

# MATERIAL SAFETY DATA SHEET



Date of Issue: August 25<sup>th</sup> 2010

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product name** Brodal® Options Selective Herbicide

**Other names** None

**Product codes and pack sizes** 4278428 (5 L), 4278436 (10 L)

**Chemical group** Nicotinilide

**Recommended use** Agricultural herbicide

**Formulation** Suspension concentrate (SC)

**Supplier** Bayer CropScience Pty Ltd ABN 87 000 226 022

**Address** 391 - 393 Tooronga Road, East Hawthorn, Victoria 3123, Australia

**Telephone** (03) 9248 6888

**Facsimile** (03) 9248 6800

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

**Contact** Development Manager (03) 9248 6888

**Emergency Telephone Number** 1800 033 111 – Orica SH&E Shared Services

## 2. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW**  
**NON HAZARDOUS SUBSTANCE – DANGEROUS GOOD**  
**Very toxic to aquatic organisms.**

**Hazard classification** Not Hazardous (National Occupational Health and Safety Commission - NOHSC)

**Risk phrases** None

**Safety phrases** See Sections 4, 5, 6, 7, 8, 10, 12, 13

**ADG classification** See Section 14.

**SUSDP classification (Poison Schedule)** Not scheduled – Exempt (Standard for the Uniform Scheduling of Drugs and Poisons)

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Diflufenican	[83164-33-4]	500
Propane-1,2-diol	[57-55-6]	50
Other ingredients, including water	(non hazardous)	625

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## 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 Material Safety Data Sheet to the doctor.**

<b>Inhalation</b>	If inhaled, remove to fresh air and keep at rest. Obtain medical advice if symptoms persist.
<b>Skin contact</b>	Carefully remove contaminated clothing. Wash affected areas with soap and water. Seek medical aid if symptoms persist.
<b>Eye contact</b>	Rinse eyes immediately with plenty of clean water and obtain medical aid.
<b>Ingestion</b>	Wash out mouth with water. Do NOT induce vomiting. Keep patient at rest and seek medical advice immediately.
<b>First Aid Facilities</b>	Provide eyewash and safety shower facilities in the workplace.
<b>Medical attention</b>	Diflufenican has a low order of toxicity. There is no antidote. Treat symptoms.

## 5. FIRE FIGHTING MEASURES

<b>Extinguishing media</b>	Water spray, foam, carbon dioxide, dry powder
<b>Hazards from combustion products</b>	Oxides of carbon and nitrogen, and hydrogen fluoride may be released in a fire.
<b>Precautions for fire fighters</b>	The product itself does not burn. Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Toxic decomposition products may be produced in a fire. If possible and without risk, remove intact containers from exposure to fire. Otherwise, spray unopened containers with water to keep cool. Keep unnecessary people away. Bund area to prevent contamination of water sources. Dispose of fire control water and spillage safely later.
<b>Hazchem code</b>	3Z

## 6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled material or contaminated surfaces. When dealing with spills do not eat, drink or smoke and wear protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Keep people and animals away and upwind. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled, sealed drums for safe disposal. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Keep out of reach of children. Avoid contact with eyes and skin. Wash hands after use.
<b>Storage</b>	Store in the closed, original container in a dry, cool, well-ventilated area out of direct sunlight. Protect from frost.

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## 7. HANDLING AND STORAGE - continued

**Flammability** Not flammable or combustible

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure standards** The NOHSC exposure standards are:  
Propane-1,2-diol total (vapour & particulates) TWA 150 ppm (474 mg/m<sup>3</sup>)  
Propane-1,2-diol : particulates only TWA 10 mg/m<sup>3</sup>

### Definitions

*Exposure standard – Time Weighted Average (TWA)* means the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.

**Biological limit values** None allocated

**Engineering controls** Control process conditions to avoid contact. Use in a well-ventilated area only.

**Personal Protective Equipment** This product has a low toxicity, but if exposure to a large amount is likely, the following protection is recommended:

- Glasses or goggles
- Long sleeved overalls
- Elbow-length PVC gloves
- Respiratory protection is not normally required. However, if inhalation exposure is likely to exceed the exposure standards above, an AS/NZS 1715/1716 approved respirator should be worn.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** A viscous, light brown liquid suspension  
**Odour:** Characteristic slightly sweet  
**pH:** 7.5 to 8.5 (undiluted)  
**Vapour pressure:** 4.25 x 10<sup>-3</sup> mPa (*diflufenican*) at 25° C  
**Vapour density:** Not available  
**Boiling point:** Greater than 100°C  
**Freezing/melting point:** Not available  
**Solubility:** Miscible with water  
**Density:** 1.175 g/mL at 20° C  
**Flash Point:** > 100° C  
**Flammability (explosive) limits:** Not available  
**Auto-ignition temperature:** Not available  
**Partition coefficient (octanol/water):** *Diflufenican*: Log P<sub>ow</sub> = 4.2

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## 10. STABILITY AND REACTIVITY

<b>Chemical stability</b>	Stable under normal conditions of use.
<b>Conditions to avoid</b>	Avoid extremes of temperature.
<b>Incompatible materials</b>	None known.
<b>Hazardous decomposition products</b>	Oxides of carbon and nitrogen, and hydrogen fluoride may be generated in a fire.
<b>Hazardous reactions</b>	None

## 11. TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

<b>Inhalation</b>	May irritate mucous membranes of nose and mouth.
<b>Skin contact</b>	Not a skin irritant. Studies indicate that this product is not a sensitising agent.
<b>Eye contact</b>	Mild eye irritant.
<b>Ingestion</b>	This product has a low acute oral toxicity, but may be harmful if a large amount is swallowed.

### ANIMAL TOXICITY DATA – PRODUCT

<b>Acute:</b>	
<b>Oral toxicity</b>	LD <sub>50</sub> rat: > 2360 mg/kg
<b>Dermal toxicity</b>	LD <sub>50</sub> rat: > 2360 mg/kg
<b>Inhalation toxicity</b>	Inhalation LC <sub>50</sub> rat: > 5.12 mg/L (4 h) ( <i>diflufenican</i> )
<b>Skin irritation</b>	Non irritating (rabbit)
<b>Eye irritation</b>	Non irritating (rabbit)
<b>Sensitisation</b>	Not sensitising (guinea pig)

### Chronic:

Diflufenican was not mutagenic, carcinogenic or teratogenic and did not show reproductive effects in animal studies.

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## 12. ECOLOGICAL INFORMATION

Very toxic to aquatic organisms. Low hazard to bees, birds and earthworms.  
DO NOT contaminate streams, rivers or waterways with Brodal Options or the used containers.

**Ecotoxicity**

*Diflufenican:*  
*Fish toxicity:*  
LC<sub>50</sub> (96 h) rainbow trout > 109 µg/L  
*Toxicity to daphnia*  
EC<sub>50</sub> (48 h) *Daphnia magna* > 240 µg/L  
*Algal toxicity*  
EC<sub>50</sub> (72 h) Algae (*Scenedesmus subspicatus*) 0.45 µg/L  
*Bird toxicity*  
Acute oral LD<sub>50</sub> bobwhite quail > 2150 mg/kg  
Acute oral LD<sub>50</sub> mallard duck > 4000 mg/kg

**Environmental fate, persistence and degradability, mobility**

*Diflufenican:*  
Not readily biodegradable.  
Bioconcentration factor (BCF) (rainbow trout): 1596. Does not bioaccumulate.  
DT<sub>50</sub> varies from 15 to 30 weeks depending on soil type and water content.

## 13. DISPOSAL CONSIDERATIONS

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 or product should not be burnt. Dispose of waste material via a reputable waste disposal contractor.

## 14. TRANSPORT INFORMATION

**UN number** UN 3082  
**Proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S (contains diflufenican)  
**Class and Subsidiary Risk** Class 9  
**Packing Group** Packing Group III  
**Hazchem code** •3Z  
**Marine Pollutant** Yes  
**Note for Road and Rail Transport** According to AU01, Environmentally Hazardous Substances in packagings, IBCs or any other receptacle not exceeding 500 kg or 500 L are not subject to the ADG Code

## 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994.  
Australian Pesticides and Veterinary Medicines Authority approval number: 53843  
See also Section 2.

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## 16. OTHER INFORMATION

**Trademark information** Brodal<sup>®</sup> is a Registered Trademark of Bayer.

**Preparation information** Replaces November 26<sup>th</sup> 2009 edition.  
Reasons for revision: Hazard identification

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

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

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.

END OF MSDS