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: +1 (314) 694-4000 (collect calls accepted).

2. COMPOSITION/INFORMATION ON INGREDIENTS

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

Composition

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS No.</th>
<th>% by weight (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropylamine salt of glyphosate</td>
<td>38641-94-0</td>
<td>41</td>
</tr>
<tr>
<td>Other ingredients</td>
<td></td>
<td>59</td>
</tr>
</tbody>
</table>

Trade secret composition.

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

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.

4. FIRST AID MEASURES

Eye contact
If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

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.

5. FIRE-FIGHTING MEASURES

Flash point
None.

Extinguishing media
Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

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 (PxOy), nitrogen oxides (NOx)

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:
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.

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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

<table>
<thead>
<tr>
<th>Components</th>
<th>Exposure Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropylamine salt of glyphosate</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
<tr>
<td>Other ingredients</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
</tbody>
</table>

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.

**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.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour/colour range</td>
<td>Clear - Amber</td>
</tr>
<tr>
<td>Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Sweet</td>
</tr>
<tr>
<td>Flash point</td>
<td>None</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.169 @ 20 °C / 15.6 °C</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>25 mmHg @ 24 °C</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water: Completely miscible.</td>
</tr>
<tr>
<td>pH</td>
<td>4.4 - 5.0</td>
</tr>
<tr>
<td>Partition coefficient (log Pow)</td>
<td>-3.2 @ 25 °C (glyphosate)</td>
</tr>
</tbody>
</table>

### 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: 5,108 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

**Chronic effects/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

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 fetida):
  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
13. DISPOSAL CONSIDERATIONS

Product
Excess product may be disposed of by agricultural use according to label instructions.
Keep out of drains, sewers, ditches and water ways.
Recycle if appropriate facilities/equipment available.
Burn in proper 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.
Store for collection by approved waste disposal service.
Ensure packaging cannot be reused.
Do NOT re-use containers.
Recycle if appropriate facilities/equipment available.
Follow all local/regional/national/international regulations.

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.

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.

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.
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