



## Brodal® Options Selective Herbicide

Version 1 / AUS  
102000001659

1/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

### SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

#### 1.1 Product identifier

**Trade name** Brodal® Options Selective Herbicide  
**Product code (UVP)** 05922763

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Use** Herbicide

#### 1.3 Details of the supplier of the safety data sheet

**Supplier** Bayer Cropscience Pty Ltd  
ABN 87 000 226 022  
Level 1, 8 Redfern Road  
3123 Hawthorn East  
Victoria  
Australia

**Telephone** (03) 9248 6888

**Telefax** (03) 9248 6800

**Responsible Department** 1800 804 479 Technical Information Service

**Website** [www.crop.bayer.com.au](http://www.crop.bayer.com.au)

#### 1.4 Emergency telephone no.

**Emergency telephone no.** 1800 033 111 IXOM Operations Pty Ltd

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### Classification in accordance with Australian GHS Regulation

Acute aquatic toxicity: Category 1  
H400 Very toxic to aquatic life.

Chronic aquatic toxicity: Category 1  
H410 Very toxic to aquatic life with long lasting effects.

#### 2.2 Label elements

No hazard label for supply/use required.

#### 2.3 Other hazards

No other hazards known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Chemical nature

Diflufenican 500 g/l  
Suspension concentrate (=flowable concentrate)(SC)



**Brodal® Options Selective Herbicide**

Version 1 / AUS  
102000001659

2/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

Chemical name	CAS-No.	Concentration [%]
Diflufenican	83164-33-4	43.50
1,2-Propanediol	57-55-6	> 1.00 - < 10.00
1,2-Benzisothiazol-3(2H)-one	2634-33-5	>= 0.005 - <= 0.05
Other ingredients (non-hazardous) to 100%		

**SECTION 4. FIRST AID MEASURES**

**If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Safety Data Sheet to the doctor.**

**4.1 Description of first aid measures**

- General advice** Remove contaminated clothing immediately and dispose of safely.
- Inhalation** Move the victim to fresh air and keep at rest. If symptoms persist, call a physician.
- Skin contact** Take off contaminated clothing and shoes immediately. Wash off thoroughly with plenty of soap and water, if available with polyethyleneglycol 400, subsequently rinse with water. If symptoms persist, call a physician.
- Eye contact** In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention if irritation develops and persists.
- Ingestion** Rinse mouth. Do NOT induce vomiting. Keep patient warm and at rest. If symptoms persist, call a physician.

**4.2 Most important symptoms and effects, both acute and delayed**

**Symptoms** No symptoms known or expected.

**4.3 Indication of any immediate medical attention and special treatment needed**

**Treatment** There is no specific antidote. Treat symptomatically. Gastric lavage is not normally required. However, if a significant amount (more than a mouthful) has been ingested, administer activated charcoal and sodium sulphate.

**SECTION 5. FIRE FIGHTING MEASURES**

**5.1 Extinguishing media**

- Suitable** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- Unsuitable** High volume water jet



## Brodal® Options Selective Herbicide

Version 1 / AUS  
10200001659

3/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

<b>5.2 Special hazards arising from the substance or mixture</b>	In the event of fire the following may be released:, Carbon monoxide (CO), Nitrogen oxides (NOx), Hydrogen fluoride
<b>5.3 Advice for firefighters</b>	
<b>Special protective equipment for firefighters</b>	In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.
<b>Further information</b>	Remove product from areas of fire, or otherwise cool containers with water in order to avoid pressure being built up due to heat. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Do not allow run-off from fire fighting to enter drains or water courses. Whenever possible, contain fire-fighting water by diking area with sand or earth. Do not allow water to come into direct contact with the product.
<b>Hazchem Code</b>	•3Z

### SECTION 6. ACCIDENTAL RELEASE MEASURES

#### 6.1 Personal precautions, protective equipment and emergency procedures

**Precautions** When dealing with a spillage do not eat, drink or smoke. Avoid contact with spilled product or contaminated surfaces. Use personal protective equipment. Keep people away from and upwind of spill/leak.

**6.2 Environmental precautions** Do not allow to get into surface water, drains and ground water. If the product contaminates rivers and lakes or drains inform respective authorities.

#### 6.3 Methods and materials for containment and cleaning up

**Methods for cleaning up** Recover the product by pumping, suction or absorption using a dry and inert absorbent clay. Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

**Additional advice** Check also for any local site procedures.

**6.4 Reference to other sections** Information regarding safe handling, see section 7.  
Information regarding personal protective equipment, see section 8.  
Information regarding waste disposal, see section 13.

### SECTION 7. HANDLING AND STORAGE

#### 7.1 Precautions for safe handling

**Advice on safe handling** Use only in area provided with appropriate exhaust ventilation.

**Advice on protection against fire and explosion** No special precautions required.

**Hygiene measures** Avoid contact with skin, eyes and clothing. Keep working clothes separately. Wash hands before breaks and immediately after handling the product. Smoking, eating and drinking should be prohibited in the



**Brodal® Options Selective Herbicide**

Version 1 / AUS  
102000001659

4/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

application area.

**7.2 Conditions for safe storage, including any incompatibilities**

**Requirements for storage areas and containers** Keep out of the reach of children. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from direct sunlight. Protect from frost.

**Advice on common storage** Keep away from food, drink and animal feedingstuffs.

**SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1 Control parameters**

Components	CAS-No.	Control parameters	Update	Basis
Diflufenican	83164-33-4	5.5 mg/m3 (TWA)		OES BCS*
1,2-Propanediol (Total vapour and particulates.)	57-55-6	474 mg/m3/150 ppm (TWA)	12 2011	AU NOEL
1,2-Propanediol (Particulate.)	57-55-6	10 mg/m3 (TWA)	12 2011	AU NOEL

\*OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"

**8.2 Exposure controls**

**Respiratory protection** Respiratory protection is not required under anticipated circumstances of exposure. Respiratory protection should only be used to control residual risk of short duration activities, when all reasonably practicable steps have been taken to reduce exposure at source e.g. containment and/or local extract ventilation. Always follow respirator manufacturer's instructions regarding wearing and maintenance.

**Hand protection** Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Wash gloves when contaminated. Dispose of when contaminated inside, when perforated or when contamination on the outside cannot be removed. Wash hands frequently and always before eating, drinking, smoking or using the toilet.

Material	Nitrile rubber
Rate of permeability	> 480 min
Glove thickness	> 0.4 mm
Protective index	Class 6
Directive	Protective gloves complying with EN 374.

**Eye protection** Wear goggles (conforming to EN166, Field of Use = 5 or equivalent).

**Skin and body protection** Wear standard coveralls and Category 3 Type 6 suit.



**Brodal® Options Selective Herbicide**

Version 1 / AUS  
102000001659

5/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

If there is a risk of significant exposure, consider a higher protective type suit.

Wear two layers of clothing wherever possible. Polyester/cotton or cotton overalls should be worn under chemical protection suit and should be professionally laundered frequently.

**General protective measures**

In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the above mentioned recommendations would apply.

**Engineering Controls**

**Advice on safe handling** Use only in area provided with appropriate exhaust ventilation.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

<b>Form</b>	viscous, suspension
<b>Colour</b>	beige
<b>pH</b>	7.5 - 8.5 at 100 % (23 °C)
<b>Flash point</b>	Not relevant; aqueous solution
<b>Ignition temperature</b>	> 600 °C
<b>Density</b>	1.18 g/cm <sup>3</sup> at 20 °C
<b>Water solubility</b>	miscible
<b>Partition coefficient: n-octanol/water</b>	Diflufenican: log Pow: 4.2
<b>Viscosity, dynamic</b>	200 - 280 mPa.s at 20 °C Velocity gradient 39.1 /s
<b>Explosivity</b>	Not explosive

**9.2 Other information** Further safety related physical-chemical data are not known.

**SECTION 10. STABILITY AND REACTIVITY**

**10.1 Reactivity**

**Thermal decomposition** Stable under normal conditions.

**10.2 Chemical stability** Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions** No hazardous reactions when stored and handled according to prescribed instructions.



## Brodal® Options Selective Herbicide

Version 1 / AUS  
102000001659

6/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

- 10.4 Conditions to avoid** Extremes of temperature and direct sunlight.
- 10.5 Incompatible materials** Store only in the original container.
- 10.6 Hazardous decomposition products** Thermal decomposition can lead to release of:  
Oxides of carbon  
Nitrogen oxides (NO<sub>x</sub>)  
Hydrogen fluoride

### SECTION 11. TOXICOLOGICAL INFORMATION

#### 11.1 Information on toxicological effects

- Acute oral toxicity** LD50 (Rat) > 2,360 mg/kg
- Acute inhalation toxicity** LC50 (Rat) > 5.12 mg/l  
Exposure time: 4 h  
The value mentioned relates to the active ingredient diflufenican.
- Acute dermal toxicity** LD50 (Rat) > 2,360 mg/kg
- Skin irritation** No skin irritation (Rabbit)
- Eye irritation** No eye irritation (Rabbit)
- Sensitisation** Non-sensitizing.

#### Assessment mutagenicity

Diflufenican was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

#### Assessment carcinogenicity

Diflufenican was not carcinogenic in lifetime feeding studies in rats and mice.

#### Assessment toxicity to reproduction

Diflufenican did not cause reproductive toxicity in a two-generation study in rats.

#### Assessment developmental toxicity

Diflufenican did not cause developmental toxicity in rats and rabbits.

#### Assessment STOT Specific target organ toxicity – single exposure

Diflufenican: Based on available data, the classification criteria are not met.

#### Assessment STOT Specific target organ toxicity – repeated exposure

Diflufenican did not cause specific target organ toxicity in experimental animal studies.

#### Aspiration hazard

Based on available data, the classification criteria are not met.

#### Information on likely routes of exposure

May cause irritation of the mucous membranes.  
No skin irritation  
Non-sensitizing.  
May cause mild irritation to eyes.  
May be harmful if swallowed.



## Brodal® Options Selective Herbicide

Version 1 / AUS  
102000001659

7/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

### Early onset symptoms related to exposure

Refer to Section 4

### Delayed health effects from exposure

Refer to Section 11

### Exposure levels and health effects

Refer to Section 4

### Interactive effects

Not known

### When specific chemical data is not available

Not applicable

### Mixture of chemicals

Refer to Section 2.1

### Further information

No further toxicological information is available.

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

<b>Toxicity to fish</b>	LC50 ( <i>Oncorhynchus mykiss</i> (rainbow trout)) > 109 µg/l Exposure time: 96 h The value mentioned relates to the active ingredient diflufenican.
<b>Toxicity to aquatic invertebrates</b>	EC50 ( <i>Daphnia magna</i> (Water flea)) > 240 µg/l Exposure time: 48 h The value mentioned relates to the active ingredient diflufenican.
<b>Toxicity to aquatic plants</b>	EC50 ( <i>Desmodesmus subspicatus</i> (green algae)) 0.45 µg/l Growth rate; Exposure time: 72 h The value mentioned relates to the active ingredient diflufenican.
<b>Toxicity to other organisms</b>	LD50 ( <i>Colinus virginianus</i> (Bobwhite quail)) > 2,150 mg/kg The value mentioned relates to the active ingredient diflufenican.  LD50 ( <i>Anas platyrhynchos</i> (Mallard duck)) > 4,000 mg/kg The value mentioned relates to the active ingredient diflufenican.

### 12.2 Persistence and degradability

**Biodegradability** Diflufenican:  
Not rapidly biodegradable

**Koc** Diflufenican: Koc: 3417

### 12.3 Bioaccumulative potential

**Bioaccumulation** Diflufenican: Bioconcentration factor (BCF) 1,596  
Does not bioaccumulate.

### 12.4 Mobility in soil

**Mobility in soil** Diflufenican: Slightly mobile in soils



**Brodal® Options Selective Herbicide**

Version 1 / AUS  
102000001659

8/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

**12.5 Other adverse effects**

**Additional ecological information**                      No other effects to be mentioned.

**SECTION 13. DISPOSAL CONSIDERATIONS**

Metal drums and plastic containers:  
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 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.  
Do not reuse container for any other purpose.

**SECTION 14. TRANSPORT INFORMATION**

**ADG**

UN number	<b>3082</b>
Transport hazard class(es)	9
Subsidiary Risk	None
Packaging group	III
Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIFLUFENICAN SOLUTION)
Hazchem Code	•3Z

According to AU01, Environmentally Hazardous Substances in packagings, IBC or any other receptacle not exceeding 500 kg or 500 L are not subject to the ADG Code.

**IMDG**

UN number	<b>3082</b>
Transport hazard class(es)	9
Subsidiary Risk	None
Packaging group	III
Marine pollutant	YES
Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIFLUFENICAN SOLUTION)

**IATA**

UN number	<b>3082</b>
Transport hazard class(es)	9
Subsidiary Risk	None
Packaging group	III
Environm. Hazardous Mark	YES
Description of the goods	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (DIFLUFENICAN SOLUTION )





## Brodal® Options Selective Herbicide

Version 1 / AUS  
102000001659

9/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

### SECTION 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994  
Australian Pesticides and Veterinary Medicines Authority approval number: 53843

#### SUSMP classification (Poison Schedule)

Exempt (Standard for the Uniform Scheduling of Medicines and Poisons)

### SECTION 16. OTHER INFORMATION

**Trademark information** Brodal® is a registered trademark of the Bayer Group.

This SDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this SDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

#### Abbreviations and acronyms

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute toxicity estimate
AU OEL	Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment)
CAS-Nr.	Chemical Abstracts Service number
CEILING	Ceiling Limit Value
Conc.	Concentration
EC-No.	European community number
ECx	Effective concentration to x %
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
EN	European Standard
EU	European Union
IATA	International Air Transport Association
IBC	International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
ICx	Inhibition concentration to x %
IMDG	International Maritime Dangerous Goods
LCx	Lethal concentration to x %
LDx	Lethal dose to x %
LOEC/LOEL	Lowest observed effect concentration/level
MARPOL	MARPOL: International Convention for the prevention of marine pollution from ships
N.O.S.	Not otherwise specified
NOEC/NOEL	No observed effect concentration/level



## Brodal® Options Selective Herbicide

Version 1 / AUS  
102000001659

10/10  
Revision Date: 17.08.2017  
Print Date: 17.08.2017

OECD	Organization for Economic Co-operation and Development
OES BCS	OES BCS: Internal Bayer AG, Crop Science Division "Occupational Exposure Standard"
PEAK	PEAK: Exposure Standard - Peak means a maximum or peak airborne concentration of a particular substance determined over the shortest analytically practicable period of time which does not exceed 15 minutes.
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SK-SEN	Skin sensitiser
SKIN_DES	SKIN_DES: Skin notation: Absorption through the skin may be a significant source of exposure.
STEL	STEL: Exposure standard - short term exposure limit (STEL): A 15 minute TWA exposure which should not be exceeded at any time during a working day even if the eight-hour TWA average is within the TWA exposure standard. Exposures at the STEL should not be longer than 15 minutes and should not be repeated more than four times per day. There should be at least 60 minutes between successive exposures at the STEL.
TWA	TWA: Exposure standard - time-weighted average (TWA): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

END OF SDS