APPLICATION

FOR

ANTI-DUMPING MEASURES

FORMULATED GLYPHOSATE

exported from

the People's Republic of China

AUSTRALIAN CUSTOMS SERVICE

Application for Dumping and Countervailing Duties

DECLARATION

I request in accordance with Section 269TB of the Customs Act 1901 that the Minister publish in respect of goods the subject of this application:

☐ a dumping duty notice, or

☐ a countervailing duty notice, or

☐ a dumping and a countervailing duty notice

This application is made on behalf of the Australian industry producing like goods to the imported goods the subject of this application. The application is supported by Australian producers whose collective output comprises:

- 25% or more of the total Australian production of the like goods; and
- more than 50% of the total production of like goods by those Australian producers that have expressed either support for, or opposition to, this application.

I believe that the information contained in this application:

- provides reasonable grounds for the publication of the notice(s) requested; and
- is complete and correct.

Signature:.....

Name: John O'Connor

Position: Director

Company: John O'Connor and Associates Pty Ltd

ABN: 39 098650 241

Date: / /

PART A

INJURY

TO AN AUSTRALIAN INDUSTRY

IMPORTANT

All questions in Part A should be answered even if the answer is 'Not applicable' or 'None'. If an Australian industry comprises more than one company/entity, each should separately complete Part A.

For advice about completing this part please contact the Customs Dumping Liaison Unit on:

☎ **(02) 6275-6066 Fax (02) 6275-6990**

A-1 Identity and communication.

Please nominate a person in your company for contact about the application:

The companies that are members of the Australian industry manufacturing formulated glyphosate, the goods the subject of this application, include:

(i) Nufarm Limited; and
(ii) Accensi Pty Limited.

Nufarm Limited ("Nufarm") and Accensi Pty Limited ("Accensi") account for more than 50 per cent of local production of formulated glyphosate in Australia.

Relevant contact details at each company are as follows:

(i) Nufarm

Contact Name:	Mr Bernard Lee
Company and position:	Manager, Industry and Government Affairs, Nufarm Limited.
Address:	103-105 Pipe Road, Laverton North, Victoria, 3026.
Telephone:	(03) 9282 1444
Facsimile:	(03) 9282 1001
E-mail address:	Bernard.Lee@au.nufarm.com
ABN:	37 091 323 312

Alternative contact

Contact Name:	Mr Michael Summons
Company and position:	Roundup & Glyphosate Regional Business Manager, Nufarm Limited.
Address:	103-105 Pipe Road, Laverton North, Victoria, 3026.
Telephone:	(03) 9282 1158
Facsimile:	(03) 9282 1003
E-mail address:	michael.summons@au.nufarm.com

(ii) Accensi

Name:	Mr Craig Ellis
Position in the company:	Business Manager
Address:	60-76 Potassium Street, Narangba, Queensland, 4504
P.O. Box:	P.O. Box 596, Burpengary, Queensland, 4505
Telephone:	(07) 3897 2000
Facsimile:	(07) 3897 2022
E-mail address:	craig@accensi.com.au
ABN:	94 079 875 184

If you have appointed a representative to assist with your application, provide the following details and complete Appendix A8 (Representation).

Name:	Mr John O'Connor
Representative's business name:	John O'Connor & Associates Pty Ltd
Address:	P.O. Box 329, Coorparoo Qld 4151
Telephone:	(07) 3342 1921
Facsimile:	(07) 3342 1931
E-mail address :	jmoconnor@optusnet.com.au
ABN:	39 098 650 241

A-2 Company information.

1. **State the legal name of your business and its type (eg. company, partnership, sole trader, joint venture). Please provide details of any other business names you use to manufacture/produce/sell the goods that are the subject of your application.**

   The names of the companies that account for the majority of the Australian industry requesting anti-dumping and countervailing measures are as follows:

   (i) Nufarm Limited; and
   (ii) Accensi Pty Limited

   Nufarm Ltd is an Australian Public Company (limited by shares) listed on the Australian Stock Exchange. Two of Nufarm's Australian operating subsidiaries – Nufarm Australia Ltd (NAL) and Crop Care Australasia Pty Ltd (Crop Care) - manufacture and sell formulated glyphosate products in Australia.

2. **Provide your company's internal organisation chart. Describe the functions performed by each group within the organisation.**

   Accensi's organisation chart is at Accensi Confidential Attachment A-2.2.

   An Organisational chart for Nufarm is included at Nufarm Confidential Attachment A-2.2.

3. **List the major shareholders of your company. Provide the shareholding percentages for joint owners and/or major shareholders.**

   Accensi Pty Limited is a 100 per cent owned subsidiary of Isnecca Pty Ltd.

   Nufarm is a publicly listed company on the Australian Stock Exchange. Please refer to Nufarm Limited's 2010 Annual Report for a listing of major shareholders.

4. **If your company is a subsidiary of another company list the major shareholders of that company.**

   Isnecca Pty Ltd is a 100 per cent subsidiary of Herorich Investments Ltd.

   This question does not apply to Nufarm.

5. **If your parent company is a subsidiary of another company, list the major shareholders of that company.**

   Accensi's parent company is ultimately owned by CK Life Sciences International Holdings Inc., a company listed on the Hong Kong Stock Exchange.

   This question does not apply to Nufarm.

6. **Provide an outline diagram showing major associated or affiliated companies and your company's place within that structure (include the ABNs of each company).**

   A diagram outlining major associated companies to Accensi is included at Accensi Confidential Attachment A-2.6.

   Nufarm's associated companies are listed in its Annual Report. Please refer to P.99 of Nufarm's 2011 Annual Report for a listing of related entities within the Group.

7. **Are any management fees/corporate allocations charged to your company by your parent or related company?**

   Accensi is not levied with any management fees or corporate allocations by its parent company.

This question does not apply to Nufarm.

8. **Identify and provide details of any relationship you have with an exporter to Australia or Australian importer of the goods.**

Accensi and Nufarm do not have any relationship with the Chinese exporters or Australian importer(s) of the goods the subject of this application.

Companies within the Nufarm Group have approximately a 6% shareholding in Xxxxxxxxx xxxxxx xxxxx xxxxx xxxxxx xxxxxxx. A representative of Nufarm was a member of the Board of Directors until 2009/10 financial year.

Companies within the Nufarm Group have supply agreements with xxxxxxxxxxxxxxxxxxxxxxx. The agreements relate to supply of glyphosate acid (not formulated glyphosate products) to countries other than Australia.

9. **Provide a copy of all annual reports applicable to the data supplied in Appendix A3 (Sales Turnover). Any relevant brochures or pamphlets on your business activities should also be supplied.**

Accensi's parent Herorich Investments Ltd's annual reports (2009 and 2010) are included at Accensi Confidential Attachment A-2.9.

Nufarm Limited's 2010 and 2011 Annual Report are included at Nufarm Non-Confidential Attachment A-2.9.

10. **Provide details of any relevant industry association.**

Nufarm is a member of Croplife Australia and the Plastics and Chemical Industries Association ("PACIA").

Accensi is also a member of Croplife Australia.

A-3 The imported and locally produced goods.

1. **Fully describe the imported product(s) the subject of your application:**
   - **Include physical, technical or other properties.**
   - **Where the application covers a range of products, list this information for each make and model in the range.**
   - **Supply technical documentation where appropriate.**

   The imported product the subject of this application is formulated glyphosate, a non-selective herbicide, imported in varying strengths of the active glyphosate acid ingredient ("glyphosate technical"), in both liquid and dry forms.

   For the following it should be noted that it is common in Australia to describe the different formulations according to grams of glyphosate technical per litre or kilogram, whereas on the global market the formulations are commonly described by the percentage of glyphosate technical contained in the formulations on a weight for weight basis.

Formulation description bridge: from grams per Litre to % weight per weight

Glyphosate content on grams of glyphosate per litre	**360**	**450**	**570**	**680**	**950**
Glyphosate gms per mole.	169.0	169.0	169.0	169.0	
NH3 gms per mole.				17.0	
IPA gms per mole.	59.1	59.1	59.1		
Gly / IPA or NH3 gms per mole. on 1:1 basis	228.1	228.1	228.1	186.0	
Grams of IPA or NH3 per litre	125.9	157.4	199.3	68.4	
Gly + IPA or NH3 grams per litre	485.9	607.4	769.3	748.4	
Specific density grams per kilogram	1.1690	1.2000	1.1850	0.9886	
Glyphosate content on weight per weight basis	41.6%	50.6%	64.9%	75.7%	
Commonly referred to as	**41%**	**51%**	**62%**	**75.7%**	**Gly. Tech**

It is understood that the following glyphosate formulations are imported:

Product	**Unit of product**	**Grams of glyphosate tech. per Litre or kilogram**	**% w/w as glyphosate IPA salt**
Glyphosate 360	Litre	360	41.6%
Glyphosate 450	Litre	450	50.6%
Glyphosate 540	Litre	570	61.5%
Glyphosate 757	Kilogram	680	75.7%

Notes:
1. Glyphosate 360, Glyphosate 450 and Glyphosate 540 are imported into Australia in a fully formulated liquid form, ready for spraying.
2. Glyphosate 680 is imported into Australia in a fully formulated dry form. Glyphosate 680 can be easily substituted for the other listed import formulations in the market as the use of these products by end users is the same.

Herbicides with a common chemistry are grouped into "families". The Glyphosate family of herbicides was introduced in Australia from 1978. Since that time formulated glyphosate has grown to be the most widely used herbicide in Australia and worldwide.

Formulated glyphosate products are used for the non-selective control of weeds and are absorbed by the leaves and green tissue of susceptible plants (A non selective herbicide is one that controls weeds in all situations). Translocated throughout the plant, formulated glyphosate

based herbicides inhibit a specific enzyme, EPSP synthase, which plants need in order to grow. Without that enzyme, plants are unable to produce other proteins essential to growth, so they yellow and die over the course of several days or weeks.

It is important to understand that this application distinguishes between fully formulated glyphosate imports (saleable or end use) and technical grade imports (used as the ingredient in the manufacture of fully formulated products).

The ingredient, Glyphosate Technical, is imported into Australia in a dry form to be used as an active primary ingredient in the manufacture of formulated liquid glyphosate products. Glyphosate Technical is dedicated for this purpose and has no other known use, and cannot be used in this form for its intended purpose.

Glyphosate technical is used by companies known in the industry as "formulators" who convert glyphosate technical into fully formulated glyphosate.

The formulation process converts glyphosate technical into a soluble form.

This application is concerned with imported Glyphosate in **all** its fully formulated liquid forms **including** Glyphosate 360, Glyphosate 450 and Glyphosate 570 and the fully formulated dry form including Glyphosate 680.

The Applicants' understand that the imported product is shipped mainly in the following packaging – 1,000 litre drums and 20 litre drums.

2. What is the tariff classification and statistical code of the imported goods.

The tariff classification and statistical code for the imported goods is 3808.93.00 statistical code 48.

3. Fully describe your product(s) that are 'like' to the imported product:

- **Include physical, technical or other properties.**
- **Where the application covers a range of products, list this information for each make and model in the range.**
- **Supply technical documentation where appropriate.**
- **Indicate which of your product types or models are comparable to each of the imported product types or models. If appropriate, the comparison can be done in a table.**

The Australian industry manufactures a range of formulated glyphosate products that it views as 'like products' to imported formulated glyphosate. Specifically, Nufarm and Accensi manufacture formulated glyphosate 360g/L, 450g/L, 470g/L, 510g/L, and 540g/L that are like goods to imported formulated glyphosate.

Nufarm produces liquid formulated glyphosate herbicides at its Laverton North, Victoria and Kwinana, WA plants. The following Nufarm products, by tradename, are considered to be like goods to the imported fully formulated liquid forms of glyphosate listed in the Table at A.3.1 below.

Table A-3.1 – Nufarm locally produced grades of formulated glyphosate in 2010/11

Product	Unit of product	g/L as Glyphosate Acid	% w/w as Glyphosate IPA salt
Weedmaster DUO	Litre	360	41.8%
Roundup BIACTIVE	Litre	360	41.8%
Roundup herbicide	Litre	360	41.8%

Glyphosate CT	Litre	450	50.9%
Gladiator	Litre	450	50.9%
Roundup DST	Litre	470	47.0%
Gladiator MAXIMUS	Litre	510	56.7%
Credit & Bonus	Litre	540	53.4%
Gladiator OPTIMAX	Litre	540	53.4%
Roundup PowerMAX	Litre	540	53.4%

Note: Nufarm did not produce CT Roundup in 2010/11.

Formulation description bridge: from grams per litre to % weight per weight

	Weedmaster DUO	Glyphosate CT	Roundup DST	Gladiatpr MAXIMUS	Credit & Bonus
	Roundup BIACTIVE	Gladiator			Gladiator OPTIMAX
	Roundup herbicide	Roundup CT			Roundup Powermax
Glyphosate content on grams of glyphosate per litre	**360**	**450**	**470**	**510**	**540**
Glyphosate gms per molecule	169	169	169	169	169
NH3 gms per molecule			17		
KOH gms per molecule			56.1		56.1
IPA gms per molecule	59.1	59.1		59.1	
Gly / IPA or NH3 or KOH gms per mole on 1 : 1.025 basis	229.6	229.6		229.6	226.5
Grams of IPA or NH3 or KOH per litre	129	161.3		182.8	183.7
Gly / KOH + NH3 gms per mole. On 1:1.3(52:48) basis			217.5		
Grams of KOH + NH3 per litre			135		
Gly + IPA or NH3 or KOH grams per litre	489	611.3		692.8	723.7
Gly + KOH + NH3 grams per litre			605		
Specific density grams per kilogram	1.169	1.2	1.288	1.221	1.356
Glyphosate content on a weight per weight basis	41.80%	50.90%	47.00%	56.70%	53.40%
Commonly referred to as	**41%**	**51%**	**47%**	**57%**	**54%**

Technical & general information data sheets for each of the major product formulations of Nufarm are provided at Nufarm Non-Confidential Attachment A3.3.

Accensi manufactures formulated glyphosate that is a like good to the imported goods. As indicated, Accensi manufactures formulated glyphosate 360g/L, 450g/L and 540g/L. Accensi does not haave product brochures, however, has included labels of the three grades of formulated glyphosate it manufactures at its Narrangba site.

4. Describe the ways in which the essential characteristics of the imported goods are alike to the goods produced by the Australian industry.

The imported goods are alike to locally produced formulated glyphosate as they each possess the following essential characteristics:

(i) Glyphosate technical is the dominant active ingredient in the locally produced formulated glyphosate products and the imported formulated glyphosate product;

(ii) The various formulations represent variations in the presentation of the glyphosate technical for both the locally produced and imported goods;

(iii) The production of formulated glyphosate (for both locally produced and imported goods) is a relatively standard process.

(iv) All glyphosate formulations whether locally produced or imported have the same end use.

(v) All glyphosate formulations whether locally produced or imported generally have the same channels of market distribution.

(vi) There is an absence of any clear dividing line in terms of market segmentation between the various formulations and product substitution can occur between the formulated products (whether locally produced or imported).

The imported formulated glyphosate therefore is a like to the locally manufactured formulated glyphosate.

5. What is the Australian and New Zealand Standard Industrial Classification Code (ANZSIC) applicable to your product.

The ANZSIC code applicable to formulated glyphosate is understood to be 2549 (i.e. other manufacturing *nec*).

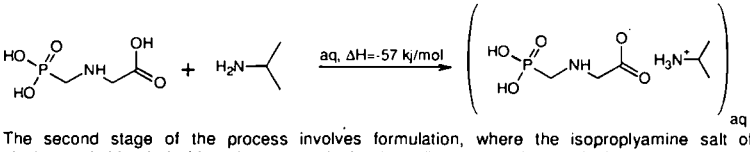
6. Provide a summary and a diagram of your production process.

Formulated glyphosate is produced via a two-stage process, followed by packaging for transportation and sale.

The initial stage of the process involves the amination of glyphosate acid and mono-isopropylamine to produce the isopropylamine salt of the N-phosphonomethylglycine molecule (i.e. the active ingredient). The amination process is essentially a controlled acid-base chemical reaction. The amination process is an exothermic reaction that generates significant heat.

The amination process is carried out in large purpose built reaction vessel that incorporates cooling equipment and microprocessor based process controls to maintain the temperature of the chemical reaction. This facilitates production in large-scale batches. The vessels are also equipped with sulphuric acid scrubbers to prevent emission of noxious fumes of mono-isoproplyamine to the atmosphere.

The following depicts the chemical reaction that occurs during the amination process.



The second stage of the process involves formulation, where the isoproplyamine salt of glyphosate is blended with surfactants and other ingredients to produce a glyphosate herbicide at the desired level of concentration (i.e. between 7.2 – 540 grams per litre). The addition of surfactants facilitates the absorption of the active ingredient by plants. Without the addition of the surfactants, plants do not readily absorb the isopropylamine salt of glyphosate.

After formulation, the glyphosate herbicide is packaged in a variety of retail containers ranging from 250 ml to 1000 litre. The herbicide is also loaded into bulk containers for transport to refilling stations located through regional Australia.

A production flow diagram is included at Nufarm Confidential Attachment A-3.6 and is

representative of the production processes of the applicant companies.

7. **If your product is manufactured from both Australian and imported inputs:**
   - **describe the use of the imported inputs; and**
   - **identify that at least one substantial process of manufacture occurs in Australia (for example by reference to the value added, complexity of process, or investment in capital).**

   Formulated glyphosate is made from imported glyphosate technical, there being no manufacturer of glyphosate acid in Australia. Similarly, some raw material surfactants (i.e. those not purchased locally from Huntsman Chemicals), mono-isoppropylamine ("MIPA"), and antifoam consumed in the production of formulated glyphosate are all imported ingredients.

   The formulation of glyphosate is considered a substantial process of manufacture where transformation of the glyphosate technical into a commercial herbicide occurs.

8. **If your product is a processed agricultural good, you may need to complete Part C.3 (close processed agricultural goods).**

   Formulated glyphosate is not considered a processed agricultural good.

9. **Supply a list of the names and contact details of all other Australian producers of the product.**

   This application is made on behalf of the two largest manufacturers of formulated glyphosate in Australia, Accensi Pty Ltd and Nufarm Limited. The two companies account for sales of more than 75 per cent of Australian production of the goods the subject of this application. Both companies also toll manufacture formulated glyphosate on behalf of some of the sellers of formulated glyphosate listed below (and hence Accensi and Nufarm's combined production of locally produced formulated glyphosate is likely to exceed 85 per cent).

   The balance of Australian production for formulated glyphosate includes:

   (i) Autopack Pty Ltd
   39 Harris St,
   St Marys NSW 2760

   (ii) Bayer Australia Pty Ltd
   875 Pacific Highway
   Pymble NSW 2073

   (iii) Cheminova Manufacturing Pty Ltd
   16 Lucca St
   Wyong NSW 2259

   (iv) Chempak (Aust) Pty Ltd
   4 Linthorpe Drive
   Yarrawonga Victoria 3730

   (v) Eureka Manufacturing Pty Ltd
   25-27 Burns Road
   Altona Victoria 3018

   (vi) Gemax Pty Ltd
   18 Conquest Way
   Wangara WA 6167

   (vii) Imtrade Australia Pty Ltd
   17 Ocean Street
   Kwinana Beach WA 6167

   (viii) Intec Industries Pty Ltd
   17-19 Raymond Road
   Laverton North Victoria 3026

   (ix) Loral Ipsum Pty Ltd
   12 Ramage Street
   Bayswater Victoria 3153

   (x) Opal Australasia Pty Ltd
   42 Thomas Street
   Kwinana Beach WA 6167

   (xi) Rygel Australia Pty Ltd
   103 Ordish Road
   Dandenong South Victoria 3175

The following is an estimate of the respective market shares of each of the above nominated companies (including Accensi and Nufarm):

Formulator	Capacity 360 Equivalent	Operating Rate FY11 %	FY11 Vol 360 Equivalent	Formulator share
Nufarm				
Accensi				
Cheminova				
Intec				
Autopak				
Chempak				
Imtrade				
Gemax				
Eureka				
Bayer				
Rygel				
Opal				
Loral Ipsum				

A-4 The Australian market.

1. **Describe the end uses of both your product and the imported goods.**

Formulated glyphosate is used as a herbicide for broad-acre weed control, along with certain horticulture and Home and Garden applications requiring weed control.

2. **Generally describe the Australian market for the Australian and imported product and the conditions of competition within the overall market. Your description could include information about:**
   - **sources of product demand;**
   - **marketing and distribution arrangements;**
   - **typical customers/users/consumers of the product;**
   - **the presence of market segmentation, such as geographic or product segmentation;**
   - **causes of demand variability, such as seasonal fluctuations, factors contributing to overall market growth or decline, government regulation, and developments in technology affecting either demand or production;**
   - **the way in which the imported and Australian product compete; and**
   - **any other factors influencing the market.**

Sources of product demand

Fully formulated products made by Accensi and Nufarm (and other Australian industry formulators) and imported fully formulated products are supplied to the Australian agricultural (including horticulture) market for the purposes of weed control. Applications are also evident in domestic and residential areas, also for weed control.

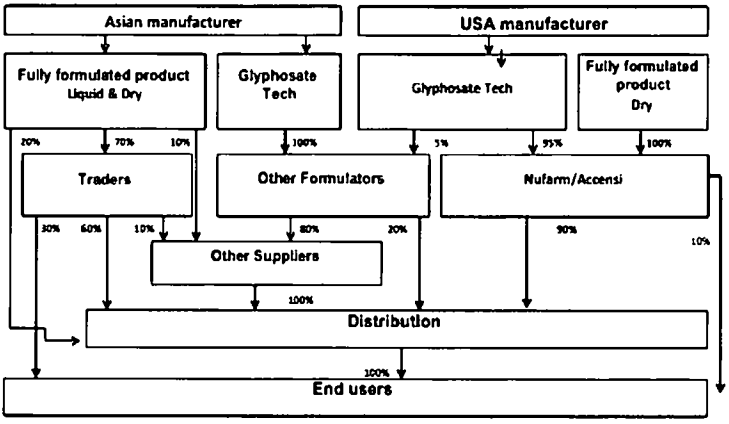
Marketing and Distribution arrangements

For the purpose of presenting market size data, formulated product sales volumes are reflected as 360 gram per Litre of glyphosate equivalent, converted as follows:

- 450 gram product volumes converted to 360 gram equivalence by multiplying the volumes by 1.250;
- 470 gram product volumes converted to 360 gram equivalence by multiplying the volumes by 1.306;
- 510 gram product volumes converted to 360 gram equivalence by multiplying the volumes by 1.417;
- 540 gram product volumes converted to 360 gram equivalence by multiplying the volumes by 1.5;
- 570 gram product volumes converted to 360 gram equivalence by multiplying the volumes by 1.583;
- 680 gram product volumes converted to 360 gram equivalence by multiplying the volumes by 1.889.

The supply of locally produced and imported formulated glyphosate to the Australian market is outlined in the following diagram:

Australian Channel to market: July10 to June11



It is noted that most formulated glyphosate is sold via traders and/or distributors to end-users.

To the best of the Australian industry's knowledge, the Australian market supply and distribution arrangements may be described as follows:

1. Traders / Importers of fully formulated glyphosate products

Traders are responsible for importing fully formulated Glyphosate products from Asian manufacturers and then selling to other suppliers, distributors and end users. Traders/importers of formulated glyphosate include:

- 4 Farmers;
- GenFarm;
- Titan;
- United Farmers/Ravensdown;
- United Phosphorous
- Agronomiq (Apparentag.com.au);
- Conquest Afrochemicals (Farmoz);
- Imtrade;
- Redox;
- Agrismart; and
- Gemax.

2. Formulators

Formulators are responsible for importing glyphosate technical to formulate glyphosate products in house and then sell the formulated product to other suppliers and distributors. Formulators include:

- Accensi Pty Ltd;
- Nufarm Australia Ltd;
- All other Australian producers as per A-3.6.

Accensi and Nufarm formulate glyphosate on behalf of local suppliers in Australia.

3. Other Suppliers

Other suppliers are responsible for purchasing formulated glyphosate products from traders and other formulators and then sell to distributors. Known suppliers include:

- Farmoz;
- Farmalinx;
- Farnalinx;
- Kenso;
- Ospray;
- Macspred.

4. Distributors / Suppliers

Distributors can act as traders and import fully formulated product from Asian manufacturers, but are more generally responsible for purchasing formulated product from traders, formulators and other suppliers. These include:

- Australian Independent Rural Retailers (AIRR) trade with Good Harvest, Rainbow in China (via Agronomiq – Apparentag);
- Combined Rural Traders, a division of Ruralco Holdings Ltd
- Elders Limited
- Landmark
- Genfarm Crop Protection Pty Ltd acts as trader on behalf of Landmark.
- IHD Pty Ltd
- National Rural Independents LTD
- Various Independent stores

Typical customers/end-users

Formulated glyphosate is used in agricultural (including horticultural) end-use applications (i.e. agricultural farming). The goods are also sold to residential and industrial end-users for weed control purposes.

Market Segmentation

Formulated Glyphosate products are present in five core market segment in Australias

Segment	Weed control	% of market
Pre plant winter cropping	Broadacre weed control	40%
Pre plant summer cropping	Broadacre weed control	15%
Fallow weed control	Broadacre weed control	30%
Horticulture	Trees, nuts, vines & vegetable weed control	5%
Industrial/Retail & Home	Railways, mining, forestry Weed control	10%

There is a preferred choice of product depending on the market segment and secondly, on the growth cycle of weeds and the timing of crops.

Causes of demand variability

Demand is seasonal. As rain stimulates weed growth the Australian market will reflect the vagaries of weather and agricultural output. Highest demand for formulated glyphosate is in the period August to March.

It is the Applicant industry's view that other influencing factors including technological advances and government regulations have not impacted the market in recent years.

The way in which Australian and imported formulated glyphosate compete

Locally produced and imported formulated glyphosate are wholly interchangeable and can be substituted in all end-use applications.

Any other factors influencing the market

The recent increase in imports of Chinese formulated glyphosate into Australia can be attributed in part to the removal of the 9% VAT export rebate on glyphosate acid in July 2010. The Chinese Government's policy decision to retain the 5 per cent VAT export rebate on formulated glyphosate has resulted in increased exports, in favour of glyphosate acid.

3. Identify if there are any commercially significant market substitutes for the Australian and imported product.

It is the Australian industry's view that there are some products that can be substituted for weed control, however, formulated glyphosate is the preferred fit-for-purpose herbicide used in Australia.

4. Complete appendix A1 (Australian production). This data is used to support your declaration at the beginning of this application.

Confidential Appendix A1 has been completed for the Australian industry and reflects the period 1 July 2010 to 30 June 2011 (Nufarm financial year quarters have been aligned with calendar quarters).

Please refer to Australian Industry Confidential Appendix A1.

5. Complete appendix A2 (Australian market).

Confidential Appendix A2 has been completed for the Australian industry. The applicant companies have estimated sales data for other Australian formulators of glyphosate on market intelligence.

Import data for formulated glyphosate is not individually identifiable in published ABS data. The applicants have sourced export data for China (from xxx) and for all other countries (from xxxxx xxxxxxxxxxxxxx) for the purposes of constructing Confidential Appendix A2.

Please refer to Australian industry Confidential Appendix A2.

6. Use the data from appendix A2 (Australian market) to complete this table:

*Indexed table of sales quantities**

Period	(a) Your Sales	(b) Other Aust^{n} Sales	(c) Total Aust^{n} Sales (a+b)	(d) Dumped Imports	(e) Other Imports	(f) Total Imports (d+e)	(g) Total Market (c+f)
2007/08	100	100	100	100	100	100	100
2008/09	68.11	169.44	94.5	17.07	131.92	48.68	82.0
2009/10	115.4	172.22	130.2	57.39	236.78	106.78	123.8
2010/11	95.0	145.00	108.0	283.48	317.77	292.92	158.4

Notes:

1. Accensi operates on a 1 January to 31 December financial year.
2. Nufarm operates a 1 August to 31 July financial year.
3. Data has been presented on a 1 July to 30 June year basis, with Nufarm's quarterly data brought forward by one month (e.g. Nufarm's May to July quarter has been included with Accensi's Apr to June quarter, and the period reported as Apr to June).
4. Nufarm's Aug to Oct 2011 data not available until mid-December 2011, hence not included in application.
5. Dumped imports data sourced from xxxxx – See Confidential Attachment B-2.4;
6. "Other Imports" sourced from xxxxxxxxxxxxxx– included in excel spreadsheet form with application (refer Confidential 'Selected Countries Export to Australia' File).

A-5 Applicant's sales.

1. **Complete appendix A3 (sales turnover).**

Confidential Appendix A3 has been completed by the applicant companies. Please refer to Confidential Appendix A3 for Accensi and Nufarm.

2. **Use the data from appendix A3 (sales turnover) to complete these tables.**

*Indexed table of Applicant's sales quantities**

Quantity	2007/08	2008/09	2009/10	2010/11
All products				
Australian market	100	233.0	170.0	98.8
Export market	100	150.8	53.4	131.0
Total	100	224.4	144.7	102.2
Like goods				
Australian market	100	73.8	110.0	85.7
Export market	100	26.4	24.8	62.2
Total	100	73.6	109.7	85.6

Notes:

1. Aggregate applicant A3 data sourced from Accensi and Nufarm Confidential Appendix A3.
2. Accensi data for Jan to June 2008 quarter only available for 2007/08 and has been pro-rated for that year.

*Indexed table of Applicant's sales values**

Values	2007/08	2008/09	2009/10	2010/11
All products				
Australian market	100	83.8	77.3	84.0
Export market	100	94.0	103.5	84.2
Total	100	84.51	79.1	84.0
Like goods				
Australian market	100	68.2	64.6	51.3
Export market	100	20.8	8.3	29.5
Total	100	68.0	64.3	51.2

The Applicant's sales of like goods has deteriorated significantly from 2009/10 to 2010/11 due to the increased exports of formulated glyphosate from China.

3. **Complete appendix A5 (sales of other production) if you have made any:**

- **internal transfers; or**
- **domestic sales of like goods that you have not produced, for example if you have imported the product or on-sold purchases from another Australian manufacturer.**

Confidential Appendix A5 has been completed by Nufarm. Accensi does not have any related party sales, purchases from other Australian manufacturers or imports of the goods under consideration, hence it has not completed Appendix A5. Nufarm's sales of imports are included in Nufarm Confidential Appendix A5.

4. **Complete appendix A4 (domestic sales).**

   Accensi and Nufarm have individually completed Confidential Appendix A4 schedules detailing sales by invoice as follows:

   - Accensi: for 12 months ending September 2011;
   - Nufarm: for 12 months ending July 2011.

5. **If any of the customers listed at appendix A4 (domestic sales) are associated with your business, provide details of the association. Describe the price effect of the association.**

   Accensi is not related to, and does not have an association with, customers listed in Accensi's Confidential Appendix A4.

   Nufarm is not relate to, and does not have an association with, customers listed in Nufarm Confidential Appendix A4.

6. **Attach a copy of distributor or agency agreements/contracts.**

   Nufarm has an agency agreement with PLANTSHIELD. Please refer to Nufarm Confidential Attachment A-5.6.

7. **Provide copies of any price lists.**

   Accensi did not operate a price list for formulated glyphosate in 2010/11.

   A copy of the Nufarm price list (May 2011) is included at Nufarm Confidential Attachment A-5.8.

8. **If any price reductions (for example commissions, discounts, rebates, allowances and credit notes) have been made on your Australian sales of like goods provide a description and explain the terms and conditions that must be met by the customer to qualify.**

   - **Where the reduction is not identified on the sales invoice, explain how you calculated the amounts shown in appendix A4 (domestic sales).**

   - **If you have issued credit notes (directly or indirectly) provide details if the credited amount has not been reported appendix A4 (domestic sales) as a discount or rebate.**

   Accensi does not provide rebates to customers. Domestic sales information included at Accensi Confidential Appendix A4 reflects net selling prices.

   Nufarm's sales included at Appendix A4 include some rebates. Xxxxxxxxxxxxxxxxxxxxxxx have been included in Nufarm's Appendix A6 schedules.

9. **Select two domestic sales in each quarter of the data supplied in appendix A4 (domestic sales). Provide a complete set of commercial documentation for these sales. Include, for example, purchase order, order acceptance, commercial invoice, discounts or rebates applicable, credit/debit notes, long or short term contract of sale, inland freight contract, and bank documentation showing proof of payment.**

   Accensi has included commercial documentation for two domestic sales in each of the four quarters to September 2011. Please refer to Accensi Confidential Attachment A-5.9.

   Nufarm has included commercial documentation for two domestic sales in each of the four quarters to July 2011. Please refer to Nufarm Confidential Attachment A-5.9.

A-6 General accounting/administration information.

The Applicants' have provided responses to each of the accounting/administration items addressed below.

1. Specify your accounting period.

Accensi: Accounting period is 1 January to 31 December.

Nufarm: Accounting period is from 1 August to 31 July each year. Financial information has been provided for financial years ending 31 July 08 to 31 July 2011.

2. Provide details of the address(es) where your financial records are held.

Accensi: records are held at 60-76 Potassium Street, Narangba, Qld, 4504.

Nufarm: Financial information is primarily located at 103-105 Pipe Road, Laverton North, Victoria, 3026.

3. To the extent relevant to the application, please provide the following financial documents for the two most recently completed financial years plus any subsequent statements:

- **chart of accounts;**

  Accensi: Provided at Accensi Confidential Attachment A-6.3.1.

  Nufarm: Provided at Nufarm Confidential Attachment A-6.3.1.

- **audited consolidated and unconsolidated financial statements (including all footnotes and the auditor's opinion);**

  Accensi: financial statements are consolidated with other CK companies as part of Group.

  Nufarm: Included with this application is the 2010 and 2011 Nufarm Limited Annual Reports. This information is consolidated at a global level. [*Commercially sensitive accounting information and methodologies*].

- **internal financial statements, income statements (profit and loss reports), or management accounts, that are prepared and maintained in the normal course of business for the goods.**

  These documents should relate to:

  1. the division or section/s of your business responsible for the production and sale of the goods covered by the application, and

  2. the company overall.

  Accensi: Extract of internal statement for September 2011 is included at Accensi Confidential Attachment A-6.3.2.

  Nufarm: Included files that show internal management profit and loss reporting from Nufarm's general ledger system. This information shows totals by entity
  a) Nufarm Australia; and
  b) Crop Care Australia.
  Please refer to Nufarm Confidential Attachment A-6.3.2.

4. **If your accounts are not audited, provide the unaudited financial statements for the two most recently completed financial years, together with your taxation returns. Any subsequent monthly, quarterly or half yearly statements should also be provided.**

   Accensi: Accensi's statements are consolidated into Herorich investments that are audited annually.

   Nufarm: Not applicable for Nufarm Limited.

5. **If your accounting practices, or aspects of your practices, differ from Australian generally accepted accounting principles, provide details.**

   Accensi: Accensi's accounting practices are in accordance with Australian generally accepted accounting principles and International Accounting Standards.

   Nufarm: Nufarm Australia and Crop Care Australasia apply Australian Generally Accepted Accounting Principles.

6. **Describe your accounting methodology, where applicable, for:**

   - **The recognition/timing of income, and the impact of discounts, rebates, sales returns warranty claims and intercompany transfers;**

     Accensi: Revenue is recognised when it is probable that the economic benefits will flow to the company and when the revenue can be measured reliably.

     Nufarm: Sales revenue and discounts shown at the time of sale. Rebates are shown in line with the actual timing/payment of the rebate. This is at a different time to the sales based on the nature of the rebate contracts (e.g. Annual or quarterly basis etc). In effect, Nufarm has applied a 'cash' basis to rebate payments.

     Sales returns, warranties, and intercompany transfers are all shown at time of transaction

     Please note: in the six months to January 2010, large returns were noted as part of our pricing support policy. These equated to $xxxM and as described above, are included in the period that the return occurred.

   - **provisions for bad or doubtful debts;**

     Accensi: Please refer to Herorich Investment 2010 Report.

     Nufarm: Provision for bad debts expensed is generally provided for on a monthly basis. This amount has been included in the month that the transaction occurred through general expenses as part of selling and administration expenses.

     [*Commercially sensitive details re treatment of certain accounting items*].

- **the accounting treatment of general expenses and/or interest and the extent to which these are allocated to the cost of goods;**

  Accensi: Interest income/expense is recognised on an effective interest basis.

  Nufarm: Net interest paid is included in the Cost to Sell calculation.
  Basis of calculation is total interest paid less interest received. Net interest payment is apportioned over total volume for the year. (eg. Volume of 'like product' taken as a percentage of 'all product' and applied to net interest expense.)

  General Expenses are allocated on the same basis as described for interest allocation.

- **costing methods (eg by tonnes, units, revenue, activity, direct costs etc) and allocation of costs shared with other goods or processes;**

  Accensi: Cost is calculated using the weighted average method.

  Nufarm: Costing methodology has used the 'most direct' link in each allocation of expense line.

  - Expense links directly to 'like product' - direct allocation used for expense line;
  - Expense links directly to glyphosate molecule – total 'like product' volume taken as percentage of total glyphosate volume and applied to expense line;
  - Expense general to business operation – total 'like product' volume taken as a percentage of total business volume and applied to expense line.

- **the method of valuation for inventories of raw material, work-in-process, and finished goods (eg FIFO, weighted average cost);**

  Accensi: Stated at lower of cost and net realisable value.

  Nufarm: The business uses fully absorbed standard costing on a FIFO basis. Lower of cost or net realisable valued is applied as appropriate.

- **valuation methods for scrap, by-products, or joint products;**

  Accensi: Not applicable to glyphosate.

  Nufarm: Not Applicable to glyphosate.

- **valuation methods for damaged or sub-standard goods generated at the various stages of production;**

  Accensi: Not applicable.

  Nufarm: Lower of cost or net realisable value.

- **valuation and revaluation of fixed assets;**

  Accensi: Stated at cost or fair value less accumulated depreciation. Any revaluation increase arising on revaluation is recognised in the revaluation reserve.

  Nufarm: Assets are valued at cost, and are depreciated over their useful life.

- **average useful life for each class of production equipment, the depreciation method and depreciation rate used for each;**

  Accensi: Buildings: 2.5 to 10%, or over lease term, whichever is shorter.
  Plant and equipment: 20%.
  Furniture, fixtures & other assets: 15-37.5%.
  Leasehold improvements: 20% or over term of lease, whichever is shorter.

  Nufarm:

  Average Depreciation Rate: 7.38%
  Average Useful Life: 13.55 years
  Method: Straight Line

  Note: Above information is provided as an average of all Glyphosate related plant and equipment across Nufarm Australia business and includes assets with life cycles between 10 and 15 years.

- **treatment of foreign exchange gains and losses arising from transactions and from the translation of balance sheet items; and**

  Accensi: Transactions in foreign currencies are translated at the prevailing rates on the dates of the transactions.

  Nufarm: Foreign exchange gains/losses are included in the 'cost to sell' calculation.

  Basis of calculation is net gain/loss apportioned over total volume for the year.

- **restructuring costs, costs of plant closure, expenses for idle equipment and/or plant shut-downs.**

  Accensi: Brought to account as incurred.

  Nufarm: Plant closure of Brendale Plant during the reporting period. The costs relating to this plant have been excluded from all analysis.

  Routine maintenance rather than plant shutdowns occur, so no extended shut down costs are incurred.

7. **If the accounting methods used by your company have changed over the period covered by your application please provide an explanation of the changes, the date of change, and the reasons.**

   Accensi: In the 2010 Year the Herorich Investment Group adopted for the first time a number of new and revised IFRS amendments and interpretations. See P.7 of Herorich invesment Report 2010.

   Nufarm: Contract.... [*Commercially sensitive details re treatment of certain accounting item*].

A-7 Cost information

1. **Complete appendices A6.1 and A6.2 (cost to make and sell) for domestic and export sales.**

Please refer to Accensi Confidential Appendix A6.1 for the periods 1 January 2008 to 30 September 2011. Accensi does not export formulated glyphosate.

Please refer to Nufarm Confidential Appendix A6.1 and A6.2 for the periods 1 August 2007 to 31 July 2011.

For the purposes of aggregating Accensi and Nufarm Appendix A6.1 data to reflect economic performance across each of the prescribed indices, Accensi's quarterly data for example, for July to September, has been aggregated with Nufarm's August to October data (and so on for the remainder of the financial year).

Accensi and Nufarm forumate glyphosate on behalf of third party entities for supply into the Australian market. Both Accensi and Nufarm have completed Appendix A6.1 schedules for sales of "toll" manufactured formulated glyphosate.

A-8 Injury

1. **Estimate the date when the material injury from dumped imports commenced.**

Material injury to the Australian industry manufacturing formulated glyphosate commenced in 2010/11.

2. **Using the data from appendix A6 (cost to make and sell), complete the following tables for each model and grade of your production.**

As indicated, Accensi and Nufarm have each completed Confidential Appendix A6.1. A consolidated schedule of the Accensi and Nufarm Appendix A6.1 data has been prepared and is included at Industry Confidential Appendix A6.1. The indices hereunder are sourced from the consolidated schedule.

Index of production variations (litres)

Period	2007/08	2008/09	2009/10	2010/11
Index	100			

Note:
1. Production data sourced from company Appendix A6.1 and Appendix A6.2, and includes toll manufactured formulated glyphosate.

The Applicant companies' have experienced a reduction in production volumes in 2010/11. This reduction in volume coincided with a substantial 393 per cent increase in Chinese export volumes of formulated glyphosate to Australia in 2010/11 (53.2 Million litres of 360 g/L equivalents) over 2009/10 (10.8 Million litres of 360 g/L equivalents).

The Australian industry's loss of production volumes is particularly evidenced in formulated glyphosate production that is toll manufactured by Accensi and Nufarm on behalf of third party entity companies. Production for toll manufacturing declined by 31 per cent from 2009/10 to 2010/11.

Index of cost variations (A$ per litre)

Period	2007/08	2008/09	2009/10	2010/11
Index	100			

Note:
1. Index of cost variations based upon Accensi and Nufarm unit CTM&S data from Appendix A6.1.

The price peak for formulated glyphosate in 2008/09 was driven by the high price for the raw material glyphosate technical that was in relative short supply. In 2008/09 the glyphosate technical price declined rapidly, resulting in price reductions for formulated glyphosate. The Industry's CTM&S in 2010/11 has declined slightly from the previous year, however, this has primarily occurred due to the further decline in glyphosate technical pricing.

Index of price variations (model, type, grade of goods – A$ per litre)

Period	2007/08	2008/09	2009/10	2010/11
Index	100			

Note:
1. Index of price variations based upon Accensi and Nufarm unit selling price data from Appendix A6.1.

Selling prices for formulated glyphosate did not "track" the glyphosate technical price increases evident in 2008/09 due primarily to the dry conditions in Australia at the time. Selling prices declined in 2009/10 as the glyphosate technical price declined.

The Australian industry's prices in 2010/11 have remained relatively stable – however, this has been as a consequence of the industry surrendering sales volumes (and not price).

Index of profit variations (model, type, grade of goods - (A$ per litre))

Period	2007/08	2008/09	2009/10	2010/11
Index	100	-190.7	-30.6	-3.5

Note:
1. Index of profit variations based upon Accensi and Nufarm profit data from Appendix A6.1.

The Applicant companies' profit in 2008/09 was impaired by the dramatic rise in glyphosate technical prices that could not be passed onto customers in a low demand period where sales had fallen by 30 per cent (due to the dry conditions apparent at the time). The industry's profit in 2009/10 was further impaired by declines in selling prices for formulated glyphosate at rates much faster than the declines in raw material costs (brought about by the emerging over-supply position of glyphosate in China).

Index of Profitability variations (model, type, grade of goods - (A$ per litre))

Period	2007/08	2008/09	2009/10	2010/11
Index	100	-336.9	-58.2	-7.9

Note:
1. Index of Profitability variations based upon Accensi and Nufarm % profitability from Appendix A6.1.

The Australian industry's profitability reflects the performance of the industry's profit over the nominated periods. It is highlighted that the increased availability of Chinese formulated glyphosate in 2010/11 (exports to Australia increased by almost 400 per cent) was caused by Monsanto addressing increased Chinese export sales into its traditional markets of the USA and

South America, thereby forcing Chinese exporters to seek out alternate export markets (See further below in A-9).

3. **Complete appendix A7 (other economic factors).**

Accensi and Nufarm have completed Confidential Appendix A7. Please refer to Accensi Confidential Appendix A7 and Nufarm Confidential Appendix A7.

The following selected economic indicators identify trends in the Applicant Companies' performance over the injury period.

Index of Employment Number variations (model, type, grade of goods)

Period	2007/08	2008/09	2009/10	2010/11
Index	100	78.1	113.4	96.7

Note:
1. Employment numbers obtained from Accensi and Nufarm Appendix A7 data.

The Applicant Companies' employee numbers declined in 2010/11 by approximately 15 per cent as the companies sought to reduce costs in response to increased Chinese imports of formulated glyphosate at prices that undercut local industry prices.

Index of Capacity variations (litres)

Period	2007/08	2008/09	2009/10	2010/11
Index	100	74.7	110.1	87.9

Note:
1. Capacity variations based upon actual production of like goods as a percentage of installed capacity for like goods. Please refer to Accensi and Nufarm Confidential Appendix A7.

In 201/11 the Applicant Companies' utilisation rate of production for like goods (i.e. formulated glyphosate) declined from the levels of 2009/10 by 20 per cent.

Index of Revenue variations (model, type, grade of goods A$)

Period	2007/08	2008/09	2009/10	2010/11
Index	100	57.7	54.6	43.4

Note:
1. Index of revenue reflects sales of domestic and export, including toll manufactured formulated glyphosate. Please refer to Accensi and Nufarm Confidential Appendix A7.

The Applicant Companies' experienced a 20 per cent decline in revenues of formulated glyphosate (sales to distributors and toll manufactured) as Chinese exports of formulated glyphosate to Australia surged by almost 400 per cent.

Information in respect of other economic indicators for formulated glyphosate may be derived from the Accensi and Nufarm Appendix A7 information. Please refer to the respective company Confidential Appendix A7 data.

A-9 Link between injury and dumped imports.

To establish grounds to initiate an investigation there must be evidence of a relationship between the injury and the alleged dumping. This section provides for an applicant to analyse the data provided in the application to establish this link. It is not necessary that injury be shown for each economic indicator.

1. **Identify from the data at appendix A2 (Australian market) the influence of the volume of dumped imports on your quarterly sales volume and market share.**

   The Australian market for formulated glyphosate has grown significantly since 2007/08 and 2008/09. This increase in market demand reflected a change in local climatic conditions that supported improved conditions for use (i.e. increased rainfall equals increase in weeds). Earlier season rainfall has also meant accelerated weed growth, necessitating higher formulated glyphosate usage rates.

   Demand in Australia for formulated glyphosate increased from approximately 90 Million Litres (M REL's of formulated glyphosate translated to 360 g/L equivalents) in 2007/08 to approximately 150 Million Litres in 2010/11.

   From 2009/10 to 2010/11 the growth in the market was approximately 25 per cent.

   Chinese exports of formulated glyphosate captured a significant proportion of the growth in the Australian market. Chinese exports increased from 10.8 M RELs in 2009/10 to 53.2 M RELs in 2010/11, or an almost 400 per cent increase. The impact of the Chinese exports is significant as they accounted for approximately 70 per cent of total formulated glyphosate exports to Australia in 2010/11.

   The impact of the surge in Chinese exports of formulated glyphosate on the Australian industry's sales volumes and market share has been dramatic. In 2010/11, despite the market expanding by approximately 25 per cent, the Australian industry's sales volumes retreated by 17 per cent, and market share contracted by 25 per cent.

   The share of imports held by other exporting countries increased by only one percent in 2010/11.

   It is therefore evident that the 400 per cent increase in Chinese exports of formulated glyphosate to Australia in 2010/11 has displaced sales of locally-produced formulated glyphosate and contributed to a 25 per cent decline in the Australian industry's sales in 2010/11.

2. **Use the data at appendix A2 (Australian market) to show the influence of the price of dumped imports on your quarterly prices, profits and profitability provided at appendix A6.1 (costs to make and sell). If appropriate, refer to any price undercutting and price depression evident in the market.**

   A comparison of distributor selling price offers for imported Chinese formulated glyphosate with Australian industry distributor selling prices confirms significant levels of price undercutting.

   Table A-9.2 – Comparison of Australian Industry selling prices and import offers for Chinese formulated glyphosate

Product/Time of offer	Aust Industry Price A$ g/L	Landed Price for Chinese GUC A$ g/L	Differential	As a %
360g/L RoundUp BiActive				
Q1, 2010/11			1.45	38.7%
Q2, 2010/11			1.41	37.2%
Q3, 2010/11			1.69	44.0%
Q4, 2010/11			1.87	49.0%

450g/L Gladiator				
Q1, 2010/11			0.90	27.3%
Q2, 2010/11			0.86	25.6%
Q3, 2010/11			0.74	22.2%
Q4, 2010/11			0.41	14.6%

Notes:

1. A comparison of Chinese landed prices with Nufarm's Glyphosate CT 450g/L does not disclose high levels of price undercutting as Nufarm has reduced its prices to match import competition – refer Nufarm Confidential Attachment A-9.2 for deductive export price calculations commencing from price offers in Australian market.
2. Similar margins of price undercutting are also evident for Accensi prices when contrasted with landed Chinese prices.
3. A comparison of the imported Chinese 570 g/L higher priced material with Australian industry 450 g/L prices also reveals significant levels of price undercutting.

Table A-9.2 evidences price undercutting by Chinese exports of formulated glyphosate of Australian industry selling prices. Across certain Australian industry product lines the level of price undercutting is substantial (up to 50 per cent), however, in certain circumstances, the Australian industry has reduced its market offer to compete with imported formulated glyphosate.

It is also observable that a build up of Chinese export prices to Australia (using add-on costs as evidenced in Nufarm Confidential Attachment A-9.2) to arrive at a landed-duty paid price-into store ("LDPIS") also undercuts the applicants' selling prices.

Offers for the supply of imported Chinese formulated glyphosate (dated 25 August 2010) and an importer price list of October 2011, highlight FOB and CIF prices (following the addition of $0.17 per litre – see deductive export price calculations and supporting documentation at Nufarm Confidential Attachment A-9.2) that undercut [*entity*] selling prices in 2010/2011 – In July to Sept quarter 2010, and July to Sept quarter 2011, by margins exceeding 40-50 per cent. Please refer to [*entity*] Confidential Attachment A-9.2.

The Applicant companies' have not sought to match all offers for imported Chinese formulated glyphosate across all grades of locally produced like goods. To do so would contribute to substantial lost profits as the import offers are at levels below the local industry's full-absorbed cost-to-make-and-sell like goods.

3. **Compare the data at appendix A2 (Australian market) to identify the influence of dumped imports on your quarterly costs to make and sell at appendix A6.1 (for example refer to changes in unit fixed costs or the ability to raise prices in response to material cost increases).**

Manufacturers of formulated glyphosate have been impacted by the volatility in the glyphosate technical price since 2007/08. In 2007/08 and into 2008/09 the glyphosate technical price peaked; however significant production capacity emerged in China and this led to a rapid decline in glyphosate technical prices. Prices for formulated glyphosate declined at a much faster rate that glyphosate technical prices, with increased supply from China of the formulated product.

In 2008/09 and 2009/10 Chinese exporters were challenged by Monsanto in its traditional markets of the USA and South America, and eagerly sought out new export market alternatives.

The nearby Australian formulated glyphosate market is a large market, with minimum barriers to entry (including registration of product concerns).

The rapid rise in Chinese exports to Australia in 2010/11 has impacted the Australian industry's volume supply, but has also contributed to reduced utilisation rates in local production facilities. Not only has production for sales direct to distributors been negatively impacted, there has also been a decline in the volumes of formulated glyphosate that is toll manufactured by Australian

industry members for supply to other Australian formulated glyphosate suppliers.

As the volume of goods manufactured by the Australian industry has declined (i.e. lower plant throughput) the Australian producer's costs to manufacture are higher than they otherwise would be. The almost 400 per cent increase in Chinese exports of formulated glyphosate in 2010/11 has caused the Australian industry's CTM&S to be higher than it would otherwise be, thereby impacting the Applicant Companies' profit and profitability (which was negative in 2010/11).

4. **The quantity and prices of dumped imported goods may affect various economic factors relevant to an Australian industry. These include, amongst other things, the return on investment in an industry, cash flow, the number of persons employed and their wages, the ability to raise capital, and the level of investment in the industry. Describe, as appropriate, the effect of dumped imports on these factors and where applicable use references to the data you have provided at appendix A7 (other economic factors). If factors other than those listed at appendix A7 (other economic factors) are relevant, include discussion of those in response to this question.**

The impact of the increased Chinese export volumes of formulated glyphosate has extended beyond the primary indicators of volume, market share, price, profit and profitability. Most notably, the Applicants have experienced injury in the form of reduced revenues as sales volumes have declined. In 2010/11, the Applicants' revenues declined by 20 per cent on 2009/10 levels.

The Applicants have also highlighted that sales of "toll" manufactured formulated glyphosate have also declined in 2010/11. Accensi and Nufarm manufacture formulated glyphosate on behalf of Australian distributors of the GUC, thereby contributing to increased use of the local production facilities. However, in 2010/11, the volume of toll-manufactured product has declined by approximately 31 per cent (in 360 g/L equivalents). Please refer to Accensi and Nufarm Confidential Attachments A-6.1 for toll-manufactured formulated glyphosate.

The Applicants' Appendix A7 schedules confirm reductions in production utilisation rates in 2010/11 due to lost sales volumes and declines in toll-manufactured goods.

Other economic indicators where injury is evident include inadequate returns on investment, reduced employment numbers and increases in levels of inventory.

The inadequate returns on investment restrict the respective company's ability to re-invest in the glyphosate business. As a result, efforts are focused on reducing costs (including wages expenses for the business). However, as utilisation rates fall, the fixed costs are spread across reduced volumes, thereby negating any benefit derived from reductions in employee numbers. In this environment, capital investment by the applicant companies has also been reduced in 2010/11.

In summary, the Applicants' can demonstrate injury (in addition to sales volume, loss of market share, reductions in prices and impacts on profit and profitability) in each of the following economic indicators during 2010/11:

- reduced revenues;
- reduced capacity utilisation;
- increased inventory levels;
- inadequate returns on investment;
- reductions in capital expenditure;
- inability to attract capital to reinvest; and
- reduced employee numbers and subsequent reductions in wages bill.

5. **Describe how the injury factors caused by dumping and suffered by the Australian industry are considered to be 'material'.**

The Applicants' Accensi and Nufarm submit that a loss of direct sales volume of 17 per cent and a reduction in market share of approximately 25 per cent in 2010/11 can be considered "material".

It is further noted that a 31 per cent reduction in revenues for the Applicants in 2010/11 contrasted with the almost 400 per cent increase in Chinese export volumes to Australia (that have undercut the selling prices of the Australian industry) has had a material impact on the economic performance of the Australian industry.

6. Discuss factors other than dumped imports that may have caused injury to the industry. This may be relevant to the application in that an industry weakened by other events may be more susceptible to injury from dumping.

The Applicants have outlined how demand for formulated glyphosate in Australia in 2010/11 has increased by more than 50 per cent since 2007/08. The Australian industry has sufficient available production capacity to satisfy this increased level of demand. However, the dramatic increase in exports of Chinese formulated glyphosate at dumped prices has displaced Australian industry supply and contributed to a reduction in the local industry's sales volumes in an expanding market.

Unlike scenarios where there is a gradual increase in dumped exports supplied to the Australian market over a few years, the present circumstances reflect a direct change in supply from one year (i.e. 2009/10) compared with the next (2010/11).

The Australian industry has not been hampered by a reduction in demand; rather, it has been prevented from accessing increased demand due to the substantial increase in availability of dumped Chinese exports of formulated glyphosate. It is the Applicants' view that in the 2010/11 year there are no other factors (other than the dumping by Chinese exporters) that have caused the material injury to the Australian industry.

7. This question is not mandatory, but may support your application. Where trends are evident in your estimate of the volume and prices of dumped imports, forecast their impact on your industry's economic condition. Use the data at appendix A2 (Australian market), appendix A6 (cost to make and sell), and appendix A7 (other economic factors) to support your analysis.

The Applicants have relied upon published export data from CCM to identify the increased Chinese sales to Australia in 2010/11. Accensi and Nufarm consider that the dramatic increase in Chinese exports of formulated glyphosate can also be linked to the removal of the VAT export rebate on glyphosate acid by the government of China on 15 July 2010[1]. The removal of the rebate on glyphosate acid – the primary raw material ingredient in glyphosate formulation – discouraged exports of the acid by Chinese producers and shifted export focus to the formulated glyphosate product range where a 5 per cent export rebate incentive applies.

In addition, the Applicants' understand that the leading supplier in the largest glyphosate markets globally in the USA and South America, Monsanto, initiated market activities that made it difficult for Chinese producers to access both markets. With significant available production capacity and difficulties accessing two of the largest global markets, Chinese producers have sought out alternate markets, including Australia for the supply of formulated glyphosate. It is further understood that Chinese glyphosate manufacturers have considerable excess capacity[2] with an average operating rate of only 30 per cent in 2010, with many Chinese companies reporting trading losses.

The transparency of the Australian market, the removal of the VAT export rebate on glyphosate acid, and the significant over capacity position of the Chinese industry, encouraged supply opportunities for Chinese suppliers to increase export volumes to Australia in 2010/11.

The loss of sales volumes (17 per cent) and market share (approx. 25 per cent) by the Australian

[1] Refer extract of GOC Export Rebate Revoked List at Non-Confidential Attachment A-9.7.1. and List of Commodities with Export Rebate Cut (Non-Confidential Attachment A-9.7.2).
[2] Refer Glyphosate China Monthly Report, CCM International Ltd, 18 November 2011 at Confidential Attachment A-7.3.

industry to dumped Chinese exports is of significant concern to the Applicant companies. In 2010/11 Chinese exporters have secured almost a third of the Australian market. This has been achieved through price undercutting at dumped prices - in a very short twelve-month period.

The Applicants anticipate that should the increased trend in Chinese exports be permitted to continue in 2011/12, then further reductions in local supply, reduced employment numbers, limited capital investment, and a diminution of industry profits and profitability will result.

Accensi and Nufarm request the Australian Customs and Border Protection Service to commence a formal investigation into the allegations of dumping, material injury and causal link detailed in this application. The Applicants' also request that a preliminary affirmative determination ("PAD") be applied as early as practicable following Day 60 of a formal investigation so that further material injury to the Australian industry is minimized.

PART B

DUMPING

IMPORTANT

All questions in Part B should be answered even if the answer is 'Not applicable' or 'None' (unless the application is for countervailing duty only: refer Part C). If an Australian industry comprises more than one company/entity, Part B need only be completed once.

For advice about completing this part please contact the Customs Dumping Liaison Unit on:

☎ **(02) 6275-6066 Fax (02) 6275-6990**

B-1 Source of exports.

1. **Identify the country(ies) of export of the dumped goods.**

   The goods under consideration ("GUC") are exported from the People's Republic of China ("China").

2. **Identify whether each country is also the country of origin of the imported goods. If not, provide details.**

   The applicant understands that the country of origin of the GUC is the same as the country of export.

3. **If the source of the exports is a non market economy, or an 'economy in transition' refer to Part C.4 and Part C.5 of the application.**

   For the purposes of Australia's Anti-Dumping provisions, China is treated as a market-economy country.

4. **Where possible, provide the names, addresses and contact details of:**

   - **producers of the goods exported to Australia;**

   The producers of formulated glyphosate exported to Australia from China are understood to include:

   (i) Jiangsu Good Harvest Welen Agrochemical Co Ltd
   Laogang, Qidong City, Jiangsu China 226221
   Tel: 86 513 8388 5555
   Fax: 86 513 8388 2818, 888 5100
   http://www.good-harvest.cn

   (ii) Shandong Rainbow Chemical Co., Ltd
   Binhai Economic Development Area, Weifang
   Shandong, China 250101
   Tel: 86 531 8887 5230, 5231
   Fax: 86 531 8887 5232, 5224
   http://.rainbowchem.com

   (iii) Hangzhou Banghua Chemical Co., Ltd
   Liangzhu Industrial Zone, Hangzhou, China 311113
   Tel: 86 571 8876 5578
   Fax: 86 571 8876 5699
   http://www.banghuachem.com

   (iv) Zhejiang LingHua Industry Company Limited
   Linghu Town, Huzhou, Zhejiang, China 313018
   Tel: 86 572 394 2330
   Fax: 86 572 394 1402
   http://www.linghuachem.com

   (v) Zhejiang Wynca Chemical Group Co., Ltd
   Jiande, Hangzhou, Zhejiang, China 311600
   Tel: 86 571 8722 0466
   Fax: 86 571 8722 0464
   http://www.wynca.com

(vi) Zhejiang Biok K.P. Chemical Co. Ltd
Zhongguan Industrial Area, Deqing Zhejiang Province
China
Tel: 86 572 840 9637
Fax: 86 572 840 9638
http://www.shkpchem.com

Zhejiang Biok K.P. Chemical Co. Ltd is a subsidiary of Shanghai K.P. Fine Chemical Co., Ltd and Zhejiang Shenghua Biok Biology Co., Ltd.

It is understood that Jiangsu Good Harvest Welen Agrochemical Co. Ltd and Shandong Rainbow Chemical Co., Ltd account for in excess of 90 per cent of total 450g/L formulated glyphosate exports to Australia during the period July 2010 to June 2011. Both companies manufacture glyphosate technical.

- **exporters to Australia; and**

The Australian industry understands that the producers of the goods the subject of this application also export the goods to Australia from China.

- **importers in Australia.**

The Australian industry understands that the following companies are importers of formulated glyphosate exported from china:

(i) 4 Farmers Pty Ltd
1/70 McDowell St
Welshpool WA 6101
Tel: (08) 9356 3445
Fax: (08) 9356 3447

(ii) GenFarm Crop Protection Pty Ltd
Suite 2, Level 3
64 Talavera Road
Macquarie Park NSW 2113
Tel: (02) 9889 5400
Fax: (02) 9889 5411

(iii) Titan AG Pty Ltd
Princess Street Marina
Suite 15/16 Princess Street
Newport, NSW 2106
Tel: (02) 9999 6655
Fax: (02) 9999 0483

(iv) United Farmers
Perth WA 6000
Tel: (08) 9430 2222
www.unitedfarmers.com.au
(website address leads to 'Ravensdown Ltd')

(v) Ravensdown Ltd
2 Birksgate Road
Rous Head, North Fremantle WA 6159
Tel: 1800 624 122

(vi) United Phosphorous Limited
Suite 416, Level 4
14 Lexington Drive
Bella Vista NSW 2153
Tel: (02) 8824 7277

5. If the import volume from each nominated country at Appendix A.2 (Australian Market) does not exceed 3% of all imports of the product into Australia refer to Part C.6 of the application.

China is the largest import source for formulated glyphosate imported into Australia. The following Table identifies import volumes (in 360 g/L equivalents) in 2010/11. Australian Bureau of Statistics import data for sub-heading 3808.93.00 includes a range of herbicide products and formulations, and cannot be relied upon to accurately depict import volumes into Australia for formulated glyphosate.

The applicants have relied upon published export data for China (CCM) and other exporting countries (TradeData International) to identify volumes exported to Australia. It is recognised that there will likely be a timing difference between the export and import volumes, however, this is unlikely to impact an assessment as to whether imported formulated glyphosate from China can be considered "negligible" throughout 2010/11.

Table B-1.5 – Formulated Glyphosate Export Volumes to Australia - 2010/11

Country	2010/11 Volume	% of Total Imports
Argentina	7,435,800	9.8%
China	53,221,186	70.1%
Indonesia	150	0.0%
Malaysia	8,297,703	10.9%
New Zealand	6,924,887	9.1%
Singapore	1,629	0.0%
Total	75,881,354	100

Source: Xxxxxxxxxxxxxxxx and xxxxx (China Only) export statistics.

In 2010/11 imports of formulated glyphosate from China accounted for approximately 70 per cent of the total import volume into Australia. Export volumes for the July to September 2011 period for the countries identified in Table B-1.5. are also available. Total export volumes to Australia in July to September 2011 were 9.788,594 litres of which 6,718,799 litres were exported from China (accounting for approximately 68.6 per cent).

It can be concluded that imports of formulated glyphosate from China account for greater than 3 per cent of total imports in 2010/11.

6. In the case of an application for countervailing measures against exports from a developing country, if the import volume from each nominated country at Appendix A.2 (Australian Market) does not exceed 4% of all imports of the product into Australia refer to Part C.6 of the application.

This application is in respect of anti-dumping measures only.

B-2 Export price

1. **Indicate the FOB export price(s) of the imported goods. Where there are different grades, levels of trade, models or types involved, an export price should be supplied for each.**

   The monthly FOB export prices for formulated glyphosate exported from China have been obtained from CCM (China Chemicals Market International), a company that specialises in the distribution of export sales data.

   The CCM data identifies the different formulated glyphosate strengths including:

   - 41 per cent g/L;
   - 51 per cent g/L;
   - 62 per cent g/L; and
   - 75 per cent g/L.

   The CCM export data is considered reliable for the purposes of contrasting with *prima facie* Chinese normal values (See Section B-4.1 below).

2. **Specify the terms and conditions of the sale, where known.**

   It is the Applicants' understanding that the FOB prices obtained from CCM represent an FOB price ex-wharf in the port of loading in China, and include local freight to wharf from the manufacturer's premises.

3. **If you consider published export prices are inadequate, or do not appropriately reflect actual prices, please calculate a deductive export price for the goods. Appendix B1 (Deductive Export Price) can be used to assist your estimation.**

   Accensi and Nufarm consider the CCM data to be adequate. Deductive export price calculations confirm that the published CCM export prices are reasonable.

4. **It is important that the application be supported by evidence to show how export price(s) have been calculated or estimated. The evidence should identify the source(s) of data.**

   Please refer to Confidential Attachment B-2.4 for export price information obtained from CCM.

B-3 Selling price (normal value) in the exporter's domestic market.

1. **State the selling price for each grade, model or type of like goods sold by the exporter, or other sellers, on the domestic market of the country of export.**

   The Applicant companies have sought to obtain domestic selling price information for formulated glyphosate sold domestically in China. Documentary evidence of a domestic sale in September 2011 was obtained, reflecting domestic prices at RMB 24,778 per 1,000 litres of 360 g/L strength glyphosate. Please refer to Nufarm Confidential Attachment B-3.1.1 for supporting evidence of the Chinese domestic price.

   An Applicant company also conducted a survey of domestic selling prices in China with two domestic suppliers. One of the suppliers is a manufacturer of formulated glyphosate in China that purchases glyphosate technical from a large Chinese manufacturer. It is also noted that formulated glyphosate sold domestically in China incorporates a locally-produced surfactant, whereas exported glyphosate incorporates an imported surfactant.

   The Chinese supplier had encountered strong domestic competition from the largest Chinese manufacturer of glyphosate – Zhejiang Wynca Chemical group ("Wynca") and xxxxxxxx domestic selling prices had declined in 2011 to RMB 22,000 per kilo litre (thousand litres) for supply in 200ml containers.

The supplier confirmed that August/September 2011 net selling prices, delivered to a warehouse, with no further rebates or price adjustments was in the range RMB 18,000-26,000 per kilo litre (VAT not included). It was further noted that the main packaging in China is in 200ml containers, however there has been growth in the 1 litre containers as farm consolidation occurs.

Information sourced from the second domestic Chinese supplier confirmed the supplier's purchase price for 41 per cent formulated glyphosate (i.e. 360 g/L equivalent) from two domestic formulators were as follows (VAT not included):

- RMB 17,500 per Kilo litre (RMB 3.5 per 200 ml); and
- RMB 20,000 per Kilo litre (RMB 4 per 200 ml).

Advice from the second supplier was that prices had decreased 5-10 per cent in the last 12 months.

Please refer to Nufarm Confidential Attachment B-3.1.2 for supporting details obtained from the survey.

2. **Specify the terms and conditions of the sale, where known.**

The terms and conditions of the selling prices are outlined in Section B-3.1 above.

3. **Provide supporting documentary evidence.**

The supporting evidence is included at Nufarm Confidential Attachment B-3.1.1 and B-3.1.2.

4. **List the names and contact details of other known sellers of like goods in the domestic market of the exporting country.**

The applicant companies have nominated manufacturers of formulated glyphosate at Section B-1.4 above.

B-4 Estimate of normal value using another method.

1. **Indicate the normal value of the like goods in the country of export using another method (if applicable, use appendix B2 Constructed Normal Value).**

The applicants have obtained some domestic pricing information on formulated glyphosate sold in China in 2011. The domestic prices obtained are for 41 per cent strength (i.e. 360 g/L) glyphosate sold in predominantly 200 ml containers. Further, advice received indicates that Chinese domestic selling prices have declined by approximately 5-10 per cent during 2011.

One of the Applicants has obtained information concerning the production costs for formulated glyphosate in China. Specifically, information concerning the production cost of two glyphosate technical producers (xxxxx and xxxxx) in 2010 and 2011 was obtained.

The glyphosate technical accounts for approximately 60-70 per cent of the production cost of formulated glyphosate.

Formulated glyphosate sold domestically in China incorporates a locally produced surfactant. Exports of Chinese formulated glyphosate, however, incorporate an imported, more expensive, surfactant.

From the domestic selling prices obtained in the market survey (for August/September 2011), the Applicants have constructed equivalent selling prices for formulated glyphosate that is exported to Australia (with the imported surfactant ingredient).

The methodology followed to arrive at the constructed selling prices for the goods exported to Australia is as follows. Utilising the information concerning glyphosate technical manufacturing costs across 2010 and 2011, and domestic selling prices obtained in August/September 2011 that represent a single point in time (although there is confirmation that selling prices had deteriorated in 2011), the Applicants have identified the margin between the costs of production and Chinese market selling prices in August 2011.

After taking the glyphosate technical input cost (averaged across two manufacturers) and adding the cost of the more expensive imported surfactant, then applying the margin that includes selling and general administrative expenses and profit, a constructed selling price for equivalent formulated glyphosate exported to Australia is derived.

Please refer to Confidential Attachment B-4.1 for supporting information relating to glyphosate technical production costs and formulated glyphosate manufacturing costs for June 2010, June 2011 and August 2011.

The constructed selling prices are derived from the lowest selling prices obtain in the Chinese domestic survey (i.e RMB 18,000 per Kilo litre). A high-end constructed selling price derived from the RMB26,000 selling price in August/September 2011 has also been used to identify a range of Chinese domestic selling prices across the specified timeframes.

Constructed selling prices for 360, 450, 570 and 680 strength formulated glyphosate have also been prepared, including by differing pack sizes (i.e. 200 ml, 20 litres, 200 litres and 1,000 litres).

Prima facie selling prices for formulated glyphosate sold in China (of the same type exported to Australia that includes an imported surfactant) for each of the exported strengths (360, 450 and 570) are included in Table B-4.1 below.

Table B-4.1 – Prima facie normal values and dumping margins

(i) 360 g/L strength formulate glyphosate (1 litre pack size)

	Low				High			
Period	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %
Qtr 3, 2010	2.68	1.45	1.23	85%	3.88	1.45	2.43	168%
Qtr 4, 2010	2.68	1.86	0.82	44%	3.88	1.86	2.02	109%
Qtr 1, 2011	2.81	1.94	0.87	45%	4.05	1.94	2.11	109%
Qtr 2, 2011	2.81	1.76	1.05	60%	4.05	1.76	2.29	130%
Qtr 3, 2011	2.76	1.62	1.14	70%	3.99	1.62	2.37	146%

(ii) 450 g/L strength formulate glyphosate (1 litre pack size)

	Low				High			
Period	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %
Qtr 3, 2010	3.10	1.90	1.20	63%	4.48	1.90	2.58	136%
Qtr 4, 2010	3.10	2.05	1.05	51%	4.48	2.05	2.43	119%
Qtr 1, 2011	3.24	2.27	0.97	43%	4.68	2.27	2.41	106%
Qtr 2, 2011	3.24	2.18	1.06	49%	4.68	2.18	2.50	115%
Qtr 3, 2011	3.18	2.17	1.01	47%	4.60	2.17	2.43	112%

(iii) 570 g/L strength formulate glyphosate (1 litre pack size)

	Low				High			
Period	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %
Qtr 3, 2010	3.15	1.99	1.16	58%	4.55	1.99	2.56	129%
Qtr 4, 2010	3.15	2.48	0.67	27%	4.55	2.48	2.07	83%
Qtr 1, 2011	3.29	2.75	0.54	20%	4.75	2.75	2.00	73%
Qtr 2, 2011	3.29	2.75	0.54	20%	4.75	2.75	2.00	73%
Qtr 3, 2011	3.23	2.06	1.17	57%	4.67	2.06	2.61	127%

(iv) 680 g/L strength formulate glyphosate (1 litre pack size)

	Low				High			
Period	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %	Normal Value US$/L	China Export US$/L	Margin US$/L	Margin %
Qtr 3, 2010	4.11	2.77	1.34	48%	5.94	2.77	3.17	114%
Qtr 4, 2010	4.11	2.72	1.39	51%	5.94	2.72	3.22	118%
Qtr 1, 2011	4.21	3.26	0.95	29%	6.08	3.26	2.82	87%
Qtr 2, 2011	4.21	3.32	0.89	27%	6.08	3.32	2.76	83%
Qtr 3, 2011	4.13	3.63	0.50	14%	5.96	3.63	2.33	64%

Notes:

1. Export prices sourced from xxxxxx – refer Confidential Attachment B-2.4.

2. Provide supporting documentary evidence.

Please refer to Confidential Attachment B-4.1 for supporting evidence of constructed selling prices for formulated glyphosate sold in China in June 2010, June 2011, and August 2011.

B-5 Adjustments.

1. Provide details of any known differences between the export price and the normal value. Include supporting information, including the basis of estimates.

The constructed selling prices for formulated glyphosate have been uplifted by an amount of 12 per cent to account for the difference between the 17 per cent VAT rate on domestic sales and the 5 per cent export rebate that is received for goods exported to Australia.

The constructed selling prices already include an amount for inland freight from production factory to export wharf, hence no further adjustment (to increase normal value to align with export price) for inland freight is required.

2. State the amount of adjustment required for each and apply the adjustments to the domestic prices to calculate normal values. Include supporting information, including the basis of estimates.

Please refer to B-5.1 above where it is stated that a 12 per cent uplift of the constructed normal value is required for the difference between the domestic VAT rate of 17 per cent and the rebate amount received on export of 5 per cent.

B-6 Dumping margin.

1. **Subtract the export price from the normal value for each grade, model or type of the goods (after adjusting for any differences affecting price comparability).**

Formulated glyphosate has been exported to Australia during the period July 2010 to September 2011 with the following margins of dumping (on a $/L and % of export price basis):

Table B-6.1 – Dumping Margin Ranges and Percentages

(i) 360 g/L strength formulate glyphosate (1 litre pack size)

Period	Margin US$/L	Margin as % of Export Price
Qtr 3, 2010	1.23 - 2.43	85 – 168%
Qtr 4, 2010	0.82 – 2.02	44 – 109%
Qtr 1, 2011	0.87 – 2.11	45 – 109%
Qtr 2, 2011	1.05 – 2.29	60 – 130%
Qtr 3, 2011	1.14 – 2.37	70 – 146%

(i) 450 g/L strength formulate glyphosate (1 litre pack size)

Period	Margin US$/L	Margin as % of Export Price
Qtr 3, 2010	1.20 - 2.58	63 – 136%
Qtr 4, 2010	1.05 – 2.43	51 – 119%
Qtr 1, 2011	0.97 – 2.41	43 – 106%
Qtr 2, 2011	1.06 – 2.50	49 – 115%
Qtr 3, 2011	1.01 – 2.43	47 – 112%

(i) 570 g/L strength formulate glyphosate (1 litre pack size)

Period	Margin US$/L	Margin as % of Export Price
Qtr 3, 2010	1.16 - 2.56	58 – 129%
Qtr 4, 2010	0.67 – 2.07	27 – 83%
Qtr 1, 2011	0.54 – 2.00	20 – 73%
Qtr 2, 2011	0.54 – 2.00	20 – 73%
Qtr 3, 2011	1.17 – 2.61	57 – 127%

(i) 680 g/L strength formulate glyphosate (1 litre pack size)

Period	Margin US$/L	Margin as % of Export Price
Qtr 3, 2010	1.34 – 3.17	48 – 114%
Qtr 4, 2010	1.39 – 3.22	51 – 118%
Qtr 1, 2011	0.95 – 2.82	29 – 87%
Qtr 2, 2011	0.89 – 2.76	27 – 83%
Qtr 3, 2011	0.50 – 2.33	14 – 64%

2. **Show dumping margins as a percentage of the export price.**

Please refer to Table B-6.1 for dumping margins as a percentage of export price for formulated glyphosate exported to Australia.

PART C

SUPPLEMENTARY SECTION

IMPORTANT

Replies to questions in Part C are not mandatory in all instances, but may be essential for certain applications.

You should contact the Customs Dumping Liaison Unit before answering any question in this part:

☎ **(02) 6275-6066 Fax (02) 6275-6990**

C-1 Subsidy

1. **Identify the subsidy paid in the country of export or origin. Provide supporting evidence including details of:**
   - **(i) the nature and title of the subsidy;**
   - **(ii) the government agency responsible for administering the subsidy;**
   - **(iii) the recipients of the subsidy; and**
   - **(iv) the amount of the subsidy.**

This application is for anti-dumping measures only, hence this question is not applicable.

C-2. Threat of material injury

Address this section if the application relies solely on threat of material injury (ie where material injury to an Australian industry is not yet evident).

1. **Identify the change in circumstances that has created a situation where threat of material injury to an Australian industry from dumping/subsidisation is forseeable and imminent, for example by having regard to:**
   1. **the rate of increase of dumped/subsidised imports;**
   2. **changes to the available capacity of the exporter(s);**
   3. **the prices of imports that will have a significant depressing or suppressing effect on domestic prices and lead to further imports;**
   4. **inventories of the product to be investigated; or**
   5. **any other relevant factor(s).**

This application for anti-dumping measures against exports of formulated glyphosate from China is based upon material injury experienced (through lost sales volumes, loss of market share and impairment of profits and profitability) from the rapid increase in Chinese exports to Australia in 2010/11.

In the absence of anti-dumping measures against future Chinese exports of formulated glyphosate to Australia, the Applicant Companies submit that further material injury to the industry is threatened.

2. **If appropriate, include an analysis of trends (or a projection of trends) and market conditions illustrating that the threat is both forseeable and imminent.**

This application demonstrates that Chinese exports of formulated glyphosate to Australia increased by almost 400 per cent (measured on a 360 g/L equivalent basis) in 2010/11, and that the Applicant Companies' sales declined by approximately 17.5 per cent in the same year.

In market share terms, the Chinese exports accounted for 9 per cent market share in 2009/10 and increased to 30 per cent in 2010/11, whereas the Australian industry's market share retreated approximately 25 per cent in 2010/11.

In the absence of anti-dumping measures and the continuing high level of excess production capacity for formulated glyphosate in China (and correspondingly low production rates that encourage Chinese exporters to seek out increased sales in the Australian market), it is evident that further material injury to the Australian industry is both foreseeable and imminent.

C-3. Close processed agricultural goods

Where it is established that the like (processed) goods are closely related to the locally produced (unprocessed) raw agricultural goods, then – for the purposes of injury assessment – the producers of the raw agricultural goods may form part of the Australian industry. This section is to be completed only where processed agricultural goods are the subject of the application. **Applicants are advised to contact the Dumping Liaison Unit before completing this section ☎ (02) 6275-6066 Fax (02) 6275-6990.**

1. **Fully describe the locally produced raw agricultural goods.**

   Formulated glyphosate is not a raw agricultural good.

2. **Provide details showing that the raw agricultural goods are devoted substantially or completely to the processed agricultural goods.**

   As formulated glyphosate is not a raw agricultural good, this question does not apply.

3. **Provide details showing that the processed agricultural goods are derived substantially or completely from the raw agricultural goods.**

   As formulated glyphosate is not a raw agricultural good, this question does not apply.

4. **Provide information to establish either:**

   - **a close relationship between the price of the raw agricultural goods and the processed agricultural goods; or**
   - **that the cost of the raw agricultural goods is a significant part of the production cost of the processed agricultural goods.**

   As formulated glyphosate is not a raw agricultural good, this question does not apply.

C-4. Exports from a non-market economy

1. **Provide evidence the country of export is a non-market economy. A non-market economy exists where the government has a monopoly, or a substantial monopoly, of trade in the country of export and determines (or substantially influences) the domestic price of like goods in that country.**

   China is not considered a 'non-market economy' country for the purposes of Australia's Anti-Dumping provisions.

2. **Nominate a comparable market economy to establish selling prices.**

   As China is not considered a non-market economy country, this question does not apply.

3. **Explain the basis for selection of the comparable market economy country.**

   As China is not considered a non-market economy country, this question does not apply.

4. **Indicate the selling price (or the cost to make and sell) for each grade, model or type of the goods sold in the comparable market economy country. Provide supporting evidence.**

   As China is not considered a non-market economy country, this question does not apply.

C-5 Exports from an 'economy in transition'

1. **Provide information establishing that the country of export is an 'economy in transition'.**

   China is not considered an 'economy in transition' country for the purposes of Australia's Anti-Dumping provisions.

2. **A price control situation exists where the price of the goods is controlled or substantially controlled by a government in the country of export. Provide evidence that a price control situation exists in the country of export in respect of like goods.**

   As China is not considered an economy in transition country, this question does not apply.

3. **Provide information (reasonably available to you) that raw material inputs used in manufacturing/producing the exported goods are supplied by an enterprise wholly owned by a government, at any level, of the country of export.**

   As China is not considered an economy in transition country, this question does not apply.

4. **Estimate a 'normal value' for the goods in the country of export for comparison with export price. Provide evidence to support your estimate.**

   As China is not considered an economy in transition country, this question does not apply.

C-6 Aggregation of Volumes of dumped goods

Only answer this question if required by question B.1.5 of the application and action is sought against countries that individually account for less than 3% of total imports from all countries (or 4% in the case of subsidised goods from developing countries). To be included in an investigation, they must collectively account for more than 7% of the total (or 9% in the case of subsidised goods from developing countries).

	Quantity	%	Value	%
All imports into Australia		100%		100%
Total				

As exports of formulated glyphosate account for approximately 70 per cent of total formulated glyphosate exports to Australia in 2010/11, this question is not applicable for the puposes of this application.

APPENDICES

Appendix A1	Australian Production
Appendix A2	Australian Market
Appendix A3	Sales Turnover
Appendix A4	Domestic Sales
Appendix A5	Sales of Other Production (*Not Applicable*)
Appendix A6.1	Cost to Make and Sell (& profit) Domestic Sales
Appendix A6.2	Cost to Make and Sell (& profit) Export Sales
Appendix A7	Other Injury Factors
Appendix A8	Authority to Deal With Representative

Nufarm Product Description Details & MSDS

- **Weedmaster Duo 360;**
- **Roundup Glyphosate 360;**
- **Roundup Biactive 360;**
- **Glyphosate CT 450;**
- **Roundup CT 450;**
- **Roundup 470;**
- **Roundup Powermax 540;**
- **Credit 540;**
- **Gladiator Optimax 540 (MSDS only);**
- **Gladiator 450 (MSDS only);**
- **Gladiator Maximus 510 (MSDS only).**

ROUNDUP POWERMAX

APVMA Code :55687

Active Constituent(s):
540g/L glyphosate(present as the potassium salt)

GROUP M HERBICIDE

Registered For

Commercial Use ✔ Domestic Use ✖

Overview Roundup PowerMAX is the most powerful Roundup liquid ever. It is designed to offer faster, stronger and more convenient weed control in a one drum package. It delivers robust performance on tough weeds, is labelled compatible with more tank mix herbicides than any other knockdown herbicide, and provides a 1 hour time to sowing interval on seedling annual weeds.

Recommended Uses Roundup PowerMAX is designed to control weeds prior to planting any edible or non edible crop (except transplanted tomato seedlings.)
Roundup PowerMAX is designed to be used with conventional, minimum and zero tillage cropping systems.
Roundup PowerMAX is registered for pre harvest use in wheat, sorghum, cotton, some winter pulse crops and some summer legumes.
Roundup PowerMAX is registered for weed control in non-agricultural, forestry and in dry drains and channels.

Benefits Roundup PowerMAX is the highest loaded 1 drum knockdown herbicide on the market, which means that users can spray more area with one drum. It is fully loaded with a new and unique surfactant system which means no need to purchase or mix wetting agents, oils or acidifiers. It is the most compatible knockdown herbicide on the market. Roundup PowerMAX is for the user seeking an edge in performance and convenience. It allows the end user to spray seedling annual weeds and sow a crop in 1 hour. It is low foaming and easy to pump.

Mode of Action Inhibitor of EPSP synthase.

Chemical Group glycine

General Instructions **Product Information**
Roundup PowerMAX is a non-volatile, non selective, water soluble liquid herbicide for the control of annual and perennial grasses and broadleaf weeds in a wide range of agricultural and non-agricultural use situations. Roundup PowerMAX may be used for weed control on agricultural land prior to planting any edible or non edible crop but not prior to transplanting tomatoes. When applying this product prior to transplanting crops into plastic mulch, care much be taken to remove residues of this product from the plastic prior to transplanting. Residues can be removed by 2cm of natural rainfall or by applying water via a sprinkler irrigation system.
Roundup PowerMAX is absorbed by plant foliage and green stems. It is inactivated on clay and organic matter in soil and does not provide residual weed control. Roundup PowerMAX moves throughout the plant from the point of contact to and into the root system. Initial visible effects on annual weeds take 3-7 days but may not be noticeable for 2 to 3 weeks under cool cloudy conditions or on some perennial weeds.

Crop Establishment
Roundup PowerMAX is recommended for control of emerged weeds prior to crop establishment. Cultivation and/or planting operations which provide conditions suitable for crop emergence and establishment are required following herbicide application. Where heavy weed growth is present or soil conditions are unsuitable, planting should be delayed to allow for decay of weeds and/or development of more favourable soil conditions for the formation of a suitable seedbed. Incorporation of green or decaying vegetation may retard crop emergence under cold, wet conditions. Vegetation may be reduced by grazing and weed decay may be assisted by cultivation to leave trash on the surface.

Mixing
Roundup PowerMAX mixes readily with water. Reduced results may occur if water is used containing; suspended clay or organic matter e.g. from dams, streams and irrigation channels, or high levels of calcium, magnesium or bicarbonate ions.
Do not mix, store or apply this product in galvanised steel or unlined steel containers or spray tanks, since a highly flammable gas mixture may be formed. Use stainless steel, aluminium, brass, copper, fibreglass, plastic or plastic lined containers or spray tanks. Spray tanks, pumps, lines and nozzles should be thoroughly cleaned with clean water following application. Ensure that the spray tank is free of any residue of other spray solutions prior to mixing. Use spray solutions promptly as a gradual loss of activity may occur over a period of days following spray preparation.
Mixing Instructions :
1. Fill the spray tank 1/3 to 1/2 full with clean water and start agitation.
2. If adding ammonium sulphate, use a 2% v/v and mix thoroughly.
3. If tank-mixing, add recommended herbicide/insecticide/additive to the spray tank and mix thoroughly.
4. Add Roundup PowerMAX and the remaining water. Mix thoroughly.
5. Add Pulse Penetrant or Wetter TX, if required, near the end of the filling process.
6. Always maintain adequate agitation during application and use the tank mix promptly.
Clean all equipment after use by washing thoroughly with water.

Tank Mixtures
Roundup PowerMAX, may be tank-mixed with the following herbicides, insecticides and adjuvants. Read

and follow all label directions, restraints, plantback and withholding periods, and safety directions for the tank-mix products.
Tank Mixtures - Herbicides
Nufarm Estercide± 800, Nufarm Estercide±Xtra 680, Nufarm LV Estercide± 600 (2,4-D ester), Surpass± 475, Ally*, Associate±, Affinity*, Hammer*, Nu-trazine 600, Nu-trazine 900 DF, Avadex± Xtra, Flowable Simazine, Nufarm Simazine 900 DF (simazine flowable or granular), Nufarm Kamba± 500 (dicamba), Express*, Eclipse*, Flame*, Flandor*, Garlon* 600, Invader±, Glean*, Lusta±, Striker±, Logran* 750WG, Nugran, Logran B Power (ensure fully dispersed prior to addition of Roundup PowerMAX±), Archer±, Lontrel, Nufarm LVE MCPA (MCPA LVE), MONZA±, Oust*, Rifle±, Comet± 400, Starane 200, Stomp*, Surflan, TriflurX, Triflur Xcel (trifluralin) and Yield*. Other brands have not been tested.
The addition of Striker at 75mL/ha to recommended rates of Roundup PowerMAX prior to planting winter cereals will improve knockdown of certain weeds.
Tank Mixtures - Insecticides
This product is compatible with the following insecticides. Imidan, Le-Mat, Lorsban 500, Perfekthion EC 400, Karate, Sumithion ULV and emulsifiable concentrates of dimethoate and fenitrothion. Other insecticides have not been tested.
Adjuvants - Nufarm LI700± Surfactant
At rates of 300 mL - 500 mL per 100 L, LI700 may modify the droplet spectrum produced by CP and flat fan nozzles. This may reduce the proportion of FINE droplets produced by these nozzles.
Adjuvants - Wetter TX
Wetter TX is recommended for the control of silver grass and annual ryegrass in late winter and spring. Wetter TX is not a general purpose surfactant and should only be used where recommended.
Rate: 200mL/100Lspray solution.
Adjuvants - Pulse Penetrant
Pulse Penetrant is recommended for the control of Bracken and many woody weeds.
Rate: 200mL/100Lspray solution.
Adjuvants - Nufarm Liase (Ammonium sulphate)
Liase may be used as an adjuvant to alleviate the adverse effects of high levels of calcium, magnesium and bicarbonate ions in water. Rate: 2L /100L spray solution.

Application
Boom Equipment (Broadacre)
For boom application, a spray volume of 80L/ha or less is recommended for broadacre uses and 200 L/ha or less for treeline and vineline spraying in orchards and vineyards. Glyphosate works better when it is present at a higher concentration in the spray solution provided sufficient coverage of the target is achieved. Nozzles and pressure settings should be selected to deliver a COARSE to VERY COARSE spray quality (as defined by ASAE S572) at the target. The use of nozzles and/or pressure settings that produce VERY FINE or FINE spray quality should be avoided as these are prone to loss or drift. In multiple product tank mixes a minimum water volume of 50L/ha is recommended and local advice should be sought. Correct mixing order is important as is good in-tank agitation when application is occurring.
For shielded applications a spray volume of 80 L/ sprayed ha is recommended using nozzle types and pressure settings to deliver a COARSE ASAE S572 spray quality at the target. Crop damage may result if spray drift occurs through incorrect nozzle and/or pressure selection, inadequate shielding and/or wind strength, high evaporation rates or excessive ground speed.
High Volume Application (eg Knapsack, Handgun Equipment)
The dilution rate varies depending on the use situation and weeds controlled - see Weeds Controlled tables for specific rates and use recommendation. Adjust equipment to achieve an even spray pattern with a COARSE spray quality at the target. Apply to ensure complete and uniform wetting of all foliage.
Wiper Equipment
Wiper equipment (eg. Ropewick, canvas, felt or carpet applicators) may be used to apply Roundup PowerMAX. Avoid contact with desirable vegetation. Operate wiper equipment a minimum of 10cm above the crop or pasture. Weeds should be at least 15cm above the crop or pasture at time of application. Speed of travel should be no greater than 8km/h. Best results are achieved at lower speeds and where two applications are made in opposite directions (double pass). Where weeds are of variable height, or occur in dense infestations or clumps, some plants may not be contacted by the herbicide solution. In these cases repeat treatment may be necessary. RATE: Mix 700mL Roundup PowerMAX with 2.3 litres clean water. Adjust flow rate to suit equipment.
Controlled Droplet Application Equipment (CDA)
ROUNDUP PowerMAX can be applied through hand held and machine mounted CDA sprayers. See Weeds Controlled tables for specific rates and use recommendations. Due to the range of CDA equipment available, dilution rates, flow rates and travel speeds will need to be determine for individual sprayers to ensure labelled rates are applied. Use of ROUNDUP PowerMAX at concentrations recommended for ROUNDUP can result in uneven droplet distribution. Spray units need to be cleaned thoroughly preferably after each application to ensure optimum performance.
DO NOT add oils to Roundup PowerMAX /water mixture, otherwise difficulty in application and reduced weed control may occur.
Because CDA units may deliver relatively low spray volumes per hectare, use on large weeds may result in insufficient coverage resulting in inadequate weed control.
CAUTION: CDA equipment produces a fine spray pattern which is not easily visible. Ensure spray pattern or drift does not contact foliage or any other green tissue of desirable plants, since severe injury or destruction may result

Aerial Application
Aerial Equipment
ROUNDUP PowerMAX may be applied by aircraft for control of weeds in forests, cropland or pasture prior to establishment of crops, new pastures or new forest plantings and for pre-harvest applications, up to a maximum rate of 2.7L/ha where specified by this label. DO NOT apply treatments by aircraft in situations where drift onto sensitive crops and pastures is likely to occur.
Apply treatments using boom or Micronair equipment using a spray volume not less than 20L/ha and using settings to produce a COARSE to VERY COARSE spray quality (as defined by ASAE S572). In multiple

product tank mixes a minimum water volume of 50L/ha is recommended and local advice should be sought. Correct mixing order is important. Swath width should be set to take into account aircraft type, wind conditions and target height. Swath width will need to be reduced to avoid striping under light wind conditions and/or application to tall, dense targets eg, preharvest application, treatments in heavy crop stubble. Thoroughly wash aircraft after each day of spraying to remove herbicide residues.
Application on hilly terrain
Increase water volume to 30-80L/ha and use a COARSE spray quality to optimise spray coverage. Air temperature and relative humidity DO NOT apply ROUNDUP PowerMAX by aircraft at temperatures above 30°C. Increase spray output to at least 30L/ha when temperatures rise above 25°C. Avoid application when relative humidity falls below 35%.

Avoid Drift
DO NOT apply treatments with spraying equipment or under weather conditions which are likely to cause spray drift onto nearby susceptible crops, pastures or other sensitive plants. Spray drift potential is lowest between wind speed of 3 to 15km per hour. However many factors including droplets size and equipment type determine drift potential at any given speed. Application should be avoided in wind speeds below 3km per hour (1.5 knots) due to variable wind direction and high inversion potential. DO NOT apply if wind is blowing towards a sensitive crop or situation and off-target damage can not be avoided.

Application Checklist
- Do not treat weeds under poor growing conditions due to moisture stress, waterlogging, severe frosting, insect damage etc. Reduced performance may also occur where weeds are covered with dust or silt.
- Do not add surfactants, adjuvants or other pesticides except as specifically directed on this label.
- Rain within 1 hour of application which causes run-off may require re-treatment. Rainfastness is reduced if weeds are not actively growing, under stress or conditions of low light intensity/darkness. The addition of Wetter TX may improve rainfastness on winter annual weeds.
- A withholding period for grazing is not required. However, it is recommended that grazing of treated plants be delayed to ensure herbicide uptake. Certain plants such as Soursob, Variegated thistle, Sorghum and Johnson grass may be naturally toxic to stock when eaten in large quantities under certain conditions. Where plants are known to be toxic, grazing should be delayed until complete desiccation of treated plants has occurred.
- Apply treatments to weeds which have at least one true leaf (broadleaf weeds) or two leaves (grasses) to provide an adequate surface area for herbicide uptake.
- If heavy grazing has occurred, allow regrowth to 6-8 cm before spraying and use the higher rates recommended.
- If glyphosate resistant weeds are known to be present, apply an additional method of control.

Restraints To ensure herbicide absorption, do NOT disturb weeds by cultivation, sowing or grazing for six hours following treatment of annual weeds and seven days for perennial weeds, unless specified otherwise in critical comments.

Resistance Warning Roundup PowerMAX is a member of the Glycines group of herbicides. Roundup PowerMAX has the inhibition of EPSP synthase mode of action. For weed resistance management Roundup PowerMAX is a Group M herbicide.
Some naturally occurring weed biotypes resistant to Roundup PowerMAX and other inhibitors of EPSP synthase mode of action herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Roundup PowerMAX or other inhibitors of EPSP synthase herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use, Monsanto accepts no liability for any losses that mayresult from the failure of Roundup PowerMAX to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment Do NOT contaminate dams, rivers or streams with the product or used container. Do NOT apply to weeds growing in or over water. Do NOT spray across open bodies of water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green bark or stems, canes, laterals, suckers, fresh wounds, exposed non-woody roots, flowers or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
DO NOT apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

Safety Directions Will irritate eyes and skin. Avoid contact with eyes and skin. If product in eyes, wash it out immediately with water. If product on skin, immediately wash area with soap and water. Wash hands after use. When opening the container, preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and a washable hat, elbow length PVC or nitrile gloves and face shield or goggles. When using controlled droplet applicator, wear protective waterproof clothing and impervious footwear. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

Storage (15L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
(20L)
Store in the closed, original container in a cool, well ventilated area. DO NOT store for prolonged periods in direct sunlight.

Disposal (15L)
Triple or preferably pressure rinse inner bladder before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean packaging to recycler or designated collection point. If not recycling, deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
(20L)
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, triple rinse, break, crush or puncture and deliver empty packaging for appropriate disposal at 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. Empty containers and product must not be burnt.

Refillable containers (60L, 110L, 500L-Bulk)

Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

Precautions **Precautions**

DO NOT use human flaggers/markers unless they are protected by engineering controls such as enclosed cabs.

Re-entry

DO NOT enter treated areas until spray has dried. When prior entry is necessary, wear personal protective equipment as specified in the Safety Directions.

Product details last updated on 12 May 2011

DISCLAIMER: This is not the ROUNDUP POWERMAX label. To view or print the label for this product, click the "MSDS/Label" tab at the top of this page. Always follow label instructions.

For specialist advice in an EMERGENCY only phone 1800 033 498, TOLL-FREE, ALL-HOURS, NATIONWIDE

Material Safety Data Sheet

Nufarm

Infosafe No™ 3NU2F Issue Date :April 2009 ISSUED by NUFARM

Product Name **Roundup PowerMAX**

Classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Roundup PowerMAX
Product Code	0574
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	Non selective herbicide for the control of many annual and perenial weeds as per the Directions for Use table on the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Classified as hazardous HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Classified as hazardous R36/38 Irritating to eyes and skin.
Safety Phrase(s)	S2 Keep out of reach of children.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the potassium salt)	1071-83-6	540 g/L
Surfactant		~10 %w/v
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

Back | Back To Search | Printable version

CREDIT

APVMA Code :52430

Active Constituent(s):
540g/L glyphosate(present as the isopropylamine and mono-ammonium salts)

GROUP M HERBICIDE

Registered For

Commercial Use ✓ Domestic Use ✓

Overview Credit provides knockdown control of an extensive range of annual, perennial and aquatic weeds . It's also suitable for control of unwanted trees, brush and woody weeds.
Credit uses the unique Dual Salt Technology to enhance solubility and uptake which means that weeds are controlled swiftly and surely even in tough conditions. Credit is highly loaded with glyphosate (dual salt form) and needs to be added to Bonus (the adjuvant component containing a proprietary blend of surfactants, acidifiers and water conditioners), at a ratio 1:1. Bonus has full aquatic registration, so the two-pack system is suitable for use around waterways without risk to aquatic fauna and amphibians (frogs etc).
The Credit+Bonus system gives the right proportion of salts necessary to achieve optimum performance from both an efficacy and physical compatibility perspective.

Recommended Uses Credit may be used before sowing broadacre crops and pastures, for sorghum regrowth, for ratoon control in sugar cane, and when direct drilling rice. Credit may also be used in pastures (including manipulation and topping). Credit is also suitable for general weed control in non-agricultural situations such as aquatic areas, roadsides, rights-of-way and industrial areas.
Refer to label for all instructions and directions for use.

Benefits
- Non-residual knockdown control of emerged weeds;
- Specific aquatic weeds section on label;
- Minimses effect of hard water;
- Extremely robust performance;
- Excellent tank mix compatibility.

Mode of Action Credit belongs to a group of herbicides called glycines. Credit acts on the enzyme pathway and works by inhibiting the production of three essential amino acids that are unique to plant life.

General Instructions - This product may be used prior to sowing any crop (edible or non-edible) but not prior to transplanting tomato seedlings.
- A Withholding Period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed for 6 hours after treatment of annual weeds, or 7 days if perennial weeds are present, to ensure absorption of this product.
- Certain plants (e.g. Soursob, Variegated Thistle) may be naturally toxic to stock. Where known toxic plants are present, do not allow stock to graze until complete browning of treated plants has occurred.
- Weeds should be actively growing at time of treatment.
- Do not treat weeds under poor growing or dormant conditions (such as occur in drought, water logging, disease, insect damage or following frosts) as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust or silt. Prior herbicide application may also induce stress in weeds.
- Rain within 2 hours of application which causes runoff may require retreatment.
Rainfastness is reduced if weeds are not actively growing under stress or in conditions of low light intensity/darkness.
- Delay treatment of plants wet with dew or rain, if water droplets run-off when plants are disturbed.
- Always add Nufarm Bonus Adjuvant/Surfactant. See Surfactant/Adjuvant Addition.
- Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
- This product is a non-volatile, water soluble liquid product with non-selective herbicidal activity
- This product is absorbed by plant foliage and green stems. It moves through the plant from the point of contact and into the root system.
- Visible effects on annual weeds take 3 - 7 days, but on perennial weeds may not be obvious for 2 - 3 weeks or even longer and may be delayed by cool or cloudy weather at and following treatment. Visible effects are gradual yellowing and wilting of the plant which advances to complete browning of above ground growth and deterioration of under-ground plant parts.
- This product will control emerged weeds only and is inactivated immediately in the soil and does not provide residual weed control.
- Apply treatments to weeds which have at least one true leaf (broadleaf weeds) or two leaves (grasses) to provide an adequate surface area for herbicide uptake.

Crop Establishment
This product is recommended for control of emerged weeds prior to crop establishment. Suitable cultivation and/or sowing operations are required to provide seedbed conditions satisfactory for crop germination and development. Spraying early to control young weeds will favour preparation of suitable seedbeds. On friable soils and where there is only light cover of young weeds, sowing may proceed satisfactorily from one day after spraying. In situations of heavy weed growth sowing should be delayed until weed decay and soil conditions allow formation of a satisfactory seedbed.
Incorporation of green or decaying vegetation and roots into the seedbed by cultivation or sowing may cause retarded crop emergence, particularly in cold and/or wet conditions. Vegetation may be reduced by grazing, and weed decay may be assisted by cultivation to leave trash on the surface. In marginal seedbed conditions take care to achieve correct seeding depth, and avoid use of pre-emergence herbicides where

label directions advise risk of retarded crop emergence

Mixing
This product mixes readily with water.
1. Fill the spray tank 1/2 full with clean water and start agitation.
2. Add Nufarm Bonus Adjuvant/Surfactant.
3. Add Credit and the remaining water. Mix thoroughly.
4. Always maintain adequate agitation during application and use promptly.
NOTE: Reduced results may occur if water containing soil is used, e.g. water from ponds and unlined ditches, or if hard water
containing calcium salts is used. Hard Water: Credit plus Bonus can be used with hard water at levels below 1000ppm. This combination will minimise the antagonism experienced when hard water containing calcium ions is used with glyphosate. (Note: Always add Bonus to the spray mix before Credit)
Ensure the spray tank is free of any residue of previous spray materials. Placing the filling hose below the surface of the spray solution will prevent excessive foaming. Removing hose from tank immediately after filling will prevent back siphoning into water source. Do not use mechanical agitators as these may cause excessive foaming.
Use spray solutions promptly and certainly within 5 days since a gradual loss of activity will occur. Spray solutions of this product should be mixed, stored and applied only in stainless steel, aluminium, brass, copper, fibreglass, plastic or plastic-lined containers. Do not mix, store or apply this product or spray solutions of this product in galvanized steel or unlined steel (except stainless steel) containers or spray tanks. This product, or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture that can flash or explode if ignited by flame, spark, welder's torch, lighted cigarette or other ignition source. Do not mix with other surfactants, agricultural chemicals, herbicide oils, or any other material except as directed on the label. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent corrosion.

Surfactant Addition
Always add Nufarm Bonus Adjuvant/Surfactant at the same volume per ha as Credit (ie. as a 1:1 ratio). For example:

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Tank Mixtures
This product may be tank mixed with the following herbicides, insecticides and additives, where recommended in the Directions For Use tables. Read and follow all label directions, restraints, plant back periods, withholding periods, regional use restrictions and safety directions for the tank mix products.
INSTRUCTIONS FOR THE MIXING OF ADDITIONAL PRODUCTS
1. Fill the spray tank 1/2 full with clean water and start agitation.
2. Add Nufarm Bonus Adjuvant/Surfactant.
3. Add the additional products to the spray tank. Mix thoroughly.
4. Add Credit and the remaining water. Mix thoroughly.
5. Always maintain adequate agitation during application and use the tank mix promptly.
TANK MIXTURES - INSECTICIDES
This product is compatible with the following insecticides: Chlorpyrifos, Dimethoate, Fenitrothion, Imidan, Le Mat/Comrad, Lorsban, Metasystox, Perfekthion, Rogor, Sumithion, Folithion 1000 and emulsifable concentrates of dimethoate and fenitrothion.Other insecticides have not been tested.
TANK MIXTURES - HERBICIDES
Atrazine flowable
Credit may be tank mixed with atrazine (Nu-trazine flowable and granular formulations) for knockdown and residual weed control. DO NOT use this tank mix on BARNYARD GRASS.
DO NOT apply the tank mix by air.
Triflur 480
Credit may be tank-mixed with Nufarm Triflur 480.
2,4-D Ester
Credit and 2,4-D Ester (Estercides) may be tank mixed for improved control of certain broadleaf weeds. Observe any regional use restrictions
Kamba 500 (Dicamba)
Credit and dicamba may be tank mixed for improved control of Sub-clover, Medics and White Clover.
Glean/ Lusta-
Credit and Glean/Lusta- tank mix will provide knockdown and residual weed control in fallow or in crop. Observe plant back periods for Glean/Siege.
Ally+/Associate
Credit may be tank mixed with Ally/Associate to provide knockdown weed control in fallows and prior to planting certain winter cereals. Observe Crop Safety, Spray Preparation & Crop Rotation Recommendations on Ally/Associate label.
Goal CT
The addition of Goal CT, 75mL/ha, to recommended rates of Credit prior to planting wheat or barley will improve knockdown and increase the speed at which treated weeds develop visible symptoms of phytotoxicity.
Simazine
Credit may be tank mixed with Simazine (flowable and granular formulations) for knockdown and residual, annual weed control prior to sowing lupins.
Credit can also be mixed with LVE MCPA, Lontrel/Archer-, Nufarm Diuron DF, Logran/Nugran, Amitrole T, Surpass 300.

Application
This product is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all

equipment after use by thoroughly washing with water.
Wiper Equipment
Wiper equipment (eg. ropewick, canvas, felt or carpet applicators) may be used to apply this product on to weeds growing in oilseed crops, sugarcane, cotton, seed and pod vegetables and tree and vine crops specified in this label, and in pasture and non-crop areas. Avoid contact with desirable vegetation. Operate wiper equipment a minimum of 10 cm above the crop or pasture. Weeds should be at least 15 cm above the crop or pasture at time of application. Speed of travel should be no greater than 8 km/h. Best results are achieved at lower speeds and where two applicators are made in opposite directions (double pass). Where weeds are of variable height, or occur in dense infestations or clumps, some plants may not be contacted by the herbicide solution. In these cases repeat treatment may be necessary. Mix only enough herbicide solution for immediate requirements. Do not store mixed solution for more than a few days. Flush out equipment with water after use.
Rate: Mix 1 Litre of this product with 3.5 Litres clean water to prepare 33% solution. This product may be used according to the above directions for suppression or control of many annual and perennial weeds. See Weeds Controlled tables for specific use recommendations.
Controlled Droplet Application Equipment (CDA): Use the following table as a guide for achieving correct application rates using the micron Herbi or similar equipment. For hand held equipment a walking speed of approximately 1m/sec. (4km/h) is recommended.
Do not add oils to Credit/Bonus/water mixture, otherwise difficulty in application and reduced weed control may occur.
CAUTION: CDA equipment produces a fine spray pattern which is not easily visible. Ensure that the spray pattern or drift dos not contact foliage or any other green tissue of desirable plants, since severe injury or destruction may result.
Boom equipment
Application of this product in low spray volumes (25 - 100L/ha) is recommended. Fan nozzle equipment is recommended, using pressures in the range 240 - 280 kPa. Boom height must be set to ensure double overlap of nozzle patterns at the top of the weed canopy.
Aerial equipment
Aerial equipment may be used to apply this product only in pasture or fallow situations prior to establishment of field crops, fodder crops, or new pasture, and for preharvest application to sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates of this product specified in this label up to a maximum limit of 2.7L/ha. For Micronair and boom equipment, apply in a minimum spray volume of at least 20L/ha. Droplets with an average size of (or VMD of) 250 - 350 micron diameter are recommended. Swath width should be 15 - 17m. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove herbicide residues.
Application on hilly terrain.
As spraying height may vary, to maximise target contact increase water volume to 30 - 80L/ha and increase droplet size to at least 300 micron VMD. Application under summer (hot) conditions.
High temperature and/or low relative humidity cause excessive evaporation of spray droplets which may reduce results. When temperature reaches 25°C, increase water volume to at least 30L/ha, and increase droplet size to at least 300 micron VMD. DO NOT apply this product by aircraft when temperature is above 30 C.
Avoid Drift: DO NOT use when breeze is blowing toward nearby desirable plants. DO NOT use with spraying equipment under meteorological conditions conducive to drift. Equipment settings which produce fine droplets (150 microns or less), winds over 8km/h, inversion conditions, still air and hot dry days all contribute

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Equipment Maintenance & Usage
Spray solutions of this product should be mixed, stored and applied only in stainless steel, aluminium, brass, copper, fibreglass or plastic or plastic-lined containers. This product or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly combustible gas mixture.
This gas mixture can flash or explode if ignited by open flame, spark, welder's torch or other ignition source. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent extensive corrosion.
Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove herbicide residues.

Restraints To ensure herbicide absorption DO NOT disturb treated weeds by cultivation, sowing or grazing for 6 hours after treatment of annual weeds and 7 days for perennial weeds.
DO NOT treat weeds under poor growing or dormant conditions such as drought, water logging, disease, insect damage or following frost.
DO NOT treat weeds heavily covered with dust or silt. Rainfall occurring up to 6 hours after application may reduce effectiveness. Heavy rainfall within 2 hours of application may wash the chemical off the foliage and a repeat treatment may be required.
DO NOT use prior to sowing tomatoes.

Resistance Warning Nufarm Credit Broadhectare Herbicide ("Credit") is a member of the Glycines group of herbicides. Credit has the inhibitors of EPSP synthase mode of action. For weed resistance management Credit is a Group M herbicide. Some naturally-occurring weed biotypes resistant to Credit and other Group M herbicides may exist through normal genetic variability in any weed population.
The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Credit or other Group M herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use Nufarm Australia Limited accepts no liability for any losses that may result from the failure of Credit to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment DO NOT contaminate dams, rivers or streams with the product or used container. When controlling weeds near water, refer to label directions to minimise the entry of spray into the water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.

Drift Warning: DO NOT apply under meteorological conditions or from spraying equipment which could be expected to cause spray to drift onto nearby susceptible plants, adjacent crops, crop lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin. When preparing product for use wear elbow-length PVC gloves and face shield or goggles. When using controlled droplet applicator wear protective waterproof clothing, and impervious footwear. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

Storage Store in the closed, original container in a dry, cool, well-ventilated area away from children, animals, food, feedstuffs, seed and fertilisers. Do not store for prolonged periods in direct sunlight.
Envirodrum 110L Mini Bulk Returnable Container
Store the original sealed Envirodrum in a cool, well ventilated area. Do not store for prolonged periods in direct sunlight. Do not tamper with the Micro Matic valve or the security seal. Do not contaminate the Envirodrum with water or any other foreign matter.

Disposal 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 bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.
Refillable containers:
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.
Envirodrum 110L Mini Bulk Returnable Container
After each use of the product, please ensure that the Micro Matic coupler, delivery system and hoses are disconnected, triple rinsed with clean water and drained accordingly. When the contents of the Envirodrum have been used, please return the empty Envirodrum to the point of purchase. The Envirodrum remains the property of Nufarm Australia Limited.

Tank Mix **BONUS**

Product details last updated on 12 Nov 2009

Product Name **CREDIT Broadhectare Herbicide**

Not classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	CREDIT Broadhectare Herbicide
Product Code	0556
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	For the control of annual, perennial and aquatic weeds in many situations, and for the control of annual and perennial weeds prior to sowing winter and summer crops, to control sorghum re-growth, for ratoon control in sugarcane and to assist in pasture renovation and management as per the Directions for Use Table on the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Not classified as hazardous NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Not classified as hazardous
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate present as the isopropylamine and mono-ammonium salts	1071-83-6	540 g/L
Amine salt of alkyl ethoxyphosphate blend		0-10 %
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes.

Material Safety Data Sheet

Infosafe No. 3NUEK Issue Date : February 2007 ISSUED by CRPCARE

Product Name : **GLADIATOR MAXIMUS Herbicide**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	GLADIATOR MAXIMUS Herbicide
Product Code	0579
Product Type	Group M Herbicide
Company Name	Crop Care Australasia Pty Ltd (ABN 53 061 362 347)
Address	Unit 15/16 Metroplex Avenue Murarrie Queensland 4172 Australia
Emergency Tel.	1800 033 498
Telephone/Fax Number	Tel: (07) 3909 2000 Fax: (07) 3909 2010
Recommended Use	A non-selective water soluble herbicide for the control of a wide range of annual and perennial weeds in a wide variety of situations as per the Directions for Use table on the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Safety Phrase(s)	S13 Keep away from food,drink and animal feeding stuffs. S2 Keep out of reach of children. S46 If swallowed, seek medical advice immediately and show this container or label.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the isopropylamine salt)	1071-83-6	510 g/L
Other ingredients (considered non-hazardous)		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre

Material Safety Data Sheet

	(Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material. Water, foam, carbon dioxide or dry chemical.
Hazards from Combustion Products	Keep upwind. This product, or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly flammable or explosive gas mixture. If involved in a major fire, could evolve oxides of nitrogen or phosphorus.
Special Protective Equipment for fire fighters	Breathable air apparatus may have to be worn if material is involved in fires especially in confined spaces.
Hazchem Code	None Allocated
Other Information	STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal	Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite). Collect in sealed open top containers for disposal. Final clean-up with degreasing agent or detergent is advised.
Environmental Precautions	Prevent from entering drains, waterways or sewers.

7. HANDLING AND STORAGE

Precautions for Safe Handling	For personal protective equipment (PPE) and hygiene advice, refer Section 8.
Conditions for Safe Storage	Store in the closed, original container in a dry, well ventilated area out of direct sunlight. Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.
Other Information	Always read the label and any attached leaflet before use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	No exposure standard has been established for this product.
Engineering Controls	No special ventilation required.
Personal Protective Equipment	When preparing product for use wear elbow-length PVC gloves and face shield or goggles. When using controlled droplet applicator, wear protective waterproof clothing and impervious footwear.
Hygiene Measures	After each day's use, wash contaminated clothing and safety equipment. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.
Requirements Concerning Special Training	NSW regulations require that people who use pesticides in their job or business must have training in the application of the materials. By 1st September, 2005 all users must have received such training.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Appearance	Clear green viscous liquid
Odour	Faint amine odour
Melting Point	N/A
Boiling Point	>100°C
Solubility in Water	Soluble in water.

Material Safety Data Sheet

Specific Gravity	1.224
Vapour Pressure	N/A
Vapour Density (Air=1)	N/A
Volatile Component	N/A
Flammability	Non combustible material.
Auto-Ignition Temperature	N/A
Flammable Limits - Lower	N/A
Explosion Properties	N/A

10. STABILITY AND REACTIVITY

Incompatible Materials	Corrosive to mild steel, galvanised steel and zinc. Non corrosive to stainless steel, polyethylene and plastics. Do not mix, store or apply the product or spray solutions of the product in galvanised steel or unlined steel (except stainless steel) containers or spray tanks.
Hazardous Reactions	Avoid contact of the concentrate with strong alkalis and alkaline materials such as lime. Such contact may release isopropylamine vapour with a strong fish like odour, which is an irritant to eyes. Isopropylamine is moderately toxic, LD50 (oral, rat) is 820 mg/kg and a TLV of 5 ppm (TWA) has been set.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. TOXICOLOGICAL INFORMATION

Toxicology Information	No harmful effects are expected if the precautions on the label and this MSDS are followed.
Inhalation	When applying the product as a spray avoid breathing in spray mist. May cause irritation to mucous membranes and respiratory tract.
Ingestion	The concentrate is of low toxicity if swallowed. Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury. Possible symptoms of exposure include: nausea, vomiting and gastrointestinal discomfort and diarrhoea. Ingestion of a large quantity of the undiluted product may result in hypotension and pulmonary oedema.
Skin	The concentrated product may cause slight irritation on contact. Prolonged contact is likely to result in irritation.
Eye	The concentrate may cause irritation of the eyes. Prolonged contact with the concentrate may cause damage to the eye.
Chronic Effects	No information available, no chronic effects expected.
Acute Toxicity - Oral	LD50 (rat) >5,000 mg/kg for a similar formulation
Acute Toxicity - Dermal	LD50 (rabbit) >5,000 mg/kg for a similar formulation
Eye Irritation	Slight irritant
Skin Irritation	Slight irritant.
Other Information	The Australian Acceptable Daily Intake (ADI) for glyphosate for a human is 0.3 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 30 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Comm. Dept. of Health and Ageing, 'ADI List', TGA, September 2006).

12. ECOLOGICAL INFORMATION

Material Safety Data Sheet

Persistence / Degradability	Adsorption studies indicate that glyphosate has very low mobility. Average field half life of glyphosate is 47 days.
Other Precautions	Do not spray in high winds. Do not contaminate dams, waterways or sewers with this product.
Environ. Protection	Glyphosate is a non-selective contact herbicide. Spray drift can cause damage.
Acute Toxicity - Fish	The following is data for a similar product. LC50 (96 hr) for rainbow trout is >100 mg/l.
Acute Toxicity - Daphnia	EC50 (48hr) is >100 mg/l.
Acute Toxicity - Other Organisms	The following data is for the active ingredient, glyphosate. Birds: Not toxic to birds. LD50 for bobwhite quail is >3,850 mg/kg Bees: Not toxic to bees. LD50 >100 µg/bee.

13. DISPOSAL CONSIDERATIONS

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
Container Disposal	Do not use this container for any other purpose. Triple rinse containers, add rinsate to the spray tank, then offer the container for recycling/reconditioning, or puncture top, sides and bottom and dispose of in landfill in accordance with local regulations. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. drumMUSTER is the national program for the collection and recycling of empty, cleaned, non returnable crop production and on-farm animal health chemical containers. If the label on your container carries the drumMuster symbol, triple rinse the container, ring your local Council, and offer the container for collection in the program. Returnable containers: empty contents fully into application equipment. Replace cap, close all valves and return to the point of supply for refill or storage. Empty containers and product should not be burnt.

14. TRANSPORT INFORMATION

Transport Information	It is good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilisers during transport.
U.N. Number	None Allocated
Proper Shipping Name	None Allocated
DG Class	None Allocated
Hazchem Code	None Allocated
Packing Group	None Allocated
Storage and Transport	Considered non dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. REGULATORY INFORMATION

Poisons Schedule	S5
Packaging & Labelling	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
AICS (Australia)	All of the components in this product are listed on the Australian Inventory of Chemical Substances.

16. OTHER INFORMATION

Contact Person/Point	Normal Hours:	Mr Volker Maier	Phone: (03) 9282 1000
	After Hours:	Shift Supervisor	Phone: 1800 033 498

Material Safety Data Sheet

Infosafe No.	3NUEK	Issue Date : February 2007	ISSUED by CRPCARE

Product Name : **GLADIATOR MAXIMUS Herbicide**

Revisions Highlighted

First Issue

...End Of MSDS...

Material Safety Data Sheet

Infosafe No™ 3NUIP Issue Date :April 2009 ISSUED by CRPCARE

Product Name **Gladiator OptiMAX Herbicide**

Classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Gladiator OptiMAX Herbicide
Product Code	0526
Product Type	Group M Herbicide
Company Name	Crop Care Australasia Pty Ltd (ABN 53 061 362 347)
Address	Unit 15/16 Metroplex Avenue Murarrie Queensland 4172 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 7 3909 2000 Fax: +61 7 3909 2010
Recommended Use	Non selective herbicide for the control of many annual and perenial weeds as per the Directions for Use table on the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Classified as hazardous HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Classified as hazardous R36/38 Irritating to eyes and skin.
Safety Phrase(s)	S13 Keep away from food, drink and animal feeding stuffs. S2 Keep out of reach of children. S25 Avoid contact with eyes. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/39 Wear suitable protective clothing and eye/face protection. S46 If swallowed, seek medical advice immediately and show this container or label.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the potassium salt)	1071-83-6	540 g/L
Surfactant		~10 %w/v
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at

	least 15 minutes. Seek medical advice immediately.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material. Water, foam, carbon dioxide or dry chemical.
Hazards from Combustion Products	Keep upwind. This product, or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly flammable or explosive gas mixture. If involved in a major fire, could evolve oxides of nitrogen or phosphorus.
Special Protective Equipment for fire fighters	Breathable air apparatus may have to be worn if material is involved in fires especially in confined spaces.
Other Information	STOP FIRE WATER FROM ENTERING DRAINS OR WATER BODIES.

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal	Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite). Collect in sealed open top containers for disposal. Final clean-up with degreasing agent or detergent is advised.
Environmental Precautions	Prevent from entering drains, waterways or sewers.

7. HANDLING AND STORAGE

Precautions for Safe Handling	For personal protective equipment (PPE) and hygiene advice, refer Section 8.
Conditions for Safe Storage	Store in the closed, original container in a dry, well ventilated area out of direct sunlight. Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.
Other Information	Always read the label and any attached leaflet before use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	No exposure standard has been established for this product.
Engineering Controls	No special ventilation required.
Personal Protective Equipment	When opening the container, preparing the spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and a washable hat, nitrile or elbow-length PVC gloves and face shield or goggles.
Hygiene Measures	After each day's use, wash contaminated clothing and safety equipment. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.
Requirements Concerning Special Training	NSW regulations require that people who use pesticides in their job or business must have training in the application of the materials.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Appearance	Blue viscous liquid
Odour	No odour
Melting Point	N/A
Boiling Point	>105°C

Material Safety Data Sheet

Product Name **Gladiator OptiMAX Herbicide**

Classified as hazardous

Solubility in Water	Soluble in water.
Specific Gravity	1.357 @ 20°C
Vapour Pressure	N/A
Vapour Density (Air=1)	N/A
Volatile Component	N/A
Flash Point	None
Flammability	Non combustible material.

10. STABILITY AND REACTIVITY

Incompatible Materials	Corrosive to mild steel, galvanised steel and zinc. Non corrosive to stainless steel, polyethylene and plastics. Do not mix, store or apply the product or spray solutions of the product in galvanised steel or unlined steel (except stainless steel) containers or spray tanks.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. TOXICOLOGICAL INFORMATION

Toxicology Information	No harmful effects are expected if the precautions on the label and this MSDS are followed.
Inhalation	When applying the product as a spray avoid breathing in spray mist. May cause irritation to mucous membranes and respiratory tract.
Ingestion	The concentrate is of low toxicity if swallowed. Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury. Possible symptoms of exposure include: nausea, vomiting and gastrointestinal discomfort and diarrhoea. Ingestion of a large quantity of the undiluted product may result in hypotension and pulmonary oedema.
Skin	The concentrated product may cause irritation on contact. Prolonged contact is likely to result in irritation.
Eye	The concentrate may cause irritation of the eyes. Prolonged contact with the concentrate may cause damage to the eye.
Chronic Effects	No information available, no chronic effects expected.
Acute Toxicity - Oral	LD50 (rat) >5,000 mg/kg for a similar formulation
Acute Toxicity - Dermal	LD50 (rabbits) >5,000 mg/kg for a similar formulation
Eye Irritation	Moderate eye irritant.
Skin Irritation	Moderate skin irritant.
Other Information	The Australian Acceptable Daily Intake (ADI) for glyphosate for a human is 0.3 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 30 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Comm. Dept. of Health and Ageing Office of Chemical Safety, 'ADI List', December 2008).

12. ECOLOGICAL INFORMATION

Persistence / Degradability	Adsorption studies indicate that glyphosate has very low mobility. Average field half life of glyphosate is 47 days.
Known Harmful Effects on the Environment	Harmful to fish and other aquatic organisms (mainly due to the surfactant).
Other Precautions	Do not spray in high winds. Do not contaminate dams, waterways or sewers with this product.
Environ. Protection	Glyphosate is a non-selective contact herbicide. Spray drift can cause damage, read the label for more information.

Material Safety Data Sheet

Product Name **Gladiator OptiMAX Herbicide**

Classified as hazardous

Acute Toxicity - Fish	The following is data for a similar product. LC50 (96hr) for bluegill sunfish is 5.8 - 14 mg/l.. LC50 (96hr) for rainbow trout is 8.2 - 26 mg/l. LC50 (96hr) for fathead minnow is 9.4 mg/l. TL50 (96hr) carp is 19.7 ppm
Acute Toxicity - Algae	EC50 (72hr) for algae is estimated at 0.62 mg/l.
Acute Toxicity - Other Organisms	The following data is for the active ingredient, glyphosate. Birds: Not toxic to birds. LD50 for bobwhite quail is >3,850 mg/kg Bees: Not toxic to bees. LD50 >100 µg/bee.

13. DISPOSAL CONSIDERATIONS

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
Container Disposal	Do not use this container for any other purpose. Triple rinse containers, add rinsate to the spray tank, then offer the container for recycling/reconditioning, or puncture top, sides and bottom and dispose of in landfill in accordance with local regulations. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. drumMUSTER is the national program for the collection and recycling of empty, cleaned, non returnable crop production and on-farm animal health chemical containers. If the label on your container carries the drumMuster symbol, triple rinse the container, ring your local Council, and offer the container for collection in the program. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, puncture or shred and bury containers in local authority landfill. Returnable containers: empty contents fully into application equipment. Replace cap, close all valves and return to the point of supply for refill or storage. Empty containers and product should not be burnt.

14. TRANSPORT INFORMATION

Transport Information	It is good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilisers during transport.
Storage and Transport	Considered non dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. REGULATORY INFORMATION

Poisons Schedule	S5
Packaging & Labelling	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
Hazard Category	Irritant
AICS (Australia)	All of the components in this product are listed on the Australian Inventory of Chemical Substances.

16. OTHER INFORMATION

Date of preparation or last revision of MSDS	Revised 06/04/2009
Contact Person/Point	Normal Hours: Mr Volker Maier Phone: (03) 9282 1000 After Hours: Shift Supervisor Phone: 1800 033 498
Revisions Highlighted	The MSDS was reviewed. Changes made to sections: 2 - Risk phrases; 11 - Skin and eye information; 13 - Container disposal; 14 - Transport information.

Material Safety Data Sheet

Infosafe No™ 3NUIP Issue Date :April 2009 ISSUED by CRPCARE

Product Name **Gladiator OptiMAX Herbicide**

Classified as hazardous

...End Of MSDS...

Material Safety Data Sheet

Infosafe No. 3NU3B Issue Date : February 2007 ISSUED by CRPCARE

Product Name : **GLADIATOR Herbicide**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	GLADIATOR Herbicide
Product Code	0576
Product Type	Group M Herbicide
Company Name	Crop Care Australasia Pty Ltd (ABN 53 061 362 347)
Address	Unit 15/16 Metroplex Avenue Murarrie Queensland 4172 Australia
Emergency Tel.	1800 033 498
Telephone/Fax Number	Tel: (07) 3909 2000 Fax: (07) 3909 2010
Recommended Use	A non-selective herbicide that will kill most emerged weeds and plants in situations as indicated in the directions for use table.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	R36 Irritating to eyes.
Safety Phrase(s)	S13 Keep away from food,drink and animal feeding stuffs. S2 Keep out of reach of children. S25 Avoid contact with eyes. S39 Wear eye/face protection.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the isopropylamine salt)	1071-83-6	450 g/L
Surfactant		~10 %w/v
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre

Material Safety Data Sheet

	(Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material. Water, foam, carbon dioxide or dry chemical.
Hazards from Combustion Products	Keep upwind. This product, or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly flammable or explosive gas mixture. If involved in a major fire, could evolve oxides of nitrogen or phosphorus.
Special Protective Equipment for fire fighters	Breathable air apparatus may have to be worn if material is involved in fires especially in confined spaces.
Hazchem Code	None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spills & Disposal	Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite). Collect in sealed open top containers for disposal. Final clean-up with degreasing agent or detergent is advised.
Environmental Precautions	Prevent from entering drains, waterways or sewers.

7. HANDLING AND STORAGE

Precautions for Safe Handling	For personal protective equipment (PPE) and hygiene advice, refer Section 8.
Conditions for Safe Storage	Store in the closed, original container in a dry, well ventilated area out of direct sunlight. Keep container tightly sealed and do not store with seed, fertilisers or foodstuffs.
Other Information	Always read the label and any attached leaflet before use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	No exposure standard has been established for this product.
Engineering Controls	No special ventilation required.
Personal Protective Equipment	When preparing product for use wear elbow-length PVC gloves and face shield or goggles. When using controlled droplet applicator, wear protective waterproof clothing and impervious footwear.
Hygiene Measures	After each day's use, wash contaminated clothing and safety equipment. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Appearance	Clear blue viscous liquid
Odour	Faint amine odour
Melting Point	N/A
Boiling Point	>100°C
Solubility in Water	Soluble in water.
Specific Gravity	1.20
Vapour Pressure	N/A

Material Safety Data Sheet

Vapour Density (Air=1)	N/A
Volatile Component	N/A
Flammability	Non combustible material.
Auto-Ignition Temperature	N/A
Flammable Limits - Lower	N/A
Explosion Properties	N/A

10. STABILITY AND REACTIVITY

Incompatible Materials	Corrosive to mild steel, galvanised steel and zinc. Non corrosive to stainless steel, polyethylene and plastics. Do not mix, store or apply the product or spray solutions of the product in galvanised steel or unlined steel (except stainless steel) containers or spray tanks.
Hazardous Reactions	Avoid contact of the concentrate with strong alkalis and alkaline materials such as lime. Such contact may release isopropylamine vapour with a strong fish like odour, which is an irritant to eyes. Isopropylamine is moderately toxic, LD50 (oral, rat) is 820 mg/kg and a TLV of 5 ppm (TWA) has been set.
Hazardous Polymerization	Hazardous polymerisation is not possible.

11. TOXICOLOGICAL INFORMATION

Toxicology Information	No harmful effects are expected if the precautions on the label and this MSDS are followed.
Inhalation	When applying the product as a spray avoid breathing in spray mist. May cause irritation to mucous membranes and respiratory tract.
Ingestion	The concentrate is of low toxicity if swallowed. Amounts swallowed incidental to normal handling procedures and use are not expected to cause injury. Possible symptoms of exposure include: nausea, vomiting and gastrointestinal discomfort and diarrhoea. Ingestion of a large quantity of the undiluted product may result in hypotension and pulmonary oedema.
Skin	The concentrated product may cause slight irritation on contact. Prolonged contact is likely to result in irritation.
Eye	The concentrate may cause irritation of the eyes. Prolonged contact with the concentrate may cause damage to the eye.
Chronic Effects	No information available, no chronic effects expected.
Acute Toxicity - Oral	LD50 (rat) >5000 mg/kg for a similar formulation
Acute Toxicity - Dermal	LD50 (rabbit) >5000 mg/kg for a similar formulation
Eye Irritation	Slight irritant
Skin Irritation	Slight irritant.
Other Information	The Australian Acceptable Daily Intake (ADI) for glyphosate for a human is 0.3 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 30 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Comm. Dept. of Health and Ageing, 'ADI List', TGA, September 2006).

12. ECOLOGICAL INFORMATION

Persistence / Degradability	Adsorption studies indicate that glyphosate has very low mobility. Average field half life of glyphosate is 47 days.

Material Safety Data Sheet

Known Harmful Effects on the Environment	Harmful to fish and other aquatic organisms (mainly due to the surfactant).
Other Precautions	Do not spray in high winds. Do not contaminate dams, waterways or sewers with this product.
Environ. Protection	Glyphosate is a non-selective contact herbicide. Spray drift can cause damage.
Acute Toxicity - Fish	The following is data for a similar product. LC50 (96 hr) for bluegill sunfish is 5.8 - 14 mg/l. LC50 (96 hr) for rainbow trout is 8.2 - 26 mg/l. LC50 (96 hr) for fathead minnow is 9.4 mg/l. TL50 (96hr) carp is 19.7 ppm
Acute Toxicity - Other Organisms	The following data is for the active ingredient, glyphosate. Birds: Not toxic to birds. LD50 for bobwhite quail is >3850 mg/kg Bees: Not toxic to bees. LD50 >100 ug/bee.

13. DISPOSAL CONSIDERATIONS

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemClear®).
Container Disposal	Do not use this container for any other purpose. Triple rinse containers, add rinsate to the spray tank, then offer the container for recycling/reconditioning, or puncture top, sides and bottom and dispose of in landfill in accordance with local regulations. If no landfill is available, bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. drumMUSTER is the national program for the collection and recycling of empty, cleaned, non returnable crop production and on-farm animal health chemical containers. If the label on your container carries the drumMuster symbol, triple rinse the container, ring your local Council, and offer the container for collection in the program. Returnable containers: empty contents fully into application equipment. Replace cap, close all valves and return to the point of supply for refill or storage. Empty containers and product should not be burnt.

14. TRANSPORT INFORMATION

Transport Information	It is good practice to separate this product from food, food related materials, animal feedstuffs, seed or fertilisers during transport.
U.N. Number	None Allocated
Proper Shipping Name	None Allocated
DG Class	None Allocated
Hazchem Code	None Allocated
Packing Group	None Allocated
Storage and Transport	Considered non dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. REGULATORY INFORMATION

Poisons Schedule	S5
Packaging & Labelling	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
Hazard Category	Irritant
AICS (Australia)	All of the components in this product are listed on the Australian Inventory of Chemical Substances.

16. OTHER INFORMATION

Material Safety Data Sheet

Infosafe No.	3NU3B	Issue Date : February 2007	ISSUED by CRPCARE

Product Name : **GLADIATOR Herbicide**

Contact Person/Point	Normal Hours:	Mr Volker Maier	Phone: (03) 9282 1000
	After Hours:	Shift Supervisor	Phone: 1800 033 498
Revisions Highlighted	The MSDS was reviewed. Minor changes were made to the information.		

...End Of MSDS...

Product Details

Back | Back To Search | Printable version

WEEDMASTER DUO

APVMA Code :53576

Active Constituent(s):

360g/L glyphosate(present as the isopropylamine and mono-ammonium salts)

GROUP M HERBICIDE

Registered For

Commercial Use ✓ Domestic Use ✓

Overview Weedmaster Duo is an innovative Dual Salt Technology® glyphosate formulation with environmentally acceptable built-in surfactant. Developed for enhanced penetration, better compatibility with certain other herbicides, and approved for aquatic weed control in areas where water may pond or flow (river banks, lakes, streams etc).

Recommended Uses For control of an extensive range of annual, perennial, aquatic, brush and woody weed, unwanted trees, in many situations including non-cultivated situations, non-agricultural areas, pome and citrus orchards, vineyards, forests, tree and vine crops and in **TASMANIA ONLY** post-plant pre-emerged onions. Also for use in peanuts, cotton, soybeans and sugar cane using selective application equipment.
Refer to label for all instructions and directions for use.

Benefits
- Non-residual knockdown control of emerged weeds;
- Effective against almost all weed species;
- Requires no added surfactant;
- For use in aquatic and sensitive environmental areas;
- Specific aquatic weeds section on label;
- Apply with a wide range of equipment;
- Very low toxicity to humans and animals.

Mode of Action Weedmaster Duo belongs to a group of herbicides called glycines. Weedmaster Duo acts on the enzyme pathway and works by inhibiting the production of three essential amino acids that are unique to plant life.

General Instructions This product is a non-volatile, water soluble liquid with non-selective herbicidal activity against many annual and perennial broadleaf weeds and grasses. This product may be used for weed control in agricultural land prior to sowing any edible or non-edible crop, but not prior to transplanting tomato seedlings. This product is absorbed by plant foliage and green stems.
It is inactivated immediately in the soil and does not provide residual weed control. This product moves through the plant from the point of contact and into the root system.
Visible effects on annual weeds take 3-7 days, but on perennial weeds may not be obvious for 2-3 weeks or longer in some cases. Visible effects of control may be delayed by cool or cloudy weather at and following treatment. Visible effects are a gradual yellowing and wilting of the plant which advances to complete browning of above ground growth and deterioration of underground plant parts.
Delay application until vegetation has emerged to the stages described in the "Weeds Controlled" tables. Unemerged parts arising from attached underground rhizomes or root stocks of perennials will not be affected by spray and will continue to grow. For this reason best control of most perennial weeds is obtained at late growth stages approaching maturity.

Crop Establishment
This product is recommended for control of emerged weeds prior to crop establishment. Suitable cultivation and/or sowing operations are required to provide seedbed conditions satisfactory for crop germination and development.
Spraying early to control young weeds will favour preparation of suitable seedbeds. On friable soils and where there is only light cover of young weeds, sowing may proceed satisfactorily from one day after spraying.
In situations of heavy weed growth sowing should be delayed until weed decay and soil conditions allow formation of a satisfactory seedbed. Incorporation of green or decaying vegetation and roots into seedbed by cultivation or sowing may cause retarded crop emergence, particularly in cold and/or wet conditions. Vegetation may be reduced by grazing, and weed decay may be assisted by cultivation to leave trash on the surface. In marginal seedbed conditions take care to achieve correct seeding depth, and avoid use of pre-emergence herbicides where label directions advise risk of retarded crop emergence.

Mixing
This product mixes readily with water.
Reduced results may occur if water containing soil is used, eg. water from ponds and unlined ditches, or if hard water containing calcium salts is used.
Ensure the spray tank is free of any residue of previous spray materials.
Fill the spray tank with one half the required amount of clean water and add the proper amount of this product. Mix well before adding the remaining portion of water. Placing the filling hose below the surface of the spray solution will prevent excessive foaming. Removing hose from tank immediately after filling will prevent back siphoning into water source. Do not use mechanical agitators as these may cause excessive foaming.

Tank Mixing Instructions
This product may be tank-mixed with the following herbicides, insecticides and additives where recommended. Read and follow all label directions, restraints, plant-back periods, withholding periods and safety directions for the tank mix products.
Mixing Instructions For All Tank Mixtures

1.Fill the spray tank 1/3 to 1/2 full with clean water and start agitation.
2.Add recommended herbicide/ insecticide/ additive to the spray tank and mix thoroughly.
3.Where ammonium sulphate is recommended, add Spraymate's Liase at a rate of 2L/100L spray solution and mix thoroughly.
4.Add Weedmaster's Duo and the remaining water. Mix thoroughly.
5.Add surfactant, if required, near the end of the filling process to minimise foaming.
6.Always maintain adequate agitation during application and use the tank mix promptly.

Tank Mixtures
TANK MIXTURES - HERBICIDES
Nutrazine 600* and 900DF (DO NOT apply the tank mix for Barnyard grass control), Estercide's Xtra 680, Kamba's 500 (dicamba), Glean1/ Lusta's, Simazine flowable* and 900DF Oust1, Yield1, Rifle's 330, Stomp's 330(pendimethalin), Surpass's, Tillmaster, Ally1/ Associate's, Logran1/ Nugran, Flandor1 500, LVE MCPA and Striker.
The addition of Striker at 75mL/ha to recommended rates of Weedmaster's Duo prior to planting wheat or barley will improve knockdown and increase the speed at which treated weeds develop visible signs of phytotoxicity.
Mixture requires a specific compatibility agent. Seek advice.
*Add ammonium sulphate as per directions below.
TANK MIXTURE - ADDITIVES
Ammonium Sulphate. Add Spraymate's Liase to water first at a rate of 2L/100L spray solution.
(DO NOT apply the tank mix for Barnyard grass control).
The use of Liase with Weedmaster's Duo, when used to control ANNUAL weeds, MAY improve the performance of Weedmaster's Duo under adverse environmental conditions such as cool, cloudy weather, and assist in minimising the antagonism in tank mixes of Weedmaster's Duo and flowable triazine herbicides. Spraymate's Liase may be corrosive to metal parts of the sprayer. Thoroughly flush tanks, pumps and nozzles with water after use. Pulse's Penetrant.
RATE: 200mL/100L spray solution.
Add when treating Bracken (boom application), Gorse, Eucalypt suckers and Lantana. TANK MIXTURES - INSECTICIDES
This product is compatible with the following insecticides: Dimethoate, Fenitrothion 1000, Imidan1, Le-Mat1/Comrade's, Lorsban1 500, Metasystox1, Perfekthion1 EC400, ULV, and emulsifiable concentrates of Dimethoate1 and Fenitrothion. Other insecticides have not been tested.

Application
This product is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all equipment after use by thoroughly washing with water.
Boom Equipment
Use recommended rates of this product in 75 to 200 litres of clean water per hectare. When using this product at 500mL-1.5L/ha (eg. in conservation tillage) spray volumes in the range 25-100L/ha are preferred. Fan nozzle equipment is recommended, using pressures in the range 240-280kPa. Boom height must be set to ensure double overlap of nozzle patterns at the top of the weed canopy.
High Volume Application (eg. Knapsack and Handgun Equipment)
Adjust equipment to achieve an even spray pattern; for handgun equipment a D6 spray tip (Spraying Systems Australia P/L) or equivalent, and an operating pressure of 400-700kPa are recommended. Apply to ensure complete and uniform wetting of all foliage.
Low Volume Application (eg. Gas Gun or Splatter Gun)
Apply as an even spray to cover all foliage. Refer to Weeds Controlled for the dilution and volume of mixture to be applied. The dilution is specific as "Low volume mixture, Product:Water". For example, a 1:9 mixture equals one part product plus 9 parts water.
Wiper Equipment
Wiper equipment (eg. ropewick, canvas, felt or carpet applicators) may be used to apply this product on to weeds growing in oilseed crops, sugarcane, cotton, seed and pod vegetables and tree and vine crops specified in this label, and in pasture and non-crop areas. Avoid contact with desirable vegetation.
Operate wiper equipment a minimum of 10cm above the crop or pasture. Weeds should be at least 15cm above the crop or pasture at time of application. Speed of travel should be no greater than 8km/h. Best results are achieved at lower speeds and where two applications are made in opposite directions (double pass). Where weeds are of variable height, or occur in dense infestations or clumps, some plants may not be contacted by the herbicide solution. In these cases repeat treatment may be necessary. Mix only enough herbicide solution for immediate requirements. Do not store mixed solution for more than a few days. Flush out equipment with water after use.
RATE: Mix 1 litre of this product with 2 litres clean water to prepare 33% solution. This product may be used according to the above directions for suppression or control of many annual and perennial weeds. See Weeds Controlled tables for specific use recommendations.
Controlled Droplet Application Equipment (CDA)
Use the following table as a guide for achieving correct application rates using the micron Herbi or similar equipment. See Weeds Controlled tables for specific rates and use recommendations.
For hand held equipment a walking speed of approximately 1m/sec. (4km/h) is recommended.
Trade Mark of Micron Sprayers Ltd, UK.
Do not add oils to Weedmaster's Duo/ water mixture, otherwise difficulty in application and reduced weed control may occur.
CAUTION: CDA equipment produces a fine spray pattern which is not easily visible. Ensure that the spray pattern or drift does not contact foliage or any other green tissue of desirable plants, since severe injury or destruction may result.

View Document

Aerial Application
Aerial equipment may be used to apply this product only in pasture or fallow situations prior to

establishment of field crops, fodder crops, or new pasture, and for pre-harvest application to sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates specified in this label up to a maximum limit of 4L/ha. When applying this product by helicopter in combination with Associates for control of Blackberry in forestry and other specific situations, the higher rate of Weedmasters Duo may be applied. Please refer to the Associates label for specific recommendations. For Micronair and boom equipment, apply in a minimum spray volume of at least 20L/ha. Droplets with an average size (or VMD) of 250-350 micron diameter are recommended. Swath width should be 15-17m.
Thoroughly wash aircraft especially landing gear after each day of spraying to remove herbicide residues.
APPLICATION ON HILLY TERRAIN: As spraying height may vary, to maximise target contact, increase water volume to 30-80L/ha and increase droplet size to at least 300 micron VMD.
APPLICATION UNDER SUMMER CONDITIONS:
High temperatures and/or low relative humidity cause excessive evaporation of spray droplets which may reduce results. When temperature reaches 25°C,increase water volume by at least 30L/ha, & increase droplet size to at least 300 micron VMD. DO NOT apply this product by aircraft when temperature is above 30° C. Avoid Drift: DO NOT use when breeze is blowing toward nearby desirable plants. DO NOT use with spraying equipment or under meteorological conditions which could be expected to cause spray to drift onto nearby susceptible plants, adjacent crops, crop lands or pastures. Equipment settings which produce fine droplets (150 microns or less), winds over 8km/h, inversion conditions, still air and hot dry days all contribute to drift.

Application Checklist
Do not treat weeds under poor growing or dormant conditions (such as occur in drought, waterlogging, disease, insect damage or following frosts) as reduced weed control may result. Reduced efficacy may also occur when treating weeds heavily covered with dust or silt. Do not add additional surfactant, or mix with any other agricultural chemicals, herbicide oils, or any other materials except as specifically directed on this label. Rainfall occurring up to 6 hours after application may reduce effectiveness. Heavy rainfall within 2 hours after application may wash the chemical off the foliage & a repeat treatment may be required. Do not disturb treated weeds by cultivation, sowing or grazing for one day after treatment of annual weeds and 7 days for perennial weeds, to ensure herbicide absorption. A Withholding Period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed (as recommended above) to ensure herbicide absorption. Certain plants such as, Soursob, St John's Wort & Bracken, may be naturally toxic to stock. Where known toxic plants are present, grazing should be delayed until complete browning of treated plants has occurred. The addition of non-ionic surfactant is recommended at a rate of 100mL of a 600g/l product (or equivalent) per 100L spray solution. Delay treatment of plants wet with dew or rain if water droplets run-off when plants are disturbed.

Equipment Maintenance & Usage
Spray solutions of this product should be mixed, stored & applied only in stainless steel, aluminium, brass, copper, fibreglass or plastic or plastic-lined containers. This product, or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture can flash or explode if ignited by open flame spark, welder's torch or other ignition source. Spray tank, pumps, lines & nozzles should be thoroughly rinsed with clean water following application to prevent extensive corrosion. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove herbicide residues.

Avoid Drift
DO NOT use when breeze is blowing toward nearby desirable plants. DO NOT use with spraying equipment or under meteorological conditions which could be expected to cause spray to drift onto nearby susceptible plants, adjacent crops, crop lands or pastures. Equipment settings which produce fine droplets (150 microns or less), winds over 8km/h, inversion conditions, still air and hot dry days all contribute to drift.

Restraints DO NOT disturb treated weeds by cultivation, sowing or grazing for 1 day after treatment of annual weeds and 7 days for perennial weeds.
DO NOT treat weeds under poor growing or dormant conditions such as occur in drought, water logging, disease, insect damage or following frost. Reduced control may also occur when treating weeds heavily covered with dust or silt. Rainfall occurring up to 6 hours after application may reduce effectiveness. Heavy rainfall within 2 hours of application may wash the chemical off the foliage and a repeat treatment may be required.
DO NOT use prior to sowing tomatoes.

Resistance Warning Nufarm Weedmasters Duo Dual Salt Technology Herbicide ("Weedmasters Duo") is a member of the Glycines group of herbicides. Weedmasters® Duo has the inhibitors of EPSP synthase mode of action. For weed resistance management Weedmasters Duo is a Group M herbicide.
Some naturally-occurring weed biotypes resistant to Weedmasters Duo and other inhibitors of EPSP synthase herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Weedmasters Duo or other inhibitors of EPSP synthase herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use, Nufarm Australia Limited accepts no liability for any losses that may result from the failure of Weedmasters Duo to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment DO NOT contaminate streams, rivers or waterways with the chemical or used containers. When controlling weeds near water, refer to label directions to minimise the entry of spray into the water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
Drift Warning:
DO NOT apply under meteorological conditions or from spraying equipment which could be expected to cause spray to drift onto nearby susceptible plants, adjacent crops, crop lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin. When preparing product for use wear elbow-length PVC gloves and face shield or goggles. When using controlled droplet applicator wear protective waterproof clothing and impervious footwear. After use and before eating, drinking or smoking

wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

Storage (15L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
(1L, 5L, 10L, 20L, 200L)
Store in the closed, original container in a cool, well-ventilated area. DO NOT store for prolonged periods in direct sunlight.
Envirodrum 110L Mini Bulk Returnable Container
Store the original sealed Envirodrum in a cool, well-ventilated area. DO NOT store for prolonged periods in direct sunlight. DO NOT tamper with the Micro Matic valve or the security seal. DO NOT contaminate the Envirodrum with water or any other foreign matter.
Refillable Container (400L, 800L 1000L)
Store in the closed, original container in a dry, cool, well-ventilated area. DO NOT store for prolonged periods in direct sunlight.

Disposal (15L)
Triple or preferably pressure rinse inner bladder before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean packaging to recycler or designated collection point. If not recycling, deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
(1L, 5L, 10L, 20L, 200L)
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, deliver empty containers to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
Envirodrum 110L Mini Bulk Returnable Container
After each use of the product, please ensure that the Micro Matic coupler, delivery system and hoses are disconnected, triple rinsed with clean water and drained accordingly.
When the contents of the Envirodrum have been used, please return the empty Envirodrum to the point of purchase. The Envirodrum remains the property of Nufarm Australia Limited.
Refillable Container (400L, 800L 1000L)
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage

Product details last updated on 19 May 2011

DISCLAIMER: This is not the WEEDMASTER DUO label. To view or print the label for this product, click the "MSDS/Label" tab at the top of this page. Always follow label instructions.

For specialist advice in an EMERGENCY only phone 1800 033 498, TOLL-FREE, ALL-HOURS, NATIONWIDE

Product Name **WEEDMASTER DUO® dual salt® Technology Herbicide**

Not classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	WEEDMASTER DUO® dual salt® Technology Herbicide
Product Code	0533
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	For the control of annual and perenial and aquatic weeds in many situations as per the Directions for Use table on the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Not classified as hazardous NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Not classified as hazardous
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate present as the isopropylamine and monoammonium salts	1071-83-6	360 g/L
Alkyl polyglucoside surfactants		10-20 %
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered. Obtain medical advice.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Rinse mouth thoroughly with water.
Skin	Remove contaminated clothing and launder before re-use. Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.

Product Details

Back | Back To Search | Printable version

ROUNDUP HERBICIDE

APVMA Code :31393

Active Constituent(s):
360g/L glyphosate(present as isopropylamine salt)

GROUP M HERBICIDE

Registered For

Commercial Use ✓ Domestic Use ✓

Overview Roundup controls virtually every economically significant weed in the world. The translocating action of Roundup (right down to the roots) makes it ideal for control of an extensive range of unwanted grasses, broadleaf weeds, brush weeds, woody weeds and unwanted trees. Roundup has no harmful effect on the environment. It binds tightly to soil and can be applied safely over root zones of trees. It is broken down into naturally occurring compounds (like carbon dioxide) by microorganisms in the soil. Roundup has very low toxicity to humans and animals. It's designed to stop certain amino acids unique to plants (essential for plant growth) from forming. Roundup presents minimal hazard to spray operators.

Recommended Uses Roundup may be used in almost every situation such as domestic areas (home gardens), dry drains and channels, dry margins of dams, lakes and stream situations, commercial, industrial and public service areas, agricultural buildings and other farm situations. In forests; peanuts, cotton, soybeans, sugarcane, navy beans and chickpeas (QLD & NSW only - applications using selective equipment). In tree and vine crops including avocado, banana, blueberries, citrus fruit, custard apples, duboisia, figs (dessert), guava, kiwifruit, litchi, mango, monstera (fruit), nuts (including almond, pecan, macadamia, pistachio and walnut), olives, pawpaw, persimmons, pome fruit, raspberries, stone fruit, tea and vineyards. For control of sugar cane ratoon regrowth. For pasture management. For post plant, pre emergence treatments in onions (TAS only). For pre-harvest cotton (NSW and QLD only - for control of bathurst burr, nogoora burr, winter annual weeds including sowthistle, milk thistle and seasonal suppression of nutgrass).
Refer to label for all instructions and directions for use.

Benefits
- Non-residual knockdown control of emerged weeds;
- Translocated throughout foliage and kills plant roots;
- Effective against almost all weed species;
- Rapidly breaks down to natural products in the environment;
- Very low toxicity to humans and animals;
- Apply with a wide range of equipment;
- Compatible with certain residual herbicides for extended control of annual weeds.

Mode of Action Roundup belongs to a group of herbicides called glycines. Roundup acts on the enzyme pathway and works by inhibiting the production of three essential amino acids that are unique to plant life.

Chemical Group glycine

General Instructions Roundup is a non-volatile, water soluble liquid product with non-selective herbicidal activity against many annual and perennial broadleaf weeds and grasses.
Roundup may be used for weed control in agricultural land prior to sowing any edible or non-edible crop, but not prior to transplanting tomato seedlings.
Roundup is absorbed by plant foliage and green stems. It is inactivated immediately in the soil and does not provide residual weed control. Roundup moves through the plant from the point of contact to and into the root system. Visible effects on annual weeds take 3-7 days but on perennial weeds may be not be obvious for 2-3 weeks or longer in some cases. Visible effects of control may be delayed by cool or cloudy weather at and following treatment.
Visible effects are a gradual yellowing and wilting of the plant which advances to complete browning of above ground growth and deterioration of underground plant parts. Delay application until vegetation has emerged to the stages described in the Weeds Controlled tables. Unemerged parts rising from unattached underground rhizomes or rootstock of perennials will not be affected by spray and will continue to grow. For this reason best control of most perennial weeds is obtained at late growth stages approaching maturity.

Mixing
Roundup mixes readily with water. Note: Reduced results may occur if water containing soil is used, eg. water from ponds and unlined ditches, or if hard water containing calcium salts is used.
Do not mix, store or apply this product or spray solutions of this product in galvanised steel or unlined steel containers or spray tanks, since a highly flammable gas mixture may be formed.
Use stainless steel, aluminium, brass, copper, fibreglass, plastic or plastic-lined containers or spray tanks. Ensure the spray tank is free of any residue or previous spray materials.
Use spray solutions promptly and certainly within 5 days, since a gradual loss of activity will occur. Fill the spray tank with one half the required amount of clean water and add the proper amount of Roundup. Mix well before adding the remaining portion of water. Placing the filling hose below the surface of the spray solution will prevent excessive foaming. Removing hose from tank immediately after filling will prevent back siphoning into water source. Do not use mechanical agitators as these may cause excessive foaming. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent corrosion.

Tank Mixtures/Compatibility
Roundup may be tank-mixed with the following herbicides, insecticides and additives.

Read and follow all label directions, restraints, plant-back periods, withholding periods, regional use restrictions and safety directions for the tank mix products.
Mixing Instructions for All Tank Mixtures
1. Fill the spray tank 1/3 to 1/2 full will clean water and start agitation.
2. Where crystalline ammonium sulphate is recommended, wash 2% w/v (2 kg/100 L spray solution) through a top mesh-screen into the tank and mix thoroughly.
3. Add recommended herbicide/insecticide/additive to the spray tank and mix thoroughly.
4. Add Roundup and the remaining water Mix thoroughly.
5. Add surfactant, if required, near the end of the filling process to minimise foaming.
6. Always maintain adequate agitation during application and use the tank mix promptly.
Tank Mixtures - Herbicides
Atrazine flowable (Agricultural uses only DO NOT apply the tank mix for Barnyard grass control.), 2, 4-D ester, dicamba, Glean, Simazine flowable, Oust , Yield, Stomp 330E, Tillmaster CT, Ally, Logran 750G, Flandor 500, LVE MCPA, and Striker.
The addition of Striker at 75 mL/ha to recommended rates of Roundup prior to planting wheat or barley will improve knockdown and increase the speed at which treated weeds develop visible signs of phytotoxicity.
Add crystalline ammonium sulphate as per directions below.
Tank Mixtures - Additives
Crystalline Ammonium Sulphate
RATE: 2% w/v (2 kg/100 L spray solution). (DO NOT apply the tank mix for Barnyard grass control). The addition of crystalline ammonium sulphate to Roundup, when used to control ANNUAL weeds, MAY improve the performance of Roundup under adverse environmental conditions such as cool, cloudy weather, and assist in minimising the antagonism in tank mixes of Roundup and flowable triazine herbicides. Use only crystalline ammonium sulphate, NOT prilled or granulated forms. To test quality dissolve 2 teaspoons in 2 litres of water. Swirl gently for 2 minutes. If undissolved particles remain, it is advisable to pre-dissolve prior to adding to spray tank through a screen. Ammonium sulphate may be corrosive to metal parts of the sprayer. Thoroughly flush tanks, pumps and nozzles with water after use.
Pulse: Penetrant
RATE: 200 mL/100 L spray solution
Add when treating bracken (boom application), Gorse, Eucalypt suckers and Lantana.
Wetter TX Surfactant
RATE: 200 mL/100 L spray solution
Add when treating Annual ryegrass in Spring (from beginning August to end October). Wetter TX is not a general purpose surfactant and should be used only where recommended.
Tank Mixtures - Insecticides
This product is compatible with the following insecticides: Dimethoate, Folithion 1000, Imidan, Le-Mat, Lorsban 500, Metasystox, Perfekthion EC400, Sumithion ULV, and emulsifiable concentrates of dimethoate and fenitrothion. Other insecticides have not been tested.

Application
Roundup is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all equipment after use by thoroughly washing with water
Boom Equipment
Use recommended rates of Roundup in 25 to 200 litres of clean water per hectare. When using Roundup at 500 mL-1.5 L/ha spray volumes in the range 25-100 L/ha are preferred. Fan nozzle equipment is recommended, using pressures in the range 240-280 kPa. Boom height must be set to ensure double over lap of nozzle patterns at the top of the weed canopy.
High Volume Application
(eg. Knapsack/Handgun Equipment)
The dilution rate is given as vol/1 litre eg: 10 mL Roundup per litre of water. This is equal to 150mL Roundup per 15 litres of water or 1 litre per 100 litres of water. Adjust equipment to achieve an even spray pattern. Apply to ensure complete and uniform wetting of all foliage. For handgun equipment, a D6 spray tip (Spraying Systems Australia P/L) or equivalent, and an operating pressure of 400-700 kPa are recommended.
Low Volume Application
(eg. Gas Gun or Splatter Gun) Apply as an even spray to cover all foliage.
Refer to Weeds Controlled for the dilution and volume of mixture to be applied. The dilution is specified as "Low volume mixture, Roundup: Water". For example, a 1:9 mixture equals one part Roundup plus 9 parts water.
Wiper Equipment
Wiper Equipment (eg. ropewick, canvas, felt or carpet applicators) may be used to apply Roundup onto weeds growing in oilseed crops, sugarcane, cotton, seed and pod vegetables, tree and vine crops specified in this label, pasture and non-crop areas. Avoid contact with desirable vegetation. Operate wiper equipment a minimum of 10 cm above the crop or pasture. Weeds should be at least 15 cm above the crop or pasture at time of application. Speed of travel should be no greater than 8 km/h. Best results are achieved at lower speeds and where two applications are made in opposite directions (double pass).
Where weeds are of variable height, or occur in dense infestations or clumps, some plants may not be contacted by the herbicide solution. In these cases repeat treatment may be necessary.
Mix only enough herbicide solution for immediate requirements. Do not store mixed solution for more than a few days. Flush out equipment with water after use.
RATE: Mix 1 litre Roundup with 2 litres clean water to prepare 33% solution.
Roundup may be used according to the above directions for suppression or control of many annual and perennial weeds.
See Weeds Controlled tables for specific use recommendations.
Controlled Droplet Application Equipment (CDA)
Use the following table as a guide for achieving the correct application rates using the Micron Herbi or similar equipment. See Weeds Controlled tables for specific rates and use recommendations. For hand held equipment a walking speed of approximately 1m/sec (4km/h) is recommended.

DO NOT add oils to Roundup /water mixture, otherwise difficulty in application and reduced weed control may occur.
CAUTION: CDA equipment produces a fine spray pattern which is not easily visible. Ensure spray pattern or drift does not contact foliage or any other green tissue of desirable plants, since severe injury or destruction may result.
Aerial Equipment
Aerial equipment may be used to apply Roundup only in pasture or fallow situations prior to establishment of field crops, fodder crops, or new pasture, and for pre-harvest application to cotton and sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates of Roundup specified in this label up to a maximum limit of 4 L/ha. For Micronair and boom equipment, apply in a minimum spray volume of at least 20 L/ha. Droplets with an average size (or VMD) of 250-350 micron dia. are recommended. Swath width should be 15-17 m. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove he

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Avoid Drift
DO NOT use with spraying equipment or under meteorological conditions which could be expected to cause spray drift onto nearby susceptible plants, adjacent crops, crop lands or pastures. Equipment settings which produce fine droplets (150 microns or less), winds over 8 km/h, inversion conditions, still air and hot dry days all contribute to drift.

Application Checklist
The addition of non-ionic surfactant is recommended at a rate of 100 mL of a 600 g/L product (or equivalent) per 100 L spray solution.
Do not treat weeds under poor growing or dormant conditions (such as occur in drought, waterlogging, disease, insect damage or following frosts) as reduced weed control may result. Reduced efficacy may also occur when treating weeds heavily covered with dust or silt.
Do not add additional surfactant, or mix with any other agricultural chemicals, herbicide oils, or other materials except as specifically directed on this label.
Rainfall occurring up to 6 hours after application may reduce effectiveness. Heavy rainfall within 2 hours after application may wash the chemical off the foliage and a repeat treatment may be required. Delay treatment of plants wet with dew or rain, if water droplets run-off when plants are disturbed. Do not disturb treated weeds by cultivation, sowing or grazing for one day after treatment of annual weeds and 7 days for perennial weeds, to ensure herbicide absorption.
A Withholding Period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed (as recommended above) to ensure herbicide absorption. Certain plants such as Soursob, St. John's Wort and Bracken, may be naturally toxic to stock. Where known toxic plants are present, grazing should be delayed until complete browning of treated plants has occurred.

Resistance Warning Roundup is a member of the Glycines group of herbicides. Roundup has the inhibition of EPSP synthase mode of action. For weed resistance management Roundup is a Group M herbicide.
Some naturally occurring weed biotypes resistant to Roundup and other inhibitors of EPSP synthase mode of action herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Roundup or other inhibitors of EPSP synthase herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use, Monsanto accepts no liability for any losses that may result from the failure of Roundup to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment Do NOT contaminate dams, rivers or streams with the product or used container. When controlling weeds in aquatic situations , refer to label directions to minimise the entry of spray into the water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems, exposed non-woody roots or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
DO NOT apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin.
When preparing product for use wear elbow-length PVC gloves and face shield or goggles.
After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.
After each day's use wash contaminated clothing, gloves and face shield or goggles.
When using controlled droplet applicator, wear protective waterproof clothing and impervious footwear.

Storage (15L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
(5L, 20L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. DO NOT contaminate seed, feed or foodstuff. DO NOT re-use container for any purpose.
Envirodrum 110L Mini Bulk Returnable Container
Store in the closed, original container in a cool well-ventilated area. DO NOT store for prolonged periods in direct sunlight.
(1000L)
Store in the closed, original container in a cool well-ventilated area. DO NOT store for prolonged periods in direct sunlight.

Disposal (15L)
Triple or preferably pressure rinse inner bladder before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean packaging to recycler or designated collection point. If not recycling, deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
(5L, 20L)
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, triple rinse, break, crush or puncture and deliver empty packaging for appropriate disposal at an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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. Empty containers and product must not be burnt.
Envirodrum 110L Mini Bulk Returnable Container
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.
(1000L)
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

Product details last updated on 09 May 2011

DISCLAIMER: This is not the ROUNDUP HERBICIDE label. To view or print the label for this product, click the "MSDS/Label" tab at the top of this page. Always follow label instructions.

For specialist advice in an EMERGENCY only phone 1800 033 498, TOLL-FREE, ALL-HOURS, NATIONWIDE

Material Safety Data Sheet

Infosafe No™ NU0HN Issue Date :April 2009 ISSUED by NUFARM

Product Name **Roundup**

Classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Roundup
Product Code	0539
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	Water soluble herbicide for non selective control of many annual and perenial weeds in certain situations as per the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Classified as hazardous HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Classified as hazardous R41 Risk of serious damage to eyes.
Safety Phrase(s)	S13 Keep away from food, drink and animal feeding stuffs. S2 Keep out of reach of children. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S46 If swallowed, seek medical advice immediately and show this container or label.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the isopropylamine salt)	1071-83-6	360 g/l
Surfactant		10-30 %
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at

FOLIO 25

Product Details

Back | Back To Search | Printable version

Product Details | Packaging | Pests | MRL | MSDS/Label

ROUNDUP BIACTIVE HERBICIDE

APVMA Code :48518

Active Constituent(s):
360g/L glyphosate(present as isopropylamine salt)

GROUP M HERBICIDE

Registered For

Commercial Use ✓ Domestic Use ✓

Overview Roundup Biactive is a special formulation with built-in 'aquatically approved' surfactant. Roundup Biactive controls many aquatic weeds, as well as an extensive range of unwanted grasses, broadleaf weeds, brush weeds, woody weeds and unwanted trees that original Roundup controls. Roundup Biactive can be used for weed control in aquatic and sensitive environmental areas such as channels, drains, streams and rivers that are in or near all situations including tree and vine crops. Roundup Biactive also provides all the other benefits of Roundup including a translocating mode of action, no harmful effect on the environment, very low toxicity to humans and animals, and application flexibility.

Recommended Uses Roundup Biactive is specifically developed for use in aquatic situations. It may also be used in many other situations such as domestic areas (home gardens), drains and channels, margins of dams, lakes and streams, commercial, industrial and public service areas, agricultural buildings and other farm situations. In forests; peanuts, cotton, soybeans, sugarcane, navy beans and chickpeas (QLD & NSW only - applications using selective equipment). In tree and vine crops including avocado, banana, blueberries, citrus fruit, custard apples, duboisia, figs (dessert), guava, kiwifruit, litchi, mango, monstera (fruit), nuts (including almond, pecan, macadamia, pistachio and walnut), olives, pawpaw, persimmons, pome fruit, raspberries, stone fruit, tea and vineyards. For control of sugar cane ratoon regrowth. For pasture management. For post plant, pre emergence treatments in onions (TAS only). For pre-harvest cotton (NSW and QLD only - for control of bathurst burr, nogoora burr, winter annual weeds including sowthistle, milk thistle and seasonal suppression of nutgrass).
Refer to label for all instructions and directions for use.

Benefits
- For use in aquatic and sensitive environmental areas;
- Requires no added surfactant;
- Non-residual knockdown control of emerged weeds;
- Effective against almost all weed species;
- Apply with a wide range of equipment;
- Very low toxicity to humans and animals.

Mode of Action Roundup Biactive belongs to a group of herbicides called glycines. Roundup Biactive acts on the enzyme pathway and works by inhibiting the production of three essential amino acids that are unique to plant life.

Chemical Group glycine

General Instructions Roundup Biactive is a non-volatile, water soluble liquid product with non-selective herbicidal activity against many annual and perennial broadleaf weeds and grasses.
Roundup Biactive may be used for weed control in agricultural land prior to sowing any edible or nonedible crop, but not prior to transplanting tomato seedlings.
Roundup Biactive is absorbed by plant foliage and green stems. It is inactivated immediately in the soil and does not provide residual weed control. Roundup Biactive moves through the plant from the point of contact to and into the root system. Visible effects on annual weeds take 3-7 days but on perennial weeds may be not be obvious for 2-3 weeks or longer in some cases. Visible effects of control may be delayed by cool or cloudy weather at and following treatment.
When applying this product prior to transplanting crops into plastic mulch, care must be taken to remove residues of this product from the plastic prior to transplanting. Residues can be removed by 2 cm of natural rainfall or by applying water via a sprinkler irrigation system.

Mixing

Roundup Biactive mixes readily with water. Note: Reduced results may occur if water containing soil is used, eg. water from ponds and unlined ditches, or if hard water containing calcium salts is used.
Do not mix, store or apply this product or spray solutions of this product in galvanised steel or unlined steel containers or spray tanks, since a highly flammable gas mixture may be formed.
Use stainless steel, brass, copper, fibreglass, plastic or plastic-lined containers or spray tanks. Aluminium is susceptible to corrosion by Roundup Biactive and should not be used. Ensure the spray tank is free of any residue or previous spray materials.
Use spray solutions promptly and certainly within 5 days, since a gradual loss of activity will occur. Fill the spray tank with one half the required amount of clean water and add the proper amount of Roundup Biactive. Mix well before adding the remaining portion of water. Placing the filling hose below the surface of the spray solution will prevent excessive foaming. Removing hose from tank immediately after filling will prevent back siphoning into water source. Do not use mechanical agitators as these may cause excessive foaming. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent corrosion.

Tank Mixtures/Compatibility

Roundup Biactive may be tank-mixed with the following herbicides, insecticides and additives.
Read and follow all label directions, restraints, plant-back periods, withholding periods, regional use

restrictions and safety directions for the tank mix products.
Mixing Instructions for All Tank Mixtures
1. Fill the spray tank 1/3 to 1/2 full will clean water and start agitation.
2. Where crystalline ammonium sulphate is recommended, wash 2% w/v (2 kg/100 L spray solution) through a top mesh-screen into the tank and mix thoroughly.
3. Add recommended herbicide/insecticide/additive to the spray tank and mix thoroughly.
4. Add Roundup Biactive and the remaining water. Mix thoroughly.
5. Add surfactant, if required, near the end of the filling process to minimise foaming.
6. Always maintain adequate agitation during application and use the tank mix promptly.
Tank Mixtures - Herbicides
Atrazine flowable (Agricultural uses only DO NOT apply the tank mix for Barnyard grass control.), 2, 4-D ester, dicamba, Glean, Simazine flowable, Oust , Yield, Stomp 330E, Ally, Logran 750G, Flandor 500, LVE MCPA, and Striker.
The addition of Striker at 75 mL/ha to recommended rates of Roundup Biactive prior to planting wheat or barley will improve knockdown and increase the speed at which treated weeds develop visible signs of phytotoxicity.
Add crystalline ammonium sulphate as per directions below.
Tank Mixtures - Additives
Crystalline Ammonium Sulphate
RATE: 2% w/v (2kg/100L spray solution). (DO NOT apply the tank mix for Barnyard grass control). The addition of crystalline ammonium sulphate to Roundup Biactive, when used to control ANNUAL weeds, MAY improve the performance of Roundup Biactive under adverse environmental conditions such as cool, cloudy weather, and assist in minimising the antagonism in tank mixes of Roundup Biactive and flowable triazine herbicides. Use only crystalline ammonium sulphate, NOT prilled or granulated forms. Ammonium sulphate may be corrosive to metal parts of the sprayer. Thoroughly flush tanks, pumps and nozzles with water after use.
Pulse: Penetrant
RATE: 200 mL/100 L spray solution
Add when treating bracken (boom application), Gorse, Eucalypt suckers and Lantana.
Wetter TX Surfactant
RATE: 200 mL/100 L spray solution
Add when treating Annual ryegrass in Spring (from beginning August to end October). Wetter TX is not a general purpose surfactant and should be used only where recommended.
Tank Mixtures - Insecticides
This product is compatible with the following insecticides: Imidan, Le-Mat, Lorsban 500, Perfekthion EC400, Sumithion ULV, and emulsifiable concentrates of dimethoate and fenitrothion. Other insecticides have not been tested.

Application
Roundup Biactive is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all equipment after use by thoroughly washing with water.
Boom Equipment
Use recommended rates of Roundup Biactive in 75 to 200 litres of clean water per hectare. When using Roundup Biactive at 500 mL-1.5 L/ha spray volumes in the range 25-100 L/ha are preferred. Fan nozzle equipment is recommended, using pressures in the range 240-280 kPa. Boom height must be set to ensure double over lap of nozzle patterns at the top of the weed canopy.
High Volume Application
(eg. Knapsack/Handgun Equipment)The dilution rate is given as vol/1 litre eg: 10 mL Roundup Biactive per litre of water. This is equal to 150 mL Roundup Biactive per 15 litres of water or 1 litre per 100 litres of water. Adjust equipment to achieve an even spray pattern. Apply to ensure complete and uniform wetting of all foliage. For handgun equipment, a D6 spray tip (Spraying Systems Australia P/L) or equivalent, and an operating pressure of 400-700 kPa are recommended.
Low Volume Application
(eg. Gas Gun or Splatter Gun) Apply as an even spray to cover all foliage.
Refer to Weeds Controlled for the dilution and volume of mixture to be applied. The dilution is specified as "Low volume mixture, Roundup Biactive : Water". For example, a 1:9 mixture equals one part Roundup Biactive plus 9 parts water.
Wiper Equipment
Wiper Equipment (eg. ropewick, canvas, felt or carpet applicators) may be used to apply Roundup Biactive onto weeds growing in oilseed crops, sugarcane, cotton, seed and pod vegetables, tree and vine crops specified in this label, pasture and non-crop areas. Avoid contact with desirable vegetation. Operate wiper equipment a minimum of 10 cm above the crop or pasture. Weeds should be at least 15 cm above the crop or pasture at time of application. Speed of travel should be no greater than 8 km/h, Best results are achieved at lower speeds and where two applications are made in opposite directions (double pass).
Where weeds are of variable height, or occur in dense infestations or clumps, some plants may not be contacted by the herbicide solution. In these cases repeat treatment may be necessary.
Mix only enough herbicide solution for immediate requirements. Do not store mixed solution for more than a few days. Flush out equipment with water after use.
RATE: Mix 1 litre Roundup Biactive with 2 litres clean water to prepare 33% solution.
Roundup Biactive may be used according to the above directions for suppression or control of many annual and perennial weeds.
See Weeds Controlled tables for specific use recommendations.
Controlled Droplet Application Equipment (CDA)
Use the following table as a guide for achieving the correct application rates using the Micron Herbi or similar equipment. See WEEDS CONTROLLED tables for specific rates and use recommendations. For hand held equipment a walking speed of approximately 1 m/sec (4 km/h) is recommended.
DO NOT add oils to Roundup Biactive/water mixture, otherwise difficulty in application and reduced weed control may occur.
CAUTION: CDA equipment produces a fine spray pattern which is not easily visible. Ensure spray pattern

23

or drift does not contact foliage or any other green tissue of desirable plants, since severe injury or destruction may result.
Aerial Equipment
Aerial equipment may be used to apply Roundup Biactive only in pasture or fallow situations prior to establishment of field crops, fodder crops, or new pasture, and for pre-harvest application to cotton and sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates of Roundup Biactive specified in this label up to a maximum limit of 4 L/ha. For Micronair and boom equipment, apply in a minimum spray volume of at least 20 L/ha. Droplets with an average size (or VMD) of 250-350 micron dia. are recommended. Swath

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Avoid Drift
DO NOT use with spraying equipment or under meteorological conditions which could be expected to cause spray drift onto nearby susceptible plants, adjacent crops, crop lands or pastures. Equipment settings which produce fine droplets (150 microns or less), winds over 8 km/h, inversion conditions, still air and hot dry days all contribute to drift.

Application Checklist
Do not treat weeds under poor growing or dormant conditions (such as occur in drought, waterlogging, disease, insect damage or following frosts) as reduced weed control may result. Reduced efficacy may also occur when treating weeds heavily covered with dust or silt.
Do not add additional surfactant, or mix with any other agricultural chemicals, herbicide oils, or other materials except as specifically directed on this label.
Roundup Biactive is absorbed by plant foliage and stems. Rainfall soon after application may wash the herbicide off the weeds, particularly if the weeds are not growing actively, under stress, or under conditions of low light intensity or darkness.
Delay treatment of plants wet with dew or rain, if water droplets run-off when plants are disturbed.
Do not disturb treated weeds by cultivation, sowing or grazing for one day after treatment of annual weeds and 7 days for perennial weeds, to ensure herbicide absorption.
A Withholding Period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed (as recommended above) to ensure herbicide absorption. Certain plants such as Soursob, St. John's Wort and Bracken, may be naturally toxic to stock. Where known toxic plants are present, grazing should be delayed until complete browning of treated plants has occurred.

Resistance Warning Roundup Biactive is a member of the Glycines group of herbicides. Roundup Biactive has the inhibition of EPSP synthase mode of action. For weed resistance management Roundup Biactive is a Group M herbicide.
Some naturally occurring weed biotypes resistant to Roundup Biactive and other inhibitors of EPSP synthase mode of action herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Roundup Biactive or other inhibitors of EPSP synthase herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use, Monsanto accepts no liability for any losses that may result from the failure of Roundup Biactive to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment Do NOT contaminate dams, rivers or streams with the product or used container. When controlling weeds in aquatic situations, refer to label directions to minimise the entry of spray into the water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems, exposed non-woody roots or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
DO NOT apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin.
When preparing product for use wear elbow-length PVC gloves and face shield or goggles.
After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.
After each day's use wash contaminated clothing, gloves and face shield or goggles.
When using controlled droplet applicator, wear protective waterproof clothing and impervious footwea

Storage (15L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
(5L, 20L)
Store in the closed, original container in a cool, well ventilated area. DO NOT store for prolonged periods in direct sunlight.
Envirodrum 110L Mini Bulk Returnable Container
Store in the closed, original container in a cool, well ventilated area. DO NOT store for prolonged periods in direct sunlight.

Disposal (15L)
Triple or, preferably pressure rinse inner bladder before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean packaging to recycler or designated collection point. If not recycling, deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
(5L, 20L)
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, triple rinse, break, crush or puncture and deliver empty packaging for appropriate disposal at an approved waste management facility. If an approved waste

management facility is not available bury the empty packaging 500mm 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. Empty containers and product must not be burnt.
Envirodrum 110L Mini Bulk Returnable Container
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

Product details last updated on 06 May 2011

DISCLAIMER: This is not the ROUNDUP BIACTIVE HERBICIDE label. To view or print the label for this product, click the "MSDS/Label" tab at the top of this page. Always follow label instructions.

For specialist advice in an EMERGENCY only phone 1800 033 498, TOLL-FREE, ALL-HOURS, NATIONWIDE

Material Safety Data Sheet

Infosafe No™ 3NU2J Issue Date :November 2008 ISSUED by NUFARM

Product Name **Roundup Biactive**

Not classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Roundup Biactive
Product Code	0554
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	Water soluble herbicide for non selective control of many annual and perenial weeds in certain situations.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Not classified as hazardous NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Not classified as hazardous
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the isopropylamine salt)	1071-83-6	360 g/l
Alkyl polyglycoside surface active agent		5-15 %w/v
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.

20

Product Details

Back | Back To Search | Printable version

Details | Packaging | Rates | MRL | Library | MSDS | Label |

GLYPHOSATE CT

APVMA Code :31398

GLYPHOSATE CT

Active Constituent(s):
450g/L glyphosate(present as isopropylamine salt)

GROUP M HERBICIDE

Registered For

Commercial Use ✓ Domestic Use ✗

Overview Glyphosate CT is the basic non-residual knockdown herbicide for use in conservation tillage situations. It controls emerged weeds only and replaces mechanical tillage practices to conserve soil moisture and reduce soil erosion. Glyphosate CT is effective against almost all weed species and rapidly breaks down to natural products in the environment. It has very low toxicity to humans and animals.

Recommended Uses Glyphosate CT controls an extensive range of annual and perennial weeds in many conservation tillage situations such as: before sowing winter and summer crops; fallow commencement; pasture topping (certain annual weeds only); bentgrass and Poa tussock infested pasture; pasture manipulation; sorghum regrowth; ratoon in sugar cane; direct drilling rice and cotton (pre-harvest).
Refer to label for all instructions and directions for use.

Benefits
- Replaces mechanical tillage practices to conserve soil moisture and reduced soil erosion;
- Non-residual knockdown control of emerged weeds;
- Translocated throughout foliage and kills plant roots;
- Effective against almost all weed species;
- Rapidly breaks down to natural products in the environment;
- Very low toxicity to humans and animals;
- Compatible with certain residual herbicides for extended control of annual weeds.

Mode of Action Glyphosate CT belongs to a group of herbicides called glycines. Weedmaster Duo acts on the enzyme pathway and works by inhibiting the production of three essential amino acids that are unique to plant life.

Chemical Group glycine

General Instructions This product may be used prior to sowing any crop (edible or non-edible) but not prior to transplanting tomato seedlings. A Withholding Period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed for one day after treatment of annual weeds, or 7 days if perennial weeds are present, to ensure absorption of this product. Certain plants (e.g. Soursob, Variegated Thistle) may be naturally toxic to stock. Where known toxic plants are present, do not allow stock to graze until complete browning of treated plants has occurred. Weeds should be actively growing at time of treatment. Do not treat weeds under poor growing or dormant conditions (such as occur in drought, water logging, disease, insect damage or following frosts) as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust or silt. Prior herbicide application may also induce stress in weeds. Rainfall occurring up to 6 hours after application may reduce effectiveness. Heavy rainfall within 2 hours after application may wash the chemical off the foliage and a repeat treatment may be required. Delay treatment of plants wet with dew or rain, if water droplets run-off when plants are disturbed. Always add a non-ionic surfactant.
See Surfactant Addition. Independent of spray volume, adding extra surfactant may improve brown out on some broadleaf weeds under less than ideal conditions.
Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result. This product is a nonvolatile, water soluble liquid product with nonselective herbicidal activity. This product is absorbed by plant foliage and green stems. It moves through the plant from the point of contact to and into the root system. Visible effects on annual weeds take 3 - 7 days, but on perennial weeds may not be obvious for 2 - 3 weeks or even longer and may be delayed by cool or cloudy weather at and following treatment. Visible effects are gradual yellowing and wilting of the plant which advances to complete browning of above ground growth and deterioration of under-ground plant parts. This product will control emerged weeds only and is inactivated immediately in the soil and does not provide residual weed control. Apply treatments to weeds which have at least one true leaf (broadleaf weeds) or two leaves (grasses) to provide an adequate surface area for herbicide uptake.

Crop Establishment
This product is recommended for control of emerged weeds prior to crop establishment. Suitable cultivation and/or sowing operations are required to provide seedbed conditions satisfactory for crop germination and development. Spraying early to control young weeds will favour preparation of suitable seedbeds. On friable soils and where there is only light cover of young weeds, sowing may proceed satisfactorily from one day after spraying. In situations of heavy weed growth sowing should be delayed until weed decay and soil conditions allow formation of a satisfactory seedbed. Incorporation of green or decaying vegetation and roots into the seedbed by cultivation or sowing may cause retarded crop emergence, particularly in cold and/or wet conditions. Vegetation may be reduced by grazing, and weed decay may be assisted by cultivation to leave trash on the surface. In marginal seedbed conditions take care to achieve correct seeding depth, and avoid use of pre-emergence herbicides where label directions advise risk of retarded crop emergence.

Mixing
This product mixes readily with water.
NOTE: Reduced results may occur if water containing soil is used, e.g. water from ponds and unlined ditches, or if hard water containing calcium salts is used. Ensure the spray tank is free of any residue of previous spray materials. Fill the spray tank with one half the required amount of clean water and add the proper amount of this product. Mix well before adding the remaining portion of water. Add the surfactant

near the end of the filling process to minimise foaming. Placing the filling hose below the surface of the spray solution will prevent excessive foaming. Removing hose from tank immediately after filling will prevent back siphoning into water source. Do not use mechanical agitators as these may cause excessive foaming. Use spray solutions promptly and certainly within 5 days since a gradual loss of activity will occur. Spray solutions of this product should be mixed, stored and applied only in stainless steel, aluminium, brass, copper, fibreglass, plastic or plastic-lined containers. Do not mix, store or apply this product or spray solutions of this product in galvanized steel or unlined steel (except stainless steel) containers or spray tanks. This product, or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture that can flash or explode if ignited by flame, spark, welder's torch, lighted cigarette or other ignition source. Do not mix with other surfactants, agricultural chemicals, herbicide oils,or any other material except as directed on the label. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent corrosion.

Surfactant Addition

Always add a non-ionic surfactant. The following surfactant products may be used (other products have not been tested).

Nufarm LI 700 Surfactant

RATE: 250mL - 500 mL per 100L

The addition of LI 700 surfactant MAY improve weed control. At rates of 300mL-500mL per 100L, LI 700 may modify the droplet spectrum produced by CP and flat fan nozzles. This may reduce the proportion of FINE droplets produced by these nozzles.

Nufarm Activator

RATE: 70mL - 125 mL per 100L

General Purpose non-ionic surfactants may increase the production of FINE and VERY FINE droplets, which are prone to drift when used through certain nozzle types.

Wetter TX Surfactant

RATE: 200 mL /100L spray solution.

Add when treating Annual Ryegrass, Silvergrass and Perennial grasses. Wetter TX is NOT a general purpose surfactant and should be used only where recommended.

DO NOT use spray oils, adjuvants or surfactants other than those recommended on this label.

Tank Mixtures

This product may be tank mixed with the following herbicides, insecticides and additives, where recommended in the Directions For Use tables. Read and follow all label directions, restraints, plant back periods, withholding periods, regional use restrictions and safety directions for the tank mix products.

MIXING INSTRUCTIONS FOR ALL TANK MIXTURES

1. Fill the spray tank 1/3 to 1/2 full with clean water and start agitation.
2. Where ammonium sulphate is recommended, add liquid Spraymate Base according to the Directions for Use on its label.
3. Add the recommended herbicide/ insecticide/ additive to the spray tank. Mix thoroughly.
4. Add this product and the remaining water. Mix thoroughly.
5. Add surfactant, if required, near the end of the filling process to minimise foaming.
6. Always maintain adequate agitation during application and use the tank mix promptly.

TANK MIXTURES - INSECTICIDES

This product is compatible with the following insecticides: Chlorpyrifos, Dimethoate, Fenitrothion, Imidan*, Le Mat*/Comrad, Lorsban*, Perfekthion, Rogor, Sumithion* and emulsifable concentrates of dimethoate and fenitrothion.Other insecticides have not been tested.

TANK MIXTURES - HERBICIDES

Atrazine flowable plus liquid ammonium sulphate

This product may be tank mixed with atrazine (Nu-trazine - flowable and granular formulations) for knockdown and residual weed control. Addition of ammonium sulphate is required to overcome antagonism. See Ammonium Sulphate section. DO NOT use this tank mix on BARNYARD GRASS. DO NOT apply the tank mix by air.

Estercide Xtra 680

This product and Estercide Xtra 680 may be tank mixed for improved control of certain broadleaf weeds. Observe any regional use restrictions.

Kamba 500(Dicamba)

This product and Kamba 500 may be tank mixed for improved control of Sub-clover, Medics and White Clover. Glean / Lusta

This product and Glean*/Lusta* tank mix will provide knockdown and residual weed control in fallow or in crop. Observe plant back periods for Glean/Lusta. Ally1/Associate

This product may be tank mixed with Associate/Ally*to provide knockdown weed control in fallows and prior to planting certain winter cereals. Observe Crop Safety, Spray Preparation & Crop Rotation Recommendations on Associate/Ally*label.

Striker

The addition of Striker, 75mL/ha, to recommended rates of Glyphosate CT prior to planting wheat or barley will improve knockdown and increase the speed at which treated weeds develop visible symptoms of phytotoxicity. br> Simazine plus liquid ammonium sulphate

This product may be tank mixed with Simazine (flowable and granular formulations) for knockdown and residual, annual weed control prior to sowing lupins. Addition of ammonium sulphate is required to overcome antagonism. See Ammonium Sulphate section.

Other Herbicides

LVE Agritone, Yield*, Stomp*/Rifle, Archer/Lontrel* , Avadex Xtra, Surpass 475, Express, Flame, Invader 600, Task*/Hammer*, Logran, Nugran, Comet 400, TriflurX and Triflur Xcel. Other brands have not been tested.

TANK MIXTURES - ADDITIVES

Nufarm Liase Liquid Herbicide Adjuvant

RATE: 2L/100L spray solution.

Liase may be used as an adjuvant to alleviate the adverse effects of high levels of calcium, magnesium and bicarbonate ions in water. The addition of this product when used to control ANNUAL weeds, MAY improve performance under adverse environmental conditions such as cool, cloudy weather, and assist in minimising the antagonism in tank mixes of this product and flowable triazine herbicides. Liase should be added to the half filled spray tank while agitating at the rate of 2L/100L water. Then add the required amount of flowable product and mix thoroughly before adding the quantity of Glyphosate CT and remaining water. Continue mixing and add surfactant if required to minimise foam. Maintain agitation during application and use tank mix promptly. Ammonium Sulphate may be corrosive to metal parts of the sprayer. Thoroughly flush tanks, pumps and nozzles with water after use.

Application

This product is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all equipment after use by thoroughly washing with water.

Boom equipment

Application of this product in low spray volumes (25 - 100L/ha) is recommended. Use nozzles that produce a MEDIUM or COARSE spray quality at the target (ASAE S572). Environmental conditions, including delta T and wind speed, and the size and density of the target weeds, should be taken into consideration when selecting nozzles. Boom height must be set to ensure double overlap of nozzle patterns at the top of the weed canopy.

Aerial equipment

Aerial equipment may be used to apply this product only in pasture or fallow situations prior to establishment of field crops, fodder crops, or new pasture, and for pre-harvest application to sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates of this product specified in this label up to a maximum limit of 3.2L/ha. Depending on product rate and spray volume, added surfactant may be required. See Surfactant Addition. For Micronair and boom equipment, apply in a minimum spray volume of at least 20L/ha. Use nozzles that produce a MEDIUM to COARSE spray quality (ASAE S572) at the target are recommended. Swath width may need to be adjusted to take into account aircraft type, wind conditions, target height and density. DO NOT apply Roundup CT by aircraft in temperatures above 30°C and increase spray output to at least 30L/ha if temperatures rise above 25 C. Avoid application when relative humidity falls below 35%. In multiple product tank mixes a minimum water volume of 50L/ha is recommended and local advice should be sought. Correct mixing order is important. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove herbicide residues.

Application on hilly terrain

As spraying height may vary, increase water volume to 30-80 L/ha and use nozzles that produce a COARSE spray quality at the target (ASAE S572).

Application under summer (hot) conditions

High temperature and/or low relative humidity cause excessive evaporation of spray droplets which may reduce results. When temperature reaches 25°C, increase water volume to at least 30L/ha, and nozzles that produce a COARSE spray quality at the target (ASAE S572).

DO NOT apply this product by aircraft when temperature is above 30° C.

Avoid Drift: DO NOT use when breeze is blowing toward nearby desirable plants. DO NOT use with spraying equipment under meteorological conditions conducive to drift. Equipment settings which produce fine droplets (150 microns or less), winds over 8km/h, inversion conditions, still air and hot dry days all contribute to drift.

Equipment Maintenance & Usage

Spray solutions of this product should be mixed, stored and applied only in stainless steel, aluminium, brass, copper, fibreglass or plastic or plastic-lined containers. This product or spray solutions of this product, react with galvanised steel or unlined steel (except stainless steel) containers and tanks, to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture can flash or explode if ignited by open flame, spark, welder's torch or other ignition source. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent extensive corrosion. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove herbicide residues.

Restraints To ensure herbicide absorption DO NOT disturb treated weeds by cultivation, sowing or grazing for 1 day after treatment of annual weeds and 7 days for perennial weeds.
DO NOT treat weeds under poor growing or dormant conditions such as drought, water logging, disease, insect damage or following frost.
DO NOT treat weeds heavily covered with dust or silt.
DO NOT apply if rainfall is likely within 6 hours of application.

Resistance Warning Nufarm Glyphosate CT Broadhectare Herbicide ("Glyphosate CT") is a member of the Glycines group of herbicides. Glyphosate CT has the inhibitors of EPSP synthase mode of action. For weed resistance management Glyphosate CT is a Group M herbicide.
Some naturally-occurring weed biotypes resistant to Glyphosate CT and other Group M herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Glyphosate CT or other Group M herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use Nufarm Australia Limited accepts no liability for any losses that may result from the failure of Glyphosate CT to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment DO NOT contaminate dams, rivers or streams with the product or used container. DO NOT apply to weeds growing in or over water. DO NOT spray across open bodies of water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
Drift Warning: DO NOT apply under meteorological conditions or from spraying equipment which could be expected to cause spray to drift onto nearby susceptible plants, adjacent crops, crop lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin. When preparing product for use

wear elbow-length PVC gloves and face shield or goggles. When using controlled droplet applicator wear protective waterproof clothing, and impervious footwear. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

Storage (15L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
(20L & 200L)
Store in the closed, original container in a cool, well-ventilated area. DO NOT store for prolonged periods in direct sunlight.
Envirodrum 60L & 110L Mini Bulk Returnable Container
Store the original sealed Envirodrum in a cool well-ventilated area. DO NOT store for prolonged periods in direct sunlight. DO NOT tamper with the Micro Matic valve or the security seal. DO NOT contaminate the Envirodrum with water or any foreign matter.
(500L, 800L, 1000L, Bulk)
Store in the closed, original container in a cool, well-ventilated area. DO NOT store for prolonged periods in direct sunlight.

Disposal (15L)
Triple or preferably pressure rinse inner bladder before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean packaging to recycler or designated collection point. If not recycling, deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
(20L & 200L)
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 bury containers in a local authority landfill. If no landfill is available bury the containers below 500mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should NOT be burnt.
Envirodrum 60L & 110L Mini Bulk Returnable Container
After each use of the product, please ensure that the Micro Matic coupler delivery system and hoses are disconnected, triple rinsed with clean water and drained accordingly. When the contents of the Envirodrum have been used, please return the empty Envirodrum to the point of purchase. The Envirodrum remains the property of Nufarm Australia Limited.
(500L, 800L, 1000L, Bulk)
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

Product details last updated on 19 May 2011

Material Safety Data Sheet

Infosafe No™ 3NU37 Issue Date :April 2009 ISSUED by NUFARM

Product Name **GLYPHOSATE CT Broadhectare Herbicide**

Classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	GLYPHOSATE CT Broadhectare Herbicide
Product Code	0545
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	For the control of annual and perennial weeds prior to sowing winter and summer crops, to control sorghum re-growth, for ratoon control in sugarcane and to assist in pasture renovation and management.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Classified as hazardous HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Classified as hazardous R41 Risk of serious damage to eyes.
Safety Phrase(s)	S13 Keep away from food, drink and animal feeding stuffs. S2 Keep out of reach of children. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S46 If swallowed, seek medical advice immediately and show this container or label.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the isopropylamine salt)	1071-83-6	450 g/L
Surfactant		10-30 %
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.

Product Details

Back | Back To Search | Printable version

View Details | Packaging | Rates | MRL | MSDS | Label

ROUNDUP CT HERBICIDE

APVMA Code :31394

Active Constituent(s):
450g/L glyphosate(present as isopropylamine salt)

GROUP M HERBICIDE

Registered For

Commercial Use ☑ Domestic Use ☐

Overview Roundup CT is the original non-residual translocating knockdown herbicide for use in conservation tillage situations. It controls emerged weeds only and replaces mechanical tillage practices to conserve soil moisture and reduce soil erosion. Roundup CT is effective against almost all weed species and rapidly breaks down to natural products in the environment. It has very low toxicity to humans and animals.

Recommended Uses Roundup CT may be used in conservation tillage situations such as: before sowing winter and summer crops; fallow commencement; pasture topping (certain annual weeds only); bentgrass and Poa tussock infested pasture; pasture manipulation; sorghum regrowth; ratoon in sugar cane; direct drilling rice and cotton (pre-harvest).
Refer to label for all instructions and directions for use.

Benefits
- Replaces mechanical tillage practices to conserve soil moisture and reduced soil erosion;
- Non-residual knockdown control of emerged weeds;
- Translocated throughout foliage and kills plant roots;
- Effective against almost all weed species;
- Rapidly breaks down to natural products in the environment;
- Very low toxicity to humans and animals;
- Compatible with certain residual herbicides for extended control of annual weeds.

Mode of Action Roundup CT belongs to a group of herbicides called glycines. Roundup CT acts on the enzyme pathway and works by inhibiting the production of three essential amino acids that are unique to plant life.

Chemical Group glycine

General Instructions Roundup CT is a non-volatile, non selective, water soluble liquid herbicide with non-selective herbicidal activity. It is absorbed by plant foliage and green stems and moves through the plant from the point of contact to and into the root system. Effects may not be apparent for 3-7 days (annual weeds) or 2 - 3 weeks (perennial weeds) or longer under cool, cloudy conditions.
Roundup CT will control emerged weeds only, and provides no residual weed control. Apply treatments to weeds which have at least one true leaf (broadleaf weeds) or two leaves (grasses) to provide an adequate surface area for herbicide uptake.
Roundup CT may be used prior to sowing any crop (edible or non edible)

but not prior to transplanting tomato seedlings.
A withholding period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed for one day after treatment of annual weeds, or 7 days of perennial weeds are present, to ensure absorption of Roundup CT. Certain plants (eg. Soursob, variegated thistle) may be naturally toxic to stock. Where known toxic plants are present, do not allow stock to graze until complete browning of treated plants has occurred.
Weeds should be actively growing at the time of treatment. Do not treat weeds under poor growing or dormant conditions (such as occur in drought, water logging, disease, insect damage or following frosts) as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust or silt. Prior herbicide application may also induce stress in weeds.
Rainfall occurring up to 6 hours after application may reduce effectiveness. Heavy rainfall within 2 hours after application may wash the chemical off the foliage and a repeat treatment may be required. Delay treatment of plants wet with dew or rain, if water droplets run off when plants are disturbed.
Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.

Crop Establishment
Roundup CT is recommended for control of emerged weeds prior to crop establishment. Suitable cultivation and/or sowing operations are required to provide seed bed conditions satisfactory for crop germination and development. Spraying early to control young weeds will favour preparation of suitable seed beds. On friable soils and where there is only light cover of young weeds, sowing may proceed satisfactorily from one day after spraying.
In situations of heavy weed growth sowing should be delayed until weed decay and soil conditions allow formation of a satisfactory seed bed. Incorporation of green or decaying vegetation and roots into the seedbed by cultivation or sowing may cause retarded crop emergence, particularly in cold and/or wet conditions. Vegetation may be reduced by grazing and weed decay may be assisted by cultivation to leave trash on the surface. In marginal seedbed conditions take care to achieve correct seeding depth, and avoid use of pre-emergence herbicides where label directions advise of risk of retarded crop emergence.

Mixing
Roundup CT mixes readily with water. NOTE Reduced results may occur if water containing soil is used, eg. Water from ponds and unlined ditches, or if hard water containing calcium salts is used.
Do not mix, store or apply this product or spray solutions of this product in galvanised steel or unlined steel containers or spray tanks, since a highly flammable gas mixture may be formed. Use stainless steel, aluminium, brass, copper, fibreglass, plastic or plastic lined containers or spray tanks. Ensure the sprayer is free of any residue of previous spray materials. Use spray solutions promptly and certainly within 5 days since a gradual loss of activity will occur. Fill the spray tank with one half the required amount of clean water and add the proper amount of Roundup CT. Mix well before adding the remaining portion of water. Add surfactant near the end of the filling process to minimize foaming. Placing the filling hose below the surface of the spray solution will

prevent excessive foaming.
Removing hose from tank immediately after the filling will prevent back siphoning into water source. Do not use mechanical agitators as these may cause excessive foaming. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent corrosion.

Tank Mixtures/Compatibility

TANK MIXTURES/COMPATIBILITY
Roundup CT may be tank-mixed with the following herbicides, insecticides and additives. Read and follow all label directions, restraints, plant-back periods, withholding periods, regional use restrictions and safety directions for the tank mix products.
MIXING INSTRUCTIONS FOR ALL TANK MIXTURES
1. Fill the spray tank 1/3 to 1/2 full with clean water and start agitation.
2. Add Spraymate Liase where required.
3. Add recommended herbicide/insecticide/additive to the spray tank and mix thoroughly.
4. Add Roundup CT and the remaining water. Mix thoroughly.
5. Add surfactant, if required, near the end of the filling process to minimize foaming.
6. Always maintain adequate agitation during application and use the tank mix promptly.
TANK MIXTURES - HERBICIDES
Ally, Associate, Avadex Xtra, Nufarm Estercide 800, Express, Flame, Garlon 600, Glean, Hammer, Invader, Nufarm Kamba 500 (dicamba), Lusta, Logran 750WG, Logran B Power (ensure fully dispersed prior to addition of Roundup CT), Lontrel, Nufarm LV Estercide 600 (2,4-D ester), Nufarm LVE MCPA (MCPA LVE), MONZA®, Nugran, Flowable Nu-trazine, Nu-trazine 900 DF (DO NOT apply this tank mix for control of Barnyard grass or Liverseed grass), Rifle, Flowable Simazine, Nufarm Simazine 900 DF, Starane 200, Stomp, Striker, Surpass 300, and TriflurX (trifluralin). Other brands have not been tested.
*Spraymate Liase (Ammonium sulphate) may improve the performance of tank mixtures of Roundup CT and atrazine or simazine. See directions below.
STRIKER®
The addition of Striker at 75 mL/ha to recommended rates of Roundup CT prior to planting Wheat or Barley or prior to planting cotton will improve knockdown and increase the speed at which treated weeds develop visible symptoms of phytotoxicity.
TANK MIXTURES - INSECTICIDES
Roundup CT is compatible with the following insecticides: Imidan, Le-Mat, Lorsban 500, Pirate 300, Karate, Sumithion ULV, Talstar and emulsifiable concentrates of dimethoate and fenitrothion. Other insecticides have not been tested.
TANK MIXTURES - ADDITIVES
Spraymate® Liase (417 g/L Ammonium Sulphate liquid)
RATE: 2 L per 100 litres spray solution. Spraymate Liase may be used as an adjuvant to alleviate the adverse effects of high levels of calcium, magnesium and bicarbonate ions in water. The addition of Spraymate Liase to Roundup CT, when used to control annual weeds, MAY improve the performance of Roundup CT under adverse environmental conditions such as cool cloudy weather. Spraymate Liase may also improve the performance of tank mixtures of Roundup CT and atrazine or simazine.

Ammonium sulfate may be corrosive to metal parts of the sprayer. Thoroughly flush tanks, pumps and nozzles with water after use. Solubility and impurity profiles of other forms of ammonium sulphate can vary and may reduce the performance of Roundup CT or tank mixtures.

Surfactant Addition

Spraymate LI 700 Surfactant
RATE: 250mL - 500 mL per 100L
The addition of Spraymate LI 700 surfactant MAY improve weed control. At rates of 300mL-500mL per 100L, Spraymate LI 700 may modify the droplet spectrum produced by CP and flat fan nozzles. This may reduce the proportion of FINE droplets produced by these nozzles.
Spraymate Activator
RATE: 70mL - 125 mL per 100L
General Purpose non-ionic surfactants may increase the production of FINE and VERY FINE droplets, which are prone to drift when used through certain nozzle types.
Wetter TX Surfactant
RATE: 200 mL /100L spray solution.
Add when treating Annual Ryegrass, Silvergrass and Perennial grasses. Wetter TX is NOT a general purpose surfactant and should be used only where recommended.
DO NOT use spray oils, adjuvants or surfactants other than those recommended on this label.

Application

Roundup CT is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all equipment after use by thoroughly washing with water.
BOOM EQUIPMENT
Application of Roundup CT in spray volumes of 25-100 L/ha is recommended. Use nozzles that produce a MEDIUM or COARSE spray quality at the target (ASAE S572). Environmental conditions, including delta T and wind speed, and the size and density of the target weeds, should be taken into consideration when selecting nozzles. Boom height must be set to ensure double overlap of nozzle patterns at the top of the weed canopy.
AERIAL EQUIPMENT
Aerial equipment may be used to apply Roundup CT only in pasture or fallow situations prior to establishment of field crops, fodder crops, or new pasture, and for preharvest application to sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates of Roundup CT specified in this label up to a maximum limit of 3.2L/ha.
For Micronair equipment, apply in a minimum spray volume of at least 20L/ha. Use nozzles that produce a MEDIUM to COARSE spray quality (ASAE S572) at the target are recommended. Swath width may need to be adjusted to take into account aircraft type, wind conditions, target height and density. DO NOT apply Roundup CT by aircraft in temperatures above 30oC and increase spray output to at least 30L/ha if temperatures rise above 25oC. Avoid application when relative humidity falls below 35%. In multiple product tank mixes a minimum water volume of 50L/ha is recommended and local advice should be sought. Correct mixing order is important.
Thoroughly wash aircraft, especially landing gear, after each day of

spraying to remove herbicide residues.
Application on hilly terrain
Spraying height may vary. Increase water volume to 30-80 L/ha and use nozzles that produce a COARSE spray quality at the target (ASAE S572).
Application under hot conditions
High temperatures and/or low relative humidity cause excessive evaporation of spray droplets, which may reduce results. When temperature reaches 25oC, increase water volume to at least 30L/ha, and nozzles that produce a COARSE spray quality at the target (ASAE S572). DO NOT apply Roundup CT by aircraft when temperature is above 30·C.

Restraints To ensure herbicide absorption, DO NOT disturb weeds by cultivation, sowing or grazing for 1 day after treatment of annual weeds and 7 days for perennial weeds, except where noted.

Resistance Warning Roundup CT is a member of the Glycines group of herbicides. Roundup CT has the inhibition of EPSP synthase mode of action. For weed resistance management Roundup CT is a Group M herbicide.
Some naturally occurring weed biotypes resistant to Roundup CT and other inhibitors of EPSP synthase mode of action herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Roundup CT or other inhibitors of EPSP synthase herbicides.
Since the occurrence of resistant weeds is difficult to detect prior to use, Monsanto accepts no liability for any losses that may result from the failure of Roundup CT to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment Do NOT contaminate dams, rivers or streams with the product or used container. Do NOT apply to weeds growing in or over water. Do NOT spray across open bodies of water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.
DO NOT apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin. When preparing product for use wear elbow-length PVC gloves and face shield or goggles.
After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.
After each day's use wash contaminated clothing, gloves and face shield or goggles.

Storage Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. Do not contaminate seed, feed or foodstuff. Do not re-use container for any purpose.

Disposal 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 recycling, replace cap and return clean containers to recycler or designated collection point.
If not recycling, break, crush or puncture and bury containers in a local

authority landfill. If no landfill is available bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.
For REFILLABLE containers: Empty contents fully into application equipment. Close all valves and return to point of supply.

Product details last updated on 19 Jun 2009

DISCLAIMER: This is not the ROUNDUP CT HERBICIDE label. To view or print the label for this product, click the "MSDS/Label" tab at the top of this page. Always follow label instructions.

For specialist advice in an EMERGENCY only phone 1800 033 498, TOLL-FREE, ALL-HOURS, NATIONWIDE

Product Name **Roundup CT Broadacre Herbicide**

Classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Roundup CT Broadacre Herbicide
Product Code	0546
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	Water soluble herbicide for non selective control of many annual and perenial weeds in conservation tillage situations as per the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Classified as hazardous HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Classified as hazardous R41 Risk of serious damage to eyes.
Safety Phrase(s)	S13 Keep away from food, drink and animal feeding stuffs. S2 Keep out of reach of children. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S46 If swallowed, seek medical advice immediately and show this container or label.
Other Information	,Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the isopropylamine salt)	1071-83-6	450 g/L
Surfactant		10-30 %
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at

ROUNDUP DUAL SALT TECHNOLOGY HERBICIDE

APVMA Code :63926

Active Constituent(s):
470g/L glyphosate(present as the potassium and mono-ammonium salts)

GROUP M HERBICIDE

Registered For

Commercial Use ✓ Domestic Use ✗

Overview Water soluble herbicide for non-selective control of many annual and perennial weeds in conservation tillage situations.

General Instructions Roundup Dual Salt Technology Herbicide is a non-volatile, non-selective, water soluble liquid herbicide with non-selective herbicidal activity. It is absorbed by plant foliage and green stems and moves through the plant from the point of contact to and into the root system. Effects may not be apparent for 3-7 days (annual weeds) or 2-3 weeks (perennial weeds) or longer under cool, cloudy conditions. Roundup Dual Salt Technology Herbicide will control emerged weeds only, and provides no residual weed control. Apply treatments to weeds which have at least one true leaf (broadleaf weeds) or two leaves (grasses) to provide an adequate surface area for herbicide uptake. Roundup Dual Salt Technology Herbicide may be used prior to sowing any crop (edible or non edible) but not prior to transplanting tomato seedlings. A withholding period for grazing stock is not required. However, it is recommended that grazing of treated plants be delayed for one day after treatment of annual weeds, or 7 days of perennial weeds are present, to ensure absorption of Roundup Dual Salt Technology Herbicide. Certain plants (eg. Soursob, variegated thistle) may be naturally toxic to stock. Where known toxic plants are present, do not allow stock to graze until complete browning of treated plants has occurred. Weeds should be actively growing at the time of treatment. Do not treat weeds under poor growing or dormant conditions (such as occur in drought, water logging, disease, insect damage or following frosts) as reduced weed control may result. Reduced results may also occur when treating weeds heavily covered with dust or silt. Prior herbicide application may also induce stress in weeds.

Rainfall occurring up to 6 hours after application may reduce effectiveness. Rainfastness or general efficacy may be reduced if weeds are not actively growing, are under stress or conditions of low light intensity/darkness. Heavy rainfall within 2 hours after application may wash the chemical off the foliage and a repeat treatment may be required. Delay treatment of plants wet with dew or rain, if water droplets run off when plants are disturbed. Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result.

Crop Establishment

Roundup Dual Salt Technology Herbicide is recommended for control of emerged weeds prior to crop establishment. Suitable cultivation and/or sowing operations are required to provide seed bed conditions satisfactory for crop germination and development. Spraying early to control young weeds will favour preparation of suitable seed beds. On friable soils and where there is only light cover of young weeds, sowing may proceed satisfactorily from one day after spraying. In situations of heavy weed growth sowing should be delayed until weed decay and soil conditions allow formation of a satisfactory seed bed. Incorporation of green or decaying vegetation and roots into the seedbed by cultivation or sowing may cause retarded crop emergence, particularly in cold and/or wet conditions. Vegetation may be reduced by grazing and weed decay may be assisted by cultivation to leave trash on the surface. In marginal seedbed conditions take care to achieve correct seeding depth, and avoid use of preemergence herbicides where label directions advise of risk of retarded crop emergence.

Mixing

Roundup Dual Salt Technology Herbicide mixes readily with water. Note: Reduced results may occur if water containing soil is used, eg. Water from ponds and unlined ditches, or if hard water containing calcium salts is used.

DO NOT mix, store or apply this product or spray solutions of this product in galvanised steel or unlined steel containers or spray tanks, since a highly flammable gas mixture may be formed. Use stainless steel, aluminium, brass, copper, fibreglass, plastic or plastic lined containers or spray tanks. Ensure the sprayer is free of any residue of previous spray materials. Use spray solutions promptly and certainly within 5 days since a gradual loss of activity will occur. Fill the spray tank with one half the required amount of clean water and add the proper amount of Roundup Dual Salt Technology Herbicide. Mix well before adding the remaining portion of water. Add surfactant near the end of the filling process to minimize foaming. Placing the filling hose below the surface of the spray solution will prevent excessive foaming. Removing hose from tank immediately after the filling will prevent back siphoning into water source. DO NOT use mechanical agitators as these may cause excessive foaming. Spray tanks, pumps, lines and nozzles should be thoroughly rinsed with clean water following application to prevent corrosion.

MIXING INSTRUCTIONS FOR ALL TANK MIXTURES

1. Fill the spray tank 1/3 to 1/2 full with clean water and start agitation.
2. Add Nufarm Base where required.
3. Add recommended herbicide/insecticide/additive to the spray tank and mix thoroughly.
4. Add Roundup Dual Salt Technology Herbicide and the remaining water. Mix thoroughly.
5. Add surfactant, if required, near the end of the filling process to minimize foaming.
6. Always maintain adequate agitation during application and use the tank mix promptly.

Tank Mixtures/Compatibility
Roundup Dual Salt Technology Herbicide may be tank mixed with the following herbicides, insecticides and additives. Read and follow all label directions, restraints, plant-back periods, withholding periods, regional use restrictions and safety directions for the tank mix products.

Tank Mixtures
TANK MIXTURES - HERBICIDES
Ally*, Archer±, Associate±, Avadex± Xtra, Comet± 400, Express*, Flame±, Garlon* 600, Glean*, Hammer±, Invader±, Nufarm Kamba± 500 (dicamba), Lusta±, Logran* 750WG, Logran B Power (ensure fully dispersed prior to addition of Roundup Dual Salt Technology Herbicide), Lontrel*, Nufarm Estericide± Xtra 680 (2,4-D ester), Nufarm LVE Agritone± (MCPA LVE), MONZA±, Nugran*, Nu-trazine 600, Nu-trazine 900 DF (DO NOT apply this tank mix for control of Barnyard grass or Liverseed grass), Rifle±, Flowable Simazine, Nufarm Simazine 900 DF, Starane* 200, Stomp±, Striker± Nufarm Surpass± 475, TriflurX± and Triflur Xcel± (trifluralin). Other brands have not been tested.
Nufarm Liase (Ammonium sulphate) may improve the performance of tank mixtures of Roundup Dual Salt Technology Herbicide and atrazine or simazine. See directions below.
STRIKER± The addition of Striker at 75mL/ha to recommended rates of Roundup Dual Salt Technology Herbicide prior to planting Wheat or Barley or prior to planting cotton will improve knockdown and increase the speed at which treated weeds develop visible symptoms of phytotoxicity.
TANK MIXTURES - INSECTICIDES
Roundup Dual Salt Technology Herbicide is compatible with the following insecticides: Astound± Duo, Chlorpyrifos 500EC, Imidan*, Le-Mat*, Lorsban* 500, Pirate± 300, Karate*, Sumithion* ULV, Talstar± and emulsifiable concentrates of dimethoate and fenitrothion. Other insecticides have not been tested.
TANK MIXTURES - ADDITIVES
Nufarm Liase (417g/L ammonium sulphate liquid)
RATE: 2L per 100 litres spray solution.
Nufarm Liase may be used as an adjuvant to alleviate the adverse effects of high levels of calcium, magnesium and bicarbonate ions in water. The addition of Nufarm Liase to Roundup Dual Salt Technology Herbicide, when used to control annual weeds, MAY improve the performance of Roundup Dual Salt Technology Herbicide under adverse environmental conditions such as cool cloudy weather. Nufarm Liase may also improve the performance of tank mixtures of Roundup Dual Salt Technology Herbicide and atrazine or simazine. Ammonium sulphate may be corrosive to metal parts of the sprayer. Thoroughly flush tanks, pumps and nozzles with water after use. Solubility and impurity profiles of other forms of ammonium sulphate can vary and may reduce the performance of Roundup Dual Salt Technology Herbicide or tank mixtures.

Surfactant Addition
SURFACTANT ADDITION
Nufarm LI 700± Surfactant
RATE: 250mL-500mL per 100L The addition of Nufarm LI 700 surfactant MAY improve weed control. At rates of 300mL-500mL per 100L, Nufarm LI 700 is likely to modify the droplet spectrum produced by CP and flat fan nozzles. This is likely to reduce the proportion of driftable FINE droplets produced by these nozzles. For high volume application (eg. in horticulture), if Roundup Dual Salt Technology Herbicide is less than 1.1L/100L, add LI 700 at 250mL/100L.
Nufarm Activator±
RATE: 70mL-125mL per 100L. General Purpose non-ionic surfactants, other than Activator, may increase the production of FINE and VERY FINE droplets, which are prone to drift when used through certain nozzle types.
Wetter TX Surfactant
RATE: 200mL/100L spray solution. Add when treating Annual Ryegrass, Silvergrass and Perennial grasses.
Wetter TX is NOT a general purpose surfactant and should be used only where recommended.
DO NOT use adjuvants or surfactants other than those recommended on this label.
DO NOT use crop oil except when tank mixing with a herbicide for which an oil adjuvant is recommended to be used. The addition of a crop oil can reduce control of some grass weeds, particularly in Summer.

Application
Roundup Dual Salt Technology Herbicide is a non-selective translocated herbicide. Direct spray contact, or even slight drift, may cause severe injury or destruction of any growing crop or other desirable plants including trees. Clean all equipment after use by thoroughly washing with water.
BOOM EQUIPMENT
Application of Roundup Dual Salt Technology Herbicide in spray volumes of 25-100L/ha is recommended. Glyphosate works better when it is present at a higher concentration in the spray solution provided sufficient coverage of the target is achieved. Nozzles and pressure settings should be selected to deliver a COARSE to VERY COARSE spray quality (as defined by ASAE S572 Standard) at the target. The use of nozzles and/or pressure settings that produce VERY FINE or FINE spray quality should be avoided as these are prone to loss or drift. Environmental conditions, including delta T, wind speed and direction, and the size and density of the target weeds, should be taken into consideration when selecting nozzles. To minimise off-target drift, apply with the lowest boom height to achieve double overlap of the spray pattern at the top of the target.
SHIELDED EQUIPMENT
For shielded applications a spray volume of 80L/sprayed ha is recommended using nozzle types and pressure settings to deliver a COARSE (as defined by ASAE S572 Standard) spray quality at the target. Crop damage may result if spray drift occurs through incorrect nozzle and/or pressure selection, inadequate shielding and/or wind strength, high evaporation rates or excessive ground speed.
AERIAL EQUIPMENT
Aerial equipment may be used to apply Roundup Dual Salt Technology Herbicide only in pasture or fallow situations prior to establishment of field crops, fodder crops, or new pasture, and for preharvest application to sorghum crops. DO NOT use in intensive horticultural cropping areas. Use recommended rates of Roundup Dual Salt Technology Herbicide specified in this label up to a maximum rate of 3.1L/ha. DO NOT apply treatments by aircraft in situations where drift onto sensitive crops and pastures is likely to

occur. Apply treatments using boom or Microair equipment using a spray volume not less than 20L/ha and using settings to produce a minimum COARSE spray quality (as defined by ASAE S572 Standard) at the target. In multiple product tank mixes a minimum water volume of 50L/ha is recommended and local advice should be sought. Correct mixing order is important. Swath width should be set to take into account aircraft type, wind conditions, target height and density. Swath width will need to be reduced to avoid striping under light wind conditions and/or application to tall, dense targets eg. preharvest application, treatments in heavy crop stubble.
DO NOT apply Roundup Dual Salt Technology Herbicide by aircraft in temperatures above 30 C and increase spray output to at least 30L/ha if temperatures rise above 25 C. Avoid application when relative humidity falls below 35%. Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove herbicide residues.
Application on hilly terrain
Spraying height may vary. Increase water volume to 30-80 L/ha and use nozzles that produce a COARSE to VERY COARSE spray quality (as defined by ASAE S572 Standard) at the target.
Application under hot conditions
High temperatures and/or low relative humidity cause excessive evaporation of spray droplets, which may reduce results. When temperature reaches 25 C, increase water volume to at least 30 L/ha, and use nozzles that produce a COARSE to VERY COARSE spray quality at the target (as defined by ASAE S572 Standard). DO NOT apply Roundup Dual Salt Technology Herbicide by aircraft when temperature is above 30 C.

Resistance Warning Roundup Dual Salt Technology Herbicide is a member of the Glycines group of herbicides. Roundup Dual Salt Technology Herbicide has the inhibition of EPSP synthase mode of action. For weed resistance management Roundup Dual Salt Technology Herbicide is a Group M herbicide. Some naturally occurring weed biotypes resistant to Roundup Dual Salt Technology Herbicide and other Group M herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Roundup Dual Salt Technology Herbicide or other Group M herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, Nufarm accepts no liability for any losses that may result from the failure of Roundup Dual Salt Technology Herbicide to control resistant weeds.

Protection of wildlife, fish, crustaceans and environment DO NOT contaminate dams, rivers or streams with the product or used container. DO NOT apply to weeds growing in or over water. DO NOT spray across open bodies of water.

Protection of crop, native and other non-target plants Avoid contact with foliage, green stems or fruit of crops, desirable plants and trees, since severe injury or destruction may result. DO NOT apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

Safety Directions Product will irritate the eyes and skin. Avoid contact with eyes and skin. When opening the container, preparing spray and using the prepared spray, wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow length gloves and face shield or goggles. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. Wash hands after use. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

Storage (15L)
Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight.
(5L, 20L)
Store in the closed, original container in a cool, well ventilated area. DO NOT store for prolonged periods in direct sunlight.
Refillable containers (60L, 110L, 500L-Bulk)
Store in the closed, original container in a cool, well ventilated area. DO NOT store for prolonged periods in direct sunlight.

Disposal (15L)
Triple or preferably pressure rinse inner bladder before disposal. Add rinsings to spray tank. DO NOT dispose of undiluted chemicals on site. If recycling, replace cap and return clean packaging to recycler or designated collection point. If not recycling, deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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.
(5L, 20L)
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, triple rinse, break, crush or puncture and deliver empty packaging for appropriate disposal at an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500mm 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. Empty containers and product must not be burnt.
Refillable containers (60L, 110L, 500L-Bulk)
Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

Product details last updated on 06 May 2011

Material Safety Data Sheet

Infosafe No™ 3NUJS Issue Date :November 2009 ISSUED by.NUFARM

Product Name **Roundup Dual Salt Technology Herbicide**

Classified as hazardous

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	Roundup Dual Salt Technology Herbicide
Product Code	0528
Product Type	Group M Herbicide
Company Name	NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address	103-105 Pipe Road Laverton North Victoria 3026 Australia
Emergency Tel.	1800 033 498 (24hr Australia)
Telephone/Fax Number	Tel: +61 3 9282-1000 Fax: +61 3 9282-1001
Recommended Use	Non selective herbicide for the control of many annual and perenial weeds as per the Directions for Use table on the label.
Other Information	This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification	Classified as hazardous HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. Hazard classification according to the criteria of NOHSC. Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s)	Classified as hazardous R36/38 Irritating to eyes and skin.
Safety Phrase(s)	S2 Keep out of reach of children.
Other Information	Poisons Schedule S5

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion
Glyphosate (present as the potassium and ammonium salts)	1071-83-6	470 g/L
Surfactant		~10 %w/v
Water		Balance

4. FIRST AID MEASURES

Inhalation	Remove affected person to fresh air until recovered.
Ingestion	If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. Do not give anything by mouth to a semi-conscious or unconscious person. Give a glass of water.
Skin	Wash affected areas thoroughly with soap and water. If irritation persists, seek medical advice.
Eye	If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice.
First Aid Facilities	If poisoning occurs, contact a doctor or the Poisons Information Centre (Australia) on 13 11 26.
Advice to Doctor	Treat symptomatically.

Govt of China Export Rebate Revocations – 15 July 2010

Export Rebate Revoked List (technical)

HS	Common Name
29036990401	Humudene
29072990101	hexachlorophen
29081990211	Anti-acarid ester
29081990221	DICHLOROPHEN
29081990231	santobrite
29089910901	para-nitrobenzene phenol natrium
29089990211	fragani acarus ester
29089990221	anti-acarus ester
29089990231	dinosam
29089990241	tal hydroxybenzene
29093000111	methoxychlor&nitrofen
29143990121	pindone
29147000111	chlorophacinone
29147000121	dichlorobenzene quinone
29147000131	chlorandi
29147000141	hexachloroacetone
29153900141	anti-acarus quinone
29154000 10	sodium monoc chloroacetate
29159000111	dalapon
29159000121	erbon
29183100201	2-(acetoxy) benzoic acid
29183600001	binapacryl (ISO)
29183990131	5-nitryl ortho-anisole natrium
29183990151	triiodobenzoic acid
29171900101	tabatrex tabutrex
29172090101	dimethyl carbate
29173410101	enophelifuge
29181990411	propyl ester chlorfenethol
29199000331	lufling phosphate, insect killer
29199000341	poisonous insect catcher, methyl poisonous insect killer
29199000351	heptylene phosphate, isqu
29199000371	chloride phosphate, grass-lufling phosphate
29201900121	chloride oxygen phosphate
29201900171	iodine sulphor phosphor, benzene rice plague curer
29209090111	Endosulfan
29209090121	sulfotepp
29209090131	dinobuton
29209090151	Izopamfos
29209090161	disul
29211990311	2-aminobutane
29214300311	bromethalin
29224999131	me,acarbate,aminocarb,ethyrycarb
29241990121	dicrotophos
29241990151	cellocidin
29310000411	glyphosate
29062900 10	Ketohane, Chlorfenethol
29149000 20	natrium diphacinone
29299090 12	Isolenphos,Isolenphos-methy, Mipafox etc.
29309090 52	Methomyl,aldicarb,enolencarb etc
29329990 11	Carbonfuran

Extract of Govt of China Reduction in Export Rebate Schedule – 15 July 2010

附件2

调低出口退税的商品清单List of commodities with export rebate cut

effective on 01/07/2007

序号	Tariff Item.	商品名称Products	退税率调整tax rebate adjusted to %
199	3808911100	蚊香（不含有一种或多种38章子目注释一所列物质的货品）	5
200	38089111001	按13%征税的蚊香	5
201	38089111002	按17%征税的蚊香	5
202	3808911900	零售包装的其他杀虫剂成药Other insecticides formuation in retail packing	5
203	38089119001	按13%征税的零售包装的其他杀虫剂成药	5
204	38089119002	按17%征税的零售包装的其他杀虫剂成药	5
205	3808919000	非零售包装杀虫剂成药Insecticides formuation in bulk	5
206	3808921000	零售包装的杀菌剂成药Fungicides formulation in retail packing	5
207	38089210001	按13%征税的零售包装的杀菌剂成药fungicides formulation with 13% VAT imposed	5
208	38089210002	按17%征税的零售包装的杀菌剂成药	5
209	3808929010	非零售包装的医用杀菌剂	5
210	38089290101	代森锰锌	5
211	38089290102	非零售包装的医用杀菌剂	5
212	3808929021	经农药杀菌剂浸渍的纸质水果套袋	5
213	38089290211	按13%征税的经农药杀菌剂浸渍的纸质水果套袋	5
214	38089290212	按17%征税的经农药杀菌剂浸渍的纸质水果套袋	5
215	3808929029	非零售包装的其他农用杀菌剂成药Other Fungicides formulation in bulk packing	5
216	3808929090	非零售包装的非农用杀菌剂成药（包括非医用杀菌剂）	5
217	38089311	零售包装的除草剂成药Herbicides formulation in retail packing	5
218	38089319	非零售包装的除草剂成药Herbicides formulation in bulk	5
219	38089391	零售包装抗萌剂及植物生长调节剂PGR formulation in retail packing	5
220	38089399	非零售抗萌剂及植物生长调节剂PGR formulation in bulk	5