

<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® Flex**

**CLP Annex VI Index No.**

Not applicable.

**C&L ID No.**

Not available.

**EC No.**

Not applicable.

**REACH Reg. No.**

Not applicable.

**CAS No.**

Not applicable.

**Product use**

Herbicide

**Chemical name**

Not applicable.

**Synonyms**

None.

**Company/(Sales office)**

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## 2. HAZARDS IDENTIFICATION

**This mixture has not yet been classified according to Regulation (EC) No. 1272/2008**

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

Not classified as dangerous.

S29	Do NOT empty into drains.
S49	Keep only in the original container.

**National classification/labelling** - U.K.

R53	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.

**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.

Not a persistent, bioaccumulative or toxic (PBT) nor a very persistent, very bioaccumulative (vPvB) mixture.

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.	EC No.	EU Index No. / REACH Reg. No. / C&L ID No.	% by weight (approximate)	Classification
Potassium salt of glyphosate	70901-12-1	933-437-9	015-184-00-8 / - / 02-2119694167-27-0000	44	Aquatic Chronic - Category 2; H411; { c } N; R51/53; { b }
Alkylpolyglycoside	68515-73-1	500-220-1	- / 01-2119488530-36 / -	>5	Eye damage - Category 1; H318; { d } Xi; R41; { a }
Nitrotyl	226563-63-9		- / - / -	>1	Xn, Xi, N; R22, 38, 41, 50/53; { c }
Water and minor formulating ingredients			- / - / -	<50	

Full text of classification code: See section 16.

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### 4. FIRST AID MEASURES

Use personal protection recommended in section 8.

**Eye contact**

Immediately flush with plenty of water.  
If easy to do, remove contact lenses.  
If there are persistent symptoms, obtain medical advice.

**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.

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 eyes.

When using do not eat, drink or smoke.

Wash hands thoroughly after handling or contact.

Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.

Emptied containers retain vapour and product residue.

Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.

**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 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.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Airborne exposure limits

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

If repeated or prolonged contact:  
Wear chemical resistant gloves.  
Chemical resistant gloves include those made of waterproof materials such as nitrile, butyl, neoprene, polyvinyl chloride (PVC), natural rubber and/or barrier laminate.

### 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:	Brown
Odour:	Caramel
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:	> 600 °C
Specific gravity:	1.3426 @ 20 °C / 4 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	107.2 mPa·s @ 20 °C

Kinematic viscosity:	79.83 cSt @ 20 °C
Density:	1.3426 g/cm <sup>3</sup> @ 20 °C
Solubility:	Completely miscible.
pH:	4.3 @ 10 g/l
Partition coefficient:	log Pow: -3.2 @ 25 °C (glyphosate)

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## 10. STABILITY AND REACTIVITY

### Stability

Stable under normal conditions of handling and storage.

### Oxidizing properties

No data.

### 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 and components are summarized below.

### Acute oral toxicity

**Rat, LD50:** > 2,000 mg/kg body weight

No mortality.

### Acute dermal toxicity

**Rat, LD50:** > 2,000 mg/kg body weight

No mortality.

### Skin irritation

**Rabbit, 3 animals, OECD 404 test:**

Redness, individual EU scores: 0.3; 0.0; 0.0

Swelling, individual EU scores: 0.0; 0.0; 0.0

Days to heal: 5

### Eye irritation

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

Conjunctival redness, individual EU scores: 0.7; 1.0; 0.7

Conjunctival swelling, individual EU scores: 1.0; 1.0; 0.7

Corneal opacity, individual EU scores: 0.0; 0.0; 0.0

Iris lesions, individual EU scores: 0.0; 0.0; 0.0

Days to heal: 3

Slightly irritating to eyes but not sufficient for classification.

### Skin sensitization

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

No skin sensitization

### 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**

**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 ppm

Tumours: none

**Toxicity to reproduction/fertility**

**Rat, oral, 2 generations:**

NOAEL toxicity: 10,000 ppm

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.

**Aquatic toxicity, algae/aquatic plants**

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

Acute toxicity, 72 hours, static, ErC50 (growth rate): 118 mg/L

**Arthropod toxicity**

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

Contact, 48 hours, LD50: > 279 µg/bee

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

Oral, 48 hours, LD50: > 282 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:**

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

**Similar formulation**

**Aquatic toxicity, fish**

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

Acute toxicity, 96 hours, static, LC50: > 1,039 mg/L

**Aquatic toxicity, invertebrates**

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

Acute toxicity, 48 hours, static, EC50: 243 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 proper incinerator.
- Burn in special, controlled high temperature incinerator.
- Follow all local/regional/national/international regulations.

**Container**

- See the individual container label for disposal information.
- 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.
- Emptied containers retain vapour and product residue.
- Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
- 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.

Not regulated for transport under ADR/RID, IMO, or IATA/ICAO Regulations

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## 15. REGULATORY INFORMATION

### Other Regulatory Information

SP1: Do not contaminate water with the product or its container.

### Chemical Safety Assessment

A Chemical Safety Assessment per Regulation (EC) No. 1907/2006 is not required and has not been performed.

A Risk Assessment has been performed under Directive 91/414/EC.

## 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 Regulation (EC) No. 1907/2006 (Annex II) as last amended by Regulation (EC) No. 453/2010

### Classification of components

Components	Classification
Potassium salt of glyphosate	Aquatic Chronic - Category 2 H411 Toxic to aquatic life with long lasting effects. N - Dangerous for the environment R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Alkylpolyglycoside	Eye damage - Category 1 H318 Causes serious eye damage. Xi - Irritant R41 Risk of serious damage to eyes.
Nitrotyl	Xn - Harmful Xi - Irritant 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} EU CLP classification (Annex VI)
- { d} EU CLP (manufacturer self-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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## **Safety Data Sheet (SDS) Annex**

Chemical Safety Report:

Read and follow label instructions.

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End of document

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