	5000	-	AX-2
up to 100	10000	-	AX-3
100+		-	Airline**

** - Continuous-flow or positive pressure demand.
A(All classes) = Organic vapours, B AUS or B1 = Acid gases, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 deg C)

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Contains a chemical subject to Prior Informed Consent (PIC) Regulation which administers the import and export of certain hazardous chemicals and places obligations on companies who wish to export these chemicals to non-EU countries. It aims to promote shared responsibility and cooperation in the international trade of hazardous chemicals, and to protect human health and the environment by providing developing countries with information on how to store, transport, use and dispose of hazardous chemicals safely. This Regulation implements, within the European Union, the Rotterdam Convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade. The PIC Regulation applies to banned or severely restricted chemicals listed in Annex I, containing industrial chemicals, pesticides and biocides. The export of these chemicals is subject to two types of requirement: export notification and explicit consent. The PIC Regulation also applies to chemicals that are banned for export as listed in Annex V and to all chemicals when exported regarding their packaging and labelling, which must comply with relevant EU legislation. The phthalates have a clear syrupy liquid consistency and show low water solubility, high oil solubility, and low volatility. The polar carboxyl group contributes little to the physical properties of the phthalates, except when R and R' are very small (such as ethyl or methyl groups). Phthalates are colourless, odourless liquids produced by reacting phthalic anhydride with an appropriate alcohol (usually 6- to 13-carbon). Phthalate esters are the dialkyl or alkyl aryl esters of phthalic acid (also called 1,2-benzenedicarboxylic acid). When added to plastics, phthalates allow the long polyvinyl molecules to slide against one another. Clear liquid Clear liquid

Physical state	Liquid	**Relative density (Water = 1)**	1.326
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	556
pH (as supplied)	Not Available	**Decomposition temperature (°C)**	Not Available
Melting point / freezing point (°C)	-97	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	40	**Molecular weight (g/mol)**	Not Available
Flash point (°C)	>110.00	**Taste**	Not Available
Evaporation rate	27.5 BuAC = 1	**Explosive properties**	Not Available
Flammability	Not Applicable	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	23	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	12	**Volatile Component (%vol)**	>99
Vapour pressure (kPa)	47.06	**Gas group**	Not Available
Solubility in water	Partly miscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	2.93	**VOC g/L**	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

Continued...

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo. Inhalation hazard is increased at higher temperatures. Material is highly volatile and may quickly form a concentrated atmosphere in confined or unventilated areas. The vapour may displace and replace air in breathing zone, acting as a simple asphyxiant. This may happen with little warning of overexposure. 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. Inhalation exposure may cause susceptible individuals to show change in heart beat rhythm i.e. cardiac arrhythmia. Exposures must be terminated. Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual. 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.
Ingestion	The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. The toxicity of phthalates is not excessive due to slow oral absorption and metabolism. Absorption is affected by fat in the diet. Repeated doses can cause cumulative toxic effects, and symptoms include an enlarged liver which often reverses if exposure is maintained. Carbohydrate metabolism is disrupted, and cholesterol and triglyceride levels in the blood falls. 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.
Skin Contact	The material may accentuate any pre-existing dermatitis condition Skin contact with the material may damage the health of the individual; systemic effects may result following absorption. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected. 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.
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.
Chronic	Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. There is sufficient evidence to suggest that this material directly causes cancer in humans. Toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects. Ample evidence exists that this material directly causes reduced fertility Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Exposure to phthalates over years leads to pain, numbness and spasms in the hands and feet. Many people have developed multiple disorders in the nervous system and the balancing system. Polycyclic aromatic hydrocarbons are found in a number of materials such as coal tar, tobacco smoke, petroleum and air pollution. Some substituted derivatives have been identified as extremely liable to cause cancer, especially that of the lung and genito-urinary tract. The reactivity of an epoxide intermediate may be the reason for the cancer-causing properties of halogenated oxiranes. It is reported that 1,1-dichloroethyne, vinyl chloride, trichloroethylene, tetrachloroethylene and chloroprene all cause cancer. Generally speaking, substances with one halogen substitution show higher potential to cause cancer compared to substances with two.

	TOXICITY	IRRITATION
Semi-Volatile by Capillary Column GC/MS Mix 3	Not Available	Not Available
acenaphthene	Oral (Mouse) LD50; 2100 mg/kg[2]	Not Available
acenaphthylene	Oral (Mouse) LD50; 1760 mg/kg[2]	Not Available
1-chloronaphthalene	Oral (Mouse) LD50; 1091 mg/kg[2]	Not Available
2-chloronaphthalene	Oral (Mouse) LD50; 886 mg/kg[2]	Not Available
p-chlorodiphenyl oxide	Not Available	Not Available
dibenzofuran	Not Available	Not Available

Continued...

diethyl phthalate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >11200 mg/kg[2]	Eye (rabbit): 112 mg - mild
	Oral (Mouse) LD50; 6172 mg/kg[2]	Skin (g. pig): slight ** [Eastman]
dimethyl phthalate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >4800 mg/kg[2]	Eye (rabbit): 119 mg
	Oral (Rat) LD50: 5120 mg/kg[2]	
2,4-dinitrophenol	**TOXICITY**	**IRRITATION**
	Oral (Dog) LD50; ~20-30 mg/kg[1]	Not Available
2,4-dinitrotoluene	**TOXICITY**	**IRRITATION**
	dermal (guinea pig) LD50: >1000 mg/kg[2]	Skin (rabbit): 500 mg/24h - mild
	Oral (Rat) LD50: 268 mg/kg[2]	
2,6-dinitrotoluene	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50: 177 mg/kg[2]	Skin (rabbit): 500 mg/24h - mild
fluorene	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
hexachlorocyclopentadiene	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 430 mg/kg[2]	Eye (rabbit): 100 mg/5m - SEVERE
	Inhalation(Rat) LC50: 0.018 mg/L4h[2]	EYE (RABBIT): 20 MG/24H - moderate
	Oral (Mouse) LD50; 505 mg/kg[2]	Eye: adverse effect observed (irreversible damage)[1]
		Skin (g.pig): 20 mg - mild
		Skin (monkey): 10 mg - SEVERE
		Skin (rabbit): 500 mg/4h - SEVERE
		Skin: adverse effect observed (corrosive)[1]
alpha-naphthylamine	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: 200-1000 mg/kg[2]	Not Available
	Inhalation(Rat) LC50: >0.056 mg/l4h[2]	
	Oral (Rat) LD50: 779 mg/kg[2]	
beta-naphthylamine	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50: 727 mg/kg[2]	Not Available
o-nitroaniline	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 20 mg/kg[2]	Not Available
	Inhalation(Rat) LC50: >2.529 mg/l4h[1]	
	Oral (Mouse) LD50; 1070 mg/kg[2]	
m-nitroaniline	**TOXICITY**	**IRRITATION**
	Oral (Mouse) LD50; 308 mg/kg[2]	Not Available
p-nitroaniline	**TOXICITY**	**IRRITATION**
	dermal (guinea pig) LD50: >500 mg/kg[2]	Eye (rabbit): FHSA 1.3/110*
	Inhalation(Rat) LC50: 0.268 mg/L4h[1]	Skin (rabbit): FHSA 0.0/8.0* * [Manufacture]
	Oral (Rat) LD50: 750 mg/kg[2]	
p-nitrophenol	**TOXICITY**	**IRRITATION**
	dermal (mammal) LD50: 920 mg/kg[2]	Not Available
	Inhalation(Rat) LC50: >4.7 mg/l4h[2]	
	Oral (Rat) LD50: 250 mg/kg[2]	
pentachlorobenzene	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2500 mg/kg[2]	Not Available
	Oral (Rat) LD50: 1080 mg/kg[2]	

Continued...

1,2,4,5-tetrachlorobenzene	**TOXICITY**	**IRRITATION**
	Oral (Mouse) LD50; 1035 mg/kg[2]	Not Available
2,3,4,6-tetrachlorophenol	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: 250 mg/kg[2]	Not Available
	Oral (Rat) LD50: 140 mg/kg[2]	
2,4,6-trichlorophenol	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: 400-2000 mg/kg[2]	Eye (rabbit): 0.25 mg/24h-SEVERE
	Oral (Mammal) LD50; 454 mg/kg[2]	Skin (rabbit): 20 mg/24h-moderate
2,4,5-trichlorophenol	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50: 820 mg/kg[2]	Not Available
methylene chloride	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2000 mg/kg[2]	Eye(rabbit): 162 mg - moderate
	Inhalation(Rat) LC50: 76 mg/L4h[2]	Eye(rabbit): 500 mg/24hr - mild
	Oral (Rat) LD50: 1600 mg/kg[2]	Skin (rabbit): 100mg/24hr-moderate
		Skin (rabbit): 810 mg/24hr-SEVERE
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

Semi-Volatile by Capillary Column GC/MS Mix 3	Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation. For polynuclear aromatic hydrocarbons (PAH) such as the benz[a]anthracenes (BA), carcinogenic activity is appreciably influenced by the numbers and positions of methyl and other substituents and hence by the molecular shapes. The planarities and dimensions of methyl-substituted BA and related PAH, including methyl phenanthrenes (MP) which also contain the carcinogenically important bay and K regions, have been compared. BA molecules with substituents well removed from the bay region, including those substituted at 5 or 6 (the K region), are nearly, but not quite, planar, with a mutual inclination of several degrees between A and C rings on each side of the bay region. With one or both bay positions 1 and 12 methyl-substituted, distortion is much greater (A/C up to 29 deg in 1,12-dimethyl BA). For phenanthrenes, the presence of the two methyl substituents in the bay, as in 2,4,5,7-tetra MP, can lead to A/C of 28 deg compared with the very small (2 deg) mutual inclination in 9,10-di MP.
1-CHLORONAPHTHALENE	Somnolence, change in motor activity.
DIETHYL PHTHALATE	When diethyl phthalate is applied to the skin, it is widely distributed in the body but it does not accumulate in tissue. It causes mild irritation to the eye and skin and rarely causes skin sensitisation. Animal testing has shown slight increases in liver and kidney weights; results regarding its potential to cause cancer, mutations and genetic damage were inconclusive. It has caused some minor bone abnormalities in the foetus in animal testing and also, changes to testis and reduced sperm count.
DIMETHYL PHTHALATE	Bacterial mutagen Reproductive effector in rats For low molecular weight phthalate esters) **Acute toxicity:** Dimethyl phthalate (DMP) and diethyl phthalate (DEP) exhibit low acute toxicity by oral, dermal and inhalation routes of exposure. Although acute oral toxicity data on DEP are based on older, inadequate studies by current guidelines, the lack of lethality at doses > 5 g/kg/ day is consistent with that seen with other phthalate esters and subchronic studies on DEP. **Repeated Dose Toxicity.** High dietary doses (5 % or -3,750 mg/ kg/ day) of DEP resulted in decreased body weights and tissue weights; no effects were seen in males at 1 % (-750 mg/ kg/ day) or in females at 0.2 % (~150 mg/ kg/ day). These results are similar to that seen following dermal administration of DMP to rabbits for 90 days at 4 g/ kg/ day.
2,6-DINITROTOLUENE	Oral (rat) TDLo: 13500 mg/kg/90D-I
ALPHA-NAPHTHYLAMINE	The material is under review by IARC and the US EPA GENETOX Program. CAUTION: Impure material could contain traces of the beta (2) isomer which is a Category 1 - Carcinogen.
BETA-NAPHTHYLAMINE	**WARNING:** This substance has been classified by the IARC as Group 1: **CARCINOGENIC TO HUMANS**. Tenth Annual Report on Carcinogens: Substance known to be Carcinogenic [*National Toxicology Program: U.S. Dep. of Health and Human Services 2002*]
O-NITROANILINE	Somnolence, convulsions recorded.
M-NITROANILINE	Somnolence, convulsions, dyspnae recorded.
P-NITROANILINE	The material is under review by the US NTP; GENETOX and TSCA Programs.
P-NITROPHENOL	Bacterial cell mutagen
PENTACHLOROBENZENE	General anaesthesia, tremor, paternal effects, specific developmental abnormalities (musculoskeletal) recorded.
1,2,4,5-TETRACHLOROBENZENE	General anaesthesia, somnolence, convulsions, changes in motor activity, muscle weakness recorded. Animal testing shows that tetrachlorobenzene can affect the blood, increase organ weight and cause dose-dependent damage to the kidney and liver. The tolerable daily intake based on animal data is about 3.4 micrograms/kilogram body weight/day.
2,3,4,6-TETRACHLOROPHENOL	WARNING : IARC Human Limited Evidence [RTECS] WARNING: Pentachlorophenol can be embryotoxic, foetotoxic, and teratogenic (birth defects) in test animals. No safe exposure level has been established for pregnant women [Williams, P.L., "Pentachlorophenol, an assessment of the occupational hazard", Am.Ind.Hyg.Assoc.J. 43(11):799-810(1982)]. Hexachlorodibenzodioxin and other higher chlorodioxins and dibenzofurans are known contaminants of pentachlorophenol and that hexachlorodibenzodioxin has been reported to cause cancer and adverse effects on reproduction in animals. **Teratogenicity**: EPA has concluded that pentachlorophenol and possibly its hexachlorodibenzo-p-dioxin (HxCDD) contaminants cause birth

Continued...

	defects and foetotoxic effects in test animals. Reported adverse effects in fetuses from pentachlorophenol exposure include distorted sex ratios, increased incidences of resorbed embryos, skeletal anomalies, subcutaneous edema (excessive fluid), reduced survival, and reduced growth. Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
2,4,6-TRICHLOROPHENOL	IARC Cancer Review: Animal Sufficient Evidence, Human Inadequate. Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen [*National Toxicology Program: U.S. Dep. of Health & Human Services 2002*]
2,4,5-TRICHLOROPHENOL	Neoplastic by RTECS criteria. IARC Cancer Review: Animal Sufficient Evidence, Human Limited The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
METHYLENE CHLORIDE	Inhalation (human) TCLo: 500 ppm/ 1 y - I Eye(rabbit): 10 mg - mild **WARNING:** This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
Semi-Volatile by Capillary Column GC/MS Mix 3 & ACENAPHTHENE & ACENAPHTHYLENE & 1-CHLORONAPHTHALENE & P-CHLORODIPHENYL OXIDE & DIETHYL PHTHALATE & DIMETHYL PHTHALATE & HEXACHLOROCYCLOPENTADIENE & P-NITROPHENOL	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.
Semi-Volatile by Capillary Column GC/MS Mix 3 & 2-CHLORONAPHTHALENE & P-CHLORODIPHENYL OXIDE & 1,2,4,5-TETRACHLOROBENZENE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions.
Semi-Volatile by Capillary Column GC/MS Mix 3 & METHYLENE CHLORIDE	
Semi-Volatile by Capillary Column GC/MS Mix 3 & DIETHYL PHTHALATE & DIMETHYL PHTHALATE	The material may produce peroxisome proliferation. Peroxisomes are single, membrane limited organelles in the cytoplasm that are found in the cells of animals, plants, fungi, and protozoa.
ACENAPHTHENE & P-CHLORODIPHENYL OXIDE & DIBENZOFURAN	No significant acute toxicological data identified in literature search.
ACENAPHTHENE & FLUORENE & ALPHA-NAPHTHYLAMINE	The substance is classified by IARC as Group 3: **NOT** classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.
1-CHLORONAPHTHALENE & 2-CHLORONAPHTHALENE	for polychlorinated naphthalenes (PCN): Chlorinated naphthalenes can be absorbed via oral, inhalative, and dermal routes, with absorption and distribution over the whole body after oral administration. The main target organs are liver and fat tissue (besides kidney and lung), both showing a high retention, especially for higher chlorinated congeners such as 1,2,3,4,6,7/1,2,3,5,6,7-hexachloronaphthalene. Half-lives of 1,2,3,4,6,7/1,2,3,5,6,7-hexachloronaphthalene were calculated to be 41 days in adipose tissue and 26 days in the liver of rats. Calculations with monitoring data from human blood samples suggested half-lives of 1.5-2.4 years for these hexa-isomers in humans.
2,4-DINITROPHENOL & METHYLENE CHLORIDE	The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
2,4-DINITROPHENOL & 2,4-DINITROTOLUENE & 2,6-DINITROTOLUENE & 2,4,6-TRICHLOROPHENOL & 2,4,5-TRICHLOROPHENOL	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.
2,4-DINITROTOLUENE & 2,6-DINITROTOLUENE	For dinitrotoluene (dinitromethylbenzene; DNT): In humans, heavy DNT exposure causes signs of methaemoglobin in the blood, which are reversible 2-3 days after removal from exposure. Signs of disturbances in liver function and exposure-dependent toxic effects on the kidney tubules were additionally found in exposed workers. In humans, DNT is absorbed after inhalation and skin contact, and is rapidly metabolized and excreted in urine. Acute toxicity: Animal testing indicates that DNT has relatively low acute toxicity by skin contact and moderately toxic by swallowing. DNT is not considered to irritate the human eye. **WARNING:** This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.
HEXACHLOROCYCLOPENTADIENE & 2,3,4,6-TETRACHLOROPHENOL & 2,4,6-TRICHLOROPHENOL	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
HEXACHLOROCYCLOPENTADIENE & METHYLENE CHLORIDE	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.
PENTACHLOROBENZENE & 1,2,4,5-TETRACHLOROBENZENE	Chlorobenzenes produce several clinical symptoms including eye and airway irritation, blood disorders, abnormal skin changes and foetal defects at levels toxic to the mother. They are well absorbed in the stomach, gut and airways, and well metabolised and excreted in the urine. Lethal doses may produce breathing failure and damage to the liver, kidneys, adrenal glands, mucous membranes, and brain.
2,3,4,6-TETRACHLOROPHENOL & 2,4,6-TRICHLOROPHENOL	Carcinogenic by RTECS criteria.
2,3,4,6-TETRACHLOROPHENOL & 2,4,6-TRICHLOROPHENOL & 2,4,5-TRICHLOROPHENOL	Side-reactions during manufacture of the parent compound may result in the production of trace amounts of polyhalogenated aromatic hydrocarbon(s). Halogenated phenols, and especially their alkali salts, can condense above 300 deg. Polyhalogenated aromatic hydrocarbons (PHAHs) can cause effects on hormones and mimic thyroid hormone. Acne, discharge in the eye, eyelid swellings and visual disturbances may occur.

Acute Toxicity	✔	**Carcinogenicity**	✔
Skin Irritation/Corrosion	✔	**Reproductivity**	✘

Continued...

Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	✘	**STOT - Repeated Exposure**	✘
Mutagenicity	✘	**Aspiration Hazard**	✘

Legend: ✘ *– Data either not available or does not fill the criteria for classification*
✔ *– Data available to make classification*

SECTION 12 Ecological information

Toxicity

Semi-Volatile by Capillary Column GC/MS Mix 3

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

acenaphthene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	254-1270	7
NOEC(ECx)	96h	Crustacea	0.014mg/l	4
EC50	96h	Algae or other aquatic plants	0.23-1.15mg/l	4
LC50	96h	Fish	0.51-0.66mg/l	4
EC50	48h	Crustacea	1.102-1.475mg/l	4

acenaphthylene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	225-545	7

1-chloronaphthalene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	142-442	7
NOEC(ECx)	96h	Algae or other aquatic plants	<0.084mg/L	4
EC50	96h	Algae or other aquatic plants	0.131-5.827mg/L	4
EC50	72h	Algae or other aquatic plants	0.299-21.492mg/L	4
LC50	96h	Fish	0.203mg/L	Not Available

2-chloronaphthalene

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

p-chlorodiphenyl oxide

Endpoint	Test Duration (hr)	Species	Value	Source
LC50	96h	Fish	100-220mg/l	Not Available

dibenzofuran

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	524-2420	7
LC50	96h	Fish	0.84-1.31mg/l	4
NOEC(ECx)	48h	Crustacea	0.28mg/l	4
EC50	96h	Algae or other aquatic plants	1.5mg/l	4

diethyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
ErC50	72h	Algae or other aquatic plants	3-6.1mg/l	1
EC10(ECx)	72h	Algae or other aquatic plants	>0.003mg/l	4
EC50	96h	Algae or other aquatic plants	2.11-4.29mg/l	4
EC50	72h	Algae or other aquatic plants	>0.003mg/l	4
LC50	96h	Fish	8-38mg/l	4
EC50	48h	Crustacea	52mg/l	1

dimethyl phthalate

Endpoint	Test Duration (hr)	Species	Value	Source
ErC50	72h	Algae or other aquatic plants	54-96mg/l	1
LC50	96h	Fish	17mg/l	Not Available
EC50	72h	Algae or other aquatic plants	28.4-71mg/l	4
EC50	48h	Crustacea	33mg/l	1
NOEC(ECx)	2448h	Fish	11mg/l	1
EC50	96h	Algae or other aquatic plants	20.6-45.8mg/l	4

Continued...

2,4-dinitrophenol

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1008h	Fish	<0.4-0.7	7
EC50(ECx)	36h	Fish	0.005mg/L	4
LC50	96h	Fish	0.06mg/l	4
EC50	72h	Algae or other aquatic plants	5.55-17.4mg/l	4
EC50	96h	Algae or other aquatic plants	3.62-21.9mg/l	4
EC50	48h	Crustacea	3.4-5.66mg/l	4

2,4-dinitrotoluene

Endpoint	Test Duration (hr)	Species	Value	Source
LC50	96h	Fish	6.3mg/l	4
EC50	48h	Crustacea	22mg/l	4
NOEC(ECx)	504h	Crustacea	0.02mg/L	5
EC50	96h	Algae or other aquatic plants	0.07-0.1mg/l	4

2,6-dinitrotoluene

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	504h	Crustacea	0.06mg/L	5
EC50	72h	Algae or other aquatic plants	11mg/l	4
LC50	96h	Fish	17.2-20.2mg/l	4
EC50	96h	Algae or other aquatic plants	12mg/l	4
EC50	48h	Crustacea	21.7mg/l	4

fluorene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	219-830	7
NOEC(ECx)	336h	Crustacea	0.063mg/l	4
EC50	96h	Algae or other aquatic plants	3.4mg/l	4
LC50	96h	Fish	0.55-1.21mg/l	4
EC50	48h	Crustacea	0.212mg/l	4

hexachlorocyclopentadiene

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	672h	Crustacea	0.0003mg/l	4
EC50	96h	Algae or other aquatic plants	0.19mg/l	1
LC50	96h	Fish	0.0037mg/l	1

alpha-naphthylamine

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	9.1-27	7
EC20(ECx)	4h	Algae or other aquatic plants	0.22mg/l	1

beta-naphthylamine

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

o-nitroaniline

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1008h	Fish	2.1-4.9	7
EC0(ECx)	24h	Crustacea	5.6mg/l	1
EC50	96h	Algae or other aquatic plants	64.6mg/l	2
LC50	96h	Fish	10mg/l	1
EC50	48h	Crustacea	1018mg/l	1

m-nitroaniline

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1008h	Fish	1.1-3	7
EC50(ECx)	48h	Crustacea	0.195-2.02mg/l	4
EC50	72h	Algae or other aquatic plants	58mg/L	5
LC50	96h	Fish	72.6-91.8mg/l	4
EC50	48h	Crustacea	0.195-2.02mg/l	4

p-nitroaniline

Endpoint	Test Duration (hr)	Species	Value	Source
LC50	96h	Fish	32-56mg/l	4
BCF	1008h	Fish	2.9-3.6	7
EC50	48h	Crustacea	17mg/l	4
EC50(ECx)	6h	Algae or other aquatic plants	0.14mg/l	1

Continued...

p-nitrophenol

Endpoint	Test Duration (hr)	Species	Value	Source
LC50	96h	Fish	3.8mg/l	4
BCF	1008h	Fish	2.5-7.8	7
EC50	72h	Algae or other aquatic plants	1.95-14.6mg/l	4
EC50	48h	Crustacea	3.1-7.1mg/l	4
EC50(ECx)	36h	Fish	0.029mg/L	4
EC50	96h	Algae or other aquatic plants	2.96-10.6mg/l	4

pentachlorobenzene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	1130-5070	7
NOEC(ECx)	1008h	Fish	0.005mg/L	5
EC50	72h	Algae or other aquatic plants	1.55mg/l	4
LC50	96h	Fish	0.135mg/L	4
EC50	96h	Algae or other aquatic plants	1.255-9.236mg/L	4
EC50	48h	Crustacea	<=0.02mg/L	4

1,2,4,5-tetrachlorobenzene

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	1650-3930	7
EC10(ECx)	96h	Fish	0.05-0.09mg/l	4
EC50	96h	Algae or other aquatic plants	4.3-11mg/L	4
EC50	72h	Algae or other aquatic plants	4.21-30mg/L	4
LC50	96h	Fish	>0.089mg/l	4

2,3,4,6-tetrachlorophenol

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	25-62	7
EC50(ECx)	48h	Algae or other aquatic plants	0.01mg/l	4
EC50	96h	Algae or other aquatic plants	1.3mg/l	4
LC50	96h	Fish	0.11-0.16mg/l	4
EC50	48h	Crustacea	0.3mg/l	4

2,4,6-trichlorophenol

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	504h	Crustacea	0.0018mg/l	4
EC50	96h	Algae or other aquatic plants	3.5mg/l	1
EC50	72h	Algae or other aquatic plants	0.058-0.062mg/l	4
LC50	96h	Fish	0.1-1mg/l	4
EC50	48h	Crustacea	1.8-2.6mg/l	4

2,4,5-trichlorophenol

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1344h	Fish	121-484	7
EC50(ECx)	24h	Algae or other aquatic plants	0.03-4.85mg/L	4
EC50	96h	Algae or other aquatic plants	0.37-2.71mg/l	4
EC50	72h	Algae or other aquatic plants	0.7-1.49mg/L	4
EC50	48h	Crustacea	0.29mg/L	5
LC50	96h	Fish	0.207-0.299mg/l	4

methylene chloride

Endpoint	Test Duration (hr)	Species	Value	Source
BCF	1008h	Fish	2-5.4	7
EC50(ECx)	96h	Algae or other aquatic plants	0.98mg/l	4
EC50	96h	Algae or other aquatic plants	0.98mg/l	4
EC50	72h	Algae or other aquatic plants	202-286mg/l	4
LC50	96h	Fish	2-3.3mg/l	4
EC50	48h	Crustacea	108.5mg/l	1

Legend: *Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

On the basis of available evidence concerning either toxicity, persistence, potential to accumulate and or observed environmental fate and behaviour, the material may present a danger, immediate or long-term and /or delayed, to the structure and/ or functioning of natural ecosystems.
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
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.

Continued...

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.
For Polycyclic Aromatic Hydrocarbons (PAH's):
Environmental Fate: A general rule for biodegradation of PAHs is that parent compounds tend to degrade faster than alkylated analogs. Less is known about the biodegradability of resins and asphaltenes, but the current knowledge suggests these are not very biodegradable and will persist in the environment for a long time. The more hydrophobic a compound, the greater the partitioning to non-aqueous phases.
Atmospheric Fate: PAHs travel through the atmosphere as a gas or attached to dust particles.
For Phthalate Esters:
Terrestrial Fate: Phthalate esters have been observed to broken down by a wide range of bacteria. Biodegradation is, therefore, expected to be the dominant fate in surface soils and sediments.
Little information is available on the fate of phthalate esters in soil, even though the primary point of entry, (landfills). The migration of phthalate esters out of plastics is slow.
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).
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
acenaphthene	HIGH (Half-life = 204 days)	LOW (Half-life = 0.37 days)
acenaphthylene	MEDIUM (Half-life = 120 days)	LOW (Half-life = 0.05 days)
1-chloronaphthalene	HIGH	HIGH
2-chloronaphthalene	HIGH	HIGH
p-chlorodiphenyl oxide	HIGH	HIGH
dibenzofuran	LOW (Half-life = 34.79 days)	LOW (Half-life = 0.79 days)
diethyl phthalate	MEDIUM (Half-life = 112 days)	LOW (Half-life = 8.83 days)
dimethyl phthalate	LOW (Half-life = 14 days)	LOW (Half-life = 46.58 days)
2,4-dinitrophenol	HIGH (Half-life = 526 days)	LOW (Half-life = 46.42 days)
2,4-dinitrotoluene	HIGH (Half-life = 360 days)	MEDIUM (Half-life = 118.33 days)
2,6-dinitrotoluene	HIGH (Half-life = 360 days)	MEDIUM (Half-life = 118.33 days)
fluorene	MEDIUM (Half-life = 120 days)	LOW (Half-life = 2.84 days)
hexachlorocyclopentadiene	LOW (Half-life = 56 days)	Not Available
alpha-naphthylamine	HIGH (Half-life = 360 days)	LOW (Half-life = 0.12 days)
beta-naphthylamine	HIGH (Half-life = 360 days)	LOW (Half-life = 0.12 days)
o-nitroaniline	HIGH	HIGH
m-nitroaniline	HIGH	HIGH
p-nitroaniline	HIGH	HIGH
p-nitrophenol	LOW (Half-life = 9.79 days)	LOW (Half-life = 6.04 days)
pentachlorobenzene	HIGH (Half-life = 690 days)	HIGH (Half-life = 453.21 days)
1,2,4,5-tetrachlorobenzene	HIGH (Half-life = 360 days)	HIGH (Half-life = 317.96 days)
2,3,4,6-tetrachlorophenol	HIGH (Half-life = 360 days)	MEDIUM (Half-life = 151.83 days)
2,4,6-trichlorophenol	HIGH (Half-life = 1820.42 days)	LOW (Half-life = 51.42 days)
2,4,5-trichlorophenol	HIGH (Half-life = 1820.42 days)	LOW (Half-life = 12.54 days)
methylene chloride	LOW (Half-life = 56 days)	HIGH (Half-life = 191 days)

Bioaccumulative potential

Ingredient	Bioaccumulation
acenaphthene	LOW (BCF = 387)
acenaphthylene	MEDIUM (BCF = 545)
1-chloronaphthalene	LOW (BCF = 442)
2-chloronaphthalene	LOW (LogKOW = 3.1293)
p-chlorodiphenyl oxide	HIGH (LogKOW = 4.7)
dibenzofuran	HIGH (BCF = 2420)
diethyl phthalate	LOW (BCF = 117)
dimethyl phthalate	LOW (BCF = 57)
2,4-dinitrophenol	LOW (BCF = 3.7)
2,4-dinitrotoluene	HIGH (BCF = 2507)
2,6-dinitrotoluene	LOW (LogKOW = 2.1757)
fluorene	MEDIUM (BCF = 830)
hexachlorocyclopentadiene	MEDIUM (BCF = 1634)
alpha-naphthylamine	LOW (BCF = 54)
beta-naphthylamine	LOW (LogKOW = 2.28)
o-nitroaniline	LOW (BCF = 10)

Continued...

Ingredient	Bioaccumulation
m-nitroaniline	LOW (BCF = 3)
p-nitroaniline	LOW (BCF = 10)
p-nitrophenol	LOW (BCF = 280)
pentachlorobenzene	HIGH (BCF = 6840)
1,2,4,5-tetrachlorobenzene	HIGH (BCF = 4830)
2,3,4,6-tetrachlorophenol	LOW (BCF = 95)
2,4,6-trichlorophenol	HIGH (BCF = 12130)
2,4,5-trichlorophenol	MEDIUM (BCF = 825)
methylene chloride	LOW (BCF = 40)

Mobility in soil

Ingredient	Mobility
acenaphthene	LOW (KOC = 6123)
acenaphthylene	LOW (KOC = 6123)
1-chloronaphthalene	LOW (KOC = 3038)
2-chloronaphthalene	LOW (KOC = 2976)
p-chlorodiphenyl oxide	LOW (KOC = 4160)
dibenzofuran	LOW (KOC = 11290)
diethyl phthalate	LOW (KOC = 126.2)
dimethyl phthalate	LOW (KOC = 37.09)
2,4-dinitrophenol	LOW (KOC = 363.8)
2,4-dinitrotoluene	LOW (KOC = 363.8)
2,6-dinitrotoluene	LOW (KOC = 371.4)
fluorene	LOW (KOC = 11290)
hexachlorocyclopentadiene	LOW (KOC = 1667)
alpha-naphthylamine	LOW (KOC = 507.6)
beta-naphthylamine	LOW (KOC = 497.3)
o-nitroaniline	LOW (KOC = 52.72)
m-nitroaniline	LOW (KOC = 51.64)
p-nitroaniline	LOW (KOC = 51.64)
p-nitrophenol	LOW (KOC = 309)
pentachlorobenzene	LOW (KOC = 2002)
1,2,4,5-tetrachlorobenzene	LOW (KOC = 1186)
2,3,4,6-tetrachlorophenol	LOW (KOC = 2002)
2,4,6-trichlorophenol	LOW (KOC = 1186)
2,4,5-trichlorophenol	LOW (KOC = 1186)
methylene chloride	LOW (KOC = 23.74)

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	▸ 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 SDS 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. ▸ **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.

Continued...

SECTION 14 Transport information

Labels Required

	
Marine Pollutant	NO
HAZCHEM	2Z

Land transport (ADG)

UN number or ID number	1593
UN proper shipping name	DICHLOROMETHANE
Transport hazard class(es)	Class: 6.1 Subsidiary risk: Not Applicable
Packing group	III
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: Not Applicable Limited quantity: 5 L

Air transport (ICAO-IATA / DGR)

UN number	1593
UN proper shipping name	Dichloromethane
Transport hazard class(es)	ICAO/IATA Class: 6.1 ICAO / IATA Subrisk: Not Applicable ERG Code: 6L
Packing group	III
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: Not Applicable Cargo Only Packing Instructions: 663 Cargo Only Maximum Qty / Pack: 220 L Passenger and Cargo Packing Instructions: 655 Passenger and Cargo Maximum Qty / Pack: 60 L Passenger and Cargo Limited Quantity Packing Instructions: Y642 Passenger and Cargo Limited Maximum Qty / Pack: 2 L

Sea transport (IMDG-Code / GGVSee)

UN number	1593
UN proper shipping name	DICHLOROMETHANE
Transport hazard class(es)	IMDG Class: 6.1 IMDG Subrisk: Not Applicable
Packing group	III
Environmental hazard	Not Applicable
Special precautions for user	EMS Number: F-A, S-A Special provisions: Not Applicable Limited Quantities: 5 L

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
acenaphthene	Not Available
acenaphthylene	Not Available
1-chloronaphthalene	Not Available
2-chloronaphthalene	Not Available

Continued...

Product name	Group
p-chlorodiphenyl oxide	Not Available
dibenzofuran	Not Available
diethyl phthalate	Not Available
dimethyl phthalate	Not Available
2,4-dinitrophenol	Not Available
2,4-dinitrotoluene	Not Available
2,6-dinitrotoluene	Not Available
fluorene	Not Available
hexachlorocyclopentadiene	Not Available
alpha-naphthylamine	Not Available
beta-naphthylamine	Not Available
o-nitroaniline	Not Available
m-nitroaniline	Not Available
p-nitroaniline	Not Available
p-nitrophenol	Not Available
pentachlorobenzene	Not Available
1,2,4,5-tetrachlorobenzene	Not Available
2,3,4,6-tetrachlorophenol	Not Available
2,4,6-trichlorophenol	Not Available
2,4,5-trichlorophenol	Not Available
methylene chloride	Not Available

Transport in bulk in accordance with the IGC Code

Product name	Ship Type
acenaphthene	Not Available
acenaphthylene	Not Available
1-chloronaphthalene	Not Available
2-chloronaphthalene	Not Available
p-chlorodiphenyl oxide	Not Available
dibenzofuran	Not Available
diethyl phthalate	Not Available
dimethyl phthalate	Not Available
2,4-dinitrophenol	Not Available
2,4-dinitrotoluene	Not Available
2,6-dinitrotoluene	Not Available
fluorene	Not Available
hexachlorocyclopentadiene	Not Available
alpha-naphthylamine	Not Available
beta-naphthylamine	Not Available
o-nitroaniline	Not Available
m-nitroaniline	Not Available
p-nitroaniline	Not Available
p-nitrophenol	Not Available
pentachlorobenzene	Not Available
1,2,4,5-tetrachlorobenzene	Not Available
2,3,4,6-tetrachlorophenol	Not Available
2,4,6-trichlorophenol	Not Available
2,4,5-trichlorophenol	Not Available
methylene chloride	Not Available

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

acenaphthene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

acenaphthylene is found on the following regulatory lists

Continued...

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

1-chloronaphthalene is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

2-chloronaphthalene is found on the following regulatory lists

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

p-chlorodiphenyl oxide is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

dibenzofuran is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List

diethyl phthalate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

dimethyl phthalate is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

2,4-dinitrophenol is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7
Australian Inventory of Industrial Chemicals (AIIC)

2,4-dinitrotoluene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans

2,6-dinitrotoluene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

fluorene is found on the following regulatory lists

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

hexachlorocyclopentadiene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)

alpha-naphthylamine is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Not Classified as Carcinogenic
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

beta-naphthylamine is found on the following regulatory lists

Australia - New South Wales Work Health and Safety Regulation - Prohibited Carcinogens
Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations- Prohibited carcinogens
Australia - Queensland Work Health and Safety Regulation - Prohibited carcinogens
Australia - South Australia - Work Health and Safety Regulations - Prohibited carcinogens
Australia - Tasmania - Work Health and Safety Regulations - Prohibited carcinogens
Australia - Western Australia Carcinogenic substances to be used only for bona fide research
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Prohibited carcinogens
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans

o-nitroaniline is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

m-nitroaniline is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

Continued...

p-nitroaniline is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

p-nitrophenol is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australian Inventory of Industrial Chemicals (AIIC)

pentachlorobenzene is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)
Stockholm Convention on Persistent Organic Pollutants - Annex A - Elimination
Stockholm Convention on Persistent Organic Pollutants (POPs) - Annex C: Unintentional Production

1,2,4,5-tetrachlorobenzene is found on the following regulatory lists

Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

2,3,4,6-tetrachlorophenol is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

2,4,6-trichlorophenol is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

2,4,5-trichlorophenol is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

methylene chloride is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australian Inventory of Industrial Chemicals (AIIC)
Chemical Footprint Project - Chemicals of High Concern List
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2A: Probably carcinogenic to humans

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	No (acenaphthylene; 2-chloronaphthalene; beta-naphthylamine; 1,2,4,5-tetrachlorobenzene; 2,3,4,6-tetrachlorophenol)
Canada - DSL	No (acenaphthylene; p-chlorodiphenyl oxide; 2,4,6-trichlorophenol; 2,4,5-trichlorophenol)
Canada - NDSL	No (acenaphthene; 1-chloronaphthalene; 2-chloronaphthalene; dibenzofuran; diethyl phthalate; dimethyl phthalate; 2,4-dinitrophenol; 2,4-dinitrotoluene; 2,6-dinitrotoluene; fluorene; hexachlorocyclopentadiene; alpha-naphthylamine; beta-naphthylamine; o-nitroaniline; m-nitroaniline; p-nitroaniline; p-nitrophenol; pentachlorobenzene; 1,2,4,5-tetrachlorobenzene; 2,3,4,6-tetrachlorophenol; methylene chloride)
China - IECSC	No (2-chloronaphthalene; p-chlorodiphenyl oxide)
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (beta-naphthylamine)
Korea - KECI	No (acenaphthylene; 2-chloronaphthalene; p-chlorodiphenyl oxide; pentachlorobenzene; 1,2,4,5-tetrachlorobenzene; 2,4,5-trichlorophenol)
New Zealand - NZIoC	No (2-chloronaphthalene; p-chlorodiphenyl oxide; 2,6-dinitrotoluene; pentachlorobenzene; 1,2,4,5-tetrachlorobenzene; 2,3,4,6-tetrachlorophenol)
Philippines - PICCS	No (2-chloronaphthalene; p-chlorodiphenyl oxide; 2,6-dinitrotoluene; pentachlorobenzene; 1,2,4,5-tetrachlorobenzene; 2,3,4,6-tetrachlorophenol; 2,4,5-trichlorophenol)
USA - TSCA	No (beta-naphthylamine)
Taiwan - TCSI	Yes
Mexico - INSQ	No (acenaphthene; p-chlorodiphenyl oxide; dibenzofuran; fluorene)
Vietnam - NCI	No (p-chlorodiphenyl oxide)
Russia - FBEPH	No (2-chloronaphthalene; p-chlorodiphenyl oxide; m-nitroaniline; pentachlorobenzene)

Continued...

National Inventory	Status
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Revision Date	16/06/2023
Initial Date	16/06/2023

SDS Version Summary

Version	Date of Update	Sections Updated
0.8	16/06/2023	Toxicological information - Chronic Health, Hazards identification - Classification

Other information

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.
The 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.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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end of SDS