

MONSANTO PRODUCT NAME
ROUNDUP® PRO Herbicide

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ROUNDUP® PRO herbicide
 Synonyms: MON 65005
 EPA Reg. No.: 524-475
 Company ID: Monsanto Company
 800 North Lindbergh
 St. Louis, MO 63167, U.S.A.
 Phone #s: Emergency Phone Number (call collect): (314) 694-4000
 Non-Emergency Information: 1-800-332-3111
 Revisions: Sections containing a revision or new information are marked with a ♣
 MSDS Number: S00012732 Date: November, 1995 Supersedes: August, 1995

2. COMPOSITION INFORMATION ON INGREDIENTS

Chemical Ingredients: *Active Ingredient:* Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt 41.0 %
Inert Ingredients: (Including surfactant) 59.0 %
 100.0 %

<u>Component</u>	<u>CAS Reg No</u>	<u>wt %</u>
Glyphosate, isopropylamine salt	38641-94-0	41.0%
Phosphate ester neutralized polyethoxylated tallowamine	---	14.5%

No Hazardous Chemicals Under OSHA Hazard Communication Standard (29 CFR §1910.1200).
 No components subject to the reporting requirements of SARA §313.

See Section 8 for exposure limits.

3. HAZARDS IDENTIFICATION ♣

Emergency Overview:

Appearance & Odor: Clear, viscous amber-colored solution

Warning Statements: Keep out of reach of children.

CAUTION !
 CAUSES EYE IRRITATION
 REFORMULATION IS PROHIBITED
 SEE INDIVIDUAL CONTAINER LABEL FOR REPACKAGING LIMITATIONS

Potential Adverse Health Effects:

Likely Routes of Exposure: Skin contact and inhalation

Eye Contact: ROUNDUP® PRO herbicide may cause pain, redness and tearing based on toxicity studies.

Skin Contact: ROUNDUP® PRO herbicide is no more than slightly toxic and no more than slightly irritating based on toxicity studies.

Ingestion: ROUNDUP® PRO herbicide is no more than slightly toxic based on toxicity studies.
 No significant adverse health effects are expected to develop if only small amounts

(less than a mouthful) are swallowed. Ingestion of similar formulations has been reported to produce gastrointestinal discomfort with irritation of the mouth, nausea, vomiting and diarrhea. Oral ingestion of large quantities of one similar product has been reported to result in hypotension and lung edema.

Inhalation: ROUNDUP® PRO herbicide is no more than slightly toxic if inhaled based on toxicity studies.

4. FIRST AID MEASURES ♣

If In Eyes: Flush with plenty of water. Get medical attention if irritation persists.

NOTE: For additional human emergency first aid or treatment guidance, call collect, anytime, day or night (314) 694-4000.

5. FIRE FIGHTING MEASURES

Flash Point: >200°F **Method:** Pensky-Martens

Auto Ignition Temperature: Not determined

Extinguishing Media: Water spray, foam, dry chemical, CO₂, or any class B extinguishing agent.

Special Fire Fighting Procedures: Firefighters and others that may be exposed to vapors, mists, or products of combustion should wear full protective clothing and self-contained breathing apparatus. Equipment should be thoroughly cleaned after use.

Unusual Fire or Explosion Hazards: None

6. ACCIDENTAL RELEASE MEASURES

Observe all protection and safety precautions when cleaning up spills - See Exposure Controls/Personal Protection, Section 8.

Small Spills: For a spill less than one gallon on floor or other impervious surface, soak up with towels or other absorbent material and discard in the trash. Clean the spill area with soap and water and rinse the area thoroughly.

Large Liquid Spills on the floor or other impervious surface should be contained or diked and then absorbed with attapulgite, bentonite or other absorbent clays. Collect the contaminated absorbent, place in a metal drum and dispose of in accordance with the instructions provided under Disposal, Section 13 of this MSDS. Thoroughly scrub floor or other impervious surface with a strong industrial detergent and rinse with water.

Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Contact appropriate state agency when considering a land spreading disposal option.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Any recovered spilled liquid should be similarly collected and disposed of.

7. HANDLING AND STORAGE ♣

Handling:

- Avoid contact with eyes or clothing.
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark.
- Do not contaminate water when disposing of equipment washwaters.

Storage:

- Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal Protective Equipment:

Eye Protection: Workers handling the packaged concentrate should wear chemical safety goggles to prevent eye contact during mixing/transfer operations or other activities where there is potential for eye contact with the concentrated product. The wearing of goggles is not required during use of this product in accordance with label instruction.

Skin Protection: Wear appropriate protective clothing to prevent skin contact. Applicators and other handlers must wear long-sleeved shirt, long pants, shoes plus socks. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Respiratory Protection: *For Handling the Concentrated Product:* Avoid breathing vapor or mist. This product concentrate is not likely to pose an airborne exposure concern during manufacture or packaging. In the event of abnormal exposure conditions, use NIOSH/MSHA approved equipment. In work situations where an air purifying respirator is appropriate to be used, use of a full face respirator equipped with purifying elements for protection against organic vapor and dust/mist approved for pesticides is recommended. Use cartridges with NIOSH/MSHA approval number TC-23C or canister with NIOSH/MSHA approval number TC-14G. Full facepiece replaces the need for chemical goggles. Observe respirator use limitations specified by the manufacturers. Respiratory protection programs must comply with 29 CFR 1910.134.

For Use of Product in accordance with label instructions: Respirators are not required for use of ROUNDUP® PRO herbicide in accordance with label instructions.

Ventilation: No special precautions are recommended.

Exposure Guidelines:

<u>Exposure Limits</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
ROUNDUP® PRO	None established	None established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: clear, viscous amber-colored solution
Odor: practically odorless to slight amine-like odor
Ph: 4.99 (1% solution)
Specific Gravity: 1.17 (Water = 1)

Note: 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 specification items.

10. STABILITY AND REACTIVITY

Chemical Stability: Stable for at least 5 years under normal conditions of warehouse storage.

Conditions to Avoid: None

Incompatibility with Other Materials: Spray solutions of this product should be mixed, stored or applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

Hazardous Decomposition Products: None

Hazardous Polymerization: Does not occur. This product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid base reaction.

11. TOXICOLOGICAL INFORMATION ♣

Data from laboratory studies conducted by Monsanto with ROUNDUP® PRO herbicide are summarized below:

Single exposure (acute) studies indicate:

- | | |
|-------------------|--|
| Oral - | Rat LD ₅₀ - >5,000 mg/kg; FIFRA Category IV |
| Dermal - | Rat LD ₅₀ - >5,000 mg/kg; FIFRA Category IV |
| Inhalation - | Rat LC ₅₀ (4-hr. exp.) - 4.2 mg/l; FIFRA Category IV; Not DOT poisonous |
| Eye Irritation - | Rabbit; moderately irritating.; all animals free of irritation by day 7, FIFRA Category III |
| Skin Irritation - | Rabbit (4-hr. exp.); slightly irritating; PII - 0.63/8.0, all animals free of irritation by day 7, FIFRA Category IV |

No skin allergy was observed in guinea pigs following repeated skin exposure.

COMPONENTS

Data from laboratory studies conducted by Monsanto and from the scientific literature on components of ROUNDUP® PRO herbicide:

Isopropylamine Salt of Glyphosate

Data from studies with a formulation comprised of 62% isopropylamine salt of glyphosate (MON 0139) indicate the following:

In repeat dosing studies (6-month), dogs fed MON 0139 exhibited slight body weight changes. Following repeated skin exposure (3-week) to MON 0139, skin irritation was the primary effect in rabbits.

Additional toxicity information is available on glyphosate, the active herbicidal ingredient of MON 0139. Following repeated exposures (90-days) to glyphosate in their feed, decreased weight gains were noted at the highest test level in mice, while no treatment-related effects occurred in rats. Following repeated skin exposure (3 weeks) to glyphosate, slight skin irritation was the primary effect observed in rabbits. No skin allergy was observed in guinea pigs following repeated skin exposure. There was no evidence of effects on the nervous system, including delayed effects in chickens (repeat oral doses) or cholinesterase inhibition in rats (single oral doses). Reduced body weight gain and effects on liver tissues were observed with long-term (2-year) feeding of glyphosate to mice at high-dose levels. Reduced body weight gain and eye changes were observed at the high-dose level in one long-term (2

year) feeding study with rats, while no treatment-related effects occurred in a second study. No adverse effects were observed in feeding studies with dogs. Glyphosate did not produce tumors in any of these studies. Based on the results from the chronic studies, EPA has classified glyphosate in category E (evidence of non-carcinogenicity for humans). No birth defects were noted in rats and rabbits given glyphosate orally during pregnancy, even at amounts which produced adverse effects on the mothers. Glyphosate was fed continuously to rats at very high dose levels for 2 successive generations. Toxicity was reported in offspring from the high dose, a level which also produced adverse effects on the mothers. In a 3 generation study conducted at lower dose levels, no effects were seen on the ability of male or female rats to reproduce. Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacterial cells.

12. ECOLOGICAL INFORMATION

Aquatic and Avian studies with this product have not been conducted at this time. However, an extensive database of studies exists for the active ingredient glyphosate. These studies indicate that glyphosate ranges from practically non-toxic to slightly toxic in a variety of aquatic and avian species. For glyphosate MSDS or additional information, contact Monsanto at 1-800-332-3111.

13. DISPOSAL CONSIDERATIONS

Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

14. TRANSPORT INFORMATION

Follow the precautions indicated in the Handling and Storage Section, Section 7 of this MSDS.

DOT Proper Shipping Name: Not Applicable

DOT Hazard Class/I.D. No.: Not Applicable

DOT Label: Not Applicable

U.S. Surface Freight Classification: Weed killing compound, N.O.I.B.N.

15. REGULATORY INFORMATION

SARA Hazard Notification:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate

Section 313 Toxic Chemical(s): Not Applicable

Hazardous Chemicals Under OSHA Hazard Communication Standard (29 CFR §1910.1200): None

Reportable Quantity (RQ) under U.S. CERCLA: Not Applicable

TSCA Inventory: All components are on the US EPA's TSCA Inventory List

16. OTHER *

Reasons for revision: Acute inhalation toxicity result reclassified by EPA to category IV.

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

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