

<p style="text-align: center;"><b>MONSANTO Europe S.A.</b> Safety Data Sheet Commercial Product</p>
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## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name**

**Roundup® Metro**

**Product use**

Herbicide

**Chemical name**

Not applicable.

**Synonyms**

None.

**Company/(Sales office)**

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**Emergency numbers**

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## 2. HAZARDS IDENTIFICATION

**EU label (manufacturer self-classification)** - Classification following the EU Dangerous Preparations' Directive 1999/45/EC.

N - Dangerous for the environment

R50/53                      Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**National classification** - U.K.

Xi - Irritant, N - Dangerous for the environment

R38                              Irritating to skin.

R50/53                      Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Potential health effects**

**Likely routes of exposure**

Skin contact, eye contact, inhalation

**Eye 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**

Very toxic to aquatic organisms.

May cause long-term adverse effects in the aquatic environment.

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

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Active ingredient**

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

### Composition

Components	CAS No.	EINECS/ ELINCS No.	% by weight (approximate)	EU Symbols & R phrases of components
Potassium salt of glyphosate	70901-12-1		35.5	N; R51/53; {b}
Surfactant(s)			7	Xn, N; R22, 38, 41, 50/53; {a}
Water and minor formulating ingredients			57.5	

The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

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## 4. FIRST AID MEASURES

Use personal protection recommended in section 8.

### Eye contact

Immediately flush with plenty of water.  
Continue for at least 15 minutes.  
If easy to do, remove contact lenses.  
If there are persistent symptoms, obtain medical advice.

### Skin contact

Immediately wash affected skin with plenty of water.  
Continue for at least 15 minutes.  
Use soap if available.  
Take off contaminated clothing, wristwatch, jewellery.  
If spilled into boots, remove immediately.  
Wash clothes and clean shoes before re-use.  
If there are persistent symptoms, obtain medical advice.

### Inhalation

Remove to fresh air.

### Ingestion

Immediately offer water to drink.  
Never give anything by mouth to an unconscious person.  
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

Keep all non-essential people away from affected area.  
Use personal protection recommended in section 8.

### Environmental precautions

Minimise spread.  
Keep out of drains, sewers, ditches and water ways.  
Notify authorities.

### Methods for cleaning up

Absorb in earth, sand or absorbent material.  
Dig up heavily contaminated soil.  
Refer to section 7 for types of containers.  
Collect in containers for disposal.  
Minimise use of water to prevent environmental contamination.  
Do NOT flush away with water.

Refer to section 13 for disposal of spilled material.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

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## 7. HANDLING AND STORAGE

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

### Handling

Avoid contact with skin and eyes.  
When using do not eat, drink or smoke.  
Wash hands thoroughly after handling or contact.  
Wash contaminated clothing before re-use.  
Thoroughly clean equipment after use.  
Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.  
Refer to section 13 of the safety data sheet for disposal of rinse water.  
Emptied containers retain vapour and product residue.  
FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.

### Storage

Minimum storage temperature: -15 °C  
Maximum storage temperature: 50 °C  
Compatible materials for storage: stainless steel, 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 container tightly closed in a cool, well-ventilated place.  
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.  
Recommended maximum shelf life: 5 years.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Airborne exposure limits

Components	Exposure Guidelines
Potassium salt of glyphosate	No specific occupational exposure limit has been established.

Surfactant(s)	No specific occupational exposure limit has been established.
Water and minor formulating ingredients	No specific occupational exposure limit has been established.

### Engineering controls

No special requirement when used as recommended.

### Eye protection

If there is significant potential for contact:

Wear chemical goggles.

### Skin protection

Wear chemical resistant gloves.

If there is significant potential for contact:

Wear face shield.

Wear chemical resistant clothing/footwear.

### 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.

## 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:	Yellow - Amber
Odour:	Slight
Form:	Liquid
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No explosive properties
Auto ignition temperature:	520 °C
Specific gravity:	1.2505 @ 20 °C / 4 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	10.0 mPa·s @ 20 °C
Kinematic viscosity:	7.98 cSt @ 20 °C
Density:	1.2505 g/cm <sup>3</sup> @ 20 °C
Solubility:	Completely miscible.
pH:	4.8 @ 10 g/l
Partition coefficient:	log Pow: < -3.2 @ 25 °C (glyphosate)

## 10. STABILITY AND REACTIVITY

### Stability

Stable under normal conditions of handling and storage.

### Oxidizing properties

none

### Materials to avoid/Reactivity

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

#### **Hazardous decomposition**

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

#### **Self-accelerating decomposition temperature (SADT)**

No data.

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## **11. TOXICOLOGICAL INFORMATION**

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

Data obtained on product, similar products and on components are summarized below.

#### **Skin irritation**

##### **Rabbit, 3 animals:**

Redness, individual EU scores: 0.67; 0.67; 0.33

Swelling, individual EU scores: 0.00; 0.00; 0.00

Days to heal: 3

Slightly irritating to skin but not sufficient for classification.

#### **Similar formulation**

##### **Acute oral toxicity**

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

##### **Acute dermal toxicity**

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

##### **Eye irritation**

##### **Rabbit, 3 animals, OECD 405 test:**

Conjunctival redness, individual EU scores: 1.00; 1.33; 1.33

Conjunctival swelling, individual EU scores: 1.00; 1.33; 1.00

Corneal opacity, individual EU scores: 0.00; 1.00; 0.00

Iris lesions, individual EU scores: 0.00; 0.33; 0.00

Days to heal: 10

Slightly irritating to eyes but not sufficient for classification.

##### **Acute inhalation toxicity**

This product is not aerosolized during handling or use and is therefore not classified as hazardous under the Dangerous Preparation Directive 1999/45/EC

##### **Skin sensitization**

##### **Guinea pig, 3-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

##### **Chronic effects/carcinogenicity**

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

NOAEL toxicity: ~ 5,000 mg/kg diet

Target organs/systems: liver

Other effects: decrease of body weight gain, histopathologic effects  
NOEL tumour: > 30,000 mg/kg diet  
Tumours: none

**Rat, oral, 24 months:**

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

**Toxicity to reproduction/fertility**

**Rat, oral, 2 generations:**

NOAEL toxicity: 10,000 mg/kg diet  
NOAEL reproduction: > 30,000 mg/kg diet  
Target organs/systems in parents: none  
Other effects in parents: decrease of body weight gain  
Target organs/systems in pups: none  
Other effects in pups: decrease of body weight gain  
Effects on offspring only observed with maternal toxicity.

**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 similar products and on components are summarized below.

**More concentrated formulation**

**Aquatic toxicity, fish**

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

Acute toxicity, 96 hours, semi-static, LC50: 3.13 mg/L

**Aquatic toxicity, algae/aquatic plants**

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

Acute toxicity, 72 hours, static, ErC50 (growth rate): 0.294 mg/L

**Arthropod toxicity**

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

Contact, 48 hours, LD50: > 250 µg/bee

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

Oral, 48 hours, LD50: > 238.8 µg/bee

**Soil organism toxicity, invertebrates**

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

Acute toxicity, 14 days, LC50: > 10,000 mg/kg dry soil

**Soil organism toxicity, microorganisms**

**Nitrogen and carbon transformation test:**

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

**Similar formulation**

**Aquatic toxicity, invertebrates**

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

Acute toxicity, 48 hours, static, EC50: 8.0 mg/L

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

**Avian toxicity**

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

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

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

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

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

Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight

**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**

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

**Container**

- See the individual container label for disposal information.
- Emptied containers retain vapour and product residue.
- Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
- Empty packaging completely.
- Triple or pressure rinse empty containers.
- Pour rinse water into spray tank.
- Ensure packaging cannot be reused.
- Do NOT re-use containers.
- Store for collection by approved waste disposal service.
- Recycle if appropriate facilities/equipment available.
- Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

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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.

**ADR/RID**

- ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (cocofattyamine ethoxylate)
- UN No.: UN3082
- Class: 9
- Kemler: 90
- Packing Group: III

**IMO**

|| ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (cocofattyamine ethoxylate)  
|| UN No.: UN3082  
|| Class: 9  
|| Packing Group: III

|| MARINE POLLUTANT

**IATA/ICAO**

|| ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (cocofattyamine ethoxylate)  
|| UN No.: UN3082  
|| Class: 9  
|| Packing Group: III

|| MARINE POLLUTANT

**15. REGULATORY INFORMATION**

**EU label (manufacturer self-classification)** - Classification following the EU Dangerous Preparations' Directive 1999/45/EC.

- N - Dangerous for the environment
- R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- S35 This material and its container must be disposed of in a safe way.
- S57 Use appropriate containment to avoid environmental contamination.

**National classification** - U.K.

- Xi - Irritant, N - Dangerous for the environment
- R38 Irritating to skin.
- R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- S35 This material and its container must be disposed of in a safe way.
- S37 Wear suitable gloves.
- S57 Use appropriate containment to avoid environmental contamination.
- S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

**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.  
In this document the British spelling was applied.  
This Safety Data Sheet has been prepared following the EU Directive 91/155/EEC as last amended by EU Directive 2001/58/EC and according to EU Regulation 1907/2006.  
|| Significant changes versus previous edition.

**EU Symbols & R phrases of components**

Components	EU Symbols & R phrases of components
Potassium salt of glyphosate	N - Dangerous for the environment R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Surfactant(s)	Xn - Harmful N - Dangerous for the environment R22 Harmful if swallowed. R38 Irritating to skin. R41 Risk of serious damage to eyes. R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Water and minor formulating ingredients	

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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