SECTION 1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Trade name	Roundup Biactive® Herbicide
Product code (UVP)	62290054

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

Use	Herbicide
Restrictions on use	See product label for restrictions.

1.3 Details of the supplier of the safety data sheet

Supplier	Bayer Cropscience Pty Ltd ABN 87 000 226 022 Level 4, 109 Burwood Rd Hawthorn 3122 Victoria Australia
Telephone	(03) 9248 6888
Telefax	(03) 9248 6800
Responsible Department	1800 804 479 Technical Information Service
Website	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

Eye irritation: Category 2B
H320 Causes eye irritation.

2.2 Label elements

Labelling according to specific Australian legislation

Hazard label for supply/use required.

Hazardous components which must be listed on the label:

Isopropylamine salt of glyphosate

Signal word: Warning

Hazard statements

H320 Causes eye irritation.

Precautionary statements

P264 Wash hands thoroughly after handling.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

2.3 Other hazards

No additional hazards known beside those mentioned.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

Isopropylamine salt of glyphosate 486 g/l
Soluble concentrate (SL)

Chemical name	CAS-No.	Concentration [%]
Isopropylamine salt of glyphosate	38641-94-0	41.43
D-Glucopyranose, oligomeric, decyl octyl glycosides	68515-73-1	> 5.00 - < 10.00
1,2-Ethanediamine, polymer with 2-methyloxirane and oxirane	26316-40-5	> 5.00 - < 10.00
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 Move out of dangerous area. Place and transport victim in stable position (lying sideways). Remove contaminated clothing immediately and dispose of safely.

Inhalation Move to fresh air. Keep patient warm and at rest. Call a physician or poison control center immediately.

Skin contact Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Call a physician or poison control center immediately.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Ingestion	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms	To date no symptoms are known.

4.3 Indication of any immediate medical attention and special treatment needed

Risks	This product is not a cholinesterase inhibitor.
Treatment	Treatment with atropine and oximes is not indicated. Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

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
5.2 Special hazards arising from the substance or mixture	In the event of fire the following may be released: Carbon monoxide (CO), Carbon dioxide (CO2), Nitrogen oxides (NOx), Oxides of phosphorus

5.3 Advice for firefighters

Special protective equipment for firefighters	In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self-contained breathing apparatus.
Further information	Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Hazchem Code Not applicable

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Precautions	Use personal protective equipment. Keep unauthorized people away. Avoid contact with spilled product or contaminated surfaces.
6.2 Environmental precautions	Do not allow to get into surface water, drains and ground water.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Keep in suitable, closed containers for disposal. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional advice	Use personal protective equipment. If the product is accidentally spilled, do not allow to enter soil, waterways or waste water canal. Do not allow product to contact non-target plants.
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	Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.
Hygiene measures	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing. Keep working clothes separately. Garments that cannot be cleaned must be destroyed (burnt).

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	Store in original container. Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in a place accessible by authorized persons only. Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode. Protect from freezing. Partial crystallization may occur on prolonged storage below the minimum storage temperature. Freezing will affect the physical condition but will not damage the material. Thaw and mix before using.
Advice on common storage	Keep away from food, drink and animal feedingstuffs.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

No known occupational limit values.

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

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.
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.

Material	Nitrile rubber
Rate of permeability	> 480 min
Glove thickness	> 0.4 mm
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.
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.
If chemical protection suit is splashed, sprayed or significantly contaminated, decontaminate as far as possible, then carefully remove and dispose of as advised by manufacturer.

General protective measures

If product is handled while not enclosed, and if contact may occur:
Complete suit protecting against chemicals
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

Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Form	Liquid, free from foreign matter
Colour	green to dark green
Odour	No data available
Odour Threshold	No data available
pH	4.4 - 4.8 (8 %) (23 °C) (deionized water)
Melting point/range	No data available

Boiling point/boiling range	105 °C
Flash point	does not flash
Flammability	No data available
Auto-ignition temperature	No data available
Thermal decomposition	No data available
Minimum ignition energy	No data available
Self-accelarating decomposition temperature (SADT)	No data available
Upper explosion limit	No data available
Lower explosion limit	No data available
Vapour pressure	No significant volatility., aqueous solution
Evaporation rate	No data available
Relative vapour density	No data available
Relative density	1.173 (20 °C) Water at 4 °C
Density	ca. 1.17 g/cm³ (20 °C)
Water solubility	soluble
Partition coefficient: n-octanol/water	Glyphosate: log Pow: -3.2
Viscosity, dynamic	No data available
Viscosity, kinematic	No data available
Oxidizing properties	No data available
Explosivity	Not explosive
9.2 Other information	Further safety related physical-chemical data are not known.

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity	Stable under normal conditions.
10.2 Chemical stability	Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions	Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.4 Conditions to avoid	Extremes of temperature and direct sunlight.
10.5 Incompatible materials	Galvanised steel, Unlined mild steel
10.6 Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute oral toxicity	LD50 (Rat) > 2,000 mg/kg Test conducted with a similar formulation.
Acute inhalation toxicity	Based on available data, the classification criteria are not met. During intended and foreseen applications, no respirable aerosol is formed.
Acute dermal toxicity	LD50 (Rat) > 2,000 mg/kg Test conducted with a similar formulation.
Skin corrosion/irritation	Slight irritant effect - does not require labelling. (Rabbit) Test conducted with a similar formulation.
Serious eye damage/eye irritation	Slight irritant effect - does not require labelling. (Rabbit) Test conducted with a similar formulation.
Respiratory or skin sensitisation	Skin: Non-sensitizing. (Guinea pig) OECD Test Guideline 406, Buehler test Test conducted with a similar formulation.

Assessment mutagenicity

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

Assessment carcinogenicity

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

Assessment toxicity to reproduction

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

Assessment developmental toxicity

Glyphosate did not cause developmental toxicity in rats and rabbits.

Assessment STOT Specific target organ toxicity – single exposure

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

Assessment STOT Specific target organ toxicity – repeated exposure

Glyphosate 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

Harmful if inhaled.
May cause skin irritation.
Causes eye irritation.
Harmful if swallowed.

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

Toxicity to fish	LC50 (Oncorhynchus mykiss (rainbow trout)) > 1,039 mg/l static test; Exposure time: 96 h Test conducted with a similar formulation. LC50 (Lepomis macrochirus (Bluegill sunfish)) 47 mg/l static test; Exposure time: 96 h The value mentioned relates to the active ingredient glyphosate.
Chronic toxicity to fish	Oncorhynchus mykiss (rainbow trout) flow-through test NOEC: >= 9.63 mg/l The value mentioned relates to the active ingredient glyphosate.
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 243 mg/l Exposure time: 48 h Test conducted with a similar formulation. LC50 (Crassostrea gigas (Portuguese oyster)) 40 mg/l static test; Exposure time: 48 h The value mentioned relates to the active ingredient glyphosate.
Chronic toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)): 12.5 mg/l Exposure time: 21 d The value mentioned relates to the active ingredient glyphosate.
Toxicity to aquatic plants	ErC50 (Raphidocelis subcapitata (freshwater green alga)) 118 mg/l

	static test; Exposure time: 72 h Test conducted with a similar formulation.
	ErC50 (Skeletonema costatum) 13.5 mg/l Growth rate; Exposure time: 72 h The value mentioned relates to the active ingredient glyphosate.
Toxicity to other organisms	(Eisenia fetida (earthworms)) 1,250 mg/kg Exposure time: 48 h
	LC50 (Apis mellifera (bees)) Exposure time: 48 h
	LD50 (Apis mellifera (bees)) > 25 µg/bee Exposure time: 48 h
	NOEC (Apis mellifera (bees)) 25 µg/bee Exposure time: 48 h

12.2 Persistence and degradability

Biodegradability	Glyphosate: Not rapidly biodegradable
Koc	Glyphosate: Koc: 6920

12.3 Bioaccumulative potential

Bioaccumulation	Glyphosate: Does not bioaccumulate.

12.4 Mobility in soil

Mobility in soil	Glyphosate: Immobile in soil

12.5 Other adverse effects

Additional ecological information	No further ecological information is available.

SECTION 13. DISPOSAL CONSIDERATIONS

Triple-rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. Do not burn empty containers or product.
Do not reuse container for any other purpose.

SECTION 14. TRANSPORT INFORMATION

According to national and international transport regulations not classified as dangerous goods.

SECTION 15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994

Australian Pesticides and Veterinary Medicines Authority approval number: 48518

SUSMP classification (Poison Schedule)

Schedule 5 (Standard for the Uniform Scheduling of Medicines and Poisons)

SECTION 16. OTHER INFORMATION

Trademark information Roundup Biactive® is a Registered Trademark of the Bayer Group.

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
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

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.

Reason for Revision: Reviewed and updated for general editorial purposes.

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