



EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone

Novachem Pty Ltd

Version No: 1.1

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Chemwatch Hazard Alert Code: 3

Issue Date: 25/01/2024

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S.GHS.AUS.EN

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

Product Identifier

Product name	EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone
Synonyms	Not Available
Proper shipping name	ACETONE
Other means of identification	DRE-A50000440AC

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

Relevant identified uses	Laboratory use
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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]	Flammable Liquids Category 2, Acute Toxicity (Oral) Category 4, Serious Eye Damage/Eye Irritation Category 2A, Acute Toxicity (Inhalation) Category 3, Specific Target Organ Toxicity - Single Exposure (Narcotic Effects) Category 3, Hazardous to the Aquatic Environment Acute Hazard Category 1, Hazardous to the Aquatic Environment Long-Term Hazard Category 1
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)

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.

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H336	May cause drowsiness or dizziness.
H410	Very toxic to aquatic life with long lasting effects.
AUH066	Repeated exposure may cause skin dryness and cracking.

Precautionary statement(s) Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P271	Use only outdoors or in a well-ventilated area.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.

Precautionary statement(s) Response

P370+P378	In case of fire: Use alcohol resistant foam or normal protein foam to extinguish.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P311	Call a POISON CENTER/doctor/physician/first aider.

Precautionary statement(s) Storage

P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
67-64-1	80-100	<u>acetone</u>
24017-47-8	<0.1	<u>triazophos</u>
31218-83-4	<0.1	<u>propetamphos</u>
2310-17-0	<0.1	<u>phosalone</u>
298-00-0	<0.1	<u>parathion methyl</u>
56-38-2	<0.1	<u>parathion</u>
7786-34-7	<0.1	<u>mevinphos</u>
121-75-5	<0.1	<u>malathion</u>
55-38-9	<0.1	<u>fenthion</u>
122-14-5	<0.1	<u>fenitrothion</u>
60-51-5	<0.1	<u>dimethoate</u>
62-73-7	<0.1	<u>dichlorvos</u>
333-41-5	<0.1	<u>diazinon</u>
5598-13-0	<0.1	<u>chlorpyrifos-methyl</u>
2921-88-2	<0.1	<u>chlorpyrifos</u>
470-90-6	<0.1	<u>chlorfenvinphos</u>
2104-96-3	<0.1	<u>bromophos</u>
86-50-0	<0.1	<u>azinphos-methyl</u>
2642-71-9	<0.1	<u>azinphos-ethyl</u>
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: ▶ 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.
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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. ▶ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

Indication of any immediate medical attention and special treatment needed

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.

Atropine sulfate, usually in doses of 600 microgram may be given intravenously, intramuscularly, or subcutaneously to control the muscarinic effects of choline esterase inhibitors. Supportive treatment may be required.

MARTINDALE: The Extra Pharmacopoeia, Twenty-ninth Edition

While other antimuscarinic agents (e.g., scopolamine) can counteract the effects of cholinesterase inhibitors, their inherent toxic effects in patients who do not have cholinesterase inhibitor poisoning have led to their rejection in favor of atropine. Glycopyrrolate in doses of 1-2 mg, I.V., (0.025 mg/kg in children) has been suggested as an alternative to atropine, and is said to have fewer CNS side effects. However, its use has not been extensively evaluated.

Atropine works by competitively occupying muscarinic receptor sites, thus reducing the effects of excessive acetylcholine on these sites brought about by cholinesterase inhibition. Atropine is not thought to have significant effect on nicotinic receptors, and thus does not counteract fasciculations, weakness, or flaccid paralysis. Thus, even when given sufficient doses of atropine, patients may need artificial ventilation, sometimes for weeks.

A number of authors have recommended the "atropine challenge" as an aid to diagnosis.

When given to a normal person who has not been exposed to cholinesterase inhibitors, a 2 mg dose of atropine (0.025-0.050/kg in pediatric cases) causes:

- ▶ A dry mouth.
- ▶ An increase in heart rate of about 35 beats/minute (which is usually not noticed by the recipient) within 3-5 minutes of an I.V. dose, and a maximal increase in heart rate of about 35-45 beats/minute with I.M. or autoinjector administration, respectively, within about 35-45 minutes (the longer being with I.M. injection).
- ▶ Blurred near-vision.
- ▶ Dry, hot skin.
- ▶ Mydriasis (pupillary dilation).

Most of these effects will dissipate within 4-6 hours, except blurred near-vision which may persist for 24 hours.

It has been suggested that when these physiological changes do not occur with this dose (sometimes referred to as an atropine challenge), this is indicative of cholinesterase inhibitor toxicity.

Cautions

- ▶ If miosis (pupillary constriction) is due to direct conjunctival vapor exposure, it is relatively unresponsive to parenteral atropine. Although, it does respond to topical administration).
- ▶ In 2-13% of cases of cholinesterase inhibitor toxicity, mydriasis (pupillary dilation) --- rather than miosis (pupillary constriction), and tachycardia --- rather than bradycardia (3-77% of cases), may be a presenting signs.
- ▶ One author points out that this strategy has never been empirically tested and may not be very sensitive or specific (Parenteral atropine is not generally recommended for those whose sole manifestation of toxicity is miosis (pupillary constriction)).
- ▶ Some cases of mild to moderate poisonings may improve with these doses of atropine. Thus, signs of atropinization do not always exclude the presence of cholinesterase inhibitor toxicity.

In approximate order of preference, the following routes of administration can be used for the administration of atropine

1. Intravenous: bolus, followed by I.V. drip. .
1. Intraosseous: (American Heart Association 2005) bolus, followed by continuous infusion.
1. Military MARK I atropine autoinjector: Although intravenous injection is the preferred route of administration, use of the autoinjector may be more practical in the field, where it can be rapidly administered even through clothing.) Blood levels are achieved more rapidly than by other forms of IM injection. Note that each MARK I kit contains an atropine autoinjector, containing 2 mg of atropine plus another autoinjector containing 600 mg of 2-PAM. Paediatric atropine autoinjector syringes are available in 0.5 mg and 1 mg sizes.
1. Intramuscular: Research for this Case Study did not turn up any comparisons of intramuscular with inhalation routes of atropine administration.
1. Inhalation: by nebulised inhalation or via the intratracheal route. The intratracheal route can be used, but absorption is notably less complete and less reliable than the intravenous or intraosseous routes, which are preferred. The optimal intratracheal dose is unknown, but is typically administered in an amount 2-2½ times the intravenous dose. The American Heart Association recommends that the dose be diluted in 5-10 ml water or normal saline. American Heart Association 2005; American Heart Association 2005)
1. Oral: use has been reported after I.V. administration became unnecessary.
1. Ophthalmic: Anticholinergic eye drops (e.g., atropine or homatropine) have been recommended for severe eye pain caused by miosis (pupillary constriction), and secondary reflex nausea and vomiting, but may result in blurred vision. However, one author questions whether there is enough evidence to recommend this practice.

Tachycardia should not be used as an end-point, because it sometimes is a nicotinic manifestation of toxicity.

Resolution of miosis [Miosis has been defined as pupillary diameter of <3 mm in the dark, along with sluggish or absent response to light] should not be used as an end-point, because:

- ▶ Miosis (pupillary constriction) from systemic exposure may be a late finding.
- ▶ When miosis (pupillary constriction) is present, it may be resistant to systemic atropine therapy.
- ▶ Miosis (pupillary constriction) may reflect only localized ophthalmic exposure to vapor without systemic effects.
- ▶ Pupils are of normal size in a significant minority of poisoned patients (20% in one series).
- ▶ Toxic patients may present with mydriasis (pupillary dilation) due to occasional dominance of nicotinic effects from cholinesterase inhibitors.

Case Studies in Environmental Medicine (CSEM) Cholinesterase Inhibitors Including Insecticides and Chemical Warfare Nerve Agents Part 4: The Cholinergic Toxidrome; Section 11: Management of the Cholinergic Toxidrome Management Strategy 3: Medications Atropine Agency for Toxic Substance and Disease Registry ATSDR (USA)

For acute or short term repeated exposures to acetone:

- ▶ Symptoms of acetone exposure approximate ethanol intoxication.
- ▶ About 20% is expired by the lungs and the rest is metabolised. Alveolar air half-life is about 4 hours following two hour inhalation at levels near the Exposure Standard; in overdose, saturable metabolism and limited clearance, prolong the elimination half-life to 25-30 hours.
- ▶ There are no known antidotes and treatment should involve the usual methods of decontamination followed by supportive care.

[Ellenhorn and Barceloux: Medical Toxicology]

Management:

Measurement of serum and urine acetone concentrations may be useful to monitor the severity of ingestion or inhalation.

Continued...

- Inhalation Management:
- Maintain a clear airway, give humidified oxygen and ventilate if necessary.
 - If respiratory irritation occurs, assess respiratory function and, if necessary, perform chest X-rays to check for chemical pneumonitis.
 - Consider the use of steroids to reduce the inflammatory response.
 - Treat pulmonary oedema with PEEP or CPAP ventilation.

- Dermal Management:
- Remove any remaining contaminated clothing, place in double sealed, clear bags, label and store in secure area away from patients and staff.
 - Irrigate with copious amounts of water.
 - An emollient may be required.

- Eye Management:
- Irrigate thoroughly with running water or saline for 15 minutes.
 - Stain with fluorescein and refer to an ophthalmologist if there is any uptake of the stain.

- Oral Management:
- No **GASTRIC LAVAGE OR EMETIC**
 - Encourage oral fluids.

- Systemic Management:
- Monitor blood glucose and arterial pH.
 - Ventilate if respiratory depression occurs.
 - If patient unconscious, monitor renal function.
 - Symptomatic and supportive care.

The Chemical Incident Management Handbook:
Guy's and St. Thomas' Hospital Trust, 2000

BIOLOGICAL EXPOSURE INDEX

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

Determinant	Sampling Time	Index	Comments
Acetone in urine	End of shift	50 mg/L	NS

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

- Alcohol stable 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
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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	carbon dioxide (CO2) 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.
HAZCHEM	•2YE

SECTION 6 Accidental release measures

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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	- 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	- Clear area of personnel and move upwind. - Alert Fire Brigade and tell them location and nature of hazard. - Wear breathing apparatus plus protective gloves. - Prevent, by any means available, spillage from entering drains or water course.

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	- Lined metal can, lined metal pail/ can. - Plastic pail. - Polyliner drum. - Packing as recommended by manufacturer. 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. All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.
Storage incompatibility	Dichlorvos: - is incompatible with sulfuric acid, alkalis, ammonia, aliphatic amines, alkanolamines, alkylene oxides, amides, epichlorohydrin, organic anhydrides, isocyanates, nitromethane, vinyl acetate - is corrosive to black iron and mild steel. to aluminium and 316 stainless steel in presence of water - attacks some plastics, rubber and coatings. Acetone: - may react violently with a variety of substances, including but not limited to activated carbon, halogenated compounds, perchlorates, chromic acids, liquid oxygen and strong acids. - will react violently with bromoform and chloroform when in contact with alkaline substances - may form unstable and explosive peroxides when in contact with strong oxidisers, fluorine, hydrogen peroxide (90%), sodium perchlorate, or 2-methyl-1,3-butadiene - can make nitromethane more explosive - will dissolve most rubbers, resins and plastics Ketones in this group: - are reactive with many acids and bases liberating heat and flammable gases (e.g., H2). - react with reducing agents such as hydrides, alkali metals, and nitrides to produce flammable gas (H2) and heat. - are incompatible with isocyanates, aldehydes, cyanides, peroxides, and anhydrides. - react violently with aldehydes, HNO3 (nitric acid), HNO3 + H2O2 (mixture of nitric acid and hydrogen peroxide), and HClO4 (perchloric acid). - Avoid reaction with oxidising agents

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
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Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	acetone	Acetone	500 ppm / 1185 mg/m3	2375 mg/m3 / 1000 ppm	Not Available	Not Available
Australia Exposure Standards	parathion methyl	Methyl parathion	0.2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	parathion	Parathion	0.1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	mevinphos	Mevinphos	0.01 ppm / 0.092 mg/m3	0.27 mg/m3 / 0.03 ppm	Not Available	Not Available
Australia Exposure Standards	malathion	Malathion	10 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	fenthion	Fenthion	0.2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	dichlorvos	Dichlorvos (DDVP)	0.1 ppm / 0.9 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	diazinon	Diazinon	0.1 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	chlorpyrifos	Chlorpyrifos	0.2 mg/m3	Not Available	Not Available	Not Available
Australia Exposure Standards	azinphos-methyl	Azinphos-methyl	0.2 mg/m3	Not Available	Not Available	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
acetone	Not Available	Not Available	Not Available
triazophos	0.25 mg/m3	2.8 mg/m3	12 mg/m3
parathion methyl	0.11 mg/m3	Not Available	Not Available
parathion	0.15 mg/m3	Not Available	Not Available
mevinphos	0.3 mg/m3	4 mg/m3	40 mg/m3
malathion	Not Available	Not Available	Not Available
fenthion	0.15 mg/m3	5.9 mg/m3	35 mg/m3
dimethoate	2.7 mg/m3	30 mg/m3	170 mg/m3
dichlorvos	1.8 mg/m3	20 mg/m3	200 mg/m3
chlorpyrifos	0.6 mg/m3	15 mg/m3	44 mg/m3
chlorfenvinphos	0.91 mg/m3	10 mg/m3	500 mg/m3
azinphos-methyl	0.6 mg/m3	0.7 mg/m3	20 mg/m3
azinphos-ethyl	0.35 mg/m3	3.9 mg/m3	17 mg/m3

Ingredient	Original IDLH	Revised IDLH
acetone	2,500 ppm	Not Available
triazophos	Not Available	Not Available
propetamphos	Not Available	Not Available
phosalone	Not Available	Not Available
parathion methyl	Not Available	Not Available
parathion	10 mg/m3	Not Available
mevinphos	4 ppm	Not Available
malathion	250 mg/m3	Not Available
fenthion	Not Available	Not Available
fenitrothion	Not Available	Not Available
dimethoate	Not Available	Not Available
dichlorvos	100 mg/m3	Not Available
diazinon	Not Available	Not Available
chlorpyrifos-methyl	Not Available	Not Available
chlorpyrifos	Not Available	Not Available
chlorfenvinphos	Not Available	Not Available
bromophos	Not Available	Not Available
azinphos-methyl	10 mg/m3	Not Available
azinphos-ethyl	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
triazophos	E	≤ 0.1 ppm
propetamphos	E	≤ 0.1 ppm
phosalone	E	≤ 0.01 mg/m³
chlorpyrifos-methyl	D	> 0.01 to ≤ 0.1 mg/m³
chlorfenvinphos	E	≤ 0.1 ppm
bromophos	E	≤ 0.01 mg/m³
azinphos-ethyl	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.

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

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
BUTYL/NEOPRENE	C
CPE	C
HYPALON	C
NATURAL RUBBER	C
NATURAL+NEOPRENE	C
NEOPRENE	C
NITRILE	C
NITRILE+PVC	C
PE	C
PE/EVAL/PE	C
PVA	C
PVC	C
PVDC/PE/PVDC	C
SARANEX-23	C
SARANEX-23 2-PLY	C
TEFLON	C
VITON/NEOPRENE	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 AX-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	AX-AUS P2	-	AX-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AX-AUS / Class 1 P2	-
up to 100 x ES	-	AX-2 P2	AX-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

Continued...

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up to 50	5000	Airline *	-
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	Colourless Liquid		
Physical state	Liquid	Relative density (Water = 1)	0.79
Odour	Sweet	Partition coefficient n-octanol / water	-0.24
Odour threshold	Not Available	Auto-ignition temperature (°C)	465
pH (as supplied)	Not Available	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	-94.7	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	56	Molecular weight (g/mol)	Not Available
Flash point (°C)	<-20	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	HIGHLY FLAMMABLE.	Oxidising properties	Not Available
Upper Explosive Limit (%)	14.3	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	2.5	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	24.00	Gas group	Not Available
Solubility in water	Not Available	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	2	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

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. 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. Dichlorvos inhalation studies with animals have shown that it is difficult to achieve a lethal concentration in air, because it is easily absorbed on surfaces and broken down by moisture.
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	Occupational malathion poisonings have caused deterioration in health and death, and isomalathion increases the toxicity of the insecticide. Acute intoxication at high doses and repeated exposure at low doses causes EEG changes. Ketone vapours irritate the nose, throat and mucous membrane. High concentrations depress the central nervous system, causing headache, vertigo, poor concentration, sleep and failure of the heart and breathing. Effects of exposure to acetone by inhalation include central nervous system depression, light-headedness, unintelligible speech, inco-ordination, stupor, low blood pressure, fast heart rate, metabolic acidosis, high blood sugar and ketosis. Rarely, there may be convulsions and death of kidney tubules.
Ingestion	Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual. Swallowing fenthion may cause headache, drowsiness, sweating, central nervous system effects, nausea, vomiting and diarrhoea. Animal testing has also shown nervousness, generalised spasms, diarrhoea, salivation and eye symptoms (eyeball protrusion, and damage and clouding of the cornea). Oral doses of 1.47 mg parathion/man/day produced no signs of toxicity in volunteers. Ingestion of 5.46 mg/kg/day produced moderate depression of blood cholinesterase. A dosage of 0.07 mg/kg/day was regarded as the no-effect level in adults. Over many years, clinical experience indicates that humans may be more susceptible to the effects of malathion than rats. The mean lethal dose, without treatment, is about 250mg per kilogram. Acute exposure may result in loss of appetite, nausea, vomiting, diarrhoea, excessive production of saliva, constriction of the pupils and airways, muscle twitches, convulsion, coma and failure of breathing; symptoms can take 8 or more hours to develop. Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733)
Skin Contact	Skin contact with the material may be harmful; systemic effects may result following absorption. Repeated exposure may cause skin cracking, flaking or drying following normal handling and use. Parathion is absorbed through intact skin at 0.45 - 0.58 mg/hr/cm2. When 0.004 mg parathion was applied to 1 sq. cm. to six male volunteers, 8.6% was absorbed over the following 24 hours. Malathion poisonings have occurred where absorption through the skin was thought to have been the major route of exposure. Experiments show malathion to be a weak contact sensitiser, causing a mild skin reaction, but this has not been a significant problem in its widespread use. 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. There is some evidence to suggest that the material may cause mild but significant 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	The liquid may produce eye discomfort and is capable of causing temporary impairment of vision and/or transient eye inflammation, ulceration There is evidence that material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Severe inflammation may be expected with pain.
Chronic	Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. 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 from experiments exists that there is a suspicion this material directly reduces fertility. Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Animal testing showed that dichlorvos can increase the rate of tumours of the stomach, including cancer, and also increase the rate of leukaemia. Repeated or prolonged exposures to cholinesterase inhibitors produce symptoms similar to acute effects. In addition workers exposed repeatedly to these substances may exhibit impaired memory and loss of concentration, severe depression and acute psychosis, irritability, confusion, apathy, emotional liability, speech difficulties, headache, spatial disorientation, delayed reaction times, sleepwalking, drowsiness or insomnia. Workers exposed to acetone for long periods showed inflammation of the airways, stomach and small bowel, attacks of giddiness and loss of strength. Exposure to acetone may enhance the liver toxicity of chlorinated solvents.

EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone	TOXICITY	IRRITATION
	Not Available	Not Available
acetone	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 20000 mg/kg ^[2]	Eye (human): 500 ppm - irritant
	Inhalation(Mouse) LC50; 44 mg/L4h ^[2]	Eye (rabbit): 20mg/24hr -moderate
	Oral (Rat) LD50: 5800 mg/kg ^[2]	Eye (rabbit): 3.95 mg - SEVERE
		Eye: adverse effect observed (irritating) ^[1]
		Skin (rabbit): 500 mg/24hr - mild
		Skin (rabbit):395mg (open) - mild
		Skin: no adverse effect observed (not irritating) ^[1]
triazophos	TOXICITY	IRRITATION
	dermal (rat) LD50: 1100 mg/kg ^[2]	Skin: non-irritating *

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	Inhalation(Rat) LC50: 0.28 mg/L4h ^[2]	
	Oral (Rat) LD50: 57 mg/kg ^[2]	
propetamphos	TOXICITY	IRRITATION
	dermal (rat) LD50: 564 mg/kg ^[2]	Not Available
	Oral (Rat) LD50: 0.067 mg/kg ^[2]	
phosalone	TOXICITY	IRRITATION
	dermal (rat) LD50: 390 mg/kg ^[2]	Not Available
	Oral (Mouse) LD50: 73 mg/kg ^[2]	
parathion methyl	TOXICITY	IRRITATION
	dermal (rat) LD50: 481 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 0.034 mg/L4h ^[2]	
	Oral (Rat) LD50: 25 mg/kg ^[2]	
parathion	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 15 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 0.03 mg/l4h ^[2]	
	Oral (Rat) LD50: 2 mg/kg ^[2]	
mevinphos	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 4.2 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 7 ppm4h ^[2]	
	Oral (Rat) LD50: 3 mg/kg ^[2]	
malathion	TOXICITY	IRRITATION
	dermal (rat) LD50: >2000 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 0.085 mg/L4h ^[2]	
	Oral (Rat) LD50: 290 mg/kg ^[2]	
fenthion	TOXICITY	IRRITATION
	dermal (rat) LD50: 330 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: >0.299 mg/l4h ^[2]	
	Oral (Rat) LD50: 180 mg/kg ^[2]	
fenitrothion	TOXICITY	IRRITATION
	dermal (rat) LD50: 890 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 0.378 mg/L4h ^[2]	
	Oral (Rat) LD50: 250 mg/kg ^[2]	
dimethoate	TOXICITY	IRRITATION
	dermal (rat) LD50: 353 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: >1.553 mg/l4h ^[2]	
	Oral (Rat) LD50: 60 mg/kg ^[2]	
dichlorvos	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 107 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 0.015 mg/L4h ^[2]	
	Oral (Rat) LD50: 17 mg/kg ^[2]	

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diazinon	TOXICITY	IRRITATION
	dermal (rat) LD50: 180 mg/kg ^[2]	Eye (rabbit): 100 mg - SEVERE
	Inhalation(Rat) LC50: >2.33 mg/l4h ^[2]	Skin (rabbit):500mg(open)-moderate
	Oral (Rat) LD50: 66 mg/kg ^[2]	
chlorpyrifos-methyl	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 2000 mg/kg ^[2]	Eyes: non-irritating *
	Inhalation(Rat) LC50: >0.67 mg/L4h ^[2]	Skin (rabbit): 500 mg/24 h - mild
	Oral (Rat) LD50: 1828 mg/kg ^[2]	Skin: non-irritating *
chlorpyrifos	TOXICITY	IRRITATION
	dermal (rat) LD50: 202 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: >0.2 mg/L4h ^[2]	
	Oral (Mouse) LD50; >69 mg/kg ^[1]	
chlorfenvinphos	TOXICITY	IRRITATION
	dermal (rat) LD50: 26.4 mg/kg ^[2]	Eye (rabbit) - non-irritating *** The Agrochemical Handbook
	Inhalation(Rat) LC50: 0.05 mg/L4h ^[2]	Skin (rabbit) - non-irritating *
	Oral (Rat) LD50: 10 mg/kg ^[2]	
bromophos	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 2180 mg/kg ^[2]	Not Available
	Oral (Rabbit) LD50; 720 mg/kg ^[2]	
azinphos-methyl	TOXICITY	IRRITATION
	dermal (rat) LD50: 88 mg/kg ^[2]	Not Available
	Inhalation(Rat) LC50: 0.017 mg/L4h ^[2]	
	Oral (Rat) LD50: 7 mg/kg ^[2]	
azinphos-ethyl	TOXICITY	IRRITATION
	dermal (rat) LD50: 250 mg/kg ^[2]	Not Available
	Oral (Rat) LD50: 7 mg/kg ^[2]	
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	

EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone	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.
TRIAZOPHOS	Oral (rat) LD50: 57-68 mg/kg * Eye: non-irritating * Inhalation LC50: 280 mg/m3/4h Inhalation LC50: 0.531 mg/l/4h * ADI: 0.0002 mg/kg b.w. * NOEL (2 y) rats receiving 1 mg/kg diet and dogs receiving 0.3 mg/kg diet were unaffected except for inhibition of blood serum cholinesterase. Toxicity Class WHO Ib;EPA II *
PROPETAMPHOS	propetamphos technical For propetamphos: Propetamphos has acute effects similar to other organophosphate pesticides, including effects on the nervous system and muscles due to inhibition of the enzyme cholinesterase. Very high doses may result in unconsciousness, incontinence and convulsions or death. Propetamphos does not cause reproductive toxicity or birth defects. It has, at most, a weak effect on causing mutations.
PHOSALONE	Oral (rat) LD50: 120-175 mg/kg (male) * Oral (rat) LD50: 135-170 mg/kg (female) * ADI: 0.001 mg/kg b.w. * NOEL: In a 2 year feeding trial, rats receiving 250 mg/kg diet and dogs receiving 290 mg/kg diet suffered no ill effects. * Toxicity Class WHO II:EPA II * For phosalone: Phosalone has moderate toxicity. The substance is moderately irritating to the skin and eyes. Animal testing shows that long-term exposure may inhibit the enzyme cholinesterase and cause some changes to cells of the small bowel. Phosalone has not been shown to cause reproductive effects or birth defects. PESTMAN
PARATHION METHYL	ADI: 0.0002 mg/kg/day NOEL: 0.02 mg/kg/day
PARATHION	Oral (man) TDLo: 0.43 mg/kg/4d-I ADI: 0.005 mg/kg/day WARNING: This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.
MEVINPHOS	Oral (man) TDLo: 0.7 mg/kg/28d - I Nil reported Human cell mutagen ADI: 0.0008 mg/kg/day NOEL: 0.015 mg/kg/day For mevinphos: Mevinphos is highly toxic when given by mouth, through skin contact and if inhaled. Animal testing showed build-up of fluid in the lungs and

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	changes in the structure and function of salivary glands. Effects of exposure are similar to those due to exposure to other organophosphates although these occur at lower doses. Very high doses may cause unconsciousness, incontinence, convulsions or death, and symptoms can occur in as little as 15 minutes or be delayed for as long as 2 days, and may be prolonged for up to six weeks after acute exposure.
MALATHION	Reproductive effector in rats NOEL: 0.26 mg/kg/day
FENTHION	Equivocal tumourigen by RTECS criteria ADI: 0.0003 mg/kg/day NOEL: 0.03 mg/kg/day
FENITROTHION	NOTE: Maximum levels have been determined for manufacturing impurities, s-methyl fenitrothion and fenitrooxon. ADI: 0.003 mg/kg/day NOEL: 0.3 mg/kg/day For fenitrothion: The acute toxicity of fenitrothion to mammals is considered to be low. Mild irritation to the skin and eyes has been reported in animal testing. In humans, chronic symptoms include general malaise, fatigue, headache, memory loss, impaired concentration, poor appetite, nausea, thirst, loss of weight, cramps, muscle weakness and tremors. Sufficient doses will cause a typical cholinergic poisoning.
DIMETHOATE	NOEL: 0.2 mg/kg/day (H) For dimethoate: Omethoate and formothion are metabolites of dimethoate Acute toxicity: Dimethoate is moderately toxic by ingestion, inhalation and dermal absorption. Most oral LD50s in rats range from 150-400 mg/kg body weight. For mice, rabbits and guinea pigs, the LD50s are 160, 300 and 350 mg/kg respectively. As with all organophosphates (OPs) dimethoate is rapidly absorbed through the skin, and easily absorbed through the lungs.
DICHLORVOS	Human cell mutagen Reproductive effector in rats. ADI: 0.0005 mg/kg/day NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
DIAZINON	Reproductive effector NOEL: 0.1 mg/kg/day
CHLORPYRIFOS-METHYL	Oral (mouse) LD50: 1100-2250 mg/kg * NOEL (2 y) based on blood plasma cholinesterase activity, 0.1 mg/kg for dogs and rats. * Toxicity Class WHO Table 5; EPA III * Lachrymation, tremors, diarrhoea recorded.
CHLORPYRIFOS	Oral (rat) LD50: 135-163 mg/kg * Oral (rabbit) LD50: 1000-2000 mg/kg * Inhalation (rat) LC50: >0.2 mg/l(14 ppb)/ 4-6hr * NOEL (2 y) based on blood plasma cholinesterase activity, for rats 0.03, dogs 0.01 mg/kg daily * Toxicity Class WHO II; EPA II * Non-teratogenic *
CHLORFENVINPHOS	No (Effect Level) rat: 2 year 0.05 mg/kg/day . ' ' ' (dog) ' ' 0.05 mg/kg/day * ADI 0.002 mg/kg b.w. Lachrymation, diarrhoea
AZINPHOS-METHYL	Dermal (rat male/female) LD50: 445/220 mg/kg* NOEL: 0.125 mg/kg/day *The Pesticide Manual 9th Edition (Eds Worthing, C.R., and Walker, S.B.), pg 46 (British Crop Protection Council: U.K. 1991).
AZINPHOS-ETHYL	ADI: 0.002 mg/kg/day NOEL: 0.02 (H)mg/kg/day
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & AZINPHOS-METHYL & AZINPHOS-ETHYL	For azinphos-methyl (and congeners) Acute toxicity: Azinphos-methyl is one of the most toxic of the organophosphate insecticides. It is highly toxic by inhalation, dermal absorption, ingestion, and eye contact Individuals with a history of reduced lung function, convulsive disorders, or recent exposure to other cholinesterase inhibitors are at increased risk from exposure to azinphos-methyl. There is wide variation in the recorded LD50 values for azinphos-methyl depending on the route of exposure and the test animal. For humans, ingestion of azinphos-methyl in amounts above 1.5 mg/day can cause severe poisoning with symptoms such as dimness of vision, salivation, excessive sweating, stomach pain, vomiting, diarrhea, unconsciousness, and death .
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & DIAZINON	Diazinon can be degraded to more toxic forms, especially in the presence of moisture and UV radiation. Diazinon poisoning symptoms include weakness, headaches, chest tightness, blurred vision, non-reactive pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhoea, abdominal cramps, and slurred speech. Deaths have occurred from both swallowing and skin contact at very high levels. Chronic effects include enzyme inhibition in brain and blood cells.
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & DICHLORVOS	Dichlorvos is highly toxic by inhalation, absorption through skin and swallowing. Inhalation is the most common route of exposure as it is volatile. It is readily absorbed through the skin, as with all organophosphates. Compared to other organophosphates, poisoning causes more rapid symptoms, but also a similarly rapid recovery, because it is more quickly metabolised and eliminated from the body.
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & FENTHION	Acute effects of fenthion are similar to those caused by other organophosphates, but may take somewhat longer to develop. Animal testing showed that chronic exposure to fenthion may cause weight loss, and persons occupationally exposed have experienced symptoms of tingling and numbness in the hands and feet and shooting pains. In animal testing, fenthion caused poisoning in fetuses, but not mutations or birth defects, and it was not shown to decrease fertility. Data is insufficient to ascertain whether fenthion causes cancer.
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & PARATHION	For parathion: Parathion is highly toxic by all routes of exposure. Human deaths have occurred by swallowing, skin contact and inhalation. Breathing dusts or aerosols may be extremely dangerous. It is rapidly absorbed through skin If skin contact occurs, immediately wash with soap and water and remove all contaminated clothing.
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & PARATHION METHYL	For methyl parathion: Methyl parathion is highly toxic if inhaled or swallowed, and moderately toxic through skin contact. It mostly affects the nervous system through inhibition of cholinesterase, an enzyme required for proper nerve functioning. If skin contact occurs, immediately wash with soap and water and remove all contaminated clothing. Accidental skin and inhalation exposure have caused deaths in humans.
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & MALATHION	Malathion has caused poisoning through swallowing, inhalation and absorption through the skin. It seems that malathion is more toxic when dietary protein is reduced. Females are at higher risk of poisoning at lower doses. Acute symptoms include nausea, headache and tightness in the chest.
EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone & ACETONE	For acetone: The acute toxicity of acetone is low. Acetone is not a skin irritant or sensitizer, but it removes fat from the skin, and it also irritates the eye. Animal testing shows acetone may cause anaemia. Studies in humans have shown that exposure to acetone at a level of 2375 mg/m3 does not negatively impact an individual's emotional regulation, behaviour, or learning ability.
ACETONE & DIAZINON & CHLORPYRIFOS-METHYL	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.
TRIAZOPHOS & CHLORPYRIFOS-METHYL & CHLORPYRIFOS	[* The Pesticides Manual, Incorporating The Agrochemicals Handbook, 10th Edition, Editor Clive Tomlin, 1994, British Crop Protection Council]
PHOSALONE & DIAZINON	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
PARATHION METHYL & DICHLORVOS	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.
PARATHION & DICHLORVOS	NOEL: 0.05 mg/kg/day

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PARATHION & MALATHION & DIAZINON & CHLORPYRIFOS & AZINPHOS-METHYL & AZINPHOS-ETHYL	Dithiophosphate alkyl esters is corrosive and toxic to the tissues on skin or oral exposure depending on its concentration. Symptoms included diarrhoea, skin and gastrointestinal irritation, lethargy, reduced food intake, staining about the nose and eye; occasionally, there was drooping of the eyelid, hair standing up, inco-ordination and salivation. Toxicity is reduced following inhalation (due to vapour pressure and high viscosity). It may produce reproductive, developmental and genetic toxicity on experimental animals, but no substantive data is available to establish effect on humans.
MALATHION & DIMETHOATE	ADI: 0.02 mg/kg/day
MALATHION & DICHLORVOS & CHLORPYRIFOS-METHYL & AZINPHOS-METHYL	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.
MALATHION & DIAZINON	WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
DIAZINON & AZINPHOS-METHYL	ADI: 0.001 mg/kg/day
CHLORPYRIFOS-METHYL & CHLORPYRIFOS	Common symptoms include headache, sweating, nausea, vomiting, diarrhoea, abdominal cramps, reduced heart rate, blurred vision, shrinking of the pupil, narrowing of the airway with excess phlegm, fluid in the lung, and difficulty in breathing. There may be muscle twitch, salivation, excess secretion of tears, 'pins and needles', lightheadedness, headache and memory impairment which may last weeks or months after the initial symptoms have resolved. Children may show a decline in school performance for up to about 6 months from exposure. Long term exposure has been linked to unstable blood pressure and pulse. ADI 0.01 mg/kg b.w. *

Acute Toxicity	✓	Carcinogenicity	✗
Skin Irritation/Corrosion	✗	Reproductivity	✗
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

EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
acetone	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	3744.6-5000.7mg/L	4
	NOEC(ECx)	12h	Fish	0.001mg/L	4
	EC50	72h	Algae or other aquatic plants	5600-10000mg/l	4
	EC50	48h	Crustacea	6098.4mg/L	5
	EC50	96h	Algae or other aquatic plants	9.873-27.684mg/l	4
triazophos	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	48h	Crustacea	0.003mg/l	Not Available
	EC50(ECx)	48h	Crustacea	0.003mg/l	Not Available
	LC50	96h	Fish	5.6mg/l	Not Available
propetamphos	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	9.5mg/l	4
	EC50	48h	Crustacea	0.002-0.005mg/L	4
	LC50	96h	Fish	0.159-0.287mg/L	4
	NOEC(ECx)	504h	Crustacea	0.0001mg/l	4
phosalone	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	0.83mg/l	4
	EC50	48h	Crustacea	1.529-1.946mg/L	4
	EC50(ECx)	72h	Algae or other aquatic plants	0.83mg/l	4
	LC50	96h	Fish	0.054-0.089mg/L	4
parathion methyl	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	15mg/l	4
	EC50	48h	Crustacea	0.00009-0.0002mg/l	4

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	EC50	96h	Algae or other aquatic plants	2.9mg/l	4
	LC50	96h	Fish	0.005mg/l	4
	NOEC(ECx)	504h	Crustacea	0.000166mg/l	1
parathion	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	0.00001-0.0002mg/l	4
	EC50	72h	Algae or other aquatic plants	3.59mg/l	1
	EC50	48h	Crustacea	0.0024mg/l	1
	ErC50	72h	Algae or other aquatic plants	3.59mg/l	1
	NOEC(ECx)	672h	Crustacea	0.000003mg/l	1
mevinphos	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	48h	Crustacea	0.00011-0.00022mg/l	4
	EC50(ECx)	48h	Crustacea	0.00011-0.00022mg/l	4
	LC50	96h	Fish	0.0107-0.0132mg/l	4
malathion	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	4.06mg/l	1
	EC50	48h	Crustacea	0.00014-0.014mg/l	4
	LC50	96h	Fish	0.002mg/l	4
	NOEC(ECx)	504h	Crustacea	0.00006mg/l	1
fenthion	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	0.035-0.09mg/l	4
	EC50	48h	Crustacea	0.00006mg/l	4
	EC50	96h	Algae or other aquatic plants	1.25-1.625mg/L	4
fenitrothion	NOEC(ECx)	504h	Crustacea	0.000042mg/l	1
	Endpoint	Test Duration (hr)	Species	Value	Source
	BCF	1344h	Fish	1.5-101.7	7
	EC50	72h	Algae or other aquatic plants	0.29-6.49mg/l	4
	EC50	48h	Crustacea	0.001-0.005mg/L	4
	EC50	96h	Algae or other aquatic plants	0.72-0.92mg/l	4
dimethoate	LC50	96h	Fish	0.00165mg/l	4
	NOEC(ECx)	504h	Crustacea	0.000009mg/l	4
	BCF	1008h	Fish	0.4-0.8	7
	EC50	72h	Algae or other aquatic plants	282.3mg/l	1
	EC50	48h	Crustacea	0.48-0.66mg/l	4
	EC50	96h	Algae or other aquatic plants	5.76mg/L	4
dichlorvos	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	0.0023mg/l	4
	NOEC(ECx)	504h	Crustacea	0.04mg/l	1
	EC50	72h	Algae or other aquatic plants	25.57mg/L	4
	EC50	48h	Crustacea	0.00005-0.00009mg/l	4
diazinon	EC50	96h	Algae or other aquatic plants	57.711mg/L	4
	LC50	96h	Fish	0.0025mg/l	4
	EC50(ECx)	48h	Crustacea	0.00005-0.00009mg/l	4
	Endpoint	Test Duration (hr)	Species	Value	Source
	BCF	1008h	Fish	7-46.9	7
diazinon	EC50	48h	Crustacea	0.00041mg/l	1
	EC50	96h	Algae or other aquatic plants	0.131-1.35mg/l	4
	LC50	96h	Fish	<0.001mg/l	4

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	NOEC(ECx)	504h	Crustacea	0.00017mg/l	1
chlorpyrifos-methyl	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	48h	Crustacea	0.00067-0.00094mg/l	4
	EC50(ECx)	24h	Crustacea	0.016-0.025mg/L	Not Available
	LC50	96h	Fish	0.3mg/l	Not Available
chlorpyrifos	Endpoint	Test Duration (hr)	Species	Value	Source
	BCF	1344h	Fish	49-493	7
	EC50	72h	Algae or other aquatic plants	0.58mg/L	2
	EC50	48h	Crustacea	0.00007-0.00008mg/l	4
	EC50	96h	Algae or other aquatic plants	0.112-0.169mg/l	4
	LC50	96h	Fish	0.0002-0.0009mg/l	4
	NOEC(ECx)	336h	Crustacea	<0.000001mg/l	4
chlorfenvinphos	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	48h	Crustacea	<0.001mg/L	Not Available
	LC50	96h	Fish	0.32mg/l	Not Available
	EC50(ECx)	48h	Crustacea	<0.001mg/L	Not Available
bromophos	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
azinphos-methyl	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	48h	Crustacea	<0.001mg/L	5
	EC50	96h	Algae or other aquatic plants	7.15mg/l	1
	EC0(ECx)	720h	Fish	0.000005mg/l	4
	LC50	96h	Fish	0.00027-0.00048mg/l	4
azinphos-ethyl	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	48h	Crustacea	0.0018-0.0058mg/l	4
	EC50(ECx)	48h	Crustacea	0.0018-0.0058mg/l	4
	LC50	96h	Fish	0.019mg/L	Not Available
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					

for diazinon:

Environmental Fate:

Breakdown in soil and groundwater: Diazinon has a low persistence in soil. The half-life is 2 to 4 weeks. Bacterial enzymes can speed the breakdown of diazinon and have been used in treating emergency situations such as spills. Diazinon seldom migrates below the top half inch in soil, but in some instances it may contaminate groundwater.

for Dichlorvos: Log Kow: 1.16-1.47; Koc: 28; Half-life (hr) air: 7680; Half-life (hr) H2O Surface Water: 96; Half-life (hr) Soil: 36-408; Henry's atm m³/mol: 9.58E-07; BCF: 1.9; Log BCF: 0.28.

Atmospheric Fate: UV light makes dichlorvos 5 to 150 times more toxic to aquatic life.

Terrestrial Fate: Soil - Dichlorvos has low persistence in soil and is subject to hydrolysis and biodegradation. Half-lives of 7 days were measured on clay, sandy clay, and loose, sandy soil.

Environmental Fate:

Breakdown in soil and groundwater: When released in soil, fenitrothion is moderately persistent and it is strongly adsorbed to soil particles thus will not likely leach into groundwater.

Breakdown in water: Fenitrothion is moderately persistent in water but can be rapidly degraded under alkaline conditions.

Breakdown in vegetation: Fenitrothion is found to be phototoxic to several plants like American linden, Hawthorn and sugar maple trees, and to certain rose varieties. However, it will not be phototoxic when applied at recommended rates.

Environmental Fate: Malathion can undergo degradation by photooxidation, chemical oxidation, and biological oxidation that involve two major pathways: activation and degradation.

Soil and Sediments: Malathion in soil is degraded rapidly by microorganisms that occur through enzyme-catalyzed hydrolysis. Although Malathion is moderately to highly mobile in soils, it does not promote leaching into groundwater because it is rapidly degraded in the environment. Degradation of Malathion is enhanced with an increase in moisture content.

for Parathion: Log Kow: 2.799; Koc: 602-15,860; Half-Life (hr) Air: 0.083; Half-Life (hr) Surface Water: 120-168; Henry's atm m³/mol: 5.65E-07.

Terrestrial Fate: Soil - Parathion has little or no potential for groundwater contamination. It binds tightly to soil particles and is degraded by biological and chemical processes within several weeks. Degradation is faster in flooded soil.

Studies on various thiophosphates indicated complete mineralization within three weeks by acclimation. A water stability study demonstrated the nature of hydrolysis involves the attack of water molecule on the phosphorus ester involving P-O bond fission.

For Ketones: Ketones, unless they are alpha, beta-unsaturated ketones, can be considered as narcosis or baseline toxicity compounds.

Aquatic Fate: Hydrolysis of ketones in water is thermodynamically favourable only for low molecular weight ketones. Reactions with water are reversible with no permanent change in the structure of the ketone substrate. Ketones are stable to water under ambient environmental conditions.

For Acetone:

log Kow : -0.24;

Half-life (hr) air : 312-1896;

Half-life (hr) H2O surface water : 20;

Henry's atm m³/mol : 3.67E-05

BOD 5: 0.31-1.76, 46-55%

Continued...

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COD: 1.12-2.07
ThOD: 2.2BCF: 0.69.
Environmental Fate: The relatively long half-life allows acetone to be transported long distances from its emission source.
Atmospheric Fate: Acetone preferentially locates in the air compartment when released to the environment. In air, acetone is lost by photolysis and reaction with photochemically produced hydroxyl radicals; the estimated half-life of these combined processes is about 22 days.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
acetone	LOW (Half-life = 14 days)	MEDIUM (Half-life = 116.25 days)
triazophos	HIGH	HIGH
propetamphos	HIGH	HIGH
parathion methyl	HIGH (Half-life = 360 days)	LOW (Half-life = 0.44 days)
parathion	HIGH	HIGH
mevinphos	LOW	LOW
malathion	MEDIUM (Half-life = 103 days)	LOW (Half-life = 0.41 days)
fenthion	HIGH	HIGH
fenitrothion	HIGH	HIGH
dimethoate	MEDIUM (Half-life = 112 days)	LOW (Half-life = 0.2 days)
dichlorvos	HIGH	HIGH
diazinon	HIGH	HIGH
chlorpyrifos-methyl	HIGH	HIGH
chlorpyrifos	HIGH	HIGH
chlorfenvinphos	HIGH	HIGH
bromophos	HIGH	HIGH
azinphos-methyl	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation
acetone	LOW (BCF = 0.69)
triazophos	HIGH (LogKOW = 4.5012)
propetamphos	MEDIUM (LogKOW = 3.82)
parathion methyl	LOW (BCF = 71)
parathion	LOW (BCF = 400)
mevinphos	LOW (LogKOW = 0.13)
malathion	LOW (BCF = 119)
fenthion	MEDIUM (LogKOW = 4.0791)
fenitrothion	LOW (BCF = 101.7)
dimethoate	LOW (BCF = 1.6)
dichlorvos	LOW (LogKOW = 1.47)
diazinon	MEDIUM (BCF = 540)
chlorpyrifos-methyl	HIGH (LogKOW = 4.5705)
chlorpyrifos	HIGH (BCF = 2880)
chlorfenvinphos	MEDIUM (LogKOW = 4.1458)
bromophos	HIGH (LogKOW = 5.21)
azinphos-methyl	LOW (LogKOW = 3.7147)

Mobility in soil

Ingredient	Mobility
acetone	HIGH (KOC = 1.981)
triazophos	LOW (KOC = 31590)
propetamphos	LOW (KOC = 122.4)
parathion methyl	LOW (KOC = 522.9)
parathion	LOW (KOC = 1779)
mevinphos	LOW (KOC = 232)
malathion	LOW (KOC = 30.5)
fenthion	LOW (KOC = 2346)
fenitrothion	LOW (KOC = 864.6)
dimethoate	LOW (KOC = 24.52)
dichlorvos	LOW (KOC = 40.2)
diazinon	LOW (KOC = 1337)
chlorpyrifos-methyl	LOW (KOC = 2008)

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Ingredient	Mobility
chlorpyrifos	LOW (KOC = 6829)
chlorfenvinphos	LOW (KOC = 591)
bromophos	LOW (KOC = 2008)
azinphos-methyl	LOW (KOC = 170.6)

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.
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SECTION 14 Transport information

Labels Required

	
Marine Pollutant	
HAZCHEM	*2YE

Land transport (ADG)

14.1. UN number or ID number	1090	
14.2. UN proper shipping name	ACETONE	
14.3. Transport hazard class(es)	Class	3
	Subsidiary Hazard	Not Applicable
14.4. Packing group	II	
14.5. Environmental hazard	Environmentally hazardous	
14.6. Special precautions for user	Special provisions	Not Applicable
	Limited quantity	1 L

Air transport (ICAO-IATA / DGR)

14.1. UN number	1090	
14.2. UN proper shipping name	Acetone	
14.3. Transport hazard class(es)	ICAO/IATA Class	3
	ICAO / IATA Subsidiary Hazard	Not Applicable
	ERG Code	3H

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14.4. Packing group	II	
14.5. Environmental hazard	Environmentally hazardous	
14.6. Special precautions for user	Special provisions	Not Applicable
	Cargo Only Packing Instructions	364
	Cargo Only Maximum Qty / Pack	60 L
	Passenger and Cargo Packing Instructions	353
	Passenger and Cargo Maximum Qty / Pack	5 L
	Passenger and Cargo Limited Quantity Packing Instructions	Y341
	Passenger and Cargo Limited Maximum Qty / Pack	1 L

Sea transport (IMDG-Code / GGVSee)

14.1. UN number	1090	
14.2. UN proper shipping name	ACETONE	
14.3. Transport hazard class(es)	IMDG Class	3
	IMDG Subsidiary Hazard	Not Applicable
14.4. Packing group	II	
14.5. Environmental hazard	Marine Pollutant	
14.6. Special precautions for user	EMS Number	F-E , S-D
	Special provisions	Not Applicable
	Limited Quantities	1 L

14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code
Not Applicable

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

Product name	Group
acetone	Not Available
triazophos	Not Available
propetamphos	Not Available
phosalone	Not Available
parathion methyl	Not Available
parathion	Not Available
mevinphos	Not Available
malathion	Not Available
fenthion	Not Available
fenitrothion	Not Available
dimethoate	Not Available
dichlorvos	Not Available
diazinon	Not Available
chlorpyrifos-methyl	Not Available
chlorpyrifos	Not Available
chlorfenvinphos	Not Available
bromophos	Not Available
azinphos-methyl	Not Available
azinphos-ethyl	Not Available

14.7.3. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
acetone	Not Available
triazophos	Not Available
propetamphos	Not Available
phosalone	Not Available
parathion methyl	Not Available
parathion	Not Available
mevinphos	Not Available
malathion	Not Available
fenthion	Not Available

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Product name	Ship Type
fenitrothion	Not Available
dimethoate	Not Available
dichlorvos	Not Available
diazinon	Not Available
chlorpyrifos-methyl	Not Available
chlorpyrifos	Not Available
chlorfenvinphos	Not Available
bromophos	Not Available
azinphos-methyl	Not Available
azinphos-ethyl	Not Available

SECTION 15 Regulatory information

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

- acetone 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)
- triazophos is found on the following regulatory lists**

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
- propetamphos is found on the following regulatory lists**

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
- phosalone is found on the following regulatory lists**

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
- parathion methyl is found on the following regulatory lists**

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring

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

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)

United Nations List of Prior Informed Consent Chemicals

WHO Recommended Classification of Pesticides by Hazard - Table 7. Pesticides subject to the Rotterdam Convention
- parathion is found on the following regulatory lists**

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7

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

United Nations List of Prior Informed Consent Chemicals

WHO Recommended Classification of Pesticides by Hazard - Table 7. Pesticides subject to the Rotterdam Convention
- mevinphos is found on the following regulatory lists**

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7
- malathion is found on the following regulatory lists**

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 3

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6

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
- fenthion is found on the following regulatory lists**

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Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7

fenitrothion is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6

dimethoate is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6

dichlorvos is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7
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

diazinon is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
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 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
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

chlorpyrifos-methyl is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
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 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

chlorpyrifos is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6
Chemical Footprint Project - Chemicals of High Concern List
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

chlorfenvinphos is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7

bromophos 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 6

azinphos-methyl is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals
Australia Model Work Health and Safety Regulations - Hazardous chemicals (other than lead) requiring health monitoring
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)
United Nations List of Prior Informed Consent Chemicals
WHO Recommended Classification of Pesticides by Hazard - Table 7. Pesticides subject to the Rotterdam Convention

azinphos-ethyl is found on the following regulatory lists

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)
Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals

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Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 7
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

Additional Regulatory Information
Not Applicable

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	No (triazophos; bromophos)
Canada - DSL	No (triazophos; propetamphos; phosalone; parathion methyl; parathion; mevinphos; fenthion; fenitrothion; dimethoate; chlorpyrifos-methyl; chlorfenvinphos; bromophos; azinphos-methyl; azinphos-ethyl)
Canada - NDSL	No (acetone; triazophos; propetamphos; phosalone; parathion methyl; parathion; mevinphos; malathion; fenthion; fenitrothion; dichlorvos; diazinon; chlorpyrifos-methyl; chlorpyrifos; chlorfenvinphos; bromophos; azinphos-methyl; azinphos-ethyl)
China - IECSC	No (propetamphos; bromophos)
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (triazophos; phosalone; parathion methyl; parathion; mevinphos; fenthion; chlorpyrifos-methyl; chlorfenvinphos; bromophos; azinphos-methyl; azinphos-ethyl)
Korea - KECI	No (bromophos; azinphos-ethyl)
New Zealand - NZIoC	No (triazophos; phosalone; parathion methyl; parathion; mevinphos; bromophos; azinphos-methyl; azinphos-ethyl)
Philippines - PICCS	No (triazophos; propetamphos; phosalone; fenthion; chlorpyrifos-methyl; chlorfenvinphos; bromophos)
USA - TSCA	No (triazophos; propetamphos; phosalone; parathion methyl; parathion; mevinphos; malathion; fenthion; fenitrothion; chlorpyrifos-methyl; chlorpyrifos; chlorfenvinphos; bromophos; azinphos-methyl; azinphos-ethyl)
Taiwan - TCSI	Yes
Mexico - INSQ	No (propetamphos; phosalone; bromophos; azinphos-ethyl)
Vietnam - NCI	No (bromophos; azinphos-ethyl)
Russia - FBEPH	No (triazophos; propetamphos; phosalone; mevinphos; malathion; fenitrothion; dichlorvos; diazinon; chlorpyrifos-methyl; chlorfenvinphos; bromophos; azinphos-ethyl)
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	25/01/2024
Initial Date	25/01/2024

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
- DNEL: Derived No-Effect Level
- PNEC: Predicted no-effect concentration
- 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

EN 12918 Organophosphorus Mixture 440 100 µg/mL in Acetone

► FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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