

**Product Name:** RELDAN™ PLuS IGR GRAIN PROTECTOR**Issue Date:** 10.02.2014

Dow AgroSciences (Australia) Ltd. 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

RELDAN™ PLuS IGR GRAIN PROTECTOR

COMPANY IDENTIFICATION

Dow AgroSciences (Australia) Ltd.
A Subsidiary of The Dow Chemical Company
ABN 24 003 771 659
Level 5
20 Rodborough Rd
Frenchs Forest, NSW 2086
Australia

Customer Information Number:

1800-700-096

auscustomerservice@dow.com**EMERGENCY TELEPHONE NUMBER****24-Hour Emergency Contact:**

61 3 9663 2130

Local Emergency Contact:

1800 033 882

For advice, contact a doctor (at once) or the Australian Poisons Information Centre: 131 126

Transport Emergency Only Dial 000

2. Hazards Identification

HAZARDOUS SUBSTANCES CLASSIFICATION: Classified as hazardous to health according to the criteria of the National Occupational Health and Safety Commission, Australia

Flammable.

Harmful by inhalation.

Harmful if swallowed.

Toxic if swallowed.

Limited evidence of a carcinogenic effect.

May cause sensitization by skin contact.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Harmful: may cause lung damage if swallowed.

3. Composition Information

Component	Amount	Classification:	CAS #
chlorpyrifos-methyl	44.6 %	R43; N: R50, R53	5598-13-0
S-methoprene	2.7 %		65733-16-6
Solvent naphtha (petroleum), heavy arom.;	> 40.0 - < 50.0 %	Xn: R65;	64742-94-5
Kerosine - unspecified Distillates (petroleum), hydrotreated light;	< 5.0 %	Xn: R65	64742-47-8
kerosine - unspecified 1,2,4-Trimethylbenzene	< 5.0 %	R10; Xn: R20; Xi: R36/37/38; N: R51, R53	95-63-6
2,6-Di-tert-butyl-p-cresol (BHT)	< 1.0 %		128-37-0
Naphthalene	< 1.0 %	Carc. 3: R40; Xn: R22; N: R50, R53	91-20-3
Mesitylene; 1,3,5- trimethylbenzene	< 1.0 %	R10; Xn: R65; Xi: R37; N: R51, R53	108-67-8
chlorpyrifos (ISO)	< 1.0 %	T: R25; N: R50/53	2921-88-2
See Section 16 for full text of R-phrases.			

4. First Aid Procedures

Description of first aid measures

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 reuse. Shoes and other leather items which cannot be decontaminated should be disposed of properly.

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.

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), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. 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. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Attempt seizure control with diazepam 5-10 mg (adults) intravenous 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). If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire Fighting Measures

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.

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: Hydrogen chloride. Carbon monoxide. Carbon dioxide. Nitrogen oxides.

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.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition 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.

Hazchem Code: 2X•

See Section 9 for related Physical Properties

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 upwind 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

General 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. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

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.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
1,2,4-Trimethylbenzene	EU IOELV	TWA	100 mg/m ³ 20 ppm
	ACGIH	TWA	25 ppm
	AU OEL	TWA	123 mg/m ³ 25 ppm
chlorpyrifos-methyl	Dow IHG	TWA	0.1 mg/m ³ SKIN, D-SEN
Naphthalene	ACGIH	TWA	10 ppm SKIN
	ACGIH	STEL	15 ppm SKIN
	AU OEL	TWA	52 mg/m ³ 10 ppm
	AU OEL	STEL	79 mg/m ³ 15 ppm
	EU IOELV	TWA	50 mg/m ³ 10 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 "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.

Personal Protection

Eye/Face Protection:

Skin Protection:

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.

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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

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 eye protection in the industrial environment.

AS/NZS 1337: Eye protectors for industrial applications.

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

AS/NZS 2161: Occupational protective gloves.

AS/NZS 2210: Occupational protective footwear.

AS 2919: Industrial clothing.

9. Physical and Chemical Properties

Appearance

Physical State	Liquid.
Color	Yellow
Odor	Aromatic
Odor Threshold	No test data available
pH	4.7 (@ 1 %) <i>pH Electrode</i> (1% aqueous suspension)
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	179 °C <i>Vendor Solvent.</i>
Flash Point - Closed Cup	64 °C <i>Pensky-Martens Closed Cup ASTM D 93</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammable Limits In Air	Lower: 0.9 %(V) <i>Vendor</i> Upper: 6.0 %(V) <i>Vendor</i>
Vapor Pressure	< 10 mmHg @ 20 °C <i>Vendor Solvent</i>
Vapor Density (air = 1)	No test data available
Specific Gravity (H₂O = 1)	1.12
Solubility in water (by weight)	emulsifiable
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Kinematic Viscosity	No test data available
Liquid Density	1.122 g/cm ³ @ 20 °C <i>DAS-PM-00-001</i>

10. Stability and Reactivity

Reactivity

No dangerous reaction known under conditions of normal use.

Chemical stability

Thermally stable at typical use temperatures.

Possibility of hazardous reactions

Polymerization will not occur.

Conditions to Avoid: Avoid temperatures above 50 °C. Potentially violent decomposition can occur above 160 °C. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid.

Incompatible Materials: Avoid contact with oxidizing materials.

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: Hydrogen chloride.

11. Toxicological Information**Acute Toxicity****Ingestion**

Low 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. Excessive exposure may produce organophosphate type cholinesterase inhibition.

Single dose oral LD50 has not been determined. Estimated. LD50, rat > 2,000 mg/kg

Dermal

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

The dermal LD50 has not been determined. Estimated. LD50, rabbit > 2,000 mg/kg

Inhalation

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.

The LC50 has not been determined. Estimated. LC50, 4 h, Aerosol, rat > 2 mg/l

Eye damage/eye irritation

May cause slight eye irritation. Corneal injury is unlikely. Vapor may cause eye irritation experienced as mild discomfort and redness.

Skin corrosion/irritation

Prolonged contact may cause slight skin irritation with local redness. Prolonged or repeated exposure may cause defatting of the skin leading to drying or flaking of skin.

Sensitization**Skin**

Skin contact may cause an allergic skin reaction.

Repeated Dose Toxicity

For the active ingredient(s): 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. Liver. For the solvent(s): In animals, effects have been reported on the following organs: Lung. For some component(s): In animals, effects have been reported on the following organs: Lung. Gastrointestinal tract. Thyroid. Urinary tract. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust. For the minor component(s): BHT is toxic only at concentrations much higher than normally consumed in man, causing organ changes (liver, lung, brain, thyroid, kidney) and anti-clotting effects; however, it may enhance or inhibit the effects of other substances.

Chronic Toxicity and Carcinogenicity

For the active ingredient(s): Did not cause cancer in laboratory animals. For the minor component(s) 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. It is generally recognized that at high doses BHT may act as a promoter or inhibitor of

certain tumor formation in laboratory animals; at the maximum acceptable daily intake for man it is not believed to cause cancer.

Developmental Toxicity

For the active ingredient(s): High doses fed to pregnant mice resulted in an increase in cleft palate, a common developmental abnormality in mice. No abnormalities have been observed in other species under similar test conditions. For the minor component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. For the majority of components: Did not cause birth defects in laboratory animals.

Reproductive Toxicity

For the active ingredient(s): In animal studies, did not interfere with reproduction. For the majority of components: No relevant data found.

Genetic Toxicology

For the active ingredient(s): Chlorpyrifos-methyl. For the solvent(s): In vitro genetic toxicity studies were negative. For some component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. For the active ingredient(s): Chlorpyrifos-methyl. For the solvent(s): For the majority of components: Animal genetic toxicity studies were negative. For the minor component(s) Animal genetic toxicity studies were predominantly negative.

12. Ecological Information

Toxicity

Data for Component: **chlorpyrifos-methyl**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species). Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

Fish Acute & Prolonged Toxicity

LC50, *Oncorhynchus mykiss* (rainbow trout), 96 h: 0.41 mg/l

Aquatic Invertebrate Acute Toxicity

EC50, *Daphnia magna* (Water flea), 48 h: 0.00062 mg/l

Aquatic Plant Toxicity

EbC50, *Pseudokirchneriella subcapitata* (green algae), 96 h: 0.54 mg/l

Fish Chronic Toxicity Value (ChV)

rainbow trout (*Oncorhynchus mykiss*), 21 d: 0.0047 mg/l, NOEC:0.0047 mg/l

Aquatic Invertebrates Chronic Toxicity Value

water flea *Daphnia magna*, 21 d, Immobilization: 0.00001 mg/l, NOEC: 0.00001 mg/l

Toxicity to Above Ground Organisms

oral LD50, *Colinus virginianus* (Bobwhite quail): 923 mg/kg bodyweight.

dietary LC50, *Colinus virginianus* (Bobwhite quail): 2010 mg/kg diet.

oral LD50, *Apis mellifera* (bees): 0.11 ug/bee

contact LD50, *Apis mellifera* (bees): 0.152 ug/bee

Toxicity to Soil Dwelling Organisms

LC50, *Eisenia fetida* (earthworms), 14 d: 182 mg/kg

Data for Component: **Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified**

For similar material(s): Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

Fish Acute & Prolonged Toxicity

For similar material(s): LC50, *Oncorhynchus mykiss* (rainbow trout), 96 h: 2 - 5 mg/l

Aquatic Invertebrate Acute Toxicity

For similar material(s): EC50, *Daphnia magna* (Water flea), 48 h: 3 - 10 mg/l

Aquatic Plant Toxicity

For similar material(s): EC50, *Pseudokirchneriella subcapitata* (green algae), 72 h: 11 mg/l

Data for Component: **Distillates (petroleum), hydrotreated light; kerosine - unspecified**

Not expected to be acutely toxic to aquatic organisms.

Data for Component: **1,2,4-Trimethylbenzene**

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

Fish Acute & Prolonged Toxicity

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

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), 48 h: 3.6 mg/l

Data for Component: 2,6-Di-tert-butyl-p-cresol (BHT)

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 0.48 mg/l

Aquatic Invertebrates Chronic Toxicity Value

Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, NOEC: 0.07 mg/l

Data for Component: Naphthalene

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

Fish Acute & Prolonged Toxicity

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

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 1.6 - 24.1 mg/l

Fish Chronic Toxicity Value (ChV)

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

Data for Component: Mesitylene: 1,3,5-trimethylbenzene

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

Fish Acute & Prolonged Toxicity

LC50, Carassius auratus (goldfish), flow-through test, 96 h: 12.5 mg/l

Aquatic Invertebrate Acute Toxicity

LC50, Daphnia magna (Water flea), static test, 48 h, mortality: 6 mg/l

Aquatic Plant Toxicity

EbC50, alga Scenedesmus sp., biomass growth inhibition, 48 h: 25 mg/l

Aquatic Invertebrates Chronic Toxicity Value

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

Data for Component: chlorpyrifos (ISO)

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species). Material is highly toxic to birds on a dietary basis (LC50 between 50 and 500 ppm).

Fish Acute & Prolonged Toxicity

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

Aquatic Invertebrate Acute Toxicity

EC50, Daphnia magna (Water flea), 48 h: 0.0001 mg/l

Aquatic Plant Toxicity

EbC50, alga Scenedesmus sp., 72 h: 0.580 mg/l

Toxicity to Micro-organisms

EC50; activated sludge: > 100 mg/l

Fish Chronic Toxicity Value (ChV)

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

Aquatic Invertebrates Chronic Toxicity Value

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

Toxicity to Above Ground Organisms

dietary LC50, Anas platyrhynchos (Mallard duck): 203 mg/kg diet.

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

Persistence and Degradability**Data for Component: chlorpyrifos-methyl**

Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%). 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.

Stability in Water (1/2-life):

2.2 - 3.6 d

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
25 %	28 d	OECD 301D Test	fail

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
6.1E-11 cm ³ /s	2.11 h	Estimated.

Theoretical Oxygen Demand: 2.08 mg/mg**Data for Component: Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified**

Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

Data for Component: Distillates (petroleum), hydrotreated light; kerosine - unspecified

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

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
4 - 12 %	28 d	OECD 301D Test	fail

Data for Component: 1,2,4-Trimethylbenzene

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

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
4 - 18 %	28 d	OECD 301C Test	Not applicable

Data for Component: 2,6-Di-tert-butyl-p-cresol (BHT)**OECD Biodegradation Tests:**

Biodegradation	Exposure Time	Method	10 Day Window
4.5 %	28 d	OECD 301C Test	Not applicable

Data for Component: Naphthalene

Material is expected to be readily biodegradable.

Data for Component: Mesitylene; 1,3,5-trimethylbenzene

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.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	OECD 301C Test	Not applicable
50 %	4.4 d	Calculated	Not applicable

Data for Component: chlorpyrifos (ISO)

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

Stability in Water (1/2-life):

72 d

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
22 %	28 d	OECD 301D Test	fail

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
9.0E-11 cm ³ /s	1.4 h	Estimated.

Theoretical Oxygen Demand: 2.46 mg/mg

Bioaccumulative potential

Data for Component: chlorpyrifos-methyl

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 4

Bioconcentration Factor (BCF): 1,800; Oncorhynchus mykiss (rainbow trout)

Data for Component: Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified

Bioaccumulation: For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Data for Component: Distillates (petroleum), hydrotreated light; kerosine - unspecified

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 3.3 - 6 Estimated.

Bioconcentration Factor (BCF): 310; Fish; Estimated.

Data for Component: 1,2,4-Trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 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

Data for Component: 2,6-Di-tert-butyl-p-cresol (BHT)

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient, n-octanol/water (log Pow): 4.17 - 5.10 Estimated.

Bioconcentration Factor (BCF): 598.4; Fish; Estimated.

Data for Component: Naphthalene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

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

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

Data for Component: Mesitylene; 1,3,5-trimethylbenzene

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 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

Data for Component: chlorpyrifos (ISO)

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

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

Mobility in soil

Data for Component: chlorpyrifos-methyl

Mobility in soil: Potential for mobility in soil is slight (Koc between 2000 and 5000).

Partition coefficient, soil organic carbon/water (Koc): 1,189 - 8,100
Henry's Law Constant (H): 2.35E-01 Pa*m³/mole.; 20 °C

Data for Component: Solvent naphtha (petroleum), heavy arom.; Kerosine - unspecified

Mobility in soil: No relevant data found.

Data for Component: Distillates (petroleum), hydrotreated light; kerosine - unspecified

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).

Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated.

Henry's Law Constant (H): 8.24E+00 atm*m³/mole Estimated.

Data for Component: 1,2,4-Trimethylbenzene

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

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

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

Data for Component: **2,6-Di-tert-butyl-p-cresol (BHT)**

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).

Partition coefficient, soil organic carbon/water (Koc): > 5,000 Estimated.

Henry's Law Constant (H): 2.49E-03 atm*m3/mole Estimated.

Data for Component: **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

Data for Component: **Mesitylene; 1,3,5-trimethylbenzene**

Mobility in soil: Potential for mobility in soil is low (Koc between 500 and 2000).

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

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

Data for Component: **chlorpyrifos (ISO)**

Mobility in soil: Expected to be relatively immobile in soil (Koc > 5000).

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

Henry's Law Constant (H): 4.78E-01 Pa*m3/mole.

13. Disposal Considerations

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.

14. Transport Information

ROAD AND RAIL TRANSPORT:

Not dangerous goods under the ADG code when being transported in IBCs or other receptacles < 500 L (kg), (Special Provision AU01).

IMDG

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Technical Name: Chlorpyrifos-Methyl

Hazard Class: 9 **ID Number:** UN3082 **Packing Group:** PG III

EMS Number: F-A,S-F

Marine pollutant: Yes

ICAO/IATA

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

Technical Name: Chlorpyrifos-Methyl

Hazard Class: 9 **ID Number:** UN3082 **Packing Group:** PG III

Cargo Packing Instruction: 964

Passenger Packing Instruction: 964

Environmental Hazard: Yes

HAZCHEM CODE: 2X•

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. 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.

15. Regulatory Information

Poison Schedule: S6

APVMA Approval Number

58562

16. Other Information

Risk-phrases in the Composition section

R10	Flammable.
R20	Harmful by inhalation.
R22	Harmful if swallowed.
R25	Toxic if swallowed.
R37	Irritating to respiratory system
R38	Irritating to skin.
R40	Limited evidence of a carcinogenic effect.
R43	May cause sensitization by skin contact.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.

Revision

Identification Number: 83018 / 4069 / Issue Date 10.02.2014 / Version: Replaces October 2013

DAS Code: GF-1332

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation

Dow AgroSciences (Australia) Ltd. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs 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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