APPENDIX G: MATERIAL SAFETY DATA SHEETS
1. PRODUCT AND COMPANY IDENTIFICATION

Material Identification: ANSWER®

Product description: Metsulfuron-methyl herbicide

Recommended use: For the control of gorse and other scrub weeds in pasture, forest site preparation and waste areas.

Company details: DuPont (New Zealand) Ltd
98 Kerrs Road
PO Box 97641, SAMC,
Manukau City, AUCKLAND

Telephone: (09) 268 5500
Fax: (09) 268 5490
Freefone: 0800 658080
24-hour Emergency phone: 0800 243 622
Web site: www.dupont.co.nz

Date of Issue: August 2010

2. HAZARDS IDENTIFICATION

HSNO Classification: 6.1D (acute oral toxicant), 6.3B (skin irritant), 6.4A (eye irritant) 9.1A (aquatic toxicant), 9.2A (soil toxicant), 9.3C (terrestrial vertebrate toxicant)

Health Hazards: May cause mild to moderate eye and skin irritation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metsulfuron-methyl</td>
<td>74223-64-6</td>
<td>20%</td>
</tr>
<tr>
<td>Inert ingredients</td>
<td></td>
<td>80%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Inhalation: If inhaled, remove from exposure and have patient lie down and keep quiet. If patient is not breathing, start artificial respiration immediately. Never give anything by mouth to an unconscious person. Call a physician if necessary.

Skin contact: If spilt on the skin, remove contaminated clothing and wash affected areas of skin immediately.

Eye contact: If concentrate is splashed in eyes, flush with running water for at least 15 minutes. Take to hospital without delay. For advice contact the National Poisons Centre 0800 POISON (0800 764766)

Ingestion: No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However seek Medical attention if necessary.
5. FIRE FIGHTING MEASURES

Flammable Properties
Non flammable. Flammable limits in Air, % by volume: LEL 0.135g/L

Fire/Explosion Hazard
Like most organic powders or crystals, under severe dusting conditions, this material may form explosive mixtures in air.

Extinguishing Media
Water spray, foam, dry chemical, CO₂

Fire Fighting Instructions
Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Wear self-contained breathing apparatus. Wear full protective equipment. Shut off source of fuel, if possible and without risk. Use water spray. Cool tank/container with water spray. Fight fire from maximum distance, use extreme caution as heat may decompose material and rupture containers.

If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated.

Combustion products
Not known.

Hazchem Code
2Z

6. ACCIDENTAL RELEASE MEASURES

Spill precautions
Use appropriate Personal Protective Equipment during clean up. (See Section 8)

Spill containment
Dyke spill. Prevent liquid from entering the sewers, waterways, or low areas.

Spill clean-up
Shovel or sweep up. DO NOT flush with water. Place material in a clean, dry container and cover for disposal. Wash contaminate areas with water and detergent. Prevent liquid from entering sewers, waterways or low areas. Soak up with sawdust, sand or other absorbent material. Shovel or sweep up. Never return to container for reuse. (See section 13 for disposal instructions.)

7. HANDLING AND STORAGE

Handling
Avoid skin and eye contact. Avoid inhaling the vapour, or spray mist. Wash thoroughly after handling. Wash clothing after use.

Storage
Store in the closed, original container in a dry, well ventilated area, as cool as possible out of direct sunlight and under lock and key. Keep from contact with fertilisers, fungicides and seeds.

Do not store with Classes 1, 2, 3.2, 4 or 5 substances. Stores containing more than 100 kg of this product, either alone or in aggregate with other hazardous substances are subject to requirement of an emergency management response plan, secondary containment and signage.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls
Use only with adequate ventilation. Keep container tightly closed.

Exposure Limits
TWA (NOHSC) 10mg/cubic metre, dusts not otherwise classified.
AEL (Du Pont) 10mg/cubic metre (8 and 12 hr TWA)

Personal Protection
Wear long sleeved shirt and long pants.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Solid

Colour
Brown

Odour
Odourless

Boiling Point
ND

Vapour Pressure
ND

Specific Gravity
0.53

Flash Point
NA

Corrosivity
Non corrosive.

Oxidisation
Not an oxidiser.

(Also, see sections 5 & 10)

10. STABILITY AND REACTIVITY

Stability
Stable at normal temperatures and storage conditions.

Incompatible materials
No incompatibilities reasonably foreseeable.

Decomposition
Will not occur.

Polymerisation
Polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Effects
Eye
Irritation (rabbit): Mild to moderate corneal irritation in unwashed eyes and mild conjunctiva irritation in unwashed eyes. All effects reversed in 7 days.

Skin
Slightly to moderately toxic by contact. Not a primary skin irritant or sensitiser.

Inhalation
May irritate throat.

Ingestion
Very low toxicity.

Chronic Effects
No oncogenic effects observed in 18 month mouse and 2 year rat feeding studies. Slightly decreased parental bodyweight at 5,000 ppm. No effect on rat reproduction or lactation at any dose tested (highest dose 5,000 ppm). Non-mutagenic in the Ames bacterial assay. Chinese Hamster Ovary Cell cytogenetic assay or DNA rat liver repair assay; positive in the in vitro Chinese Hamster Ovary Cell cytogenetic assay but negative in the in vitro rat bone marrow cytogenetic assay. Not teratogenic or embryo-foetal toxic in rats (highest level tested
Toxicity Data
1,000 g/kg in rabbits (highest dose tested 700 mg/kg)
Acute Oral LD50 (rat) > 5,000 mg/kg
Acute dermal LD50 (rabbit) > 2,000 mg/kg
Inhalation LC50 (rat) 4 hrs > 5 mg/L air.

12. ECOLOGICAL INFORMATION

Metsulfuron-methyl
Fish LC50 rainbow trout and bluegill sunfish > 150 mg/L, Algae EC50 for green algae 0.19 mg/L, EC50 for Lemna spp. 0.0004 mg/L (9.1A). Avoid contamination of any water supply with chemical or empty container. EC50 seedling plants 0.00015 mg/kg soil-herbicidal. Worms LC50 >1,000 mg/kg soil.
Break down in soil by chemical hydrolysis and microbial degradation. DT50 varies from 1-5 weeks, with break down being more rapid at lower soil pH, higher temperatures and at higher levels of soil moisture. Koc 35 (pH7) Hydrolysis DT50 (25°C) 22 d (pH5), pka 3.3 (9.2A) BCF 0.6 Break down in plants- undergoes complete degradation within a few days by hydrolysis and conjugation. Log Kow 0.014
Birds- Acute oral LD50 for mallard ducks > 5,000 mg/kg.
Dietary LC50 (8d) for mallard ducks and bobwhite quail > 5,620 mg/kg diet. Bees-non toxic.

13. DISPOSAL CONSIDERATION

Ensure bag is completely empty and dispose of at an approved landfill. If local regulations and wind direction permit, burn. Dispose of this product only by using in accordance with label directions. Dispose of solid contaminated material/or contaminated soil in an approved landfill. Disposal must be in accordance with applicable local regulations.

14. TRANSPORT INFORMATION

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (Metsulfuron-methyl)
D.G. Class 9
UN Number 3077
Hazchem 2Z
Pack Group III

15. REGULATORY INFORMATION

Registration Answer® is registered pursuant to the ACVM Act 1997 No.P5207
HSNO Approval Code  HSR000238  
Approved Handler  This product must be under the control of an approved handler during use.

16. OTHER INFORMATION

Glossary

ACGIH  American Conference of Governmental Industrial Hygienists.
DT50  Time(days) for 50% loss.
EC50  Median effective concentration.
EEL  Environmental Exposure Limit.
ERMA  Environmental Risk Management Authority
HSNO  Hazardous Substances and New Organisms.
IARC  International Agency for Research on Cancer.
Koc  Organic carbon partition coefficient (ml soil water/g organic carbon)
LC50  Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD50  Lethal dose to kill 50% of test animals/organisms.
NOEL  No observable effect level.
OSHA  American Occupational Safety and Health Administration.
Pow  The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium at a specified temperature.
TEL  Tolerable Exposure Limit.
TLV  Threshold Limit Value—an exposure limit set by responsible authority.
WES  Workplace Exposure Limit

Miscellaneous

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process

Responsibility for MSDS  DuPont (New Zealand) Limited
For further information Freephone 0800 658080

The Du Pont Oval Logo, DuPont™ and Answer® are Trademarks or Registered Trademarks of DuPont or its affiliates
Safety Data Sheet
Prism

Date of issue: 30th March, 2011

1) Identification of Substance:

<table>
<thead>
<tr>
<th>Product name:</th>
<th>Prism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Ingredient(s):</td>
<td>600g/kg metsulfuron-methyl</td>
</tr>
<tr>
<td>ACVM Approval:</td>
<td>P7679</td>
</tr>
<tr>
<td>ERMA Approval:</td>
<td>HSR000242</td>
</tr>
</tbody>
</table>
| Distributed by: | Adria Crop Protection
P.O. Box 535 Kumeu 1250, Auckland
Ph: 09-412-9817
Fax: 09-412-9807
www.adriacp.co.nz |

Emergency Number:
National Poisons Centre
0800 764 766

2) Hazards Identification:

Hazard classification: This material may be harmful if swallowed, inhaled or absorbed through the skin. May cause skin irritation – avoid skin contact. May cause eye irritation – avoid eye contact. May cause sensitisation from prolonged skin contact – avoid skin contact. Very toxic to the soil environment.

HSNO Classifications: 6.3B, 6.4A, 9.1A, 9.2A

Risk and safety phrases:

3) Composition Details:

<table>
<thead>
<tr>
<th>Ingredient:</th>
<th>CAS No.:</th>
<th>Content (%w/v)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metsulfuron-methyl</td>
<td>74223-64-6</td>
<td>60%</td>
</tr>
<tr>
<td>Inert ingredients</td>
<td>Not allocated</td>
<td>40%</td>
</tr>
</tbody>
</table>

4) First Aid Measures:

General Information:

Skin contact: After contact with skin, wash immediately with soap and water.

Eye contact: If product or spray enters eyes, wash out immediately and continue rinsing with clean water for at least 15 minutes. Obtain medical attention.

Ingestion: If swallowed do NOT induce vomiting. For advice, contact the National Poisons Centre on 0800 POISON (0800 764766) or a doctor immediately.

Inhalation: Keep patient calm. Remove to fresh air and seek medical attention.
Further Information: Treatment: Treat according to symptoms (decontamination, vital functions). No known specific antidote.

**5) Fire-Fighting Measures:**

<table>
<thead>
<tr>
<th>Specific hazards:</th>
<th>Like most organic powders or crystals, under severe dusting conditions, this material may form explosive mixtures in air.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extinguishing media and methods:</td>
<td>Water spray, dry extinguishing media, carbon dioxide.</td>
</tr>
<tr>
<td>Recommended protective clothing:</td>
<td>Wear SCBA and chemical-protective clothing.</td>
</tr>
</tbody>
</table>

**6) Accidental Release Measures:**

| Personal precautions: | Use protective clothing. Avoid contact with skin, eyes and clothing. Remove contaminated clothes and shoes immediately. |
| Environmental precautions: | Do not discharge into drains/surface waters/groundwater. Do not discharge into the subsoil/soil. |
| Spill procedures: | Wear appropriate protective clothing and prevent material from entering waterways. Absorb spills with inert material and place in waste containers. Wash area with water and absorb with further inert material. |
| Disposal procedures: | Dispose of waste safely, according to local Council regulations. |

**7) Handling & Storage:**

| Handling: | Avoid skin and eye contact. Avoid inhaling the vapour, or spray mist. Wash thoroughly after handling. Wash clothing after use. |
| Storage: | Store in the closed, original container in a dry, well ventilated area, as cool as possible out of direct sunlight and under lock and key. Keep from contact with fertilisers, fungicides and seeds. Do not store with Classes 1, 2, 3.2, 4 or 5 substances. Stores containing more than 100kg of this product, either alone or in aggregate with other hazardous substances are subject to requirement of an emergency management response plan, secondary containment and signage. |

**8) Exposure Control / Personal Protection:**

| Engineering measures: | Wear respiratory protection if ventilation is inadequate. Particle filter with medium efficiency for solid and liquid particles. |
| Respiratory protection: | Safety goggles with side-shields. |
| Eye protection: | Suitable chemical resistant safety gloves (e.g. nitrile rubber (.4mm)). |
| Hand protection: | Body protection (chemical protection suit, boots) must be chosen depending on activity and possible exposure. |
| Other protective equipment: | Keep out of reach of children. Wear protective clothing such as impervious gloves, waterproof hat, coat and trousers when using. Avoid contact with skin or eyes and inhalation of spray mist. Wash hands and exposed skin after use and before meals. |
| General Safety & Hygiene measures: | |
9) Physical & Chemical Properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Solid</td>
</tr>
<tr>
<td>Colour</td>
<td>Off-white</td>
</tr>
<tr>
<td>Odour</td>
<td>Non-specific</td>
</tr>
<tr>
<td>Melting point/boiling point</td>
<td>-</td>
</tr>
<tr>
<td>Density</td>
<td>1.48</td>
</tr>
<tr>
<td>Surface tension</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>-</td>
</tr>
<tr>
<td>Ignition Temperature</td>
<td>n/a</td>
</tr>
<tr>
<td>Explosive Limits</td>
<td>n/a</td>
</tr>
</tbody>
</table>

10) Stability & Reactivity:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to avoid</td>
<td>Stable at normal temperatures.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>None known of.</td>
</tr>
<tr>
<td>Hazardous reactions</td>
<td>None under normal circumstances.</td>
</tr>
</tbody>
</table>

11) Toxicological Information:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>&gt;5,000mg/kg (LD50 rat/oral)</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>&gt;5mg/L air (LC50 4hrs/rat)</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>&gt;2,000mg/kg (LD50/rabbit)</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>Not a primary irritant or sensitiser.</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Mild to moderate irritation.</td>
</tr>
<tr>
<td>Sensitisation</td>
<td>Not a sensitiser.</td>
</tr>
</tbody>
</table>

12) Ecological Information:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute fish toxicity</td>
<td>&gt;150mg/L (LC50/rainbow trout)</td>
</tr>
<tr>
<td>Toxicity for daphnia</td>
<td>0.0004 mg/L (EC50)</td>
</tr>
<tr>
<td>Toxicity to algae</td>
<td>0.19mg/L (EC50)</td>
</tr>
</tbody>
</table>

13) Disposal Considerations:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal</td>
<td>Triple rinse container and add residue to spray tank. Return empty container to an AgRecovery collection point for disposal.</td>
</tr>
<tr>
<td>Empty container precautions</td>
<td>VERY TOXIC TO AQUATIC ORGANISMS. Avoid contamination of any water supply with chemical or empty container.</td>
</tr>
</tbody>
</table>

14) Transportation Information:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail/road (RID/ADR)</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (METSULFURON-METHYL) CLASS: 9 UN No.: 3077 HAZCHEM: 2X PACKG GRP: III</td>
</tr>
</tbody>
</table>
### Sea (IMDG code):

<table>
<thead>
<tr>
<th>Environmentally Hazardous Substance, Solid, N.O.S</th>
<th>(Metsulfuron-Methyl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class: 9</td>
<td></td>
</tr>
<tr>
<td>UN No.: 3077</td>
<td></td>
</tr>
<tr>
<td>HAZCHEM: 2X</td>
<td></td>
</tr>
<tr>
<td>PACKG GRP: III</td>
<td></td>
</tr>
<tr>
<td>Marine Pollutant</td>
<td></td>
</tr>
</tbody>
</table>

### Air (ICAO/IATA):

<table>
<thead>
<tr>
<th>Environmentally Hazardous Substance, Solid, N.O.S</th>
<th>(Metsulfuron-Methyl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class: 9</td>
<td></td>
</tr>
<tr>
<td>UN No.: 3077</td>
<td></td>
</tr>
<tr>
<td>HAZCHEM: 2X</td>
<td></td>
</tr>
<tr>
<td>PACKG GRP: III</td>
<td></td>
</tr>
</tbody>
</table>

### 15) Regulatory Information:

<table>
<thead>
<tr>
<th>Approved handlers:</th>
<th>This product must be under the care of an approved handler at all times.</th>
</tr>
</thead>
</table>
1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY:

METRO 200 WDG

SUPPLIER NAME: Zelam Limited
SUPPLIER ADDRESS: Hudson Road, Bell Block, New Plymouth, New Zealand
SUPPLIER PHONE: +64 6 755 9234
SUPPLIER FAX: +64 6 755 1174
SUPPLIER EMERGENCY PHONE: 0800 243 622, 0800 CHEMCALL
CHEMICAL FAMILY: Sulfonyle urea

2. COMPOSITION / INFORMATION ON INGREDIENTS:

COMMON NAME: Metsulfuron-methyl
CAS NUMBER: 74223-64-6
CONCENTRATION %: 20
HAZARD CLASSIFICATIONS: Class 6, 9.

3. HAZARDS IDENTIFICATION:

Harmful - may cause skin irritation. Avoid contact with skin.
Harmful - may cause eye irritation. Avoid contact with eyes.
Very toxic to fish/aquatic organisms with long-lasting effects. Avoid contamination of any water supply with product or empty container.
Very toxic to the soil environment.
Refer to Section 15 for ERMA Requirements.

4. FIRST-AID MEASURES:

EYE CONTACT: Immediately flush with flowing water for at least 15 minutes. Seek medical attention if irritation persists.
SKIN CONTACT: If ill-effects occur, move the victim to fresh air. Avoid inhalation of dust.
INHALATION: If swallowed, drink several glasses of water. DO NOT induce vomiting. Seek medical advice.
INGESTION: Treat Symptomatically.
NOTES TO DOCTOR: Not flammable.

5. FIRE FIGHTING MEASURES:

FLASHPOINT: Not flammable.
FLAMMABLE LIMITS: Not flammable.
EXTINGUISHING MEDIA: Foam, Carbon dioxide, Dry chemical or Water spray (fog).
THERMAL DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, nitrogen oxides, oxides of sulfur, water.
SPECIAL FIRE FIGHTING METHODS: Not Applicable.
UNUSUAL FIRE OR EXPLOSION HAZARDS: Decomposition products are toxic. There is little or no chance of an explosion from this product if involved in a fire.

6. ACCIDENTAL RELEASE MEASURES:

Use appropriate protective equipment. Sweep up split granules, ensure that the product is stored in either the original container or a well-labeled container.
If the granules are exposed to water the solution may become slippery and should be cleaned up immediately. Absorb the remaining liquid and any small spills with clay granules, sand or other absorbent material and sweep to a waste container. Cover the spill area with water and absorb.
Warning this substance is very toxic to aquatic organisms. Avoid contamination of any water supply with this substance or empty container.

7. HANDLING AND STORAGE:

Store in original container, tightly closed under lock and key, away from food stuffs. Wash protective clothing daily after work.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

EXPOSURE LIMITS: Not established by OSHA.
EYE PROTECTION: Chemical goggles or face shield where splash may occur.
RESPIRATORY PROTECTION: Not established by OSHA.
PROTECTIVE CLOTHING: If skin contact or contamination of clothing is likely, gloves should be worn.
VENTILATION: Not normally required. Exceptions: in the case of fire or during the formation of mists or aerosols.
HYGIENE PRECAUTIONS: Do not eat drink or smoke while working with this product. Remove clothing that becomes soaked or contaminated and wash before reuse. Wash hands before breaks and after work. The use of a skin barrier cream is useful to give additional skin protection.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE / STATE / ODOUR: Light tan extruded granule.
BOILING POINT: Not applicable.
DENSITY: Not applicable.
DECOMPOSITION TEMP: Not available.
FLASHPOINT: Not applicable.
EXPLOSION PROPERTIES: Not applicable.
SOLUBILITY: Dispersible in water
OTHER DATA: OCTANOL / WATER PARTITION COEFFICIENT: Not available.
10. STABILITY AND REACTIVITY:
CONDITIONS TO AVOID:
MATERIALS TO AVOID:
HAZARDOUS DECOMPOSITION PRODUCTS: May decompose to form carbon dioxide, carbon monoxide, nitrogen oxides, oxides of sulfur, and water in event of fire.

11. TOXICOLOGICAL INFORMATION:
ACUTE ORAL: LD50 (Rat) > 5000mg/Kg.
ACUTE DERMAL: LD50(rabbits) > 2000 mg/Kg.
ACUTE INHALATION: LC50 (96 hours) > 150mg/L for rainbow trout and bluegill sunfish.
OTHER TOXICITY INFORMATION:
6.3B; Harmful - may cause skin irritation. Avoid contact with skin.
6.4A; Harmful - may cause eye irritation. Avoid contact with eyes.

12. ECOLOGICAL INFORMATION:
Aquatic Toxicity: Very toxic to fish. LC50 (96 hr) for Rainbow trout >150mg/L.
Soil Toxicity: Very toxic to the soil environment.
Terrestrial Vertebrates - Birds: Not toxic to birds.
Terrestrial Invertebrates - Bees: Not toxic to bees.
9.1A; Very Toxic to fish/aquatic organisms with long lasting effects. Avoid contamination of any water supply with this product or empty container.
9.2A; Very toxic to the soil environment. Selective herbicide - very toxic to some plant species (certain plants may be killed or damaged from root uptake of this product).

13. DISPOSAL CONSIDERATIONS:
Triple rinse container and add residue to spray tank. Burn the container if circumstances, especially wind direction permit. Otherwise bury in a landfill. Avoid contamination of any water supply with chemical or empty container.
Do not allow contamination of any water supply with the empty container.

14. TRANSPORT INFORMATION:
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID N.O.S
UN Number: 3077
Hazchem Code: 2X
Additional Information: Contains Metsulfuron-methyl.

15. REGULATORY INFORMATION:
Approved Handler.
An approved handler is required where: a) The product is applied in a wide dispersive manner (aerial, motorised equipment). b) By a commercial contractor. c) Directly onto or into water.
If an approved handler is present at the facility where the substance is being handled, or the approved handler has provided guidance to the person in respect to the handling of the product and is present at all times a non approved handler may handle the product. Note: The approved handler can be in contact by the use of a cellphone.

Record Keeping.
Record keeping is required if more than 3 Kg is used within 24 hours in a place where the substance is likely to enter air or water and leave the place. The information must be kept for a minimum of three years.
This product DOES NOT have Tracking Requirements.

See the ERMA Website for more details: www.ermanz.govt.nz
ERMA Approval Code: HSR000245.
ACVM Pesticide Number: P007147.

16. OTHER INFORMATION:
The data given here is based on current knowledge and experience. The purpose of this safety data sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.
1: Identification of the Substance and Supplier

Product Name: HURRICANE
Recommended Use: Herbicide
Company Details: Orion Crop Protection Ltd
14 – 22 Triton Drive, North Harbour, Auckland
PO Box 100 570, North Shore Mail Centre, 0745
New Zealand
Telephone Number: (09) 415 1679 (office hours)
Emergency Telephone: 0800 CHEMCALL (0800 243 622) (24 hours)
National Poison Centre: 0800 POISON (0800 764 766) (24 hours)
Date of Issue/Revision: June 2009

2: Hazards Identification

Priority Identifiers: Combustible Liquid, Ecotoxic, Keep Out of Reach of Children
HSNO Classes: Secondary Identifiers:
3.1D Combustible liquid
6.4A Harmful - May cause eye irritation
6.9B Harmful - May cause organ damage from repeated ingestion at high doses
9.1B Toxic to aquatic organisms

3: Composition/ Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No</th>
<th>Content (% w/v)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloxyfop-R-methyl ester (active ingredient)</td>
<td>72619-32-0</td>
<td>10</td>
</tr>
<tr>
<td>Diethylene glycol monoethyl ether</td>
<td>111-90-0</td>
<td>30 - 60</td>
</tr>
<tr>
<td>Other ingredients, solvents, surfactants, etc</td>
<td>Proprietary</td>
<td>Remainder</td>
</tr>
</tbody>
</table>

4: First Aid Measures

Skin Contact: In case of contact, immediately wash affected area with soap and water. Seek medical advice if irritation persists. Wash contaminated clothing before reuse.
Eye Contact: Hold eyes open and rinse with water for at least 15 minutes. Remove contact lenses if easy to do so. Seek medical advice immediately.
Ingestion: Do not induce vomiting. Seek medical advice immediately.
Inhalation: Immediately move to fresh air and rest. Maintain half upright position if breathing is difficult. Seek medical advice if felling unwell.
5: Fire-Fighting Measures

- **Fire/Explosion Hazard:** Combustible liquid
- **HAZCHEM Code:** 3Z
- **IER Guide No:** 47
- **Extinguishing Media:** Water spray, foam, dry chemical or CO2. Avoid water jet.
- **Fire Fighting Instructions:** During a fire, toxic fumes may be emitted. Wear self-contained breathing apparatus. Contain runoff.

6: Accidental Release Measures

Caution: Floors may be slippery if wet. Eliminate all ignition sources and naked lights. Use non-sparking equipment. Leave and/or avoid entering confined spaces. When dealing with spills wear personal protective clothing and equipment as described in section 8. Respiratory protection (with organic vapour cartridge) required for any spill other than minor. Prevent further spillage or leakage. Keep bystanders away. Absorb spillage with inert material such as spill kit, sand or cat litter. Collect and place in a sealable container for disposal. Wash down affected area with water and detergent. Absorb and collect washings for disposal. Dispose of safely to a suitable landfill.

7: Storage, Handling and Use

- **Storage:** Keep out of reach of children. Do not store near heat, flame or other source of ignition. Store in the original, tightly closed container, in a cool, well ventilated and secure area.
- **Handling and Use:** Keep out of reach of children. Avoid contact with eyes and skin. Avoid inhalation of vapour or spray mist. Avoid handling, mixing or use of the product or container near heat, flame or other source of ignition. When mixing, using or applying, wear protective clothing as described in section 8. Do not eat, drink or smoke while using. Wash hands and face after use. Wash protective clothing after use.
- **Approved Handler Tracking Record Keeping:** Not required.
- **Site Requirements under the HSNO Act 1996 and HSNO Regulations:**
  - A location test certificate is not required
  - A hazardous atmosphere zone is not required
  - Fire extinguishers are required for more than 500 litres (2 fire extinguishers)
  - Signage is required for 1000 litres or more
  - Emergency information is required for 1 litre or more
  - An emergency plan is required for more than 1000 litres
  - Secondary containment is required for more than 1000 litres
  - Separation/Segregation from incompatible substances (classes 1, 2, 3, 4 and 5) is required.
- **Additional Requirements:** All aspects of storage, handling, use, disposal and record keeping must be in accordance with NZS 8409:2004 ‘Management of Agrichemicals’, and relevant local and regional council plans.
### 8: Exposure Control / Personal Protection

<table>
<thead>
<tr>
<th>Tolerable Exposure Limit:</th>
<th>None established.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace Exposure Standards:</td>
<td><strong>Product</strong> – None established (Use lowest practicable level). <strong>Active ingredient</strong> – None established (Use lowest practicable level). <strong>Excipients</strong> – None established (Use lowest practicable level). [Recommendation: Diethylene glycol monoethyl ether 25ppm (8 hr TWA)]</td>
</tr>
<tr>
<td>Engineering Controls:</td>
<td>Limited given nature of use.</td>
</tr>
<tr>
<td>Personal Protection:</td>
<td>Safety glasses/goggles (or full face respirator incorporating visor) when mixing or applying. Skin: Cotton overalls snugly fitting at the neck, wrist and ankle, chemical resistant boots and gloves (barrier multilayer, PVC, nitrile, neoprene). Respiratory: Not required where vapour or spray mist is not inhaled. Otherwise, respirator (organic vapour and particulate matter) is required.</td>
</tr>
</tbody>
</table>

### 9: Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Appearance:</th>
<th>Amber Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odour:</td>
<td>Ether like</td>
</tr>
<tr>
<td>Boiling Point:</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>93°C approx</td>
</tr>
<tr>
<td>Auto ignition Temperature:</td>
<td>Not available</td>
</tr>
<tr>
<td>Explosive Limits:</td>
<td>Not available. Undiluted product may form explosive mixture in enclosed or poorly ventilated areas (if container not kept tightly closed).</td>
</tr>
<tr>
<td>Density:</td>
<td>1.05 g/ml (approx)</td>
</tr>
<tr>
<td>Vapour Pressure:</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour Density:</td>
<td>&gt; 1 (heavier than air)</td>
</tr>
<tr>
<td>Solubility in Water:</td>
<td>Emulsifiable</td>
</tr>
<tr>
<td>pH:</td>
<td>4.0 – 6.0 (1% emulsion)</td>
</tr>
<tr>
<td>Oxidising Properties:</td>
<td>Not an oxidizer</td>
</tr>
<tr>
<td>Corrosive Properties:</td>
<td>Not a corrosive</td>
</tr>
</tbody>
</table>

### 10: Stability and Reactivity

<table>
<thead>
<tr>
<th>Stability:</th>
<th>Stable under normal conditions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatibility:</td>
<td>Avoid mixing with strong acids, alkalis, and oxidizing agents such as chlorine compounds, ammonium nitrate, etc.</td>
</tr>
<tr>
<td>Decomposition:</td>
<td>Decomposition will not occur under normal conditions.</td>
</tr>
<tr>
<td>Dangerous Reactions:</td>
<td>Products arising from combustion or thermal decomposition may be toxic, corrosive or flammable.</td>
</tr>
</tbody>
</table>

### 11: Toxicological Information

This section describes effects which could occur if this material is not handled in accordance with this data sheet.

**Swallowed:** Dizziness, headache, nausea, incoordination. The solvent in this product may cause bronchopneumonia or pulmonary oedema if aspirated into the lungs from ingestion or from vomiting.
### 12: Ecotoxicity Information

This section describes effects which could occur if this material is not handled in accordance with this data sheet. The following information is presented in respect of the active ingredients:

**Ecotoxic Effects:**
- Acute Oral LD50 (Bobwhite quail) 1159 mg/kg
- LC50 (96 hr) (Rainbow trout) 0.7 mg/l
- EC50 (5 dy) (Algae) 1.72 mg/l
- LC50 (48 hr) (Daphnia) 6.12 mg/l

Very toxic to some plant species (selective herbicide)

Non-toxic to bees.

**Environmental Fate:**
- Biodegradable. DT50 (soil) 9 - 20 days

**LogP = 4 (moderate)**

**Environmental Exposure Limit:**
- None established.

### 13: Disposal Considerations

**Product:**
Dispose of product by using it in accordance with the label. Do not burn. Waste product should be disposed of to a suitable landfill. For disposal of large quantities contact Orion Crop Protection Ltd.

**Container:**
Dispose of to a suitable landfill or agricultural recycling scheme. Do not burn. Do not use packaging for any other purpose.

### 14: Transport Information

**Dangerous Goods:**
- UN Number: 3082
- Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HALOXYFOP-R-METHYL ESTER 10%)
- Class: 9
- Subsidiary Class: None
- Packing Group: III

**Additional Information:**
- MTQ (Non-Commercial) 250 litres
- Passenger Service Vehicle: Maximum quantity 1 litre
### 15: Regulatory Information

<table>
<thead>
<tr>
<th>HSNO Approval No:</th>
<th>HSR000373</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACVM Registration No:</td>
<td>P7703</td>
</tr>
</tbody>
</table>

### 16: Other Information

**Glossary**

- **Approved Handler**: For some hazardous substances, persons storing, handling and using must be trained and certified.
- **DT50**: Time (days) for 50% reduction in concentration.
- **EC50**: Concentration required to produce an effect in 50% of organisms.
- **Environmental Exposure Limit**: Maximum concentration limit of a substance in an environmental medium, e.g., water, soil.
- **ERMA**: Environmental Risk Management Authority.
- **HAZCHEM Code**: Emergency action code for emergency services.
- **HAZNOTE**: A brief document providing hazardous substance information for transport, storage and emergency management purposes.
- **HSNO**: Hazardous Substances and New Organisms.
- **LC50**: Concentration that will kill 50% of organisms.
- **LD50**: Dose that will kill 50% or organisms.
- **MTQ**: Maximum Transport Quantity. The maximum amount of dangerous goods that can be transported by road by the user.
- **Partition Co-Efficient Kow**: Ratio of concentration between octanol and water. Values are given as the log value. A high value indicates a substance may bioaccumulate.
- **Record Keeping**: Spray diary.
- **STEL**: Short term exposure level.
- **Tolerable Exposure Limit**: Maximum concentration limit of a substance above which persons must not be exposed.
- **Tracking**: For some hazardous substances, a record must be kept of the transport, storage, sale and use of the product.
- **TWA**: Time weighted average.
- **Workplace Exposure standard**: An occupational health standard limiting concentrations of specified substances to which persons are exposed.

**Please Note**

Users must ensure that the most up to date version of this safety data sheet is used. This Safety Data Sheet summarises information on this product, and how to safely handle and use the product. Each user should familiarise themselves with the product label, HazNote and Safety data Sheet, and consider the information in the context of how the product will be handled and used, including in conjunction with other products. Orion Crop Protection Ltd assumes no responsibility for the accuracy, completeness or suitability of this information. The user is responsible for determining the suitability and accuracy of this information for their particular purposes. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company. Always read the product label before use.
1. Product and Company Information

Product Name: Agmax MET600
Proper Shipping Name: Metsulfuron-methyl
Synonyms: 
Recommended Use: For the control of gorse, blackberry and other scrub weeds
Manufacturer: Agmax Industries Limited
Address: 47 Allens Road, East Tamaki, Manukau City 2141, Auckland
Telephone Number: 09 271 5290
Facsimile Number: 09 271 5293
0508 524 824 Monday – Friday 8:00 am – 5:00 pm
NZ Emergency Number: 0800 243 622 (24 hours)
Website: www.agmax.co.nz
Email: info@agmax.co.nz

2. Hazards Identification

Dangerous Goods
Class: 9
UN No.
HSNO Classification and Hazard Statements: 6.3B, 6.4A, 9.1A, 9.2A,

6.3B Skin irritant toxic substance (Medium)
H316 Causes mild skin irritation

6.4A Eye irritant toxic substance (High)
H319 Causes serious eye irritation

9.1A Aquatic ecotoxic substance (High)
H401 Toxic to aquatic life

9.2A Soil ecotoxic substance (High)
H421 Very toxic to the soil environment

Prevention Statements:
P103 Read label before use
P264 Wash hands thoroughly after handling
P273 Avoid release into the environment.
P280 Wear protective gloves and clothing

Response Statements:
P332+P313 If skin irritation occurs: get medical advice / attention
P305+P351+P338 IF IN EYES: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P391 Collect spillage

Storage statements:
Disposal Statement:

P501 Dispose of empty containers safely in accordance with local regulations.
Refer to Section 15 for ERMA requirements

3. Composition / Information on Ingredients

Appearance: Off white solid granule
CAS No: 74223-64-6 Metsulfuron methyl 600 gm/kg

4. First Aid Measures

Ingestion: No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, seek medical attention if necessary

Eye Contact: Immediately flush with flowing water for at least 15 minutes. Seek medical attention if irritation occurs

Skin Contact: Wash with plenty of soap and flowing water for at least 15 minutes while removing contaminated clothing. Wash clothing before reuse.

Inhalation: If ill effects occur, remove victim to fresh air. If ill effects persist, consult a doctor / physician

Note to Physician: No specific antidote

5. Fire-Fighting Measure:

Specific Hazards: Product is non flammable, however containers may burn

Heating may produce toxic fumes of carbon oxides, nitrogen oxides.

Addition of water may cause excessive foaming. Vapours may be toxic. Self contained breathing apparatus is required. Do not allow contaminated runoff to enter drains.

Suitable Extinguishing Media: Dry chemical, water spray (fog), foam or carbon dioxide

6. Accidental Release Measures:

Spill Cleanup Methods: Use appropriate protective equipment. Clear area of unnecessary personnel.

Spills may be slipper and should be cleaned up immediately.

Large spills: Dike and pump as much as possible to a salvage container. Absorb the remaining liquid and any small spills with clay granules, sand or other absorbent material and sweep to waste container. Cover spill area with water and absorb.

Minimize runoff to drains and waterways

7. Handling and Storage:
Handling & Storage: Do not mix or store in galvanized or unlined steel. Store in original container, tightly closed away from foodstuffs, seeds, fertilizers and pesticides. Keep out of reach of children. Wash protective clothing daily after use.

8. Exposure control / Personal Protection:

Exposure standards: None established by OSHA

Engineering controls: General (mechanical) room ventilation is considered satisfactory

Personal Protection: Where eye contact is likely, wear chemical splash goggles. Use an air respirator with an organic vapor canister. Do not eat, drink or smoke while working with this product. Remove clothing that becomes soaked or contaminated and wash before reuse. Wash hands before breaks and after work. The use of a skin barrier cream is useful to give additional skin protection.

9. Physical and Chemical properties:

Appearance and Odor: Off White solid granule

Solubility in water (g/l): miscible

Specific Gravity: 1.470 g/mL @ 20 °C

pH value: Not applicable

10. Stability and Reactivity:

Stable under normal storage conditions

11. Toxicological Information:

Acute Oral LD50 (Rats) >5000 mg/kg

Acute Dermal LC50 (Rabbit) inhalation >2000 mg/Kg

Acute inhalation LC50 (Rats) >5 mg/L for 4 hours aerosol exposure

Warning: May cause skin irritation. Avoid skin contact

Warning: May cause eye irritation, avoid contact with eyes

12. Ecotoxicity Information:

Aquatic Toxicity LC50 (rainbow trout) > 150 mg/L

Soil Toxicity LC50 (worm) > 1000 mg/kg

Terrestrial vertebrates – Birds LD50 (mallard duck) > 5000 mg/kg

Terrestrial Invertebrates – Bees Not toxic to bees

13. Disposal Considerations:

Container disposal: Dispose of empty containers safely in accordance with local regulations.

Burn the container if circumstances, especially wind direction permit. Otherwise bury in landfill. Avoid contamination of water supply with chemical or empty container. Do not use container for any other purpose

Avoid contamination of natural water supplies with chemical or empty container.
Product disposal: Triple rinse containers and add residue to tank. Dispose of in accordance with local regulations.

14. Transport Information:
UN No. 3077
Dangerous Goods Class: 9
Hazchem code: 2Z
Packing group: III
Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S
Metsulfuron - methyl

15. NZ Regulatory Information:
ERMA Approval Code: HSR00232
NZFSA Approval P07981
HSNO Controls: Trigger quantities for this substance by itself in a place
Approve handler test certificate: Exempt
Hazardous substance location: Not required
Location Test certificate: Not required
Hazardous Atmosphere Zone: Not required
Emergency Plan: 100 kgs
Tracking: Not required
Warning Signs: Not required
Record of application or discharge: Not required

16. Other Information:
New Zealand Poisons Information Center 0800 POISON (0800 764 766)

Disclaimer:
The data given relates to this product alone, and not to its use in conjunction with other substances or products. In such circumstances, assuming the combination is permitted, refer to product labels, be guided by the most hazardous of the substances involved and observe the more stringent hazard controls applicable.
The information contained in this Safety Data Sheet was obtained from current and reliable sources. The data is supplied without warranty, expressed or implied regarding its correctness and accuracy. It is the user’s responsibility to determine safe conditions for use of this product and to assume liability for loss, injury, damage, or expense resulting from improper use of this product.
1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY:

IGNITE

SUPPLIER NAME: Zelam Limited
MANUFACTURER: Zelam Limited
SUPPLIER ADDRESS: Hudson Road, Bell Block, New Plymouth, New Zealand
SUPPLIER PHONE: +64 6 755 9234
SUPPLIER FAX: +64 6 755 1174
EMERGENCY PHONE: 0800 243 622, 0800 CHEMCALL
CHEMICAL FAMILY: Methyl Ester
USE: Grass Herbicide

2. COMPOSITION / INFORMATION ON INGREDIENTS:

COMMON NAME: Haloxyfop P Methyl
CAS NUMBER: 72619-32-0
CONCENTRATION %: 10 %
HAZARD CLASSIFICATIONS: Class 6, 9

3. HAZARDS IDENTIFICATION:

Harmful - may be harmful if swallowed, inhaled or absorbed through the skin.
Harmful - may cause eye irritation. Avoid contact with eyes.
Harmful - may cause organ damage from repeated oral exposure at high doses.
Toxic to fish/aquatic organisms with long-lasting effects. Avoid contamination of any water supply with product or empty container.

4. FIRST-AID MEASURES:

EYE CONTACT: Hold eyelids open and immediately flush eyes with flowing water for at least 15 minutes. Get prompt medical attention.
SKIN CONTACT: Immediately flush with plenty of water while removing contaminated clothing. DO NOT scrub the skin. Continue for at least 15 minutes. Wash clothing before reuse.
INHALATION: If ill-effects occur, move the victim to fresh air. If ill-effects persist, consult a doctor.
INGESTION: No specific antidote. Treat symptomatically.

5. FIRE FIGHTING MEASURES:

FLASHPOINT: > 100 °C
HAZCHEM Code: 2 X
FLAMMABLE LIMITS: Not available
EXTINGUISHING MEDIA: Dry chemical, water spray (fog), foam or carbon dioxide.
THERMAL DECOMPOSITION PRODUCTS: Carbon Dioxide.
SPECIAL FIRE FIGHTING METHODS: Spills may be slippery.
UNUSUAL FIRE OR EXPLOSION HAZARDS: None

6. ACCIDENTAL RELEASE MEASURES:

Use appropriate protective equipment. Clear area of unnecessary personnel. Spills may be slippery and should be cleaned up immediately. Large spill: Dike and pump as much as possible to a salvage container. Absorb the remaining liquid and any small spills with clay granules, sand or other absorbent material and sweep to a waste container. Cover the spill area with water and absorb. Minimise runoff into waterways or drains.

WARNING: This substance is very toxic to aquatic organisms. Avoid contamination of any water supply with this substance or empty container.

7. HANDLING AND STORAGE:

Harmful - Keep out of reach of children.
Store in original container, tightly closed away from food, food related materials, animal feedstuffs, seed or fertilizer.

Wear personal protective equipment appropriate to the situation when handling product. Wash protective clothing daily after work.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

EXPOSURE LIMITS: The following potential daily exposure [PDE] values apply: [drinking water] Haloxyfop-p-methyl ; 0.0021 mg/L
EYE PROTECTION: Avoid contact with eyes. Wear a face shield or full chemical workers goggles where there is a risk of a splash.
RESPIRATORY PROTECTION: Not normally required. Exceptions: in the case of fire or during the formation of mists or aerosols.
PROTECTIVE CLOTHING: Wear protective clothing such as impervious gloves, boots and overalls when using. Wash protective clothing daily after work.
VENTILATION: General (mechanical) room ventilation is considered satisfactory.
HYGIENE PRECAUTIONS: Do not eat drink or smoke while working with this product. Remove clothing that becomes soaked or contaminated and wash before reuse. Wash hands before breaks and after work. The use of a skin barrier cream is useful to give additional skin protection.
Material Safety Data Sheet

IGNITE

9. PHYSICAL AND CHEMICAL PROPERTIES:

- APPEARANCE / STATE / ODOUR: Amber Liquid
- BOILING POINT: Not available
- DENSITY: 0.992
- DECOMPOSITION TEMP: Not available
- FLASHPOINT: > 100 °C
- EXPLOSION PROPERTIES: Not applicable
- SOLUBILITY: Soluble in water
- OCTANOL / WATER PARTITION COEFFICIENT: Not available

10. STABILITY AND REACTIVITY:

- CONDITIONS TO AVOID: Product is stable under normal temperatures and pressures.
- MATERIALS TO AVOID: None
- HAZARDOUS DECOMPOSITION PRODUCTS: None

11. TOXICOLOGICAL INFORMATION:

- ACUTE ORAL: LD50 Rats : > 4700 mg/Kg. [By calculation]
- ACUTE DERMAL: LD50 Rats : > 14000 mg/Kg. [By calculation]
- ACUTE INHALATION: OTHER TOXICITY INFORMATION: 6.1E: Harmful - may be harmful if swallowed, inhaled or absorbed through the skin.
   6.4A: Harmful - may cause eye irritation. Avoid contact with eyes.
   6.9B: Harmful - may cause organ damage from repeated oral exposure at high doses.

12. ECOLOGICAL INFORMATION:

- Aquatic Toxicity: Toxic to fish, LC50 for Fish (96 hr) : 6.37 mg/L (By calculation)
- Soil Toxicity: Not toxic to soil environment.
- Terrestrial Vertebrates - Birds: Not toxic to birds.
- Terrestrial Invertebrates - Bees: Not toxic to bees.

9.1B: Toxic to fish/aquatic organisms with long lasting effects. Avoid contamination of any water supply with this product or empty container.

13. DISPOSAL CONSIDERATIONS:

Dispose of this product only by using according to the label. Triple rinse container and add rinsate to spray tank. Crush or puncture cleaned, empty containers and dispose of container at an approved landfill or Agrecovery Depot. Avoid contamination of any water supply or stream with this product or empty container.

14. TRANSPORT INFORMATION:

- Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID N.O.S
- UN Hazard Class: 9
- UN Number: 3082
- Packing Group: III
- Hazchem Code: 2X
- Additional Information: Contains Haloxyfop-p-methyl

Do not carry more than 1 L of this product on a passenger service vehicle

15. REGULATORY INFORMATION:

- APPROVED HANDLER: The product shall be under the personal control of an approved handler when:
  - the product is applied in a wide dispersive manner; or
  - used by a commercial contractor.

However, it may be handled by a person who is not an approved handler if:

- an approved handler is present at the facility where the substance is being handled; and
- the approved handler has provided guidance to the person in respect to the handling of the product; and
- the approved handler is available at all times to provide assistance if necessary.

This product DOES NOT have Tracking, or Record Keeping Requirements.

The use of Ignite is limited to that of a herbicide and the application rate must not exceed 7.5 L Ignite /ha. An environmental exposure limit [EEL] soil has been set at 1 µg haloxyfop-p-methyl /kg of dry weight soil.

NZ EPA Approval Code: HSR002431
ACVM Pesticide Number: P007538
See the NZ EPA Website for more details: www.epa.govt.nz

16. OTHER INFORMATION:

The data given here is based on current knowledge and experience. The purpose of this safety data sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.
Safety Data Sheet
Scorp® EC

Date of issue: 30th March, 2011

1) Identification of Substance:

<table>
<thead>
<tr>
<th>Product name:</th>
<th>Scorp EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Ingredient(s):</td>
<td>100g/L haloxyfop-P as the methyl ester</td>
</tr>
<tr>
<td>ACVM Approval:</td>
<td>P7846</td>
</tr>
<tr>
<td>ERMA Approval:</td>
<td>HSR008025</td>
</tr>
</tbody>
</table>
| Distributed by: | Adria Crop Protection  
P.O. Box 535 Kumeu 1250, Auckland  
Ph: 09-412-9817  
Fax: 09-412-9807  
www.adriacp.co.nz |

Emergency Number:  
National Poisons Centre  
0800 POISON  
0800 764 766

2) Hazards Identification:

| HSNO Classifications: | 3.1D, 6.1E, 6.3B, 6.4A, 6.9B, 9.1B, 9.3C |
| Risk and safety phrases: | R10, R36, R52 |

3) Composition Details:

| Chemical identity: | Haloxyfop-P |
| Chemical identity of ingredients: |  |
| Ingredient | CAS No.: | Content (%w/v) |
| Haloxyfop-P-methyl | 72619-32-0 | 10 % |

4) First Aid Measures:

| General Information: |  |
| Skin contact: | Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Seek medical attention if ill effect or irritation develops. |
| Eye contact: | Rinse immediately with plenty of water. Obtain medical attention if pain, blinking, tears or redness persist. |
| Ingestion: | If swallowed do NOT induce vomiting. For advice, contact the National Poisons Centre on 0800 POISON (0800 764766) or a doctor immediately. |
| Inhalation: | Assure fresh air breathing. Rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Seek medical advice. |
### Further Information:
Treatment: Treat according to symptoms (decontamination, vital functions). No known specific antidote.

### 5) Fire-Fighting Measures:

<table>
<thead>
<tr>
<th>Specific hazards:</th>
<th>Hazardous decomposition products.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extinguishing media and methods:</td>
<td>Dry chemical extinguisher, foam, carbon dioxide or waterspray (do not use direct jet of water).</td>
</tr>
<tr>
<td>Recommended protective clothing:</td>
<td>Wear SCBA and chemical-protective clothing.</td>
</tr>
</tbody>
</table>

### 6) Accidental Release Measures:

<table>
<thead>
<tr>
<th>Personal precautions:</th>
<th>Use protective clothing. Avoid contact with skin, eyes and clothing. Remove contaminated clothes and shoes immediately.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental precautions:</td>
<td>Do not discharge into drains/surface waters/groundwater. Do not discharge into the subsoil/soil.</td>
</tr>
<tr>
<td>Spill procedures:</td>
<td>Wear appropriate protective clothing and prevent material from entering waterways. Absorb spills with inert material and place in waste containers. Wash area with water and absorb with further inert material.</td>
</tr>
<tr>
<td>Disposal procedures:</td>
<td>Dispose of waste safely, according to local Council regulations.</td>
</tr>
</tbody>
</table>

### 7) Handling & Storage:

<table>
<thead>
<tr>
<th>Handling:</th>
<th>Avoid contact with skin and eyes. Ventilation required. Keep away from: sparks, open flame and direct sunlight.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage:</td>
<td>Keep away from heat and protect from sunlight. Protect against freezing.</td>
</tr>
</tbody>
</table>

### 8) Exposure Control / Personal Protection:

<table>
<thead>
<tr>
<th>Engineering measures:</th>
<th>Wear respiratory protection if ventilation is inadequate. Particle filter with medium efficiency for solid and liquid particles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory protection:</td>
<td>Safety goggles with side-shields.</td>
</tr>
<tr>
<td>Eye protection:</td>
<td>Suitable chemical resistant safety gloves (e.g. nitrile rubber (.4mm)).</td>
</tr>
<tr>
<td>Hand protection:</td>
<td>Body protection (chemical protection suit, boots) must be chosen depending on activity and possible exposure.</td>
</tr>
<tr>
<td>Other protective equipment:</td>
<td>Keep away from food, drink and animal feedstuffs. No eating, drinking or smoking during use. Wash hands and face before breaks and after work.</td>
</tr>
<tr>
<td>General Safety &amp; Hygiene measures:</td>
<td></td>
</tr>
</tbody>
</table>
### 9) Physical & Chemical Properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>Amber</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Melting point/boiling point</td>
<td>&gt; 100 °C</td>
</tr>
<tr>
<td>Density</td>
<td>± 1 030 g/L</td>
</tr>
<tr>
<td>Surface tension</td>
<td>N/A</td>
</tr>
<tr>
<td>pH</td>
<td>7 – 8</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 75 °C</td>
</tr>
<tr>
<td>Ignition Temperature</td>
<td>Not determined</td>
</tr>
<tr>
<td>Explosive Limits</td>
<td>Not determined</td>
</tr>
<tr>
<td>Viscosity</td>
<td>N/A</td>
</tr>
<tr>
<td>Other Data</td>
<td></td>
</tr>
</tbody>
</table>

### 10) Stability & Reactivity:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to avoid</td>
<td>Stable under normal storage conditions</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>N/A</td>
</tr>
<tr>
<td>Hazardous reactions</td>
<td>Vapours are flammable</td>
</tr>
</tbody>
</table>

### 11) Toxicological Information:

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>LD₅₀ &gt; 2 000 mg/kg</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LD₅₀ &gt; 4 000 mg/L (4 hrs)</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>LD₅₀ &gt; 2 000 mg/kg</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>Not a skin irritant</td>
</tr>
<tr>
<td>Eye irritation</td>
<td>Slight eye irritant</td>
</tr>
<tr>
<td>Sensitisation</td>
<td>Not expected to cause sensitisation under normal use</td>
</tr>
</tbody>
</table>

### 12) Ecological Information:

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute fish toxicity</td>
<td>LC₅₀ Rainbow trout &gt; 50 mg/L</td>
</tr>
<tr>
<td>Toxicity for daphnia</td>
<td>EC₅₀ (48 hr) &gt; 100 mg/L</td>
</tr>
<tr>
<td>Toxicity to algae</td>
<td>EC₅₀ (48 hr) &gt; 47.2 mg/L</td>
</tr>
</tbody>
</table>

### 13) Disposal Considerations:

<table>
<thead>
<tr>
<th>Action</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal</td>
<td>Triple rinse container and add residue to spray tank. Return empty container to an AgRecovery collection point for disposal.</td>
</tr>
<tr>
<td>Empty container precautions</td>
<td>Avoid contamination of any water supply with chemical or empty container.</td>
</tr>
</tbody>
</table>
### 14) Transportation Information:

<table>
<thead>
<tr>
<th>Mode of Transport</th>
<th>Description</th>
</tr>
</thead>
</table>
| Rail/road (RID/ADR): | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Haloxyfop-P)  
Class 9  
Packing group III  
UN: 3082 |
| Sea (IMDG code): | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Haloxyfop-P)  
Class 9  
Packing group III  
UN: 3082  
MARINE POLLUTANT |
| Air (ICAO/IATA): | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Haloxyfop-P)  
Class 9  
Packing group III  
UN: 3082 |

### 15) Regulatory Information:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved handlers:</td>
<td>This product must be under the care of an approved handler during use.</td>
</tr>
<tr>
<td>Tracking:</td>
<td>-</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Emergency Phone: 0800 243 622
Dow AgroSciences (N Z) Ltd.
89 Paritutu Road, New Plymouth

Effective Date: 27 February 2007
Product Code: 107278

GARLON* 360 HERBICIDE

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Garlon* 360 Herbicide

RECOMMENDED USES: For the control of certain broadleaf weeds in or near wetlands

COMPANY IDENTIFICATION:
Dow AgroSciences (NZ) Ltd.
Registration No. 169964
89 Paritutu Road, New Plymouth

Customer Service Toll Free Number:
0800 803 939
(Mon-Fri, 8am-4:30 pm)
www.dowagrosciencens.co.nz

Emergency Telephone Number:
0800 CHEMCALL (0800 243 622)
(24 hours) (EMERGENCIES ONLY)

Transport Emergency Only Dial 111

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW
Classified as Hazardous.
Classified as Dangerous Goods for transport.

HSNO Hazard Classification: 3.1C, 8.1A, 6.1D, 8.3A, 6.5B, 6.9B, 9.1A, 9.2A, 9.3C

Risk Phrases
R22: Harmful if swallowed.
R33: Danger of cumulative effects.
R34: Causes burns.
R43: May cause sensitisation by skin contact.
R50: Very toxic to aquatic organisms.

Safety Phrases
S2: Keep out of the reach of children.
S16: Keep away from sources of ignition - No smoking.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39: Where suitable protective clothing, gloves and eye/face protection.
S29/35: Do not empty into drains; disposal of this material and its container in a safe way.

3. COMPOSITION/INFORMATION ON INGREDIENTS:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclopyr TEA Salt</td>
<td>57213-69-1</td>
<td>44.4</td>
</tr>
<tr>
<td>Triethylamine</td>
<td>121-44-8</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>Other Non-Hazardous Ingredients</td>
<td>&gt;45.6</td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID:

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.

EYES: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

SKIN: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation or rash occurs, get medical advice/attention.

INGESTION: Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth to an unconscious person.

INHALATION: No emergency medical treatment necessary.

NOTE TO PHYSICIAN: Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach & lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/oesophageal control if lavage is done. If burn is present, treat as any thermal burn, after decontamination. Exposure to amine vapors may cause minor transient oedema of the corneal epithelium.

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SAFETY DATA SHEET

GARLON* 360 HERBICIDE

(glaucoma) with blurred vision, blue haze & halos around bright objects. Effects disappear in a few hours and temporarily reduce ability to drive vehicles. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 43°C
METHOD USED: TCC
FLAMMABLE LIMITS
  LFL: Not determined
  UFL: Not determined

EXTINGUISHING MEDIA: Alcohol foam and CO₂.

FIRE & EXPLOSION HAZARDS: Toxic, irritating vapours and/or asphyxiating gases, including hydrogen chloride, oxides of nitrogen and carbon may be formed or given off if product is involved in fire. Although product is water-based, it has a flash point due to the presence of small amounts of ethanol and triethylamine.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus and full protective clothing.

HAZCHEM: 2X

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Extinguish all sources of ignition. Do not touch or walk through spilled material. Wear a face shield or goggles, overall buttoned to neck and wrist, chemical resistant gloves and boots. Stop leak when safe to do so. Dike area and prevent entry into waterways, and drains or coming into contact with HSNO Class 1, 2, 3, 4 or 5 substances. Small spills/leaks: Absorb with material such as sand, soil or sawdust. Collect spilled product and place in sealable container for disposal. Spill residues may be cleaned using water and detergent. Contain and absorb wash water for disposal. Absorb and collect washings and place in the same sealable container for disposal. Absorb and collect washings and place in the same sealable container for disposal. Seek advice from the SDS, product label or Dow AgroSciences regarding disposal. Large spills: Report large spills to Dow AgroSciences Emergency Services at 0800 CHEMCALL (0800 243 622).

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Keep out of reach of children. Harmful if swallowed. Causes skin irritation and sensitivity. Avoid contact with skin and clothing. After work, remove protective clothing and equipment, wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Clean up spilled material immediately, and wash clothes, equipment and work area after use.

STORAGE: Store locked up in tightly closed original container in a cool, dry well-ventilated area out of direct sunlight when not in use. This product can be stored in an unheated building. Do not store with food, feedstuffs, fertilizers and seeds. See product label for further handling/storage precautions relative to the end use of this product.

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) Regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):

Ethanol (ethyl alcohol): WES-TWA is 1000 ppm / 1880 mg/m³. ACGIH classification is A4.

Triadimenol: Dow AgroSciences Industrial Hygiene Guideline is 2 mg/m³ as acid equivalent; Skin. Triethylamine: WES TLV is 3 ppm / 12mg/m³. WES-STEL is 5ppm / 20mg/m³ Skin.

A “skin” notation following the 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. 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.

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GARLON* 360 HERBICIDE

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area. If exposure causes eye discomfort, use a full-face respirator.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use chemically protective clothing resistant to this material. Selection of specific items such as face shield, gloves, boots, and apron or full-body suit will depend on operation. Wash contaminated clothing before reuse.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NZ Standards approved air-purifying respirator.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapour of amines may cause swelling of the cornea resulting in visual disturbances such as blurred or hazy vision. Bright lights may appear to be surrounded by halos. Effects may be delayed and typically disappear spontaneously. ERMA has classified this substance as 8.3A.

SKIN: Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. With the dilute mix, no allergic skin reaction is expected. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD₅₀ for skin absorption in rabbits is >5,000 mg/kg. ERMA has classified this substance as 6.5B.

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. Swallowing may result in gastrointestinal irritation or ulceration. The oral LD₅₀ for rats is 2,574 mg/kg (male) and 1,847 mg/kg (female). ERMA has classified this substance as 6.1D.

INHALATION: Brief exposure (minutes) is not likely to cause adverse effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Effects have been reported on the following organs: liver and kidney. ERMA has classified this substance as 9.9B.

CANCER INFORMATION: Triclopyr did not cause cancer in laboratory animal studies.

TERATOLOGY (BIRTH DEFECTS): Triclopyr did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother. Ethanol has been shown to cause birth defects and toxicity to the fetus in

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SAFETY DATA SHEET

GARLON* 360 HERBICIDE

laboratory animal tests. It has also been shown to cause human fetotoxicity and/or birth defects when ingested during pregnancy.

REPRODUCTIVE EFFECTS: For triclopyr, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

MUTAGENICITY: For triclopyr and ethanol: in-vitro genetic toxicity studies were negative. For triclopyr: animal genetic toxicity studies were negative. For ethanol: animal genetic toxicity studies were negative in some cases and positive in other cases.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:
Based largely or completely on information for triclopyr. Bioconcentration potential is low (BCF <100 or Log Pow <3).

DEGRADATION & PERSISTENCE:
Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD20/ThOD >40%).
The 20-Day biochemical oxygen demand (BOD20) is 0.30 p.p.
Theoretical oxygen demand (ThOD) is calculated to be 0.75 p.p.

ECOTOXICOLOGY:
Material is highly toxic to aquatic plants on an acute basis (LC50 or EC50 is between 0.1 and 1 mg/L in most sensitive species). Material is only slightly toxic to other aquatic organisms on an acute basis (LC50 or EC50 is between 10 and 100 mg/L in most sensitive species). ERMA has classified this substance as 9.1A.

Material is highly toxic to plants. ERMA has classified this substance as 9.2A.

Material is harmful to terrestrial vertebrates. ERMA has classified this substance as 9.3C.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: 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 and regulations.

14. TRANSPORT INFORMATION:

PUBLIC PASSENGER VEHICLE TRANSPORT: To be transported ONLY in the sealed original container. Maximum volume permitted to be transported: 1L

DANGEROUS GOODS CLASSIFICATION

UN No: 1993
Class: 3
Packing group: III
SHIPPING NAME: FLAMMABLE LIQUIDS,
N.O.S.(D & ETHYLAMINE/ETHANOL)

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 (2001).

15. REGULATORY INFORMATION:

ACVMG: Not required to be registered
ERMA New Zealand Approval Code: HSR007690

16. OTHER INFORMATION:

Glossary
ACGIH: American Conference of Governmental Industrial Hygienists.
BCF: Bioconcentration Factor - a measure for the characterization of the accumulation of a chemical in an organism. It is defined as the concentration of a chemical in an organism (plants, microorganisms, animals) divided by the concentration in a reference compartment (e.g. food, surrounding water).
BEI*: ACGIH® has recommended a Biological Exposure Index or Indices (BEIs*) for this substance:
SAFETY DATA SHEET

Dow AgroSciences

GARLON* 360 HERBICIDE

Dow AgroSciences Industrial Hygiene Guideline: An internal company standard based on an 8-hour TWA.

EC₅₀: median effective concentration. Statistically derived concentration of a substance in an environmental medium expected to produce a certain effect in 50% of test organisms in a given population under a defined set of conditions.

EEL: Environmental exposure standard set by ERMA

Explosive Limits: The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion for ignition in a confined space.

ERMA: The Environmental Risk Management Authority of New Zealand.

Kₐq: the organic carbon partition coefficient (mL soil water/g organic carbon).

Kᵲₚ: See Pₚᵢₚ

LC₅₀: Lethal Concentration 50%. A concentration of chemical in air or water that will kill 50% of the test organisms.

LD₅₀: Lethal Dose-50%. The dose of a chemical that will kill 50% of the test animals receiving it.

NIOSH: American National Institute of Occupational Safety and Health, a federal agency which conducts research on occupational safety and health questions and recommends new standards.

OSH: Occupational Safety and Health Service of the Department of Labour New Zealand.

OSHA: American Occupational Safety and Health Administration.

PEL: Permissible Exposure Level, a maximum allowable exposure level by law.

PH: Measure of how acidic or alkaline a material is using a 1 - 14 scale. pH 1 is strongly acidic and pH 14 strongly alkaline.

Polymerisation: a chemical reaction in which small molecules (monomers) combine to form much larger molecules (polymers). A hazardous polymerisation reaction is one that occurs at a fast rate and releases large amounts of energy.

Pₚᵢₚ: The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium and at a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter. This parameter is used in many environmental studies to help determine the fate of chemicals in the environment.

Skin: A 'skin' notation following the 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. 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.

STEL: Short-Term Exposure Limit. A term used to indicate the maximum average concentration allowed for a continuous 15 minute exposure period.

TEL: Tolerable Exposure Limit set by ERMA

TLV: Threshold Limit Value, an exposure limit set by a competent authority

TWA: Time Weighted Average. The average concentration of a chemical in air over the total exposure time - usually an 8-hour workday.

WES: Workplace exposure standard set by ERMA or OSH.

References


Guidelines for Personal Protection for Agrichemical Users NZ Safety Limited.

Environmental Risk Management Authority Decision HSR

Hazardous Substance (Pesticides) Transfer Notice: ERMA Approval Code HSR


IMDG Code

FOR FURTHER PRODUCT INFORMATION CALL DOW AGROSCIENCES CUSTOMER SERVICE REPRESENTATIVES TOLL FREE 0800 803 939 DURING BUSINESS HOURS.

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER SHOULD READ THIS MSDS AND CONSIDER THE INFORMATION IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE INCLUDING IN CONJUNCTION WITH OTHER PRODUCTS. IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY. THE RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

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Material Safety Data Sheet

Product Name: CREST 520

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: CREST 520
Product Code: 00185
Product Type: Herbicide
Company Name: Nufarm NZ
Address: 6 Manu Street, Otahuhu
          Auckland 2024 New Zealand
Emergency Tel.: 0800 651 911
Telephone/Fax
Number: Tel: 0-9-270 4157
        Fax: 0-9-270 4159
Email: www.nufarm.co.nz

Recommended Use: A selective post emergence herbicide for grass weed control in many broadleaf
crops, orchards and forestry.

Other Information:

This SDS describes, to the best of our knowledge, the properties of the
concentrated product. The physical properties and some of the assessments do
not apply to the properties of the product once it has been diluted for
application. Acute health effects of the diluted product are likely to be
much less severe.

2. HAZARDS IDENTIFICATION

Hazard
Classification:
Risk Phrase(s):

Other Information:

3.1D flammable liquid, 6.1D acute toxicant, 6.3B skin irritant, 6.4A eye
irritant, 6.9B target organ toxicant, 9.1A aquatic toxicant, 9.3B terrestrial
vertebrate toxicant,
FLAMMABLE
Warning - combustible liquid.
TOXICITY
Harmful - may be harmful if swallowed, inhaled or absorbed through the skin.
May cause skin or eye irritation. May cause target organ damage from repeated
oral exposure at high doses.
ECOTOXIC
Very toxic to aquatic organisms with long-lasting effects.
Selective herbicide - very toxic to some plant species.
Toxic to terrestrial vertebrates.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization

Ingredients: Liquid

Name                      | CAS         | Proportion
--------------------------|-------------|-------------
Haloxyfop-P as
the methyl ester        | 72619-32-0  | 520 g/L     
Aromatic Hydrocarbon    | 64742-94-5  | 30-60 %     

4. FIRST AID MEASURES

First Aid Measures:

For advice contact the National Poisons Centre 0800 POISON (0800 764 766) or a
doctor immediately. Begin artificial respiration if the victim is not
breathing. Use mouth-to-nose rather than mouth-to-mouth. Obtain medical
attention.

Inhalation: Remove patient to fresh air. Lay down and keep warm and rested. If breathing
is shallow or has stopped ensure airway is clear and apply resuscitation.
Seek medical assistance immediately.

Ingestion: Never give anything by mouth to an unconscious person. If swallowed do NOT
induce vomiting. For advice, contact the National Poisons Centre (0800 764
766). Seek medical assistance immediately.

Skin: Immediately flush body and clothes with large amounts of water. Remove
contaminated clothing and footwear. Wash affected areas with soap and water.
If a large area is affected seek medical assistance.
Material Safety Data Sheet

Product Name: CREST 520

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Water fog, foam, carbon dioxide or dry chemical.

Hazardous Combustion Products: On burning will emit toxic fumes.

Specific Methods: Keep up wind. Do not allow washings to reach sewage or effluent systems. Keep containers cool with water spray.

3Z

Unsuitable Extinguishing Media: Do not use water in a jet.

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal: Wear protective clothing. Clear area of unprotected personnel. Eliminate all ignition sources and naked lights. Use non-sparking utensils. Contain spill and absorb with sand, soil or absorbent granules. If spill does enter waterways contact the local authority. Collect in an appropriate sealable container for disposal in an approved landfill. Prevent material from entering waterways. Absorb spills with inert material and place in waste containers. Prevent material from coming into contact with Class 1, 2, 3.2, 4 or 5 substances. Wash area with water and detergent and absorb with inert material. Dispose of waste safely in an approved landfill.

Personal Protection: For appropriate personal protective equipment (PPE), refer Section 8.

Environmental Precautions: This product is a herbicide and spills can damage crops, pastures and desirable vegetation. Prevent contamination of soil and water.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Avoid skin and eye contact and inhalation of spray mist.

APPROVED HANDLER: This product must be under the control of an approved handler during use.

TRACKING: Is not required

RECORD KEEPING: Records of use as described in NZS 8409 Management of Agrichemicals must be kept if 3 litres or more of Crest 520 is applied within 24 hours.

BEWARE: Spray drift hazard. Apply this product carefully. Spray drift may cause serious damage to other desirable plants. Do not apply Crest 520 onto or into water.

Keep out of reach of children.

Conditions for Safe Storage: Store in original container tightly closed and in a locked, dry, cool area away from sources of ignition, seeds, fertilisers and foodstuffs. Storage must be in accordance with NZS 8409 Management of Agrichemicals.

Do not store with HSNO Class 1, 2, 3.2, 4 or 5 substances.

Stores containing 100L of Crest 520 require secondary containment and are subject to signage, and more than 100L require emergency response plans.

Do not store near heat or flame.

Stores exceeding 500 litres of this substance must have at least 2 fire extinguishers.

Tank Cleaning: See label for detailed information on cleaning/decontaminating of spray equipment.
Material Safety Data Sheet

Infosafe No™ 3NUK1  Issue Date: April 2010  ISSUED by NUFARMNZ

Product Name CREST 520

Other Information
Always read the label and any attached leaflet before use.
Aggregate Storage Volume Thresholds:
When stored with substances of the same hazard classification the aggregate quantity must be considered. For full details refer to the current NZS8409 Management of Agrichemicals and the HSNO Regulations.

8. EXPOSURE CONTROLS/PERSOINAL PROTECTION

National Exposure Standards
No exposure limits (WES, TEL or EEL's) have been specifically assigned for this product.

Engineering Controls
ADE = 0.0003mg/kg bw/day for haloxyfop-R-methyl
PDE(food) = 0.00024mg/kg bw/day for haloxyfop-R-methyl
PDE(drinking water) = 0.00006mg/kg bw/day for haloxyfop-R-methyl
Handle in well ventilated areas, generally natural ventilation is adequate.

Personal Protective Equipment
When opening the container, preparing spray and using the prepared spray wear safety goggles, chemically resistant gloves, cotton overalls buttoned to the neck and wrist, and boots.

Hygiene Measures
Do not eat, drink or smoke while using. Remove protective clothing and wash hands and face thoroughly before meals and after work. Wash protective clothing daily after work. Wash splashes of concentrate from skin immediately.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form
Liquid

Appearance
Amber liquid

Solubility in Water
Forms an emulsion in water.

Specific Gravity
1.086 - 1.108g/mL @ 20°C

pH Value
4.0 - 8.0

Vapour Pressure
0.328 mPa (25°C) for haloxyfop-R-methyl

Octanol/Water Partition Coefficient
Kow logP = 4.00 for haloxyfop-R-methyl

Flash Point
69.5°C

Other Information
(EC) Emulsifiable concentrate

10. STABILITY AND REACTIVITY

Chemical Stability
When stored appropriately this product should show no significant degradation for 2 years from the date of manufacture.

Conditions to Avoid
Avoid extremes of temperature.

Incompatible Materials
Strong acids, alkalis or oxidising materials.

Hazardous Polymerisation
Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicology Information
No specific toxicological data is available for this product. Data below is for constituents.

Eye
May cause slight conjunctival eye irritation with slight discharge (haloxyfop-R, methyl ester)

Acute Toxicity - Oral
LD50 (rat) is 300mg/kg for haloxyfop-R, methyl ester

Acute Toxicity - Dermal
Acute percutaneous LD50 (rat) >2,000mg/kg for haloxyfop-R-methyl

Subchronic/Chronic Toxicity
Target organ: Hepatotoxicity (liver) for haloxyfop-R, methyl ester
NOEL is 0.065mg/kg bw/day for haloxyfop-R-methyl ester

12. ECOLOGICAL INFORMATION

Persistence / Degradability
DT50 in water is 48 days at pH7 for haloxyfop-R, methyl ester
Material Safety Data Sheet

Infosafe No™ 3NUK1 Issue Date: April 2010 ISSUED by NUFARMNZ

Product Name CREST 520

Bioaccumulative Potential
Haloxypop-R, methyl ester is not bioaccumulative.

Environ. Protection
Avoid contamination of any water supply with product or empty container.

Basis for Assessment
Ecotoxicological data have not been determined specifically for this product. Data below is for the active ingredient unless otherwise stated.

Acute Toxicity - Fish
LC50 (96h) rainbow trout is 0.7mg/L for haloxypop-R, methyl ester

Acute Toxicity - Daphnia
LC50 (48h) daphnia is 6.12mg/L for haloxypop-R, methyl ester

Acute Toxicity - Algae
EC50 (5d) algae is 1.72mg/L for haloxypop-R, methyl ester

Acute Toxicity - Other Organisms
LD50 bobwhite quail is 414mg/kg for haloxypop-P, methyl ester
LD50 (48h) bees (oral and contact) is >100μg/bee for haloxypop-P, methyl ester
LC50 (14d) worms is 1,343mg/kg for haloxypop-P, methyl ester

13. DISPOSAL CONSIDERATIONS

Product Disposal Dispose of product only by using according to the label, or at an approved landfill. Do not burn.

Container Disposal Triple rinse empty container and add rinsate to spray tank. Recycle empty container. Otherwise crush and bury in a suitable landfill.

14. TRANSPORT INFORMATION

Transport Information It is good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilisers during transport.

U.N. Number 3082

Proper Shipping Name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. - (haloxypop-P, 52%)

DG Class 9

Hazchem Code 3Z

Packaging Method -

Packing Group III

EPG Number -

IERG Number 47

IMO Marine Pollutant
yes. Environmentally Hazardous Substance mark required.

Pollutant IMDG EMS F-A, S-F

Other Information Do not carry this product on a passenger service vehicle. Segregation: Check the latest Land Transport Rule Dangerous Goods Rule 45001 for additional information. Sea transport may require additional segregation. Refer N555433 see segregation for details.

15. REGULATORY INFORMATION

National and or International Registered pursuant to the ACVM Act 1997, No. P8058

See www.nzfsa.govt.nz/acvm/ for registration conditions

Regulatory Information Approved pursuant to the HSNO Act 1996, Approval Code HSR100054

See www.ermanz.govt.nz for approval controls

Packaging & Labelling WARNING - combustible liquid HARMFUL - ECOTOXIC - keep out of reach of children

Hazard Rating NFPA/HMIS: 1-2-1

Systems

16. OTHER INFORMATION

Contact Person/Point IN AN EMERGENCY, DIAL 111 - FIRE OR POLICE
24Hr Tollfree Emergency No: 0800 651 911
24Hr Emergency No: National Poisons Centre Phone: 0800 764 766

Other Information Supersede SDS issued New

...End of MSDS...
Infosafe No™ 3NUK1  Issue Date: April 2010  ISSUED by NUFARMNZ

Product Name CREST 520
SECTION 1 - IDENTIFICATION OF CHEMICAL PRODUCT AND COMPANY

United Phosphorus Ltd,  
Suite 416, Level 4, 14 Lexington Drive  
Norwest Business Park, Bella Vista, NSW 2153  
Telephone (02)8824 7277  
Fax (02)8814 6469

Substance: Imazapyr is an imidazolinone derivative.  
Trade Name: UniMaZ 250 SL Herbicide  
Product Use: Agricultural herbicide for use as described on the product label.  
Creation Date: August, 2008  
This version issued: February, 2010 and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature
This product is classified as: Xi, Irritating. Hazardous according to the criteria of SWA.
Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.
Risk Phrases: R36. Irritating to eyes.
Safety Phrases: S23, S25, S36. Do not breathe vapours or spray mists. Avoid contact with eyes. Wear suitable protective clothing.
SUSDP Classification: None allocated.
ADG Classification: None allocated. Not a Dangerous Good under the ADG Code.
UN Number: None allocated

Emergency Overview
Physical Description & colour: Clear, amber coloured liquid.
Odour: Mild amine odour.
Major Health Hazards: eye irritant.

Potential Health Effects

Inhalation:
Short term exposure: Available data indicates that this product is not harmful. In addition product is unlikely to cause any discomfort or irritation.
Long Term exposure: No data for health effects associated with long term inhalation.

Skin Contact:
Short term exposure: Available data indicates that this product is not harmful. It should present no hazards in normal use. However product may be irritating, but is unlikely to cause anything more than mild transient discomfort.
Long Term exposure: No data for health effects associated with long term skin exposure.

Eye Contact:
Short term exposure: This product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.
Long Term exposure: No data for health effects associated with long term eye exposure.

Ingestion:
Short term exposure: Significant oral exposure is considered to be unlikely. However, this product may be irritating to mucous membranes but is unlikely to cause anything more than transient discomfort.
Long Term exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:
SWA: No significant ingredient is classified as carcinogenic by SWA.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: No significant ingredient is classified as carcinogenic by IARC.
Section 3 - Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Conc,%</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imazapyr (as the isopropylamine salt)</td>
<td>81334-34-1</td>
<td>250g/L</td>
<td>not set</td>
<td>not set</td>
</tr>
<tr>
<td>Other non hazardous ingredients</td>
<td>various</td>
<td>20-40%</td>
<td>not set</td>
<td>not set</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>to 100%</td>
<td>not set</td>
<td>not set</td>
</tr>
</tbody>
</table>

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The SWA TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:
You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

Inhalation: First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Skin Contact: Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 5 minutes or until chemical is removed.

Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.

Ingestion: If product is swallowed or gets in mouth, do NOT induce vomiting; wash mouth with water and give some water to drink. If symptoms develop, or if in doubt contact a Poisons Information Centre or a doctor.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: There is no risk of an explosion from this product under normal circumstances if it is involved in a fire.
This product is likely to decompose only after heating to dryness, followed by further strong heating.
Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Not Combustible. Use extinguishing media suited to burning materials.

Fire Fighting:
If a significant quantity of this product is involved in a fire, call the fire brigade.

Flash point:
Will not burn until water component is driven off.

Upper Flammability Limit:
Does not burn.

Lower Flammability Limit:
Does not burn.

Autoignition temperature:
Does not burn.

Flammability Class:
Does not burn.

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses. Wear full protective clothing including eye/face protection. All skin areas should be covered. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8).

Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.
Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

Storage: Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight. Make sure that the product does not come into contact with substances listed under "Incompatibilities" in Section 10. Some liquid preparations settle or separate on standing and may require stirring before use. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:


SWA Exposure Limits

<table>
<thead>
<tr>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exposure limits have not been established by SWA for any of the significant ingredients in this product.

The ADI for Imazapyr is set at 2.5mg/kg/day. The corresponding NOEL is set at 250mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, April 2008.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

Skin Protection: You should avoid contact even with mild skin irritants. Therefore you should wear suitable impervious elbow-length gloves and facial protection when handling this product. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

Eyebaths or eyewash stations should be provided near to where this product is being used.

Section 9 - Physical and Chemical Properties:

Physical Description & colour: Clear, amber coloured liquid.

Odour: Mild amine odour.

Boiling Point: Approximately 100°C at 100kPa.

Freezing/Melting Point: Below 0°C.

Vapour pressure: Water component.

Vapour Pressure: 2.37 kPa at 20°C (water vapour pressure).

Vapour Density: No data.

Specific Gravity: 1.06 approx

Water Solubility: Completely soluble in water.

pH: Neutral.

Volatility: No data.

Odour Threshold: No data.

Evaporation Rate: No data.

Coeff Oil/water distribution: 1.9 (log P octanol/water)

Autoignition temp: Does not burn.

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
Incompatibilities: strong acids, strong bases, strong oxidising agents.

Fire Decomposition: This product is likely to decompose only after heating to dryness, followed by further strong heating. Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: Polymerisation reactions are unlikely; they are not expected to occur.

Section 11 - Toxicological Information

Local Effects: There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imazapyr</td>
<td>Conc&gt;=20%: Xi; R36</td>
</tr>
<tr>
<td>Imazapyr:</td>
<td>LD&lt;sub&gt;50&lt;/sub&gt; Oral, Rat &gt;5000mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD&lt;sub&gt;50&lt;/sub&gt; Dermal, Rabbit = &gt;2000mg/kg</td>
</tr>
<tr>
<td>LC&lt;sub&gt;50&lt;/sub&gt; Inhalation, Rat = &gt;5.1mg/L/4hr</td>
<td></td>
</tr>
</tbody>
</table>

Section 12 - Ecological Information

This product is not readily biodegradable. This product is unlikely to accumulate in body tissues.

Soil residual activity is 6 to 24 months in temperate climates and 3-6 months in warmer areas. The major residue in soils is the parent compound. Not toxic to bees, birds or aquatic organisms.

| Birds:      | LD<sub>50</sub> bobwhite quail: >2150mg/kg |
|            | LD<sub>50</sub> mallard: >2150mg/kg |
| Fish:       | LC<sub>50</sub> rainbow trout: >100mg/L |
|            | LC<sub>50</sub> bluegill sunfish: >100mg/L |
| Bees:       | LD<sub>50</sub> >100µg/bee |
| Daphnia:    | EC<sub>50</sub> >100mg/L |

Section 13 - Disposal Considerations

Disposal: Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 http://www.chemclear.com.au/ and for help with the disposal of empty drums, contact DrumMuster http://www.drummuster.com.au/ where you will find contact details for your area.

Section 14 - Transport Information

ADG Code: This product is not classified as a Dangerous Good. No special transport conditions are necessary unless required by other regulations.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.

Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Acronyms:
- ADG Code: Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
- AICS: Australian Inventory of Chemical Substances
- SWA: Safe Work Australia, formerly ASCC and NOHSC
- CAS number: Chemical Abstracts Service Registry Number
- Hazchem Code: Emergency action code of numbers and letters that provide information to emergency services especially firefighters
- IARC: International Agency for Research on Cancer
- NOS: Not otherwise specified
- NTP: National Toxicology Program (USA)
- R-Phrase: Risk Phrase
- SUSDP: Standard for the Uniform Scheduling of Drugs & Poisons
- UN Number: United Nations Number
Please read all labels carefully before using product.

This MSDS is prepared in accord with the SWA document “National Code of Practice for the Preparation of Material Safety Data Sheets” 2nd Edition [NOHSC:2011(2003)]

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http://www.kilford.com.au/ Phone (02)9251 4532
SAFETY DATA SHEET

Tordon™ PastureBoss™

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Tordon™ PastureBoss™

RECOMMENDED USES: Broadleaf herbicide

COMPANY IDENTIFICATION:
Dow AgroSciences (NZ) Ltd.
Registration No. 169964
89 Paritutu Road, New Plymouth

Customer Service Toll Free Number:
0800 803 939
(Mon-Fri, 8am–4.30 pm)
www.dowagrosciences.co.nz

Emergency Telephone Number:
0800 CHEMCALL (0800 243 622)
(24 hours) (EMERGENCIES ONLY)

Transport Emergency Only Dial 111

Contaminated work clothing should not be allowed out of the workplace

3. COMPOSITION/INFORMATION ON INGREDIENTS:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>% w/w</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triclopyr triethylamine salt</td>
<td>57213-69-1</td>
<td>~ 25</td>
</tr>
<tr>
<td>Aminopyralid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>triisopropanolamine</td>
<td>566191-89-7</td>
<td>~ 5</td>
</tr>
<tr>
<td>triethyleneminediamine</td>
<td>121-44-8</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>triisopropanolamine</td>
<td>102-71-6</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>Balance not contributing to overall hazard</td>
<td>50-60</td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID:

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.

EYES: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

SKIN: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

INGESTION: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION: Move person to fresh air. If person is not breathing, call for an ambulance then give artificial respiration; if by mouth-to-mouth use rescuer protection (pocket mask etc). Call the Poison Information Centre or doctor for treatment advice.

NOTE TO PHYSICIAN: Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury.

This SDS may not provide exhaustive guidance for all the HSNO controls assigned to this substance. The ERMA website www.ermanz.govt.nz should be consulted for a full list of triggered controls and cited regulations.

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW
Classified as Hazardous.
Classified as Dangerous Goods for transport.

Provisional HSNO Hazard Classification: 6.1E, 8.3A, 6.5B, 6.9B, 8.1A, 9.1A, 9.2A, 9.3C

Hazard:
Harmful if swallowed
Causes serious eye damage
May cause an allergic skin reaction
May cause damage to the kidney and liver
Very Toxic to aquatic life with long lasting effects
Very toxic to the soil environment

Prevention:
Do not breathe vapours or spray mist
Wear eye and skin protection
Wash hands and face thoroughly after handling
Do not eat, drink or smoke when using this product
Suggest endotracheal/esophageal control if lavage is done. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: > 100 °C

FLAMMABLE LIMITS
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: When product is involved in a fire use foam, carbon dioxide, or dry chemical.

FIRE & EXPLOSION HAZARDS: Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Toxic irritating gases may be formed under fire conditions.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus and full protective equipment.

HAZCHEM: 2X

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Do not touch or walk through spilled material. Wear a face shield or goggles, overalls buttoned to neck and wrist, chemical resistant gloves and boots. Stop leak when safe to do so. Dike area and prevent entry into waterways, and drains. Small spills/leaks: Contain and absorb small spills with a proprietary absorbent suitable for chemical spills or inert materials such as sand or earth. Collect spilled product and place in sealable container for disposal. Spill residues may be cleaned using water and detergent. Contain and absorb wash water for disposal. Absorb and collect washings and place in the same sealable container for disposal. Dike the area of large spills and report them to Dow AgroSciences Emergency Services at 0800 CHEMCall (0800 243 622).

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

HANDLING: Keep out of reach of children. Do not swallow. Do not get in eyes. Avoid contact with skin and clothing. Avoid breathing vapors and spray mist. Handle concentrate in ventilated area. Wash thoroughly with soap and water after handling and before eating, chewing gum, using tobacco, using the toilet or smoking.

STORAGE: Do not store this material near food, feed or drinking water. Store out of direct sunlight in a cool place. Keep container tightly closed when not in use.

OTHER: Triple rinse (or equivalent) and puncture empty container. Dispose empty container via Agrecovery or in a sanitary landfill as allowed by state and local authorities.

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 in in aggregate with other hazardous substances. See Hazardous substances Emergency Management and Identification Regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):
Tricyclopyr triethylamine salt: Dow IHG TWA is 2 mg/m³. Triethanolamine: OSH NZ has rated it as an A2 carcinogen, TWA is 5 mg/m³. ACGIH TLV is 5 mg/m³. Triethanolamine: OSH NZ has given it a skin notation. TWA is 3 ppm (12 mg/m³); OSH STEL is 5 ppm (20 mg/m³). ACGIH TLV is 1 ppm; ACGIH STEL is 3 ppm.

No WES TEL or EEL has been set for this product by ERMA

ENGINEERING CONTROLS: Use local exhaust ventilation, or other engineering controls to maintain airbome 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.
SAFETY DATA SHEET

Dow AgroSciences

Tordon™ PastureBoss™

Local exhaust ventilation may be necessary for some operations.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use protective clothing chemically resistant to this material. Selection of specific items such as faceshield, boots, apron, or full-body suit will depend on the task.

RESPIRATORY: 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 material is heated or sprayed, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

COLOR: Pale amber
STATE: Liquid
ODOR: Slight amine
pH: 7.3
DENSITY: 1.105

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Avoid contact with oxidizing agents.

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. Nitrogen oxides.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

SKIN: Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals.

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. Swallowing may result in irritation of the mouth, throat, and gastrointestinal tract.

INHALATION: May cause irritation to upper respiratory tract (nose and throat).

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS:
In animals, effects have been reported on the following organs: For the active ingredient(s): Kidney. For similar active ingredient(s): Liver. Gastrointestinal tract.

CANCER INFORMATION: Triclopyr and aminopyralid did not cause cancer in laboratory animals. The triethyamine did not cause cancer in laboratory animals. Findings from a chronic skin painting study with triethanolamine, include liver tumors in mice. Mechanistic studies indicate that tumor formation is of questionable relevance to humans.

TERATOLOGY (BIRTH DEFECTS): Triclopyr and aminopyralid did not cause birth defects in laboratory animals. No information found for triethyamine or triethanolamine.
SAFETY DATA SHEET

Emergency Phone: 0800 243 622
Dow AgroSciences (N Z) Ltd.
89 Paritutu Road, New Plymouth

Effective Date: 14 January 2011
Product Code: 129353

Tordon™ PastureBoss™

REPRODUCTIVE EFFECTS: For triclopyr in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. For aminopyralid in animal studies, it did not interfere with reproduction. For the minor component(s) the limited data did not indicate an effect on reproduction in laboratory animals.

MUTAGENICITY: For triclopyr and aminopyralid in vitro genetic toxicity studies were negative. Genetic toxicity studies in animals were negative for component(s) tested.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT AND PARTITIONING:
For the component Triclopyr triethylamine salt:
Bioconcentration potential is low (BCF less than 100 or log Pow less than 3).


Bioconcentration Factor (BCF): 1; invertebrate; Measured Based on information for aminopyralid.

DIAGNOSIS AND PERSISTENCE:
For the component Triclopyr triethylamine salt: Chemical degradation (hydrolysis) is expected in the environment. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). Chemical degradation (hydrolysis) is expected in the environment. Based largely or completely on information for aminopyralid. 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.

ECOTOXICOLOGY:
For the component Triclopyr triethylamine salt:

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). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm).
Aminopyralid TIPA is practically non-toxic to aquatic organisms on an acute basis (LC50 or EC50 is >100 mg/L in the most sensitive species tested).
Acute LC50 in rainbow trout (Oncorhynchus mykiss) is >360 mg/L.
Acute immobilization EC50 in water flea (Daphnia magna) is >460 mg/L.
Aminopyralid TIPA is practically non-toxic to birds on an acute basis (LD50 is >2000 mg/kg).
Acute oral LD50 in bobwhite (Colinus virginianus) is >10,000 mg/kg.
Dietary LC50 in bobwhite (Colinus virginianus) is >4670 ppm.
Acute oral LD50 in honeybee (Apis mellifera) is >100 μg/bee.
Acute contact LD50 in honeybee (Apis mellifera) is >100 μg/bee.
The LC50 in earthworm (Eisenia fetida) is >10,000 mg/L.
Growth inhibition EC50 in green alga (Selenastrum capricornutum) is >1000 mg/L.

Material is a herbicide highly toxic to aquatic organisms and plants; and harmful to terrestrial vertebrates.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: 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 and regulations.

14. TRANSPORT INFORMATION:
PUBLIC PASSENGER VEHICLE TRANSPORT: To be transported ONLY in the sealed original container. Do not transport in a passenger service vehicle.

DANGEROUS GOODS CLASSIFICATION

UN No: 3082
Class: 9
Packing group: III

SHIPPING NAME: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (triclopyr and aminopyralid salts) Marine Pollutant

Compliance with the above requirements is deemed to comply with the applicable requirements of the Hazardous Substances Identification and Emergency Management Regulations.

15. REGULATORY INFORMATION:

ACVMG APPROVAL NUMBER: P8205
ERMA New Zealand Approval Code: HSR100379

16. OTHER INFORMATION:

Glossary
A2: NZ OSH carcinogenicity classification. Suspected Human Carcinogen The A2 carcinogen rating is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans.
ACGIH: American Conference of Governmental Industrial Hygienists.
BAC: Butyl acetate. Evaporation rate is an important factor in evaluating health and fire hazard of the named chemical—a fast evaporation rate generally indicates a high health, fire, and/or explosion risk. Slow = <0.8 x BAC; medium = 0.8-3 x BAC; fast = >3 x BAC
BCF: Bioconcentration Factor - a measure for the characterization of the accumulation of a chemical in an organism. It is defined as the concentration of a chemical in an organism (plants, microorganisms, animals) divided by the concentration in a reference compartment (e.g. food, surrounding water).
Dow AgroSciences Industrial Hygiene Guideline: An internal company standard based on an 8 hour TWA.
EC50: median effective concentration. Statistically derived concentration of a substance in an environmental medium expected to produce a certain effect in 50% of test organisms in a given population under a defined set of conditions.
EEL: Environmental exposure standard set by ERMA
Explosive Limits: The range of concentrations (% by volume in air) of a flammable gas or vapour that can result in an explosion for ignition in a confined space.
ERMA: The Environmental Risk Management Authority of New Zealand.
Koc: the organic carbon partition coefficient (mL soil water /g organic carbon).
Kow: See Pow
LC50: Lethal Concentration 50%. A concentration of chemical in air or water that will kill 50% of the test organisms.
LD50: Lethal Dose-50%. The doses of a chemical that will kill 50% of the test animals receiving it.
NIOSH: American national Institute of Occupational Safety and Health, a federal agency which conducts research on occupational safety and health questions and recommends new standards.
OSH: Occupational Safety and Health Service of The Department of Labour, New Zealand.
OSHA: American Occupational Safety and Health Administration.
Pel: Permissible Exposure Level, a maximum allowable exposure level by law.
PH: Measure of how acidic or alkaline a material is using a 1 - 14 scale. pH 1 is strongly acidic and pH 14 strongly alkaline.
Polymerisation: a chemical reaction in which small molecules (monomers) combine to form much larger molecules (polymers). A hazardous polymerisation reaction is one that occurs at a fast rate and releases large amounts of energy.
Pow: The octanol-water partition coefficient is the ratio of the concentration of a chemical in octanol and in water at equilibrium and at a specified temperature. Octanol is an organic solvent that is used as a surrogate for natural organic matter. This parameter is used in many environmental studies to help determine the fate of chemicals in the environment.
Skin: A 'skin' notation following the 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. 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.
SAFETY DATA SHEET

Emergency Phone: 0800 243 622
Dow AgroSciences (N Z) Ltd.
89 Paritutu Road, New Plymouth

Effective Date: 14 January 2011
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STEL: Short-Term Exposure Limit. A term used to indicate the maximum average concentration allowed for a continuous 15 minute exposure period.
TEL: Tolerable Exposure Limit set by ERMA
TVL: Threshold Limit Value, an exposure limit set by a competent authority
TWA: Time Weighted Average. The average concentration of a chemical in air over the total exposure time - usually an 8-hour workday.
WES: Work place exposure standard set by ERMA or OSH.

References
Guidelines for Personal Protection for Agrichemical Users NZ Safety Limited.
Environmental Risk Management Authority Decision for ERMA Approval Code (Refer to Section 15).
International Maritime Dangerous Goods Code (IMDG)
Maritime Rule 24A Carriage of Cargoes-Dangerous Goods
International Air Transport Association (IATA) Dangerous Goods Regulation

VERSION CONTROL
Replaces version dated: 9 September 2010
Sections amended: Header, 6
Formulation Number: GF-2574

FOR FURTHER PRODUCT INFORMATION CALL DOW AGROSCIENCES CUSTOMER SERVICE REPRESENTATIVES TOLL FREE 0800 803 939 DURING BUSINESS HOURS.

THIS SDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER SHOULD READ THIS MSDS AND CONSIDER THE INFORMATION IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE INCLUDING IN CONJUNCTION WITH OTHER PRODUCTS. IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY. THE RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

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