FORWARD PESTICIED APPLICATION PROGRAM
Sydney West Stewardship Management Contract
To 30th June 2019
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### Version History

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<th>Date</th>
<th>Author</th>
<th>Description of Updates</th>
<th>Status</th>
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<td>Rev A</td>
<td>13 December 2018</td>
<td>James Allsop</td>
<td>Draft</td>
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### Issue Control

- Reviewed by: James Allsop
- Approved by: James Allsop

### Distribution List

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<td>DM Roads</td>
<td>Olivia Davies – Environmental Manager</td>
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<td>Daniel James – Senior Supervisor</td>
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1 GENERAL INFORMATION

DM Roads conducts a number of pest management functions on behalf of Roads and Maritime Services (RMS) under the Stewardship Maintenance Contract (SMC) for the Sydney West Zone. Some of these involve the application of pesticides to manage pests such as weeds, termites, mould and funguses.

DM Roads and its subcontractors will use a variety of weed control techniques taking into consideration the targeted weed species and the receiving environment. DM Roads and its subcontractors also use insecticides to protect wooden bridges from termite damage.

DM Roads is required to develop and submit this forward pesticide application program to the RMS as it applies pesticides on RMS land. It provides detail on:

- The application of herbicides to the road corridor as part of routine maintenance
- The application of insecticides to wooden bridges to protect them from termite damage

This document does not contain detail on pesticides used whilst upgrading roads, intersections, bridges or other RMS assets as these works are not routine and are unable to be scheduled one year in advance. In addition to this DM Roads may be directed to apply a pesticide as part of its obligations under the Biosecurity Act 2015 (NSW). These applications are also unscheduled.

1.1 Pesticides approved for use

Maintenance of the Sydney West Zone requires the application of a large variety of pesticides. DM Roads and its subcontractors only apply pesticides that are contained within the RMS approved pesticide list which is contained in Appendix 1.

The most common pesticides used by DM Roads and its subcontractors for the maintenance of the Sydney West Zone are contained in the table below:

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Active Ingredient</th>
<th>USE</th>
<th>GENERAL NOTES</th>
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<tr>
<td>Roundup Biactive ®</td>
<td>Glyphosate (various salts) Group M</td>
<td>Weed Control</td>
<td>Broad spectrum grass and broadleaved weeds. Inactivated in the soil by clay. Best results are when applied to small actively growing weeds in good growth conditions, however as it translocates readily, it can also control many susceptible weed species at larger growth stages. Works best when applied in clean (no suspended clay) water with low total hardness (calcium, magnesium and bicarbonate ions). Symptoms in annuals: yellowing of newer growth leading to death. Most species take 21-28 days to die. This can be longer in some broadleaved weeds and perennial species or under cool conditions. Rain fast ~6 hours (check label as some formulations require less time). Many formulations have additives that are toxic to aquatic organisms and thus can’t be used on or around waterways. Roundup®Biactive and similar formulations (with some restrictions) can in specified situations be used on or around waterways. Check labels for specific information. All glyphosate formulations are pre-formulated with an adjuvant package (wetters) included. If applying in high carrier volumes, wetting agent in the formulation becomes diluted and there can be benefit from increasing the wetter. Read the label for instructions. It is important to only use the recommended wetting agents. Also when using high carrier volumes it is critical that water quality is excellent (i.e. of low turbidity and hardness) or herbicide inactivation will occur.</td>
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</table>
## Sentricon ™ IG Termite Rod

**Active Ingredient:** Hexaflumuron

**Use:** Termite control

**General Notes:** Sentricon RTI stations need to be placed into the soil in a hole pre-dug with an auger. They need to be installed so that the soil cover sits flush with the soil surface, restricting entry of other insects, and helping to maintain conditions inside the Sentricon RTI stations that are conducive to termites. Any lawn thatch, gravel or mulch needs to be removed from under the soil cover before the Sentricon RTI station is installed. The best way to do this is to insert a small piece of wood inside the auger channel so that when the auger is turned, the wood clears a circular flat surface for the soil cover to sit on. Push the Sentricon RTI station into the hole. Sometimes it may be necessary to use a soft rubber mallet to tap the Sentricon RTI station in if the ground is hard or stony. In sandy soil it may be an advantage to pour water on the area before augering the hole. The water helps keep the soil firm and reduces the tendency for the hole to cave in. The Sentricon RTI station can also be wrapped in paper or cardboard before inserting it into the hole if sandy soil is proving to be an issue. In clay soil ensure the hole is deep enough to allow water to drain out of the Sentricon RTI station.

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## Abide Termite Bait

**Active Ingredient:** Chlorfluazuron

**Use:** Termite control

**General Notes:** Abide Termite Bait is used within-ground and above-ground stations and can contain up to 400g of bait paste. Abide Termite Bait in-ground stations are designed to intercept foraging termites with timber interceptors and to concentrate their feeding in the stations. In-ground stations containing timber interceptors are placed around the perimeter of the building at intervals of 3-5 metres. Station placement is focused in areas where termites are most likely to be found foraging. These stations are inspected on a regular basis at approximately 8 to 12 week intervals until termites are intercepted. Inspections are more frequent during the warmer summer months and first inspection sooner if the building is under termite attack at the time of initial station installation. At this point, Abide Termite Bait is added to the Station. Baited Stations should be inspected every 3-8 weeks with the more frequent inspections occurring during the initial stages of termite feeding. When the colony has been eliminated, the Abide Termite Bait is removed and fresh timber interceptors are placed in the stations. These stations should continue to be monitored on a regular basis. Where live termites are feeding within a building or aboveground stations containing Abide Termite Bait are installed on areas of termite feeding. These are removed once the colony has been eliminated, or if no feeding occurs. Bait may also be placed directly into termite workings. Abide Termite Bait above-ground stations should be inspected at least 3-6 weekly with the more frequent inspections occurring during the initial stages of termite feeding. Bait is replenished or moistened slightly with clean water to maintain its attractiveness in feeding stations.

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The Safety Data Sheets for these products are contained within Appendix 2.

As a matter of best practice DM Roads will look to eradicate or contain weeds and pests identified during construction projects or as directed under the Biosecurity Act 2015 (NSW). As different pests and different situations require the use of different pesticides, providing a full list of pesticide use is not practicable. When managing these weeds and pests DM Roads and its subcontractors will give preference to the use of RMS approved pesticides, a full list of these are contained within Appendix 1.

### 1.2 Persons approved to apply pesticides

DM Roads will only use a suitably qualified and experience person to apply pesticides. This may be a DM Roads employee who has the prescribed qualification and experience in applying pesticides. Alternatively DM will engage a subcontractor who holds the required qualification and has appropriate experience.
During the forward period to June 2019 DM has engaged the services of the following contractors to apply pesticides on the Sydney West Zone:

- Ultimate Horticultural Solutions – Weed control
- Swifts Sweeping Services Pty Ltd – Weed control
- Plateau Trees – Weed control
- Campbelltown City Council – Weed control
- Timber Inspection - Termite control

2 APPLICATION SCHEDULING

2.1 Weed control

Application of the pesticide will usually be conducted during grass cutting works. Grass cutting occurs eight times a year, in the months of January, February, April, June, August, October, November and December. The grass cutting and pesticide application can occur inside and outside of standard construction hours. Preference will be given to applying the pesticide during the day when weather conditions are favourable (refer below) however due to special considerations, such as traffic management; some works will have to occur at night.

When rain is forecast within 6 hours of the application time or if high winds (greater than 15kmph) are forecast the application of pesticides will be rescheduled. This will maintain the efficacy of the pesticide and minimise spray drift.

2.2 Termite control

Termite control consists of inspections of the wooden bridges and bridge sections within the Western and Northern Zones. These occur during spring and summer as this is when the termites are most active. Termite inspections occur in October, December and February of 2018/2019.

If a termite infestation of a bridge, or bridge section, is identified then termite bait box will be affixed to the bridge. The box contains wood chips mixed with the insecticide and is securely affixed to the bridge to prevent the woodchips and insecticide escaping into the environment.

Bait boxes may also be buried in the ground near bridges to determine if termites are active in the soil surrounding bridges. This method of termite baiting encapsulates the insecticide within a container as opposed to spraying it onto a termite mound or termite infested timber. This minimises the chance that the insecticide will enter the environment.
### 2.3 Forward Program

#### 2.3.1 Weed control (for concrete hardstand areas, guardrails and guideposts)

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</tr>
<tr>
<td>681</td>
<td>Hoxton Park Road</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>683</td>
<td>Reservoir Road (M4 – Great Western Highway), Blacktown</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>685</td>
<td>Grove Avenue (Hawkesbury Valley Way), Windsor</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>686</td>
<td>Beach Road, Casula</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>687</td>
<td>Schofields Road, Schofields</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>690</td>
<td>Norwest Boulevard, Bella Vista</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
### 2.3.2 Termite control

Bridge maintenance program – (inspection of wooden bridges and the possible application of insecticide)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>BN406</td>
<td>Hortons Creek Bridge</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Late 2022</td>
<td></td>
</tr>
<tr>
<td>BN413</td>
<td>St Albans Bridge over the Macdonald River</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Late 2019</td>
<td></td>
</tr>
<tr>
<td>BN542</td>
<td>Yarramundi Lagoon Bridge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Late 2021</td>
<td></td>
</tr>
<tr>
<td>BN547</td>
<td>Toongabbie Creek Bridge</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td>Late 2019</td>
<td></td>
</tr>
<tr>
<td>BN8466</td>
<td>Redbank Creek Bridge</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Late 2022</td>
<td></td>
</tr>
<tr>
<td>BN10379</td>
<td>Culvert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Late 2018</td>
<td></td>
</tr>
<tr>
<td>BN158</td>
<td>McCann Creek Bridge</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Late 2022</td>
<td></td>
</tr>
<tr>
<td>BN390</td>
<td>Galston Bridge</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Continual inspections thought-out the year</td>
<td></td>
</tr>
<tr>
<td>BN105</td>
<td>Lane Cove River Bridge (Fullers Bridge)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Late 2019</td>
<td></td>
</tr>
<tr>
<td>BN592</td>
<td>Gasworks Bridge</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Late 2019</td>
<td></td>
</tr>
</tbody>
</table>
3 RECORD KEEPING

As DM Roads is applying pesticides on behalf of the Roads and Maritime Services the Pesticide Regulation 2009 requires that the following details are recorded:

1. the full product name of the pesticide applied
2. a description of the crop or situation in which the pesticide was applied
3. the rate of application of the pesticide and the quantity applied
4. a description of the equipment used to apply the pesticide
5. the address of the property and the delineation of the area in which the pesticide was released
6. the date and time of the application of the pesticide (including the start and finish time)
7. the name, address and contact details of the person who applied the pesticide or, if the pesticide was applied by a person employed to apply the pesticide, the name of the employee and the name, address and contact details of the employer
8. the name, address and contact details of the owner or occupier of the land
9. if the record is made by a supervisor—the name of each person who used the pesticide under the supervision or direction of the supervisor,
10. if the pesticide is applied outdoors by means of any spray equipment:
   a. the estimated wind speed and direction at the start of the application and whenever there is any significant change during the application, and
   b. if other weather conditions (such as temperature, humidity or rainfall conditions) are specified on the pesticide label as being relevant for the proper use of the pesticide—a description of those conditions at the start of the application and whenever there is any significant change during the application.

These details should be documented as soon as possible after the use of the pesticide and must be completed within 24 hours of the application. They must be completed in English and retained for a minimum of three (3) years.

3.1 Notification

3.1.1 Roads and Maritime Services notification

Roads and Maritime Services (RMS) is provided with a copy of the Forward Pesticide Application Program which notifies RMS of the intent to apply pesticide to their land as part of the Sydney West Stewardship Maintenance Contract. This also provides detail on the pesticides applied and the general timing.

Should the RMS require additional information all records of pesticide application (as required under the Pesticide Regulation 2009) are kept at DM Roads offices and will be made available upon request.
In instances where insecticide is applied to protect wooden assets as part of the Sydney West and North maintenance Contract, the RMS will be forwarded a copy of the application report provided by the termite control contractor.

### 3.1.2 Public Notification

The public will be notified by the use of pesticides in the following public places.

<table>
<thead>
<tr>
<th>Public Places where pesticide will be applied on behalf of the RMS</th>
<th>Minimum Notification Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban and Rural roadsides, including:</td>
<td>Signs on vehicles concurrent with spraying activity</td>
</tr>
<tr>
<td>• Median strips</td>
<td></td>
</tr>
<tr>
<td>• Road shoulders</td>
<td></td>
</tr>
<tr>
<td>• Kerb and guttering</td>
<td></td>
</tr>
<tr>
<td>• Roundabouts</td>
<td></td>
</tr>
<tr>
<td>• Traffic Islands</td>
<td></td>
</tr>
<tr>
<td>• Roadside cycleways / footpaths</td>
<td></td>
</tr>
<tr>
<td>• Traffic management devices</td>
<td></td>
</tr>
<tr>
<td>• Stockpile sites</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road construction sites</th>
<th>Signs on vehicles concurrent with spraying activity</th>
</tr>
</thead>
</table>

| Roadside rest areas, including facilities such as:              | Signs on vehicles concurrent with spraying activity |
| Picnic / BBQ areas                                             |                                                      |
| Toilets                                                        |                                                      |
| Playgrounds                                                    |                                                      |

| Weigh stations and heavy vehicle inspection stations            | Portable signs will be erected at locations where most likely to be seen immediately prior to use and remain until operation is completed, unless label required longer period. Reasonable efforts must be made to replace signs removed or vandalised |

| Vacant lands owned by RMS, including pesticide applications around built property (excluding lands that are leased for private occupation and without public access). | |

| More registries, including:                                     | |
| Buildings and surrounds                                        | |
| Carparks                                                       | |
| Lawn / landscaping                                             | |

| Administration sites, including regional and district offices.  | |
| Depots                                                         | |

| Rider / driver training schools                                 | |

| Public places over which persons or organisations hold an existing lease on RMS land | |
| Ferry wharves                                                   | |

| Bridges, vehicular ferries and associated infrastructure        | Portable signs will be erected at locations where most likely to be seen immediately prior to use and remain until operation is completed, unless label required longer period. Reasonable efforts must be made to replace signs removed or vandalised |
4 Appendix

4.1 Roads & Maritime Services Approved Pesticides List
Wherever possible, Roads and Maritime follows an integrated pest management program that aims to use best practice and cost effective techniques with minimal impacts on the environment.

Roads and Maritime selects from a variety of control techniques depending on the targeted pest species and the receiving environment.

Pesticides are one of the control techniques used in the Roads and Maritime integrated pest management program that are particularly effective for managing weeds and roadside vegetation in conjunction with mechanical control techniques. When used correctly, pesticides have minimal social and environmental impacts.

The following list details pesticide active ingredients that are approved by Roads and Maritime for use by its staff and contractors in outdoor public places where the maintenance of the land on which the pesticides are to be applied is the responsibility of Roads and Maritime. The pesticides are to be applied in accordance with label conditions and any notes for application as detailed in this list.

**Approved insecticides**

Approved for the purpose of termite control in timber wharf structures.

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Purpose</th>
<th>Poisons schedule¹</th>
<th>Potential impact on aquatic species</th>
<th>Off target potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triflumuron</td>
<td>Termite control in timber wharf structures</td>
<td>S5</td>
<td>Dangerous to non-target insects, fish, yabbies, and other aquatic and soil arthropods.</td>
<td></td>
</tr>
<tr>
<td>Chlorfluazuron</td>
<td>Termite control</td>
<td>Not scheduled</td>
<td>Harmful to aquatic organisms. This product can be hazardous to small aquatic arthropods.</td>
<td></td>
</tr>
<tr>
<td>Hexaflumuron</td>
<td>Termite control</td>
<td>Not scheduled</td>
<td>Moderately to highly toxic to fish and other aquatic organisms. Hexaflumuron is non-toxic to birds, earthworms and soil micro-organisms.</td>
<td></td>
</tr>
</tbody>
</table>

## Approved herbicides

Herbicides approved for control of roadside weeds and vegetation.

<table>
<thead>
<tr>
<th>Herbicide active ingredient and MOA Group</th>
<th>Example product Name</th>
<th>Main weeds controlled</th>
<th>Persistence in the soil (half-life)</th>
<th>Poisons schedule</th>
<th>Mobility in soil</th>
<th>Potential impact on aquatic species</th>
<th>Off target potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyphosate (various salts) Group M</td>
<td>Roundup®</td>
<td>Grasses and broadleaf plants</td>
<td>25-47 days Herbicide is tightly bound to clay particles, so no residual activity.</td>
<td>S5 Low</td>
<td>Low</td>
<td>Glyphosate has low toxicity to aquatic species. Some formulation ingredients have higher toxicity. Only certain formulations can be used near waterways.</td>
<td>Low. Spray drift can cause damage to trees, ornamentals and crops.</td>
</tr>
</tbody>
</table>

### Notes for application:
- Broad spectrum grass and broadleaved weeds. Inactivated in the soil by clay. Best results are when applied to small actively growing weeds in good growth conditions, however as it translocates readily, it can also control many susceptible weed species at larger growth stages. Works best when applied in clean (no suspended clay) water with low total hardness (calcium, magnesium and bicarbonate ions). Symptoms in annuals: yellowing of newer growth leading to death. Most species take 21-28 days to die. This can be longer in some broadleaved weeds and perennial species or under cool conditions. Rain fast ~6 hours (check label as some formulations require less time). Many formulations have additives that are toxic to aquatic organisms and thus can’t be used on or around waterways. Roundup® Biactive and similar formulations (with some restrictions) can be used on or around waterways. Check labels for specific information. All glyphosate formulations come pre-formulated with an adjuvant package (wetter) included. If applying in high carrier volumes, wetting agent in the formulation becomes diluted and there can be benefit from increasing the wetter. Read the label for instructions. It is important to only use the recommended wetting agents. Also when using high carrier volumes, it is critical that water quality is excellent (i.e. of low turbidity and hardness) or herbicide inactivation will occur.

### Amitrole Group Q
### Amitrole® T
### Some broadleaf plants and grasses
### About 14 days.
### S5 Moderate Low Low

### Notes for application:
- Non-selective translocated herbicide absorbed via the leaves. Predecessor to glyphosate. Used at much higher rates (6-12 L/ha) when compared to glyphosate. Symptoms are yellowing and bleaching of younger growth. Slow acting with symptoms appearing after 3 weeks and plant death 5 to 8 weeks, although plants stop growing immediately after spraying. Effective on sedges, rushes, grasses and broadleaf plants.

### Amitrole Group Q and paraquat Group L
### Alliance®
### Some monocots and broadleaf
### 14 days
### S7 Moderate Low Low

### Notes for application:
- Non-selective foliar applied herbicide that is a mix of paraquat and amitrole. Effective in controlling a wide range of seedling grasses and broadleaf plants. Potentially useful in control of glyphosate resistant weeds. Paraquat is a contact herbicide and will benefit from a high level of application coverage. See application notes for paraquat.

### Bromoxynil Group C
### Brominil®
### Broadleaf seedlings
### 7 days
### S6 Low High Low

### A post emergent foliar applied herbicide for the control of a wide range of broadleaf seedlings. Does not damage grass. Could be a useful broadleaf herbicide in cotton and grape growing areas. Plant symptoms are burning off of foliage. Poorly translocated so application to maximise coverage is critical. Apply as a coarse droplet spectrum with 100 to 150 L/ha spray volume. Rain fast ~3hrs

---

2 Herbicides act by blocking specific plant processes. This process - specific activity is termed the herbicide’s ‘mode of action’ or MOA. In Australia all herbicides are classified into groups based on their MOA and named with a group letter from A to Z. Information on a herbicides MOA group classification can be found on all herbicide labels.

<table>
<thead>
<tr>
<th>Herbicide active ingredient and MOA Group</th>
<th>Example product Name</th>
<th>Main weeds controlled</th>
<th>Persistence in the soil (half-life)</th>
<th>Poisons schedule</th>
<th>Mobility in soil</th>
<th>Potential impact on aquatic species</th>
<th>Off target potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carfentrazone-ethyl Group G</td>
<td>Hammer Spotlight Plus (when added to a glyphosate or paraquat product)</td>
<td>Annual broadleaf plants</td>
<td>Less than 2 days</td>
<td>S5</td>
<td>Low. Rapidly degraded. Minimal potential to leach.</td>
<td>High to algae and aquatic plants, but is rapidly degraded in water.</td>
<td>Low. Spray drift will result in bleaching of leaves.</td>
</tr>
<tr>
<td>Paraquat + diquat Group L</td>
<td>Spray. Seed®</td>
<td>Most broadleaf seedlings</td>
<td>1000 days Tightly bound to clay particles so inactive in soil.</td>
<td>S7</td>
<td>Immobile</td>
<td>Moderate to high</td>
<td>Low</td>
</tr>
<tr>
<td>Dichlorprop Group I</td>
<td>Lantana®</td>
<td>Lantana, morning glory and some other broadleaf plants</td>
<td>About 10 days</td>
<td>S6</td>
<td>Low to medium.</td>
<td>Medium to high.</td>
<td>Medium to high from spray drift. Kurrajongs and Casuarinas are particularly susceptible.</td>
</tr>
<tr>
<td>Fluazifop-p-butyl Group A</td>
<td>Fusilade® Forte</td>
<td>Annual and perennial grasses in roadside plantings</td>
<td>About 15 days</td>
<td>S6</td>
<td>Low</td>
<td>Low to moderate. Do not contaminate water ways.</td>
<td>Low</td>
</tr>
<tr>
<td>Fluroxopyr Group I</td>
<td>Comet® StaraneTM</td>
<td>Annual and perennial broadleaf plants</td>
<td>11 to 38 days</td>
<td>S5</td>
<td>Low</td>
<td>Low for fish, moderate for algae.</td>
<td>Medium to high from spray drift.</td>
</tr>
<tr>
<td>Glufosinate Group N</td>
<td>Basta®</td>
<td>Many annual and some perennial plants</td>
<td>Less than 7 days</td>
<td>S5</td>
<td>High potential, but rapid degradation limits movement.</td>
<td>Low</td>
<td>Low. Spray drift will result in some bleaching of leaves.</td>
</tr>
</tbody>
</table>

**Notes for application:**
- A foliar applied burn-down product that can be added to glyphosate to improve the control of certain broadleaf weeds including capeweed, storksbill, mallow, Paterson’s curse, wild radish. Different mode-of-action – Group G so could be useful where Group B resistant broadleaf weeds are present or where 2,4-D cannot be used. MUST be added to another herbicide to be effective. Rain fast ~ 6hrs
- Poorly translocated within plant. Action is similar to paraquat in most respects, except better control of capeweed (*Arctotheca calendula*), black bindweed (*Fallopia convolvulus*) and *Erodium* species. A “stench” is added to herbicide, so it can be easily smelled. Paraquat and diquat are contact herbicides and will benefit from a high level of application coverage. See application notes for paraquat.
- Not soluble in water, and does not bind tightly to soil. Do not use near native vegetation. Ensure wind conditions will not cause spray drift
- Fluazifop (like other Group A mode of action herbicides) kills grasses with generally little effect on dicots (broad-leaved plants). As a result it provides a great opportunity to quickly and cost-effectively kill grass weeds in revegetation areas. It is poorly translocated and benefits from higher levels of spray coverage. Symptoms are generally first seen after 2 to 3 weeks, when the youngest leaf can be easily pulled from the main stem, at which time the base of the pulled out stem should have shrivelled and discoloured. Plant death usually occurs between 4 to 6 weeks after application. For optimum results, weeds should be small and actively growing; however some more susceptible grass weeds can be controlled at some larger growth stages. Cold conditions reduce kill rates. Group A herbicides are high risk to developing herbicide resistance and should be used in an integrated strategy. These products have specific label requirements for the use of adjuvants which should be followed. Several products in this group are ‘schedule 6 poisons’ and appropriate PPE and handling procedures should be used.
- Foliar applied translocated herbicide for the control of a range of broadleaf weeds. Has little soil residual so root uptake by sensitive vegetation is a low risk in normal use. Particularly effective on the thistle family (Asteraceae), legumes (Fabaceae), Acacias and the Polygonaceae family. Like Garlon™, has little residual activity so is a better option near sensitive vegetation than Grazon™ or Tordon™ products. Do not graze sprayed areas for 7 days. Rain fast ~ 1hr
- Controls a broad spectrum of grass and broadleaved weeds – but generally not as robust as glyphosate – especially on grasses. Best results when applied to small actively growing weeds in warm, moist conditions. Results in cold conditions can be variable. Most reliable results on the central and north coast, or as a summer herbicide following good rains in the rest of the state. Requires a higher level of droplet coverage than glyphosate. Works best when applied in clean water. Basta® will remain active on inert surfaces such as plastic. Special care should be taken when applying Basta® over plastic mulches, as plant contact with the mulch after spraying may result in plant damage. Rain fast ~ 4 hours
<table>
<thead>
<tr>
<th>Herbicide active ingredient and MOA Group</th>
<th>Example product Name</th>
<th>Main weeds controlled</th>
<th>Persistence in the soil <em>(half-life)</em></th>
<th>Poisons schedule</th>
<th>Mobility in soil</th>
<th>Potential impact on aquatic species</th>
<th>Off target potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCPA (various salts) Group I</td>
<td>MCPA</td>
<td>Broadleaf plants</td>
<td>Less than 7 days</td>
<td>S6</td>
<td>High potential, but rapid degradation limits movement.</td>
<td>Low</td>
<td>Medium to high from spray drift.</td>
</tr>
<tr>
<td>Paraquat Group L</td>
<td>Gramoxone®</td>
<td>Most seedlings Contact. Poorly translocated</td>
<td>&gt;1000 days Tightly bound to clay particles so inactive in soil.</td>
<td>S7</td>
<td>Immobile</td>
<td>High to moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Triclopyr Group I</td>
<td>Garlon™</td>
<td>Broadleaf plants</td>
<td>30-90 days.</td>
<td>S6</td>
<td>Moderate.</td>
<td>Low.</td>
<td>High from spray drift</td>
</tr>
<tr>
<td>Trifloxsulfuron Group B</td>
<td>Monument®</td>
<td>Sedges &amp; broadleaf</td>
<td>45-80 days</td>
<td>S5</td>
<td>High</td>
<td>High to algae</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Notes for application:

MCPA is a post emergent herbicide for the control of broadleaved weeds and some sedges. Very good control of the Brassica family. Apply as a coarse to very coarse spray. Has medium to high drift risk and can be damaging to sensitive plants. Well translocated within the plant. Only use amine formulations. Has a highly recognisable odour which can lead to complaints from the general public. Do not use in or near urban areas. It is particularly important when using near sensitive crops and vegetation to conduct a risk assessment before use. Do not use in areas growing cotton, grapes and vegetables. Rain fast ~6 hours

Paraquat is a broad spectrum herbicide. Inactivated in the soil by clay. Not readily translocated. Good spray coverage is essential and weeds must be small, or there will be sufficient root reserves for re-shooting to occur. Works best when applied in clean low hardness water with higher application volumes. Symptoms in annuals: leaf desiccation occurs within a few days. Plants are more likely to recover if they have an established root system at the time of spraying and or if rainfall occurs after spraying to reinvigorate remaining root tissues. Rain fast ~30 minutes. A "stench" is added to herbicide, so it can be easily smelled. Useful when trying to control some glyphosate resistant weeds using a double knock approach.

Triclopyr is similar to other Group I herbicides, however is often tank mixed with glyphosate to control melons or used in high volume application to control a range of woody weeds including eucalypts and acacias. Rain fast ~ 1hr

Trifloxsulfuron is a post emergent foliar applied herbicide for controlling Poa annua, ryegrass, kikuyu, sedges and a wide spectrum of broadleaf weeds in turf.

Trinexapac-ethyl (PGR) | Primo® Maxx | Grasses | 3 - 6 days | S5 | Moderate | Low | Low |

A plant growth regulator. Used in horticulture and playing fields to reduce the growth rates of grasses. The higher the ambient temperature the faster the growth regulator breaks down. Needs to be re-applied every 200 degree days. Should be used in tandem with a mowing program. This product is more likely to be used within urban areas, parks etc., rather than on the road network.

2,4-D Group I | Amicide® 700 | Broadleaf | 10 days | S6 | Moderate, but rapid breakdown | Low | Medium to high from spray drift. Visual symptoms, smell |

2,4-D is a post emergent herbicide for the control of broadleaved weeds and some sedges. Very good control of the Brassica family. Apply as coarse to very coarse spray. Has high drift risk and can be damaging to sensitive plants. It is well translocated within the plant. Only use amine formulations. Has a highly recognisable odour and can be the provocation for complaints from the general public. Do not use in or near urban areas. It is particularly important when using near sensitive crops and vegetation to conduct a risk assessment by the spray operator before use. Do not use in areas growing cotton, grapes and vegetables. Rain fast ~6 hours
## Residuals (Pre-emergent - remain active in the soil)

<table>
<thead>
<tr>
<th>Herbicide active ingredient and MOA Group</th>
<th>Example product Name</th>
<th>Main weeds controlled</th>
<th>Persistence in the soil * (half-life)</th>
<th>Poisons schedule</th>
<th>Mobility in soil #</th>
<th>Potential impact on aquatic species</th>
<th>Off target potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bromacil Group C</td>
<td>Uragan®</td>
<td>Annual grass &amp; broadleaf</td>
<td>60 days</td>
<td>S5</td>
<td>Moderate to high</td>
<td>Moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Notes for application:** Bromacil is a pre-emergent residual herbicide applied to the soil surface prior to rainfall and weed germination. It controls a broad spectrum of broadleaved and grass weeds. It is particularly effective against perennial grasses. It is absorbed through plant roots and only poorly absorbed through leaves. Depending on the rate applied and rainfall it can give up to 6 months control of vegetation. Persists in dry soil and doesn’t breakdown in sunlight. Has potential to move with runoff water. Do not use within 2.5 times the mature height of trees. Eucalypts are particularly sensitive. Best locations for use would be around roadside furniture west of the Great Dividing Range.

| Flupropanate Group J                    | Rambo® Taskforce®    | Needle grasses, Coolatai grass | > 60 days                         | S6               | Immobile          | Low                  | Low                              |

**Notes for application:** A soil residual root uptake herbicide for the control of perennial grasses such as Chilean needle grass, serrated tussock, and giant Parramatta grass. Apply during the season when high intensity rain is least likely as the herbicide is highly water soluble immediately after application. Take care if using on North Coast in high rainfall areas. Binds strongly to organic material. Do not graze areas that have been sprayed for 4 months. Slow acting and results may not be obvious for 6 months.

| Simazine Group C                        | Gesatop®             | Annual grass and broadleaf     | About 60 days                      | S5               | Low               | Moderate             | Low                              |

Simazine is a pre-emergent residual herbicide applied to the soil surface prior to rainfall and weed germination. It controls a broad spectrum of broadleaved and grass weeds. Depending on rate and rainfall it can give up to 6 months control of vegetation. It will not kill established perennial species. It is absorbed through plant roots and only poorly absorbed through leaves. Best results are obtained when applied to bare soil with rain occurring within a few weeks of application to wash the herbicide in and germinate weeds. Best timing for application in southern NSW would be autumn prior to the onset of rainfall. If weeds have already germinated or perennial species are present, tank mix simazine with a knockdown herbicide such as glyphosate, paraquat, amitrole or Alliance®. If mixing with glyphosate, use a higher rate of glyphosate and an ammonium sulphate product such as Liase® to reduce antagonism. Use immediately and don’t leave mixed in the tank. While simazine does not bind strongly to dead plant tissue and is largely washed off and into the soil when rainfall occurs, dense ground cover can reduce effectiveness. If there is a prolonged dry spell after application, some simazine may also be lost to breakdown by UV radiation. When in the soil, simazine binds relatively strongly to soil and has low water solubility. It is not prone to leaching or movement off site, unless erosion occurs. Formulations include a suspension concentrate and a water dispersible granule. Follow the label directions when mixing. Some suspension concentrates vary in their quality of formulation and some can have issues with sedimentation and or the formation of a dry crust that can block nozzles if kept in storage for prolonged periods – particularly after opening.

| Terbacil + sulfometuron Groups C & B    | Trimac®              | Annual grass & broadleaf       | 120 days                           | S5               | Moderate to high  | Low                  | Moderate             |

A residual soil applied herbicide for longer term vegetation control such as around roadside furniture. Controls a wide range of grass and broadleaf species. Apply to bare soil or tank mix with a knockdown herbicide such as glyphosate if vegetation is higher than 10 cm or perennial species present. If tank mixing with glyphosate, use immediately and keep glyphosate rate towards the higher recommended rate. Existing vegetation will exhibit some burn-down, while perennial regrowth will show yellowing of new growth and death from leaf edges inwards. Germinating seedlings will yellow and die. Dry conditions following application may allow some weeds to establish, however following rain these plants will absorb the herbicide and die. Also contains sulfometuron (same active as found in Oust®). Sulfometuron is prone to movement with runoff. Do not use on sandy soils. Use should be restricted to west of the Great Dividing Range.
<table>
<thead>
<tr>
<th>Herbicide active ingredient and MOA Group</th>
<th>Example product Name</th>
<th>Main weeds controlled</th>
<th>Persistence in the soil * (half-life)</th>
<th>Poisons schedule</th>
<th>Mobility in soil #</th>
<th>Potential impact on aquatic species</th>
<th>Off target potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aminopyralid Group I</td>
<td>Hotshot™ (+ fluroxypyr)</td>
<td>Some broadleaf plants</td>
<td>25-36 days</td>
<td>S6</td>
<td>Moderate</td>
<td>Moderate</td>
<td>High. Do not apply near trees or where roots may extend.</td>
</tr>
<tr>
<td></td>
<td>Grazon™ Xtra (+ triclopyr &amp; picloram)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notes for application:</strong> Foliar applied translocated herbicide for the control of a range of broadleaf weeds. Control of fireweed, Crofton weed, mistflower, thistles, lantana, docks, St Johns wort and a range of wattle and legume species. Likely fit would be central and north coasts and where St Johns wort is a problem. Grazon Xtra controls a slightly broader range of weeds including eucalypt seedlings and blackberry. Some residual activity with both herbicides. Both herbicides would be useful in controlling broadleaf weeds in grass road shoulders. Rain fast ~ 1hr</td>
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</tr>
<tr>
<td>2,2-DPA Group J</td>
<td>Dalapon®</td>
<td>Annual &amp; perennial grasses, monocots</td>
<td>S5</td>
<td>Low</td>
<td>Moderate</td>
<td>Low</td>
<td>Low to moderate. Many natives tolerant up to 10 kg/ha</td>
</tr>
<tr>
<td></td>
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<tr>
<td><strong>Notes for application:</strong> A translocated herbicide for the control of annual and perennial grasses, sedges and rushes. Residual control of seedlings for up to 30 days. Many native species tolerant at the 10 kg/ha rate. It is slow acting and symptoms may not be seen for 6 to 8 weeks. Has low potential to move in the soil due to rapid breakdown by microorganisms.</td>
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</tr>
<tr>
<td>Clopyralid Group I</td>
<td>Garrison Lontrel™</td>
<td>Annual and perennial broadleaf plants.</td>
<td>About 40 days.</td>
<td>S5</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate.</td>
</tr>
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<tr>
<td><strong>Notes for application:</strong> Foliar applied translocated herbicide for the control of a range of broadleaf weeds. Particularly effective on legumes, thistles, fleabane. Can be mixed with glyphosate to improve control of thistles, fleabane and legumes. Poor control of Brassica weeds like wild radish, turnips and mustards. Some soil residual activity depending on rate applied. Rain fast ~ 3hrs</td>
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</tr>
<tr>
<td>Imazapyr (+ glyphosate) Group B &amp; N</td>
<td>Arsenal® Xtra</td>
<td>Some grass and broadleaf plants</td>
<td>25-140 days. Longer in acidic soils.</td>
<td>S5</td>
<td>Moderate</td>
<td>Low</td>
<td>High. Do not apply near trees or areas where their roots extend.</td>
</tr>
<tr>
<td><strong>Notes for application:</strong> Is absorbed through the leaves and roots and has long-acting soil residual activity. It controls both grass and broadleaved weeds. It has a moderate to high chance of movement in the soil and presents a risk of movement off site in runoff water. Arsenal is not suitable for use where runoff water might flow to sensitive areas such as in coastal areas or in soils saturated with water. Only suitable for areas west of the Great Dividing Range. Arsenal® is more mobile (soluble) in high pH soils (&gt; 7). Arsenal® has poor residual activity on plants of the family Asteraceae such as thistles and fleabane. High risk of herbicide resistance if not used as part of an integrated weed management program.</td>
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<tr>
<td><strong>Notes for application:</strong> Metsulfuron is a foliar applied translocated herbicide that controls broadleaved weeds and also has some useful soil residual activity on some weeds such as mustards, turnips, Paterson’s curse, deadnettle, sowthistle and wireweed. Can be used for controlling broadleaf weeds and eucalypt seedlings in grassed shoulders. Can stunt Bahia grass (Paspalum notatum) growth. Often tank mixed with glyphosate to broaden the spectrum of broad leaved weeds controlled. It has a moderate chance of movement in the soil and presents a lower risk of movement off site in runoff water than products such as imazapyr or sulfometuron. High risk of herbicide resistance if not used as part of integrated weed management. Rain fast ~4 hours</td>
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</tr>
<tr>
<td>Herbicide active ingredient and MOA Group</td>
<td>Example product Name</td>
<td>Main weeds controlled</td>
<td>Persistence in the soil * (half-life)</td>
<td>Poisons schedule</td>
<td>Mobility in soil #</td>
<td>Potential impact on aquatic species</td>
<td>Off target potential</td>
</tr>
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</tr>
<tr>
<td>Picloram Group I</td>
<td>Vigilant™</td>
<td>Perennial broadleaf plants</td>
<td>20-300 days. Longer in cooler soils.</td>
<td>S6</td>
<td>Highly leachable</td>
<td>Moderate</td>
<td>High. Do not apply near trees or where their roots extend.</td>
</tr>
<tr>
<td></td>
<td>Tordon™</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Tordon™ Double Strength (with triclopyr)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Grazon™ Extra (with triclopyr and aminopyralid)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Grazon™ Extra (with triclopyr and aminopyralid)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grazon™ Extra (with triclopyr and aminopyralid)</td>
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</tr>
</tbody>
</table>

**Notes for application:** Herbicides with the name Tordon™ contain picloram which is well translocated and controls a wide range of broadleaf weeds. Used in combination with other Group I herbicides to broaden the control spectrum such as 2,4-D in Tordon™ 75D. Effective on deep rooted perennial species such as silverleaf nightshade. Picloram is highly water soluble and should not be used on light textured (sandy) soils. It is also absorbed through the roots from the soil. Has residual activity depending on rate applied and amount of rainfall. Rain fast ~ 4hrs


**Notes for application:** Is absorbed through the leaves and also has long-acting soil residual activity. It controls both grass and broadleaved weeds. It has a moderate to high chance of movement in the soil and presents a risk of movement off site in runoff water. Oust is not suitable for use where runoff water might flow to sensitive areas such as in coastal areas or in soils saturated with water. Only suitable for areas west of the Great Dividing Range. High risk of herbicide resistance if not used as part of an integrated weed management program.
4.2 Safety Data Sheets
4.2.1 Roundup Biactive ® SDS
Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: Roundup Biactive Herbicide

Recommended Use of the Chemical and Restrictions on Use
Herbicide.

Supplier: Sinochem International Australia Pty Ltd
Street Address: Level 8 / 606 St Kilda Road
Melbourne, Victoria, 3004
Australia

Telephone Number: +61 3 9520 8888
Facsimile: +61 3 9520 8888
Emergency Telephone: Australia 1800 033 111 or +61 3 9663 2130 (All Hours)

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the “Other Information” section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.

Based on available information, not classified as hazardous according to Safe Work Australia; NON-HAZARDOUS CHEMICAL.

Classification of the chemical:
The following health/environmental hazard categories fall outside the scope of the Workplace Health and Safety Regulations:
Eye damage/irritation - Category 2B

Poisons Schedule (SUSMP): S5 Caution.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Product Description: Active ingredient is Isopropylamine salt of glyphosate.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>Proportion</th>
<th>Hazard Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropylamine salt of glyphosate</td>
<td>38641-94-0</td>
<td>41.14%</td>
<td>H411</td>
</tr>
<tr>
<td>Surfactant(s), water and minor formulating ingredients</td>
<td>-</td>
<td>58.86%</td>
<td>-</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

Inhalation:
Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

Skin Contact:
Remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.
Eye Contact:
If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes.

Ingestion:
Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Never give anything by the mouth to an unconscious patient. Seek medical advice.

Indication of immediate medical attention and special treatment needed:
This product is not an inhibitor of cholinesterase. Treatment with atropine and oximes is not indicated.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media:
Not combustible, however, if material is involved in a fire use: Fine water spray, normal foam, dry agent (carbon dioxide, dry chemical powder).

Specific hazards arising from the chemical:
Not combustible, however following evaporation of the water component of the material, the residual material can burn if ignited. On burning will emit toxic fumes, including those of oxides of carbon, oxides of phosphorus, oxides of nitrogen.

Special protective equipment and precautions for fire-fighters:
Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of combustion. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures/Environmental precautions:
Clear area of all unprotected personnel. Do not allow container or product to get into drains, sewers, streams or ponds. If contamination of sewers or waterways has occurred advise local emergency services.

Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:
Slippery when spilt. Avoid accidents, clean up immediately. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. After cleaning, flush away any residual traces with water.

7. HANDLING AND STORAGE

This material is a Scheduled Poison S5 and must be stored, maintained and used in accordance with the relevant regulations.

Precautions for safe handling:
Avoid skin and eye contact and breathing in vapour, mists and aerosols. When using do not eat, drink or smoke. Keep out of reach of children. Wash hands thoroughly after handling. Thoroughly clean equipment after use. Launder contaminated clothing before reuse. Follow label warnings even after container is emptied since empty containers may retain product residues.

Conditions for safe storage, including any incompatibilities:
Store in a cool, dry, well ventilated place and out of direct sunlight. Do not store above 50°C. Store in the original container, tightly closed and away from foodstuffs. Store away from food, drink and animal feeding stuffs. Store away from incompatible materials described in Section 10. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Safety Data Sheet

Control Parameters: No value assigned for this specific material by Safe Work Australia.

Appropriate engineering controls:
Use in well ventilated areas. Keep containers closed when not in use.

Individual protection measures, such as Personal Protective Equipment (PPE):
The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES.

Wear overalls, chemical goggles and impervious gloves. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

If determined by a risk assessment an inhalation risk exists, wear a suitable mist respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Colour:</td>
<td>Green - Dark Green</td>
</tr>
<tr>
<td>Odour:</td>
<td>Slight</td>
</tr>
<tr>
<td>Solubility:</td>
<td>Miscible in water.</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>1.173 @ 25°C</td>
</tr>
<tr>
<td>Relative Vapour Density (air=1):</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour Pressure (20 °C):</td>
<td>Not available</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability Limits (%):</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Autoignition Temperature (°C):</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Point/Range (°C):</td>
<td>Not available</td>
</tr>
<tr>
<td>pH:</td>
<td>4.4 - 4.8 (80 g/L)</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate:</td>
<td>Not available</td>
</tr>
<tr>
<td>Partition Coefficient:</td>
<td>log Pow: -3.2 @ 25°C (glyphosate)</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity: Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form explosive mixture with air.

Chemical stability: Stable under normal conditions of use.

Possibility of hazardous reactions: None known.

Conditions to avoid: Avoid exposure to direct sunlight. Avoid contact with foodstuffs.

Incompatible materials: Incompatible with strong alkalis.
11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

**Ingestion:** No adverse effects expected, however, large amounts may cause nausea and vomiting.

**Eye contact:** An eye irritant.

**Skin contact:** Contact with skin may result in irritation.

**Inhalation:** Breathing in mists or aerosols may produce respiratory irritation.

**Acute toxicity:** No LD50 data available for the product. However, based on similar product(s):
- Oral LD50 (rat): >2000 mg/kg
- Dermal LD50 (rabbit): >2000 mg/kg

**Skin corrosion/irritation:** Minimal irritant (rabbit).

**Serious eye damage/irritation:** Moderate irritant (rabbit).

**Respiratory or skin sensitisation:** Not a skin sensitiser (guinea pig).

**Chronic effects:** No information available for the product.

12. ECOLOGICAL INFORMATION

**Ecotoxicity**

Avoid contaminating waterways.

- 48hr EC50 (Daphnia magna): 243 mg/L (for similar formulation)
- 96hr LC50 (rainbow trout): >1039 mg/L (for similar formulation)

13. DISPOSAL CONSIDERATIONS

**Disposal methods:**

Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site.

If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product.

For refillable container, empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage. Do not reuse empty container.

14. TRANSPORT INFORMATION

**Road and Rail Transport**

Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road and Rail; NON-DANGEROUS GOODS.
Safety Data Sheet

Marine Transport
Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; NON-DANGEROUS GOODS.

Air Transport
Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; NON-DANGEROUS GOODS.

15. REGULATORY INFORMATION

Classification:
Based on available information, not classified as hazardous according to Safe Work Australia; NON-HAZARDOUS CHEMICAL.

Classification of the chemical:
The following health/environmental hazard categories fall outside the scope of the Workplace Health and Safety Regulations:
Eye damage/irritation - Category 2B

Poisons Schedule (SUSMP):  S5 Caution.

This product is registered in Australia by the Australian Pesticides & Veterinary Medicines Authority (APVMA). APVMA product number 48518

16. OTHER INFORMATION

References:
Supplier Safety Data Sheet; 09/2013.

This safety data sheet has been prepared by Ixom Operations Pty Ltd Toxicology & SDS Services.

Reason(s) for Issue:
First Issue Primary SDS

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Ixom Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Ixom representative or Ixom Operations Pty Ltd at the contact details on page 1.

Ixom Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.
4.2.2 Sentricom™ IG Termite Rod SDS
SAFETY DATA SHEET  
DOW AGROSCIENCES AUSTRALIA LIMITED

Product name: SENTRICON™ IG Termiticide Rod  
Issue Date: 16.08.2016  
Print Date: 16.08.2016

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

SECTION 1: IDENTIFICATION: PRODUCT IDENTIFIER AND CHEMICAL IDENTITY

Product name: SENTRICON™ IG Termiticide Rod

Recommended use of the chemical and restrictions on use
Identified uses: End use insecticide product

COMPANY IDENTIFICATION
DOW AGROSCIENCES AUSTRALIA LIMITED
LVL 5  20 RODBOROUGH RD
FRENCHS FOREST NSW 2086
AUSTRALIA

Customer Information Number: 1800-700-096
auscustomerservice@dow.com

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 613-9663-2130
Local Emergency Contact: 1800-033-882
For advice, contact a doctor (at once) or the Australian Poisons Information Centre: 131 126
Transport Emergency Only Dial 000

SECTION 2: HAZARD(S) IDENTIFICATION

GHS Classification
Acute aquatic toxicity - Category 1
Chronic aquatic toxicity - Category 1

GHS label elements
Hazard pictograms

Signal word: WARNING!
Hazard statements
Very toxic to aquatic life with long lasting effects.

Precautionary statements

**Prevention**
Avoid release to the environment.

**Response**
Collect spillage.

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

Other hazards
No data available

---

**SECTION 3: COMPOSITION AND INFORMATION ON INGREDIENTS, IN ACCORDANCE WITH SCHEDULE 8**

This product is a mixture.

<table>
<thead>
<tr>
<th>Component</th>
<th>CASRN</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexaflumuron</td>
<td>86479-06-3</td>
<td>0.5%</td>
</tr>
<tr>
<td>Cellulose</td>
<td>9004-34-6</td>
<td>&gt; 60.0 - &lt; 70.0 %</td>
</tr>
<tr>
<td>Octadecanoic acid, calcium salt</td>
<td>1592-23-0</td>
<td>&lt; 5.0 %</td>
</tr>
<tr>
<td>Balance</td>
<td>Not available</td>
<td>&lt;= 29.9 %</td>
</tr>
</tbody>
</table>

---

**SECTION 4: FIRST AID MEASURES**

**Description of first aid measures**

**General advice:** If potential for exposure exists refer to Section 8 for specific personal protective equipment.

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

**Skin contact:** 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.

**Eye contact:** Flush eyes with plenty of water; remove contact lenses after the first 1-2 minutes then continue flushing for several minutes. Only mechanical effects expected. If effects occur, consult a physician, preferably an ophthalmologist. Get medical attention immediately.
Ingestion: No emergency medical treatment necessary.

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

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

SECTION 5: FIREFIGHTING MEASURES

Hazchem Code
2X

Suitable extinguishing media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture
Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen fluoride. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: None known.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. This material does not burn. Fight fire for other material that is burning.

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Spilled material may cause a slipping hazard. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

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

SECTION 7: HANDLING AND STORAGE, INCLUDING HOW THE CHEMICAL MAY BE SAFELY USED

Precautions for safe handling: Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing dust or mist. Wash thoroughly after handling. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Control parameters
Exposure limits are listed below, if they exist.

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulation</th>
<th>Type of listing</th>
<th>Value/Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexaflumuron</td>
<td>Dow IHG</td>
<td>TWA</td>
<td>0.05 mg/m³</td>
</tr>
<tr>
<td>Cellulose</td>
<td>ACGIH</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td></td>
<td>AU OEL</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Octadecanoic acid, calcium</td>
<td>ACGIH</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>salt</td>
<td>AU OEL</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

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

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

Individual protection measures
Eye/face protection: Use safety glasses (with side shields). If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Skin protection
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under standard AS/NZS 2161.10: Protective gloves against chemicals and microorganisms. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). When
prolonged or frequently repeated contact may occur, a glove is recommended to prevent contact with the solid material. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.  

**Other protection:** Wear clean, body-covering clothing.

**Respiratory protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Other Information:** Selection and use of personal protective equipment should be in accordance with the recommendations in one or more of the relevant Australian/New Zealand Standards, including: AS/NZS 1336: Eye and face protection – Guidelines. AS/NZS 1337: Personal eye protection - Eye and face protectors for occupational applications. AS/NZS 1715: Selection, use and maintenance of respiratory protective equipment. AS/NZS 2161: Occupational protective gloves. AS/NZS 2210: Occupational protective footwear. AS/NZS 4501: Occupational protective clothing Set

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>6.27 pH Electrode</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>No test data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point (760 mmHg)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>closed cup Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate (Butyl Acetate = 1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>No test data available</td>
</tr>
<tr>
<td>Relative Vapor Density (air = 1)</td>
<td>No test data available</td>
</tr>
<tr>
<td>Relative Density (water = 1)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Water solubility            No test data available
Partition coefficient: n-octanol/water            No data available
Auto-ignition temperature            Not applicable
Decomposition temperature            No test data available
Kinematic Viscosity            Not applicable to solids
Explosive properties            No data available
Oxidizing properties            No significant increase (>5C) in temperature.
Bulk density            0.67 g/cm³ Loose Volumetric
                        0.73 g/cm³ Tapped Volumetric
Molecular weight            No test data available

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

SECTION 10: STABILITY AND REACTIVITY

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

Chemical stability: Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible materials: Avoid contact with oxidizing materials. Avoid contact with: Strong bases.


SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

Acute toxicity

Acute oral toxicity
Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

As product: Single dose oral LD50 has not been determined. Based on information for component(s):
LD50, Rat, > 5,000 mg/kg Estimated.

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

As product: The dermal LD50 has not been determined. Based on information for component(s):
LD50, Rat, > 2,000 mg/kg Estimated.

**Acute inhalation toxicity**
No adverse effects are anticipated from single exposure to dust. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.
As product: The LC50 has not been determined.

**Skin corrosion/irritation**
Brief contact is essentially nonirritating to skin.

**Serious eye damage/eye irritation**
Solid or dust may cause irritation or corneal injury due to mechanical action.

**Sensitization**
Based on information for component(s): Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**
Available data are inadequate to determine single exposure specific target organ toxicity.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**
For the active ingredient(s):
In animals, effects have been reported on the following organs:
Blood.
Liver.
Spleen.
May cause methemoglobinemia, thereby impairing the blood's ability to transport oxygen.

**Carcinogenicity**
Contains component(s) which did not cause cancer in laboratory animals.

**Teratogenicity**
Contains component(s) which did not cause birth defects or any other fetal effects in lab animals.

**Reproductive toxicity**
For the active ingredient(s): In animal studies, did not interfere with reproduction.

For the major component(s): In animal studies, cellulose has been shown to interfere with fertility and reproduction as a result of nutritional deficiencies associated with extremely high dietary concentrations of cellulose.

**Mutagenicity**
For the active ingredient(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

**Aspiration Hazard**
Based on physical properties, not likely to be an aspiration hazard.
COMPONENTS INFLUENCING TOXICOLOGY:

Hexaflumuron

**Acute inhalation toxicity**
No adverse effects are anticipated from single exposure to dust. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.

LC50, Rat, male and female, 4 Hour, dust/mist, > 7.0 mg/l

Cellulose

**Acute inhalation toxicity**
The LC50 has not been determined.

Octadecanoic acid, calcium salt

**Acute inhalation toxicity**
Dust may cause irritation to upper respiratory tract (nose and throat).

The LC50 has not been determined.

Balance

**Acute inhalation toxicity**
The LC50 has not been determined.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

Ecotoxicity

Hexaflumuron

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

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, > 0.5 mg/l

LC50, Lepomis macrochirus (Bluegill sunfish), 96 Hour, > 100 mg/l

**Acute toxicity to aquatic invertebrates**
EC50, Daphnia magna (Water flea), 48 Hour, 0.000111 mg/l

**Acute toxicity to algae/aquatic plants**
ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, > 3.2 mg/l

**Toxicity to bacteria**
EC50, activated sludge, 3 Hour, > 100 mg/l, OECD 209 Test

**Chronic toxicity to aquatic invertebrates**
NOEC, Daphnia magna (Water flea), 21 d, 0.000001 mg/l

**Toxicity to Above Ground Organisms**
Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).
Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm).
oral LD50, Colinus virginianus (Bobwhite quail), > 2000mg/kg bodyweight.
dietary LC50, Colinus virginianus (Bobwhite quail), 5 d, 4786mg/kg diet.
contact LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee
oral LD50, Apis mellifera (bees), 48 Hour, > 100micrograms/bee

Toxicity to soil-dwelling organisms
LC50, Eisenia fetida (earthworms), 14 d, 880 mg/kg

Cellulose
Acute toxicity to fish
Material is practically non-toxic to aquatic organisms on an acute basis
(LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
LC50, Fish, 96 Hour, > 100 mg/l

Acute toxicity to algae/aquatic plants
EC50, Algae, 96 Hour, Growth rate inhibition, > 100 mg/l

Toxicity to bacteria
LC50, Bacteria, > 100 mg/l

Octadecanoic acid, calcium salt
Acute toxicity to fish
The LC50 value is above the water solubility.
The EC50 value is above the water solubility.
LC50, Oryzias latipes (Japanese medaka), 96 Hour, estimated> 100 mg/l, OECD Test
Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates
EC50, Daphnia magna (Water flea), 48 Hour, estimated> 100 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants
EyC50, Pseudokirchneriella subcapitata (algae), 72 Hour, Cell yield inhibition, estimated> 100
gm/l, OECD Test Guideline 201
ErC50, Pseudokirchneriella subcapitata (algae), 72 Hour, Growth rate, estimated> 100 mg/l,
OECD Test Guideline 201

Balance
Acute toxicity to fish
No relevant data found.

Persistence and degradability
Hexaflumuron
Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready
biodegradability.
10-day Window: Pass
Biodegradation: 76 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 4.72 mg/mg

Stability in Water (1/2-life)
, half-life, 22 d, pH 7

**Cellulose**

**Biodegradability:** Biodegradation rate may increase in soil and/or water with acclimation.

**Theoretical Oxygen Demand:** 1.18 mg/mg

**Octadecanoic acid, calcium salt**

**Biodegradability:** Material is expected to be readily biodegradable.

**Theoretical Oxygen Demand:** 2.74 mg/mg

**Balance**

**Biodegradability:** No relevant data found.

**Bioaccumulative potential**

**Hexaflumuron**

**Bioaccumulation:** Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

**Partition coefficient: n-octanol/water (log Pow):** 5.68 Estimated.

**Bioconcentration factor (BCF):** 3,800 - 5,600 Fish 28 d Measured

**Cellulose**

**Bioaccumulation:** No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

**Octadecanoic acid, calcium salt**

**Bioaccumulation:** No data available for this product.

**Balance**

**Bioaccumulation:** No relevant data found.

**Mobility in Soil**

**Hexaflumuron**

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

**Partition coefficient (Koc):** 3096 - 41170 Estimated.

**Cellulose**

No data available.

**Octadecanoic acid, calcium salt**

No data available.

**Balance**

No relevant data found.

**Results of PBT and vPvB assessment**

**Hexaflumuron**

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

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

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

**Other adverse effects**

**Hexaflumuron**
No relevant data found.

**Cellulose**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Octadecanoic acid, calcium salt**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Balance**
This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

---

### SECTION 13: DISPOSAL CONSIDERATIONS

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

This product when disposed of in its unused and uncontaminated state should be treated as a hazardous waste.

---

### SECTION 14: TRANSPORT INFORMATION

**ADG**

<table>
<thead>
<tr>
<th><strong>Proper shipping name</strong></th>
<th>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hexaflumuron)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UN number</strong></td>
<td>UN 3077</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>9</td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
<td>III</td>
</tr>
<tr>
<td><strong>Marine pollutant</strong></td>
<td>Hexaflumuron</td>
</tr>
</tbody>
</table>

**Classification for SEA transport (IMO-IMDG):**

<table>
<thead>
<tr>
<th><strong>Proper shipping name</strong></th>
<th>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hexaflumuron)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UN number</strong></td>
<td>UN 3077</td>
</tr>
<tr>
<td><strong>Class</strong></td>
<td>9</td>
</tr>
<tr>
<td><strong>Packing group</strong></td>
<td>III</td>
</tr>
<tr>
<td><strong>Marine pollutant</strong></td>
<td>Hexaflumuron</td>
</tr>
</tbody>
</table>
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code

Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Hexaflumuron)

UN number: UN 3077

Class: 9

Packing group: III

Hazchem Code: 2X

Further information:

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the Australian Code for the Transport of Dangerous Goods (ADG). This applies when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs per ADG Special Provision AU01.

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

SECTION 15: REGULATORY INFORMATION

Poison Schedule

5

APVMA Approval Number: 80120

Australia Inventory of Chemical Substances (AICS)
The product is used in a biocide/pesticide application and is subject to the applicable regulation. It contains a component exempt from inventory listing requirements. Because an intentional component of the product is not on the inventory, the product may only be used in the exempt application.

SECTION 16: ANY OTHER RELEVANT INFORMATION

Revision

Identification Number: 101271436 / A143 / Issue Date: 16.08.2016 / Version: 1.1

DAS Code: GF-2060
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

**Legend**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>USA, ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>AU OEL</td>
<td>Australia, Workplace Exposure Standards for Airborne Contaminants.</td>
</tr>
<tr>
<td>Dow IHG</td>
<td>Dow Industrial Hygiene Guideline</td>
</tr>
<tr>
<td>TWA</td>
<td>Exposure standard - time weighted average</td>
</tr>
</tbody>
</table>

DOW AGROSCIENCES AUSTRALIA LIMITED urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.
4.2.3 Abide Termite Bait SDS
SAFETY DATA SHEET

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: ABIDE Termite Bait

Other Names: Abide
Use: For the protection of buildings and other structures from concealed entry by termites.
Company: TERM-seal (Aust) Pty Ltd.
Address: 1/30 Janola Cct, Port Macquarie NSW, 2444
Telephone Number: 02 6581 4414  Fax Number: 02 6581 4414
Emergency Telephone Number: 1800 033 111 (All hours - Australia wide).

SECTION 2 HAZARDS IDENTIFICATION

Not classified as hazardous according to criteria of Safe Work Australia. #
Not classified as a Dangerous Good according to the ADG Code.

# Under Safe Work Australia this product is not classified as a hazardous substance. Under the Globally Harmonised System (GHS) this product is a hazardous substance with the following environmental classification:

Risk Phrases:
R52. Harmful to aquatic organisms.

Safety Phrases:
S61. Avoid release to the environment. Refer to special instructions/Safety Data Sheets.

Signal Word: NOT HAZARDOUS.

Hazard Statements:
H402: Harmful to aquatic life.

Precautionary statements:
Prevention:
P233: Keep container tightly closed.
P273: Avoid release to the environment.
P235+P410: Keep cool. Protect from sunlight.

Response:
P309: If exposed or if you feel unwell, seek medical attention.
P335: Brush off loose particles from skin.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P370+P378: In case of fire, use carbon dioxide, dry chemical, foam.

Disposal:
P410: Protect from sunlight.
P402+P404: Store in a dry place. Store in a closed container.
P403+P235: Store in a well ventilated place. Keep cool.
SECTION 3 | COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>CAS NUMBER</th>
<th>PROPORTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorfluazuron</td>
<td>71422-67-8</td>
<td>1.0g/Kg</td>
</tr>
<tr>
<td>Other ingredients determined not to be hazardous</td>
<td>mixture</td>
<td>Balance</td>
</tr>
</tbody>
</table>

SECTION 4 | FIRST AID MEASURES

FIRST AID
General Information:
You should call The Poisons Information Centre if you feel that you may have been poisoned or irritated by this product. The number is 13 1126 from anywhere in Australia and is available at all times. Have this SDS with you when you call.

Contact or Poisoning:
From the available evidence, this product offers no significant health hazard by any exposure route. Consequently, First Aid is not generally required. If in doubt contact a Poisons Information Centre or a doctor.

SECTION 5 | FIRE FIGHTING MEASURES

Specific Hazard: Not flammable, however thermal decomposition may produce toxic by-products.

Extinguishing media: Choose extinguishing media to suit the burning material. Contain all runoff.

Hazards from combustion products: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. There is no risk of an explosion from this product under normal circumstances if it is involved in a fire. This product, if scattered, may form flammable or explosive dust clouds in air. Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Precautions for fire-fighters and special protective equipment: When fighting fires involving significant quantities of this product, no special equipment is believed to be necessary. Do not scatter spilled material with high pressure water jets.

SECTION 6 | ACCIDENTAL RELEASE MEASURES

Accidental release:

Minor spills do not normally need any special cleanup measures. In the event of a major spill, prevent spillage from entering drains or water courses. If there is a significant chance that dusts are likely to build up in cleanup area, we recommend that you use a suitable Dust Mask. Stop leak, and contain spill. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Consider vacuuming if appropriate. 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 SDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Launder protective clothing before storage or re-use.
SECTION 7 | HANDLING AND STORAGE

Precautions for Safe Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this SDS for details of personal protective measures, and make sure that those measures are followed.

Conditions for Safe Storage: Store packages of this product in a cool place. 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. Check packaging - there may be further storage instructions on the label.

SECTION 8 | EXPOSURE CONTROLS / PERSONAL PROTECTION

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

SWA Exposure Limits TWA (mg/m3) STEL (mg/m3)

Exposure limits have not been established by SWA for any of the known significant ingredients in this product.
The ADI for Chlorfluazuron is set at 0.005mg/kg/day. The corresponding NOEL is set at 0.56mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, June 2013.
No special equipment is usually needed. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.

Ventilation:
No special requirements.

Eye Protection:
Eye protection is not normally necessary when this product is being used. However, if in doubt, wear suitable protective glasses or goggles.

Skin Protection:
This product is not considered harmful and no skin protection is usually necessary.

SECTION 9 | PHYSICAL AND CHEMICAL PROPERTIES

Physical Description & colour: White powder
Odour: No odour.
Boiling Point: Not available.
Freezing/Melting Point: No specific data. Solid at normal temperatures.
Volatiles: None.
Vapour Density: Not applicable.
Specific Gravity: Approx 0.25
Water Solubility: Dispersible.
pH: Approx 7 when dispersed in water
Evaporation Rate: Not applicable.
Viscosity: Not applicable

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:
This product should be kept in a cool place, preferably below 30°C. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
Incompatibilities:
strong oxidising agents.

Fire Decomposition:
Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke.
Water is also formed. May form hydrogen chloride gas, other compounds of chlorine. May form hydrogen fluoride gas and other compounds of fluorine. 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

Target Organs:
There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients
No ingredient mentioned in the HSIS Database is present in this product at hazardous concentrations.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: This product is harmful to aquatic organisms. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems. This product is unlikely to accumulate in body tissues.

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

SECTION 14 TRANSPORT INFORMATION

Transport: TERMseal Abide is not classified as a Dangerous Good.
It is good practice not to transport this product with food, food related materials and animal feedstuffs.

SECTION 15 REGULATORY INFORMATION

Not classified as a hazardous substance according to criteria of Safe Work Australia.
Under the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP), this product is not a Scheduled poison.
This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No. 70294/101695.
Product is not classified as a Dangerous Good according to the ADG Code (7th Ed), the International Maritime Dangerous Goods (IMDG) Code and the International Air Transport Association (IATA).
Requirements concerning special training:
Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

SECTION 16 OTHER INFORMATION

Issue Date: 25 November 2016. Valid for 5 years till 10 August 2021. (Revised to GHS).

Key to abbreviations and acronyms used in this SDS:
ADG Code: Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail).
Carcinogen: An agent which is responsible for the formation of a cancer.
Clonic: Alternate involuntary muscular contraction and relaxation in rapid succession.
Genotoxic: Capable of causing damage to genetic material, such as DNA.
Lavage: The irrigation or washing out of an organ, as of the stomach or bowel.
Mutagen: An agent capable of producing a mutation.
Oedema: Accumulation of fluid in tissues.
Teratogen: An agent capable of causing abnormalities in a developing foetus.
Safe Work Australia: Formally known as Australian Safety & Compensation Council (ASCC) which was formally known as the National Occupational Health & Safety Commission (NOHSC).

References

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 SDS 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.

End SDS