

**MONSANTO Europe S.A.**  
Material Safety Data Sheet  
Commercial Product

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name**

**Roundup® Pro Biactive®**

**Product use**

Herbicide

**Chemical name**

Not applicable.

**Synonyms**

None.

**Company**

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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Active ingredient**

Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

**Composition**

Components	CAS No.	EINECS/ ELINCS No.	% by weight (approximate)	EU Symbols & R phrases of components
Isopropylamine salt of glyphosate	38641-94-0	254-056-8	41.5	
Surfactant			16	R53; {a}
Water	7732-18-5	231-791-2	42.5	

## 3. HAZARDS IDENTIFICATION

**Classification following the EU Dangerous Preparations' Directive 1999/45/EC.**

Not classified as dangerous.

**Potential health effects**

**Likely routes of exposure**

Skin contact, eye contact

**Eye contact, short term**

Not expected to produce significant adverse effects when recommended use instructions are followed.

**Skin contact, short term**

Not expected to produce significant adverse effects when recommended use instructions are followed.

**Inhalation, short term**

Not expected to produce significant adverse effects when recommended use instructions are followed.

**Potential environmental effects**

Not expected to produce significant adverse effects when recommended use instructions are followed.

Refer to section 11 for toxicological and section 12 for environmental information.

## 4. FIRST AID MEASURES

#### **Eye contact**

Immediately flush with plenty of water.  
If easy to do, remove contact lenses.

#### **Skin contact**

Take off contaminated clothing, wristwatch, jewellery.  
Wash affected skin with plenty of water.  
Wash clothes and clean shoes before re-use.

#### **Inhalation**

Remove to fresh air.

#### **Ingestion**

Immediately offer water to drink.  
Do NOT induce vomiting unless directed by medical personnel.  
If symptoms occur, get medical attention.

#### **Advice to doctors**

This product is not an inhibitor of cholinesterase.

#### **Antidote**

Treatment with atropine and oximes is not indicated.

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## **5. FIRE-FIGHTING MEASURES**

#### **Flash point**

Does not flash.

#### **Extinguishing media**

Recommended: Water, foam, dry chemical, carbon dioxide (CO<sub>2</sub>)

#### **Unusual fire and explosion hazards**

Minimise use of water to prevent environmental contamination.  
Environmental precautions: see section 6.

#### **Hazardous products of combustion**

Carbon monoxide (CO), phosphorus oxides (P<sub>x</sub>O<sub>y</sub>), nitrogen oxides (NO<sub>x</sub>)

#### **Fire fighting equipment**

Self-contained breathing apparatus.  
Equipment should be thoroughly decontaminated after use.

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## **6. ACCIDENTAL RELEASE MEASURES**

#### **Personal precautions**

Use personal protection recommended in section 8.

#### **Environmental precautions**

SMALL QUANTITIES:  
Low environmental hazard.  
LARGE QUANTITIES:  
Minimise spread.  
Keep out of drains, sewers, ditches and water ways.  
Notify authorities.

#### **Methods for cleaning up**

SMALL QUANTITIES:  
Flush spill area with water.  
LARGE QUANTITIES:  
Absorb in earth, sand or absorbent material.

Dig up heavily contaminated soil.  
Collect in containers for disposal.  
Refer to section 7 for types of containers.  
Flush residues with small quantities of water.  
Minimise use of water to prevent environmental contamination.

Refer to section 13 for disposal of spilled material.

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## 7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

### Handling

When using do not eat, drink or smoke.  
Wash hands thoroughly after handling or contact.  
Thoroughly clean equipment after use.  
Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.  
Emptied containers retain vapour and product residue.

### Storage

Minimum storage temperature: -15 °C  
Maximum storage temperature: 50 °C  
Compatible materials for storage: stainless steel, aluminium, fibreglass, plastic, glass lining  
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.  
Keep out of reach of children.  
Keep away from food, drink and animal feed.  
Keep only in the original container.  
Partial crystallization may occur on prolonged storage below the minimum storage temperature.  
If frozen, place in warm room and shake frequently to put back into solution.  
Minimum shelf life: 5 years.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.
Surfactant	No specific occupational exposure limit has been established.
Water	No specific occupational exposure limit has been established.

### Engineering controls

No special requirement when used as recommended.

### Eye protection

No special requirement when used as recommended.

### Skin protection

If repeated or prolonged contact:  
Wear chemical resistant gloves.

### Respiratory protection

No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Yellowish - Brown
Form:	Liquid
Odour:	Earthy
Boiling point:	105.3 °C
Flash point:	Does not flash.
Specific gravity:	1.17 @ 20 °C / 4 °C
Dynamic viscosity:	65 mPa·s
Solubility:	Water: Completely miscible.
pH:	4.6 - 5.0 @ 80 g/l
Partition coefficient (log Pow):	-3.2 @ 25 °C (glyphosate)

## 10. STABILITY AND REACTIVITY

### Stability

Stable under normal conditions of handling and storage.

### Hazardous decomposition

Thermal decomposition: Hazardous products of combustion: see section 5.

### Materials to avoid/Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

## 11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on product and components are summarized below.

### Acute oral toxicity

**Rat, LD50:** > 5,000 mg/kg body weight

No mortality.

### Acute dermal toxicity

**Rat, LD50:** > 5,000 mg/kg body weight

No mortality.

### Skin irritation

**Rabbit, 6 animals, OECD 404 test:**

Redness, mean EU score: 0.11

Swelling, mean EU score: 0.00

Days to heal: 3

### Eye irritation

**Rabbit, 6 animals, OECD 405 test:**

Conjunctival redness, mean EU score: 1.11

Conjunctival swelling, mean EU score: 0.00

Corneal opacity, mean EU score: 0.00

Iris lesions, mean EU score: 0.00

Days to heal: 7

### Skin sensitization

**Guinea pig, 9-induction Buehler test:**

Positive incidence: 0 %

### N-(phosphonomethyl)glycine: {glyphosate}

### Mutagenicity

**In vitro and in vivo mutagenicity test(s):**

Not mutagenic.

### **Repeated dose toxicity**

#### **Rabbit, dermal, 21 days:**

NOAEL toxicity: > 5,000 mg/kg body weight/day  
Target organs/systems : none  
Other effects: none

#### **Rat, oral, 3 months:**

NOAEL toxicity: > 20,000 mg/kg diet  
Target organs/systems : none  
Other effects: none

### **Carcinogenicity**

#### **Mouse, oral, 24 months:**

NOEL tumour: > 30,000 mg/kg diet  
NOAEL toxicity: ~ 5,000 mg/kg diet  
Tumours: none  
Target organs/systems: liver  
Other effects: decrease of body weight gain, histopathologic effects

#### **Rat, oral, 24 months:**

NOEL tumour: > 20,000 mg/kg diet  
NOAEL toxicity: ~ 8,000 mg/kg diet  
Tumours: none  
Target organs/systems : eyes  
Other effects: decrease of body weight gain, histopathologic effects

### **Toxicity to reproduction/fertility**

#### **Rat, oral, 3 generations:**

NOAEL toxicity: > 30 mg/kg body weight  
NOAEL reproduction: > 30 mg/kg body weight  
Target organs/systems in parents: none  
Other effects in parents: none  
Target organs/systems in pups: none  
Other effects in pups: none

### **Developmental toxicity/teratogenicity**

#### **Rat, oral, 6 - 19 days of gestation:**

NOAEL toxicity: 1,000 mg/kg body weight  
NOAEL development: 1,000 mg/kg body weight  
Other effects in mother animal: decrease of body weight gain, decrease of survival  
Developmental effects: weight loss, post-implantation loss, delayed ossification  
Effects on offspring only observed with maternal toxicity.

#### **Rabbit, oral, 6 - 27 days of gestation:**

NOAEL toxicity: 175 mg/kg body weight  
NOAEL development: 175 mg/kg body weight  
Target organs/systems in mother animal: none  
Other effects in mother animal: decrease of survival  
Developmental effects: none

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## **12. ECOLOGICAL INFORMATION**

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on product and components are summarized below.

### **Aquatic toxicity, fish**

#### **Rainbow trout (*Oncorhynchus mykiss*):**

Acute toxicity, 96 hours, flowthrough, LC50: > 989 mg/L

#### **Common carp (*Cyprinus carpio*):**

Acute toxicity, 96 hours, flowthrough, LC50: > 895 mg/L

### **Aquatic toxicity, invertebrates**

#### **Water flea (*Daphnia magna*):**

Acute toxicity, 48 hours, flowthrough, EC50: 676 mg/L

### **Aquatic toxicity, algae/aquatic plants**

#### **Green algae (*Selenastrum capricornutum*):**

Acute toxicity, 72 hours, static, ErC50 (growth rate): 393 mg/L

#### **Avian toxicity**

##### **Mallard duck (*Anas platyrhynchos*):**

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet

##### **Bobwhite quail (*Colinus virginianus*):**

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet

#### **Arthropod toxicity**

##### **Honey bee (*Apis mellifera*):**

Oral, 48 hours, LD50: > 254 µg/bee

##### **Honey bee (*Apis mellifera*):**

Contact, 48 hours, LD50: > 330 µg/bee

#### **Soil organism toxicity, invertebrates**

##### **Earthworm (*Eisenia foetida*):**

Acute toxicity, 14 days, LC50: > 1,250 mg/kg dry soil

#### **Soil organism toxicity, microorganisms**

##### **Nitrogen and carbon transformation test:**

53 L/ha, 28 days: Less than 25% effect on nitrogen or carbon transformation processes in soil.

#### **N-(phosphonomethyl)glycine: {glyphosate}**

#### **Bioaccumulation**

##### **Bluegill sunfish (*Lepomis macrochirus*):**

Whole fish: BCF: < 1

No significant bioaccumulation is expected.

#### **Dissipation**

##### **Soil, field:**

Half life: 2 - 174 days

Koc: 884 - 60,000 L/kg

Adsorbs strongly to soil.

##### **Water, aerobic:**

Half life: < 7 days

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### **13. DISPOSAL CONSIDERATIONS**

#### **Product**

- Recycle if appropriate facilities/equipment available.
- Burn in special, controlled high temperature incinerator.
- Dispose of as hazardous industrial waste.
- Keep out of drains, sewers, ditches and water ways.
- Follow all local/regional/national/international regulations.

#### **Container**

- Triple or pressure rinse empty containers.
- Pour rinse water into spray tank.
- Store for collection by approved waste disposal service.
- Dispose of as non hazardous industrial waste.
- Do NOT re-use containers.
- Follow all local/regional/national/international regulations.

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### **14. TRANSPORT INFORMATION**

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Not regulated for transport.

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### **15. REGULATORY INFORMATION**

**|| Classification following the EU Dangerous Preparations' Directive 1999/45/EC.**

**|| Not classified as dangerous.**

## 16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.  
Follow all local/regional/national/international regulations.  
Please consult supplier if further information is needed.

This Safety Data Sheet has been prepared following the EU Directive 91/155/EEC as amended by EU Directive 93/112/EC and EU Directive 2001/58/EC.

In this document the British spelling was applied.

® Registered trademark.

|| Changes versus previous edition.

### EU Symbols & R phrases of components

Components	EU Symbols & R phrases of components
Isopropylamine salt of glyphosate	
Surfactant	R53 May cause long-term adverse effects in the aquatic environment.
Water	

### Endnotes:

- {a} EU label (manufacturer self-classification)
- {b} EU label (Annex I)
- {c} National classification

Full denomination of most frequently used acronyms. BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short -Term Exposure Limit), TLV-C (Threshold Limit Value -Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

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