

**MONSANTO Company**  
Material Safety Data Sheet  
Commercial Product

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name**

**ROUNDUP PRO® Herbicide**

**EPA Reg. No.**

524-475

**Product use**

Herbicide

**Chemical name**

Not applicable

**Synonyms**

None

**Company**

MONSANTO Company, 800 N. Lindbergh Blvd., St. Louis, MO, 63167

**Telephone:** 800-332-3111, **Fax:** 314-694-5557

**Emergency numbers**

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).

FOR MEDICAL EMERGENCY - Day or Night: 314-694-4000 (collect calls accepted).

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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

**Active ingredient**

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

**Composition**

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	41
Surfactant		14.5
Water and minor formulating ingredients		44.5

**OSHA Status**

This product is hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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## 3. HAZARDS IDENTIFICATION

**Emergency overview**

**Appearance and odour (colour/form/odour):** Clear - Amber / Liquid / Sweet

CAUTION!

CAUSES EYE IRRITATION

**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.

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

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## 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 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**

none

**Extinguishing media**

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

**Unusual fire and explosion hazards**

Minimize 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.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions

Use personal protection recommended in section 8.

### Environmental precautions

#### SMALL QUANTITIES:

Low environmental hazard.

#### LARGE QUANTITIES:

Minimize 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.

Minimize 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.

Refer to section 13 for disposal of rinse water.

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, 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 and minor formulating ingredients	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:	Clear - Amber
Form:	Liquid
Odour:	Sweet
Flash point:	none
Specific gravity:	1.169 @ 20 °C / 15.6 °C
Solubility:	Water: Completely miscible.
pH:	4.4 - 5.0
Partition coefficient (log Pow):	< 0.00 (active ingredient)

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## 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.

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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:** 5,108 mg/kg body weight  
Practically non-toxic.  
FIFRA category IV.

**Acute dermal toxicity**

**Rat, LD50 (limit test):** > 5,000 mg/kg body weight  
Practically non-toxic.  
FIFRA category IV.  
No mortality.

**Acute inhalation toxicity**

**Rat, LC50, 4 hours, aerosol:** 2.9 mg/L  
Other effects: weight loss, breathing difficulty  
Practically non-toxic.  
FIFRA category IV.

**Skin irritation**

**Rabbit, 6 animals, OECD 404 test:**  
Days to heal: 3  
Primary Irritation Index (PII): 0.5/8.0  
Essentially non irritating.  
FIFRA category IV.

**Eye irritation**

**Rabbit, 6 animals, OECD 405 test:**  
Days to heal: 3  
Slight irritation.  
FIFRA category III.

**Skin sensitization**

**Guinea pig, 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, static, LC50: 5.4 mg/L  
moderately toxic

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

Acute toxicity, 96 hours, static, LC50: 7.3 mg/L  
moderately toxic

**Aquatic toxicity, invertebrates**

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

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

**Avian toxicity**

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

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet  
practically non-toxic

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

Dietary toxicity, 5 days, LC50: > 5,620 mg/kg diet  
practically non-toxic

**Arthropod toxicity**

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

Oral/contact, 48 hours, LD50: > 100 µg/bee  
practically non-toxic

**Soil organism toxicity, invertebrates**

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

Acute toxicity, 14 days, LC50: > 1,250 mg/kg soil  
practically non-toxic

**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 regulations.

**Container**

Triple 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 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 hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

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### 15. REGULATORY INFORMATION

**TSCA Inventory**

All components are on the US EPA's TSCA Inventory

**OSHA Hazardous Components**

Surfactant

**SARA Title III Rules**

Section 311/312 Hazard Categories  
Immediate

Section 302 Extremely Hazardous Substances

Not applicable.

Section 313 Toxic Chemical(s)

Not applicable.

**CERCLA Reportable quantity**

Not applicable.

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## 16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.

Follow all local/regional/national regulations.

Please consult supplier if further information is needed.

In this document the British spelling was applied.

All tests were conducted following OECD guidelines for Good Laboratory Practices (GLP).

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.

For more information refer to product label.

Please consult Monsanto if further information is needed.

Follow all local/regional/national regulations.

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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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