

<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**

**Glyphogan**

**Product use**

Herbicide

**Chemical name**

Not applicable.

**Synonyms**

None.

**Company/(Sales office)**

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## 2. HAZARDS IDENTIFICATION

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

Xi - Irritant, N - Dangerous for the environment

R36 Irritating to eyes.

R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**National classification** - U.K.

Xn - Harmful, N - Dangerous for the environment

R20 Harmful by inhalation.

R41 Risk of serious damage to eyes.

R51/53 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

**Eye contact, short term**

May cause temporary eye irritation.

**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**

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

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	N; R51/53; {b}
Surfactant	61791-26-2		15.5	Xn, N; R22, 41, 51/53; {a}
Water	7732-18-5	231-791-2	43	

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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

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.  
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.
- Warn everybody of irritant/corrosive hazard.

### 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.
- Collect in containers for disposal.
- Refer to section 7 for types of containers.
- 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 eyes.
- 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.
- 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 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.
- Use appropriate containment to avoid environmental contamination.

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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

Have eye wash facilities immediately available at locations where eye contact can occur.

### Eye protection

If there is potential for contact:  
Wear chemical goggles.

### 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:	Amber - Brown
Odour:	Slight, amines
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:	443 °C
Specific gravity:	1.172 @ 20 °C / 4 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	73.2 mPa·s
Kinematic viscosity:	62.47 cSt @ 20 °C
Density:	1.172 g/cm <sup>3</sup> @ 20 °C
Solubility:	Water: Completely miscible.
pH:	4.4 - 4.9 @ 80 g/l
	5.1 @ 10 g/l
	5.0 @ 20 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:** 5,000 mg/kg body weight

#### **Acute dermal toxicity**

**Rabbit, LD50 (limit test):** > 5,000 mg/kg body weight

No mortality.

#### **Acute inhalation toxicity**

**Rat, LC50 (limit test), 4 hours, aerosol (3 fold dilution):** > 5.7 mg/L

Aerosol particle size (< 10 micron) much lower than the droplet size (> 100 micron) normally achieved during spraying operations. Maximum attainable concentration. No mortality.

#### **Skin irritation**

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

Redness, mean EU score: 0.64

Swelling, mean EU score: 0.03

Days to heal: 3

#### **Eye irritation**

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

Conjunctival redness, mean EU score: 1.60

Conjunctival swelling, mean EU score: 1.17

Corneal opacity, mean EU score: 0.57

Iris lesions, mean EU score: 0.50

Days to heal: > 28

Other effects: pannus, ulcer on surface of eye (ulceration of cornea)

#### **Skin sensitization**

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

Positive incidence: 0 %

## **EXPERIENCE WITH HUMAN EXPOSURE**

#### **Ingestion, excessive, intentional misuse:**

**Respiratory effects:** pneumonitis (aspiration)

**Gastro-intestinal effects:** nausea/vomiting, diarrhoea, abdominal pain, bloody vomiting (haematemesis)

**Cardiovascular effects:** abnormal heart rhythm (cardiac dysrhythmia), decreased heart output (myocardial depression)

**General/systemic effects:** disturbances of fluid and electrolyte regulation, abnormally decreased blood volume (hypovolaemia), elevated serum amylase, fluid loss (haemoconcentration), no cholinesterase inhibition

**Laboratory effects - blood chemistry:** elevated serum transaminases, mild acidosis

#### **Eye contact, short term, epidemiological:**

**Note:** No cases of irreversible eye effects could be attributed to glyphosate formulations in an extensive epidemiological survey of reported accidental eye contact with these formulations.

## **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 product and components are summarized below.

**Aquatic toxicity, fish**

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

Acute toxicity, 96 hours, flowthrough, LC50: 5.8 mg/L

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

Acute toxicity, 96 hours, flowthrough, LC50: 8.2 mg/L

**Aquatic toxicity, invertebrates**

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

Acute toxicity, 48 hours, static, EC50: 11 mg/L

**Aquatic toxicity, algae/aquatic plants**

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

Acute toxicity, 72 hours, static, ErC50 (growth rate): 8.0 mg/L

**Duckweed (*Lemna minor*):**

Acute toxicity, 7 days, static, EC50 (frond number): 6 mg/L

**Avian toxicity**

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

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

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

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

**Arthropod toxicity**

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

Oral/contact, 48 hours, LD50: > 338 µg/bee

**Soil organism toxicity, invertebrates**

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

Acute toxicity, 14 days, LC50: > 5,000 mg/kg dry 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

**Surfactant**

**Dissipation**

**Water/sediment, aerobic, 30 °C:**

Half life: < 4 weeks

**Soil, aerobic:**

Half life: 1 - 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.

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. , (glyphosate, ethoxylated tallowamine)  
UN No.: UN3082  
Class: 9

Kemler: 90  
Packing Group: III

**IMO**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (glyphosate, ethoxylated tallowamine)  
UN No.: UN3082  
Class: 9  
Packing Group: III

**IATA/ICAO**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , (glyphosate, ethoxylated tallowamine)  
UN No.: UN3082  
Class: 9  
Packing Group: III

**15. REGULATORY INFORMATION**

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

Xi - Irritant, N - Dangerous for the environment  
R36 Irritating to eyes.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S35 This material and its container must be disposed of in a safe way.  
S39 Wear eye/face protection.  
S57 Use appropriate containment to avoid environmental contamination.

**National classification** - U.K.

Xn - Harmful, N - Dangerous for the environment  
R20 Harmful by inhalation.  
R41 Risk of serious damage to eyes.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S35 This material and its container must be disposed of in a safe way.  
S39 Wear eye/face protection.  
S57 Use appropriate containment to avoid environmental contamination.

**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 last amended by EU Directive 2001/58/EC and according to EU Regulation 1907/2006.  
In this document the British spelling was applied.  
® Registered trademark.  
|| Significant changes versus previous edition.

**EU Symbols & R phrases of components**

Components	EU Symbols & R phrases of components
Isopropylamine 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	Xn - Harmful N - Dangerous for the environment R22 Harmful if swallowed.

	R41 Risk of serious damage to eyes. R51/53 Toxic to aquatic organisms, 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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