

<p><b>Monsanto Company, Lawn &amp; Garden Products</b> 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 II**

**EPA Reg. No.**

71995-47

**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

**E-mail:** TS-SAFETYDATASHEET@DOMINO.MONSANTO.COM

**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

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## 2. HAZARDS IDENTIFICATION

**Emergency overview**

**Appearance and odour (colour/form/odour):** Hazy / Liquid / Slight

CAUTION!

CAUSES MODERATE EYE IRRITATION

**Potential health effects**

**Likely routes of exposure**

Skin contact, eye contact, inhalation

**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.

**OSHA Status**

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

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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Active ingredient

Nonanoic and related fatty acids; {Pelargonic and related fatty acids}  
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)
Pelargonic and related fatty acids	112-05-0	2
Isopropylamine salt of glyphosate	38641-94-0	1
Ammonium salt of imazapic	104098-49-9	0.017
Other ingredients		96.983

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

## 4. FIRST AID MEASURES

Use personal protection recommended in section 8.

### 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 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

Does not flash.

### Extinguishing media

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

### Unusual fire and explosion hazards

None.  
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.

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## **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.  
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**

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: 5 °C  
Maximum storage temperature: 50 °C  
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.  
Protect from frost.  
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.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Airborne exposure limits

Components	Exposure Guidelines
Pelargonic and related fatty acids	No specific occupational exposure limit has been established.
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.

### Engineering controls

No special requirement when used as recommended.

### Eye protection

If there is significant potential for contact:  
Wear chemical goggles.

### 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.

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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:	Hazy
Odour:	Slight
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:	No data.
Specific gravity:	1.02 @ 20 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.02 g/cm <sup>3</sup> @ 20 °C

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Solubility:	Water: Completely miscible.
pH:	7.2 - 7.5
Partition coefficient:	log Pow: 3.42 (pelargonic acid)
Partition coefficient:	log Pow: -3.2 @ 25 °C (glyphosate)
Partition coefficient:	log Pow: 0.393 25 °C (imazapic)

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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, similar products and on components are summarized below.

### Eye irritation

#### Rabbit, 3 animals, OECD 405 test:

Days to heal: 14  
Moderate irritation.  
FIFRA category III.

### Similar formulation

### 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.

### 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.

### 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 sensitization**

##### **Guinea pig, 3-induction 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:**

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

## Pelargonic and related fatty acids

### Repeated dose toxicity

#### **Rat, oral, 4 weeks:**

Dosage: 2,090 mg/kg body weight/day  
Target organs/systems: none  
Other effects: none

## Imazapic acid

### 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

### Chronic effects/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:**

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

#### **Mouse, oral, 18 months:**

NOAEL toxicity: 1,288 mg/kg body weight/day  
Target organs/systems: none  
Other effects: none  
NOEL tumour: 1,288 mg/kg body weight/day  
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

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## 12. ECOLOGICAL INFORMATION

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

Data obtained on similar products and on components are summarized below.

### Similar formulation

#### Aquatic toxicity, fish

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

Acute toxicity, 96 hours, static, LC50: 98 mg/L  
Slightly toxic.

#### Aquatic toxicity, invertebrates

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

Acute toxicity, 48 hours, static, EC50: 115 mg/L  
Practically non-toxic.

#### Aquatic toxicity, algae/aquatic plants

##### **Green algae (*Pseudokirchneriella subcapitata*):**

Acute toxicity, 72 hours, static, EC50: 51 mg/L  
Slightly toxic.

##### **Duckweed (*Lemna gibba*):**

Acute toxicity, 7 days, static, EC50 (frond number): 152 mg/L  
Practically non-toxic.

#### Arthropod toxicity

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

Oral, 48 hours, LD50: > 7,841 µg/bee

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

Contact, 48 hours, LD50: > 1,078 µg/bee

#### Soil organism toxicity, invertebrates

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

Acute toxicity, 14 days, LC50: > 10,000 mg/kg dry soil  
Practically non-toxic.

#### Soil organism toxicity, microorganisms

##### **Nitrogen and carbon transformation test:**

388 L/ha, 28 days: Less than 25% effect on nitrogen or carbon transformation processes in soil.

### 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

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### 13. DISPOSAL CONSIDERATIONS

#### Product

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.  
Triple or pressure rinse empty containers.  
Do NOT contaminate water when disposing of rinse waters.  
Ensure packaging cannot be reused.  
Do NOT re-use containers.  
Store for collection by approved waste disposal service.  
Recycle if appropriate facilities/equipment available.  
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.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

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### 15. REGULATORY INFORMATION

#### TSCA Inventory

Exempt

#### OSHA Hazardous Components

Surfactant(s)

#### 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/international regulations.  
Please consult supplier if further information is needed.

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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