

SAFETY DATA SHEET

DOW AGROSCIENCES (NZ) LIMITED

Product name: Lorsban™ 50EC Insecticide

Issue Date: 24.07.2015

DOW AGROSCIENCES (NZ) LIMITED encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Lorsban™ 50EC Insecticide

Purpose: Insecticide

COMPANY IDENTIFICATION

DOW AGROSCIENCES (NZ) LIMITED
89 PARITUTU ROAD
NEW PLYMOUTH, 4342
NEW ZEALAND

Customer Information Number:

0800-803-939

fnpcust@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact:

+64 6 751 2407

Local Emergency Contact:

0800-844-455

For medical advice, contact the New Zealand Poisons Information Centre:

0800 POISON (0800 764 766)

Transport Emergency Only Dial 111

This SDS does not provide exhaustive guidance for all the HSNO controls assigned to this substance. The EPA website <http://www.epa.govt.nz> should be consulted for a full list of triggered controls and cited regulations.

2. HAZARDS IDENTIFICATION

Hazard classification

NEW ZEALAND HAZARDOUS SUBSTANCES CLASSIFICATION: Classified as hazardous according to criteria in the New Zealand Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001. Refer to Section 15 for HSNO Approval Number.

HSNO Classification: 3.1D, 6.1C, 6.3B, 6.4A, 6.8B, 6.9A, 9.1A, 9.2B, 9.3A, 9.4A

Hazards

Combustible liquid

Toxic if swallowed

Harmful if inhaled

Toxic in contact with skin

Causes mild skin irritation
Causes eye irritation
Causes damage to organs through prolonged or repeated exposure
Suspected of damaging fertility or the unborn child
Very toxic to aquatic life with long lasting effects
Toxic to the soil environment
Very toxic to terrestrial vertebrates and invertebrates

Prevention:

Keep out of reach of children
Read label before use
Keep away from sparks/open flames/hot surfaces. No smoking
Wear protective gloves/protective clothing/eye protection/face protection
Wash hands and face thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe vapours/mist/spray
Use only outdoors or in a well-ventilated area
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Avoid release to the environment.

Response:

Call a POISON CENTRE or doctor if you feel unwell, or if exposed or concerned.
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
IF SWALLOWED immediately call a POISON CENTER or doctor/physician. Rinse mouth.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention
Remove/take off immediately all contaminated clothing. Wash contaminated clothing before re-use.
IF IN EYES: rinse cautiously with water for several minutes. Remove contact lenses if easy to do.
Continue rinsing
If eye irritation persists: Get medical advice/attention
Specific measures – see First Aid instruction on this SDS.
In case of fire: use water fog or fine spray for extinction
Collect spillage

Storage:

Store locked up.
Store in a well-ventilated place. Keep cool.

Disposal

Dispose of contents/ container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CASRN	Concentration
Chlorpyrifos (ISO)	2921-88-2	45 - 50 %
Heavy aromatic naphtha	64742-94-5	45 - 50 %
Naphthalene	91-20-3	< 5.0 %
1,2,4-Trimethylbenzene	95-63-6	< 3.0 %
Mesitylene; 1,3,5-Trimethylbenzene	108-67-8	< 1.0 %
Balance	Not available	< 1.0%

4. FIRST AID MEASURES

Consult the National Poisons Information Centre (0800 POISON (0800 764 766)) or a doctor in every case of suspected chemical poisoning. Never give fluids or induce vomiting if a patient is unconscious or convulsing regardless of cause of injury. If breathing difficulties occur seek medical attention immediately.

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

Skin Contact: Take off contaminated clothing. Wash skin with soap and plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Wash clothing before re-use. Shoes and other leather items which cannot be decontaminated should be disposed of properly. Suitable emergency safety shower facility should be available in manufacturing and loading areas.

Eye Contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be immediately available.

Ingestion: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of immediate medical attention and special treatment needed

Notes to physician: This material is a cholinesterase inhibitor. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. Attempt seizure control with diazepam 5-10 mg (adults) intravenously over 2-3 minutes. Repeat every 5-10 minutes as needed. Monitor for hypotension, respiratory depression, and need for intubation. Consider second agent if seizures persist after 30 mg. If seizures persist or recur administer Phenobarbital 600-1200 mg (adults) intravenous diluted in 60 ml 0.9% saline given at 25-50 mg/minute. Evaluate for hypoxia, dysrhythmia, electrolyte disturbance, hypoglycemia (treat adults with dextrose 100 mg intravenous). Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. Maintain adequate ventilation and oxygenation of the patient. If haemolysis is suspected, monitor haemoglobin, haematocrit, plasma free haemoglobin, and urinalysis. Whole blood or packed RBC transfusion may be required in severe cases. Alkalinization of urine with bicarbonate may prevent renal damage. The decision of whether to induce vomiting or not should be made by a

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. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment. Excessive exposure may aggravate pre-existing asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome). Skin contact may aggravate pre-existing dermatitis.

5. FIREFIGHTING MEASURES

Hazchem Code: 2X

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Phosphorous compounds. Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Dense smoke is produced when product burns.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of re-ignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7: Handling, for additional precautionary measures. Keep up-wind of spill. Ventilate area of leak or spill. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8: Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13: Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Handling

Precautions for safe handling: Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling. Keep container closed. Spills of these organic materials on hot fibrous insulations may lead to lowering of the auto-ignition temperatures possibly resulting in spontaneous combustion.

Storage

Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

<p>This substance is subject to a requirement for an emergency management plan, secondary containment and signage, whenever it is held in quantities of 100 litres or more, either alone or in aggregate with other hazardous substances. See Hazardous Substances Emergency Management and Identification Regulations.</p>
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure limits are listed below, if they exist:

Component	List	Type	Value
Chlorpyrifos	NZ OEL	WES-TWA	0.2 mg/m ³ Absorbed via skin
	ACGIH	TWA Inhalable fraction and vapor.	0.1 mg/m ³ SKIN, BEI
Naphthalene	ACGIH	TWA	10 ppm Absorbed via skin
	NZ OEL	WES-TWA	52 mg/m ³ 10 ppm
	NZ OEL	WES-STEL	79 mg/m ³ 15 ppm
	Dow IHG	TWA	10ppm Absorbed via skin
	Dow IHG	STEL	15 ppm Absorbed via skin
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
Mesitylene; 1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

A BEI notation following the exposure guideline refers to a guidance value for assessing biological monitoring results as an indicator of the uptake of a substance from all routes of exposures.

A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/Face Protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator. Use safety glasses (with side shields). If exposure causes eye discomfort, use a full-face respirator.

Skin Protection: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material.

Hand protection: Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to AS/NZS 2161.10) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to AS/NZS

2161.10) is recommended. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Other Information

Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including:

AS/NZS 1336: Recommended practices for occupational eye protection.

AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications.

AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment.

AS/NZS 2161: Occupational protective gloves.

AS/NZS 2210: Occupational protective footwear.

AS/NZS 4501: Occupational protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Color	Yellow
Odor	Solvent
pH	No test data available
Melting point/range	No test data available
Freezing point	No test data available
Boiling point (760 mmHg)	183 °C <i>Vendor Solvent</i>
Flash point – closed cup	67 °C <i>Pensky-Martens Closed Cup ASTM D 93</i>
Flammability (solid, gas)	Not applicable
Lower explosion limit	Lower: 0.6 %(V) <i>Vendor Solvent</i>
Upper explosion limit	Upper: 7.0 %(V) <i>Vendor Solvent</i>
Vapor Pressure	26 mmHg @ 38 °C <i>Vendor Solvent</i>
Vapor Density (air = 1)	No test data available
Relative density (water = 1)	1.075 at 20 °C
Solubility in water (by weight)	Emulsifiable
Auto-ignition temperature	No test data available
Decomposition temperature	No test data available

Liquid Density 1.090 g/ml *CIPAC MT 3*
Molecular weight No product data available. Chlorpyrifos = 350.62 g/mol

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems. Avoid static discharge. Avoid direct sunlight.

Incompatible Materials: Avoid contact with: Bases. Oxidizers.

Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride. Organic sulfides. Sulfur dioxide. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Acute oral toxicity

Moderate toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury, even death.

As product: Single dose oral LD50 has not been determined.
Based on information for component(s): LD50, Rat, 450 mg/kg. Estimated.

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

As product: The LD50 has not been determined.
Based on information for components: LD50, Rabbit, > 5,000 mg/kg

Acute inhalation toxicity

Prolonged excessive exposure to mist may cause adverse effects. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Signs and symptoms of excessive exposure may include: Nausea and/or vomiting.

As product: The LC50 has not been determined.

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness. May cause drying and flaking of the skin.

Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.

Eye damage/eye irritation

May cause moderate eye irritation which may be slow to heal. May cause corneal injury.

Vapor may cause eye irritation experienced as mild discomfort and redness.

Sensitization

For the active ingredient: Did not cause allergic skin reactions when tested in guinea pigs.

For the solvent(s): Did not cause allergic skin reactions when tested in humans.

For the minor component(s): Skin contact may cause an allergic skin reaction in a small proportion of individuals.

For respiratory sensitization: No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For the active ingredient:

Excessive exposure may produce organophosphate type cholinesterase inhibition. Signs and symptoms of excessive exposure to active ingredient may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions.

In animals, effects have been reported on the following organs: Adrenal gland. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

For the solvent(s):

In animals, effects have been reported on the following organs: Gastrointestinal tract. Thyroid. Urinary tract. Lung. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

For the minor component(s):

Excessive exposure may cause haemolysis, thereby impairing the blood's ability to transport oxygen. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust. Ingestion of naphthalene by humans has caused hemolytic anemia.

In animals, effects have been reported on the following organs: Respiratory tract.

Carcinogenicity

Active ingredient did not cause cancer in laboratory animals. Contains naphthalene which has caused cancer in some laboratory animals. In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

Teratogenicity

For the active ingredient: Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

For the solvent(s): Did not cause birth defects or any other foetal effects in laboratory animals.

Reproductive Toxicity

For the active ingredient: Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

Mutagenicity

Based on a majority of negative data and some equivocal or marginally positive results, active ingredient is considered to have minimal genetic toxicity potential.

For the minor component(s): *In vitro* genetic toxicity studies were negative in some cases and positive in other cases.

For the solvent(s): *In vitro* genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

May be fatal if swallowed and enters airways.

COMPONENTS INFLUENCING TOXICOLOGY:

Chlorpyrifos

Acute inhalation toxicity

At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

LC50, 4 h, Vapor, Rat > 0.2 mg/l

Maximum attainable concentration. No deaths occurred at this concentration.

Heavy aromatic naphtha

Acute inhalation toxicity

LC50, Rat, 4 Hour, dust/mist > 4.8 mg/l

LC50, Rat, 4 Hour, vapour > 0.2 mg/l

No deaths occurred following exposure to a saturated atmosphere.

Naphthalene

Acute inhalation toxicity

Excessive exposure may cause irritation to upper respiratory tract (nose and throat).

Excessive exposure may cause lung injury. Signs and symptoms of excessive exposure may include: Headache. Confusion. Sweating. Nausea and/or vomiting.

LC50, Rat, 4 Hour, vapour > 0.41 mg/l.

The LC50 value is greater than the Maximum Attainable Concentration.

1,2,4-Trimethylbenzene

Acute inhalation toxicity

Prolonged excessive exposure may cause serious adverse effects, even death. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50, 4 h, Rat, 18 mg/l

Mesitylene; 1,3,5-Trimethylbenzene**Acute inhalation toxicity**

LC50, Rat, male and female, 4 Hour, vapour > 10.2 mg/l.

No deaths occurred following exposure to a saturated atmosphere.

Carcinogenicity**Component
Naphthalene****List**

IARC
US NTP

ACGIH

Classification

Group 2B: Possibly carcinogenic to humans
Reasonably anticipated to be a human
carcinogen

A3: Confirmed animal carcinogen with
unknown relevance to humans.

12. ECOLOGICAL INFORMATION

Ecotoxicity**Chlorpyrifos (ISO)**

Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 < 0.1 mg/L in the most sensitive species).

Acute toxicity to fish

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 h: 0.003 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), 48 h: 0.00068 mg/l

Acute toxicity to algae/aquatic plants

EC50, *Skeletonema costatum* (marine diatom), 96 Hour, Growth inhibition (cell density reduction), 0.255 - 0.328 mg/l

Toxicity to bacteria

EC50, activated sludge > 100 mg/l

Chronic toxicity to fish

NOEC, *Pimephales promelas* (fathead minnow), 216 d, 0.000568 mg/l

MATC (Maximum Acceptable Toxicant Level), *Pimephales promelas* (fathead minnow), 216 d, 0.00226 - 0.00325 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, *Daphnia magna* (Water flea), number of offspring, 0.000056 mg/l

MATC (Maximum Acceptable Toxicant Level), *Daphnia magna* (Water flea), number of offspring, 0.000075 mg/l

Toxicity to Above Ground Organisms

Material is highly toxic to birds on a dietary basis (LC50 between 50 and 500 ppm).
dietary LC50, *Colinus virginianus* (Bobwhite quail): 423 mg/kg diet.

Material is highly toxic to bees

oral LD50, *Apis mellifera* (bees): 0.36 micrograms/bee

contact LD50, *Apis mellifera* (bees): 0.070 micrograms/bee

Toxicity to Soil Dwelling Organisms

LC50, *Eisenia fetida* (earthworms), 14 d, 129 mg/kg

Heavy aromatic naphtha

Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

Acute toxicity to fish

LC50, *Gambusia affinis* (Mosquito fish), 96 h, 811 mg/l

Aquatic Plant Toxicity

EC50, algae, 72 h, 21 - 165 mg/l

Naphthalene

Acute toxicity to fish

Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 h, 0.11 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, 1.6 - 24.1 mg/l

Acute toxicity to algae/aquatic plants

ErC50, *Skeletonema costatum* (marine diatom), Growth rate inhibition, 72 Hour, 0.4 mg/l

Chronic toxicity to fish

NOEC, Other, flow-through test, 40 d, mortality, 0.37 mg/l

1,2,4-Trimethylbenzene

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Acute toxicity to fish

LC50, *Pimephales promelas* (fathead minnow), flow-through test, 96 Hour, 7.7 mg/l

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), 48 Hour, 3.6 mg/l

Mesitylene; 1,3,5-Trimethylbenzene

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Acute toxicity to fish

LC50, *Carassius auratus* (goldfish), flow-through test, 96 Hour, 12.5 mg/l. Method not specified.

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), Static, 48 Hour, 6 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

EbC50, *Desmodesmus subspicatus* (green algae), 48 Hour, Biomass, 25 mg/l, OECD Test Guideline 201 or Equivalent

Chronic toxicity to aquatic invertebrates

NOEC, *Daphnia magna* (Water flea), semi-static test, 21 d, number of offspring, 0.4 mg/l

Persistence and Degradability

Chlorpyrifos (ISO)

Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.

10-day Window: Fail

Biodegradation: 22 %

Exposure time: 28 d

Method: OECD Test Guideline 301D or Equivalent

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0.000 %

Stability in Water (1/2-life): Hydrolysis, half-life, 72 d

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 1.4 Hour

Method: Estimated.

Heavy aromatic naphtha

Biodegradability: Material is not readily biodegradable according to OECD/EEC guidelines.

Naphthalene

Biodegradability: Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).

Theoretical Oxygen Demand: 3.00 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	57.000 %
10 d	71.000 %
20 d	71.000 %

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 5.9 Hour

Method: Estimated.

1,2,4-Trimethylbenzene

Biodegradability: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

10-day Window: Not applicable

Biodegradation: 4 - 18 %

Exposure time: 28 d

Method: OECD Test Guideline 301C or Equivalent

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 0.641 d

Method: Estimated.

Mesitylene; 1,3,5-Trimethylbenzene

Biodegradability: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Not applicable

Biodegradation: 0 %

Exposure time: 28 d

Method: OECD Test Guideline 301C or Equivalent

10-day Window: Not applicable

Biodegradation: 50 %

Exposure time: 4.4 d

Method: Calculated.

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitizer: OH radicals

Atmospheric half-life: 3.7 Hour

Method: Estimated.

Bioaccumulative potential

Chlorpyrifos (ISO)

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3,000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 4.7 at 20 °C. Estimated.

Heavy aromatic naphtha

Bioaccumulation: For similar material(s): Bioconcentration potential is high (BCF > 3,000 or Log Pow between 5 and 7).

Naphthalene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3,000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.3 Measured

Bioconcentration Factor (BCF): 40 - 300 Fish. Measured

1,2,4-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3,000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.63 Measured

Bioconcentration Factor (BCF): 33 - 275 *Cyprinus carpio* (Carp). Measured

Mesitylene; 1,3,5-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3,000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.42 Measured

Bioconcentration Factor (BCF): 161; *Pimephales promelas* (fathead minnow). Measured

Mobility in soil

Chlorpyrifos (ISO)

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5,000).

Partition coefficient, soil organic carbon/water (Koc): 8,151

Henry's Law Constant (H): 6.6E-06 atm*m3/mole Measured

Heavy aromatic naphtha

Mobility in soil: No data available.

Naphthalene

Mobility in soil: Potential for mobility in soil is medium (Koc between 150 and 500).

Partition coefficient, soil organic carbon/water (Koc): 240 - 1,300 Measured

Henry's Law Constant (H): 2.92E-04 - 5.53E-04 atm*m3/mole; 25 °C Measured

1,2,4-Trimethylbenzene

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2,000).

Partition coefficient, soil organic carbon/water (Koc): 720 Estimated.

Henry's Law Constant (H): 6.16E-03 atm*m3/mole; 25 °C Measured

Mesitylene; 1,3,5-Trimethylbenzene

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2,000).

Partition coefficient, soil organic carbon/water (Koc): 741.65 Estimated.

Henry's Law Constant (H): 1.97E-02 atm*m3/mole; 25 °C Estimated.

Results of PBT and vPvB assessment

Chlorpyrifos

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Heavy aromatic naphtha

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Naphthalene

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

1,2,4-Trimethylbenzene

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Mesitylene; 1,3,5-Trimethylbenzene

This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

13. DISPOSAL CONSIDERATIONS

Disposal methods: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

Waste handling, treatment and disposal practices must be in compliance with the New Zealand Hazardous Substances (Disposal) Regulations 2001. Additional local requirements may be applicable in accordance with planning controls under the Resource Management Act. Regulations concerning waste management may vary in different locations.

14. TRANSPORT INFORMATION

PUBLIC PASSENGER VEHICLE TRANSPORT: Not permitted

Classification for ROAD and Rail transport:

Proper shipping name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (CHLORPYRIFOS)
UN number	UN 3018
Class	6.1
Packing group	III
Environmental hazards	Chlorpyrifos

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (CHLORPYRIFOS)
UN number	UN 3018
Class	6.1
Packing group	III
Marine pollutant	Chlorpyrifos
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (CHLORPYRIFOS)
UN number	UN 3018
Class	6.1
Packing group	III

Hazchem Code: 2X

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Compliance with the above land, rail, marine and air requirements is deemed to comply with the applicable requirements of the Hazardous substances Identification and Emergency Management Regulations.

15. REGULATORY INFORMATION

ACVMG Approval Number: P1839

HSNO Approval Number: HSR000224

ADVICE TO PRODUCT USERS REGARDING HSNO CONTROLS: Users of this product should make reference to the New Zealand Hazardous Substances and New Organisms Act and Regulations for relevant risk management controls. Additional local requirements may be applicable in accordance with planning controls under the Resource Management Act. Refer to Environment Protection Authority publication; User Guide to the HSNO Controls Regulations. <http://www.epa.govt.nz>.

16. OTHER INFORMATION

Revision

Identification Number: 101194912 / A157 / Issue Date: 24.07.2014 / Version: Replaces 24.04.2014
DAS Code: GF-176

Legend

Absorbed via skin	Absorbed via skin
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Dow IHG	Dow Industrial Hygiene Guideline
NZ OEL	New Zealand. Workplace Exposure Standards for Atmospheric Contaminants
SKIN, BEI	Absorbed via Skin, Biological Exposure Indices
STEL	Short term exposure limit
TWA	Time weighted average
WES-STEL	Workplace Exposure Standard - Short-Term Exposure Limit
WES-TWA	Workplace Exposure Standard - Time Weighted average

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safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDS's, we are not and cannot be responsible for (M)SDS's obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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