

<p>Monsanto Company, Lawn & Garden Products Material Safety Data Sheet Commercial Product</p>
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1. PRODUCT AND COMPANY IDENTIFICATION

Product name

Roundup® Ready-To-Use Extended Control Weed & Grass Killer Plus Weed Preventer

EPA Reg. No.

241-425-71995

Product use

Herbicide

Chemical name

Not applicable.

Synonyms

None.

Company

Monsanto Company, Lawn & Garden Products, P.O. Box 418, Marysville, OH, 43041

Telephone: 1-800-246-7219

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: 1-800-246-7219

2. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

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

Ammonium salt of 2-[4,5-dihydro-4-methyl-4-(1-methyl)-5-oxo-1H-imidazol-2-yl]-5-methyl-3-pyridinecarboxylic acid; {Ammonium salt of imazapic}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	1
Ammonium salt of imazapic	104098-49-9	0.017
Other ingredients		98.983

The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

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): Hazy - Clear / Liquid / Slight

CAUTION!

Potential health effects

Likely routes of exposure

Skin contact, eye contact, inhalation

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.

Single ingestion

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

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.

If there are persistent symptoms, obtain medical advice.

Wash clothes and clean shoes before re-use.

Inhalation

Remove to fresh air.

Ingestion

Rinse mouth thoroughly with water.

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

Does not flash.

Extinguishing media

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

Unusual fire and explosion hazards

None.

Environmental precautions: see section 6.

Hazardous products of combustion

Carbon monoxide (CO), phosphorus oxides (P_xO_y), nitrogen oxides (NO_x)

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.

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

Storage

Compatible materials for storage: stainless steel, glass lining, fibreglass, aluminium, plastic
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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.
Ammonium salt of imazapic	No specific occupational exposure limit has been established.

Other ingredients	No specific occupational exposure limit has been established.
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Engineering controls

No special requirement when used as recommended.

Eye protection

No special requirement when used as recommended.

Skin protection

No special requirement when used as recommended.

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:	Hazy - Clear
Form:	Liquid
Odour:	Slight
Flash point:	Does not flash.
Specific gravity:	1.01 @ 20 °C /@ 15.6 °C
Solubility:	Water: Completely miscible.
pH:	6 100 g/l
Partition coefficient (log Pow):	-3.2 @ 25 °C (glyphosate)
Partition coefficient (log Pow):	0.393 25 °C (imazapic)

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: > 5,000 mg/kg body weight

Practically non-toxic.
FIFRA category IV.

Acute dermal toxicity

Rat, LD50: > 5,000 mg/kg body weight

Practically non-toxic.
FIFRA category IV.

No mortality.

Acute inhalation toxicity

Rat, LC50 (limit test), 4 hours, aerosol:

Practically non-toxic.
FIFRA category IV.

No mortality. No 4-hr LC50 at the maximum tested concentration. Not hazardous for transportation.

Skin irritation

Rabbit, 3 animals, OECD 404 test:

Days to heal: 1
Primary Irritation Index (PII): 0.3/8.0
Essentially non irritating.
FIFRA category IV.

Eye irritation

Rabbit, 3 animals, OECD 405 test:

Days to heal: 2
Essentially non irritating.
FIFRA category IV.

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

Ammonium salt of imazapic

Mutagenicity

In vitro and in vivo mutagenicity test(s):

Not mutagenic.

Repeated dose toxicity

Rabbit, dermal, 21 days:

NOAEL toxicity: 1,000 mg/kg body weight/day
Target organs/systems: none

Rat, oral, 13 weeks:

NOAEL toxicity: 1,640 mg/kg body weight/day
Target organs/systems: none
Other effects: none

Carcinogenicity

Dog, oral, 1 years:

NOAEL toxicity: < 158 mg/kg body weight/day
Target organs/systems: skeletal muscle
Other effects: histopathologic effects, blood biochemistry effects

Rat, oral, 2 years:

NOEL tumour: 1,133 mg/kg body weight/day
NOAEL toxicity: 1,133 mg/kg body weight/day
Target organs/systems: none
Other effects: none
No tumours.

Mouse, oral, 18 months:

NOEL tumour: 1,288 mg/kg body weight/day
NOAEL toxicity: 1,288 mg/kg body weight/day
Target organs/systems: none
Other effects: none
No tumours.

Toxicity to reproduction/fertility

Rat, oral, 2 generations:

NOAEL toxicity: 1,344 mg/kg body weight/day
NOAEL reproduction: 1,344 mg/kg body weight/day
Target organs/systems in parents: none
Target organs/systems in pups: none

Developmental toxicity/teratogenicity

Rat, oral, days of gestation:

NOAEL toxicity: 1,000 mg/kg body weight/day

NOAEL development: 1,000 mg/kg body weight/day

Target organs/systems in mother animal: none

Developmental effects: none

Rabbit, oral, days of gestation:

NOAEL toxicity: 350 mg/kg body weight/day

NOAEL development: 500 mg/kg body weight/day

Target organs/systems in mother animal: none

Other effects in mother animal: decrease of body weight gain, decrease of food consumption

Developmental effects: none

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on a similar glyphosate formulation and/or glyphosate are summarized below. The minor active ingredient is not predicted to significantly contribute to the ecological toxicity of this formulation.

Similar formulation

Aquatic toxicity, fish

Rainbow trout (*Oncorhynchus mykiss*):

Acute toxicity (limit test), 96 hours, static, LC50: > 100 mg/L

Practically non-toxic.

Aquatic toxicity, invertebrates

Water flea (*Daphnia magna*):

Acute toxicity (limit test), 48 hours, static, EC50: > 100 mg/L

Practically non-toxic.

Aquatic toxicity, algae/aquatic plants

Green algae (*Scenedesmus subspicatus*):

Acute toxicity, 72 hours, static, EC50: > 87.7 mg/L

No more than slightly toxic.

Arthropod toxicity

Honey bee (*Apis mellifera*):

Oral, 48 hours, LD50: > 9,742 µg/bee

Practically non-toxic.

Honey bee (*Apis mellifera*):

Contact, 48 hours, LD50: 8,309 µg/bee

Practically non-toxic.

Soil organism toxicity, invertebrates

Earthworm (*Eisenia foetida*):

Acute toxicity, 14 days, LC50: > 1,000 mg/kg dry soil

Practically non-toxic.

N-(phosphonomethyl)glycine: {glyphosate}

Avian toxicity

Bobwhite quail (*Colinus virginianus*):

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

No more than slightly toxic.

Mallard duck (*Anas platyrhynchos*):

Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet

No more than slightly toxic.

Bobwhite quail (*Colinus virginianus*):

Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight
Practically non-toxic.

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

13. DISPOSAL CONSIDERATIONS

Product

Keep out of drains, sewers, ditches and water ways.
Recycle if appropriate facilities/equipment available.
Follow all local/regional/national/international regulations.

Container

See the individual container label for disposal information.
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

Exempt

SARA Title III Rules

Section 311/312 Hazard Categories
Not applicable.
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.

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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