SAFETY DATA SHEET

ROUNDUP® DUAL ACTION WEED & GRASS KILLER PLUS 4 MONTH PREVENTER CONCENTRATE

Version 2.0 / USA
102000056713

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SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name	ROUNDUP® DUAL ACTION WEED & GRASS KILLER PLUS 4 MONTH PREVENTER CONCENTRATE
Product code (UVP)	87311783
SDS Number	102000056713
EPA Registration No.	71995-69

Relevant identified uses of the substance or mixture and uses advised against

Use	Herbicide
Restrictions on use	See product label for restrictions.

Information on supplier

Responsible Department	Email: SDSINFO.BCS-NA@bayer.com Monsanto Company Lawn & Garden Products 800 North Lindberg Blvd. St. Louis MO 63167 USA

Emergency telephone no.

Emergency Telephone Number (24hr/ 7 days)	1-800-334-7577
Product Information Telephone Number	1-866-99BAYER (1-866-992-2937)

SECTION 2: HAZARDS IDENTIFICATION

Classification in accordance with regulation HCS 29CFR §1910.1200
Acute toxicity(Inhalation): Category 4
Specific target organ toxicity - repeated exposure, Reproductive toxicity: Category 2

Labelling in accordance with regulation HCS 29CFR §1910.1200



Signal word: Warning

Hazard statements
Harmful if inhaled.
Suspected of damaging fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements
Use only outdoors or in a well-ventilated area.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe gas/ mist/vapours/ spray.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER/doctor/physician if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Store locked up.
Dispose of contents/container in accordance with local regulation.

Hazards Not Otherwise Classified (HNOC)
No physical hazards not otherwise classified.
No health hazards not otherwise classified.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component Name	CAS-No.	Concentration % by weight
Triclopyr, triethylamine salt	57213-69-1	2.50
fluazifop-P-butyl	79241-46-6	2.00
Diquat dibromide	85-00-7	1.50
Imazapic, ammonium salt	104098-49-9	0.30

SECTION 4: FIRST AID MEASURES

Description of first aid measures

General advice When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Inhalation Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Skin contact Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

Eye contact Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Ingestion	Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Most important symptoms and effects, both acute and delayed

Symptoms	To date no symptoms are known.

Indication of any immediate medical attention and special treatment needed

Treatment	Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable	High volume water jet
Special hazards arising from the substance or mixture	Dangerous gases are evolved in the event of a fire.

Advice for firefighters

Special protective equipment for firefighters	In the event of fire and/or explosion do not breathe fumes. Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.
Further information	Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow water to come into direct contact with the product.

Specific hazards from the substance or mixture which can increase the fire

Flash point	does not flash
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Explosivity	No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Precautions	Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods and materials for containment and cleaning up

Methods for cleaning up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.
Additional advice	Use personal protective equipment. If the product is accidentally spilled, do not allow to enter soil, waterways or waste water canal. Do not allow product to contact non-target plants.
Reference to other sections	Information regarding safe handling, see section 7. Information regarding personal protective equipment, see section 8. Information regarding waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Use only in area provided with appropriate exhaust ventilation. Handle and open container in a manner as to prevent spillage.
Hygiene measures	Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics. Remove Personal Protective Equipment (PPE) immediately after handling this product. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Protect from freezing. Keep away from direct sunlight.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components	CAS-No.	Control parameters	Update	Basis

Diquat dibromide (Total dust.)	85-00-7	0.5 mg/m3 (TWA PEL)	09 2006	US CA OEL
Diquat dibromide	85-00-7	0.5 mg/m3 (TWA)	06 2008	TN OEL
Diquat dibromide	85-00-7	0.5 mg/m3 (REL)	2005	NIOSH
Diquat dibromide (Inhalable fraction.)	85-00-7	0.5 mg/m3 (TWA)	01 2022	ACGIH
Diquat dibromide (Respirable fraction.)	85-00-7	0.1 mg/m3 (TWA)	01 2022	ACGIH

Exposure controls

Personal protective equipment
In normal use and handling conditions please refer to the label and/or leaflet. In all other cases the following recommendations would apply.

Respiratory protection	When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.
Hand protection	Chemical-resistant gloves (barrier laminate, butyl rubber, nitrile rubber or Viton)
Eye protection	Safety glasses with side-shields
Skin and body protection	Wear long-sleeved shirt and long pants and shoes plus socks.
General protective measures	Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Form	Liquid
Colour	brown
Odour	paint-like
Odour Threshold	No data available
pH	6.6 - 6.9 (100 %) (23 °C)
Melting point/range	No data available
Boiling Point	No data available

Flash point	does not flash
Flammability	No data available
Auto-ignition temperature	No data available
Thermal decomposition	No data available
Minimum ignition energy	No data available
Self-accelarating decomposition temperature (SADT)	No data available
Upper explosion limit	No data available
Lower explosion limit	No data available
Vapour pressure	No data available
Evaporation rate	No data available
Relative vapour density	No data available
Relative density	No data available
Density	1.04 g/cm³ (20 °C)
Water solubility	No data available
Partition coefficient: n-octanol/water	Triclopyr: log Pow: -0.45 Imazapic, ammonium salt: No data available Diquat dibromide: log Pow: -4.6
Viscosity, dynamic	No data available
Viscosity, kinematic	No data available
Oxidizing properties	No data available
Explosivity	No data available

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	No hazardous reactions when stored and handled according to prescribed instructions.

Conditions to avoid	Extremes of temperature and direct sunlight.
Incompatible materials	No incompatible materials known.
Hazardous decomposition products	No decomposition products expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes	Skin contact, Eye contact, Inhalation
Immediate Effects	
Eye	Causes moderate eye irritation.
Skin	May cause skin irritation. May cause sensitisation by skin contact.
Ingestion	Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation	May be harmful if inhaled.

Information on toxicological effects

Acute oral toxicity	LD50 (Rat) > 5,000 mg/kg Test conducted with a similar formulation.
Acute inhalation toxicity	LC50 (Rat) > 2.04 mg/l Exposure time: 4 h Determined in the form of liquid aerosol. highest concentration tested Test conducted with a similar formulation.
Acute dermal toxicity	Dermal toxicity was assessed based on the result of the oral toxicity study. Dermal toxicity study has been waived by competent regulatory authority.
Skin corrosion/irritation	Slight irritant effect - does not require labelling. (Rabbit) Test conducted with a similar formulation.
Serious eye damage/eye irritation	Minimally irritating. (Rabbit) Test conducted with a similar formulation.
Respiratory or skin sensitisation	Skin: Non-sensitizing. (Guinea pig) Test conducted with a similar formulation.

Assessment STOT Specific target organ toxicity – single exposure

Triclopyr: Based on available data, the classification criteria are not met.
Imazapic, ammonium salt: Based on available data, the classification criteria are not met.
Diquat dibromide: May cause respiratory irritation.

Assessment STOT Specific target organ toxicity – repeated exposure

Triclopyr caused specific target organ toxicity in experimental animal studies in the following organ(s): Kidney, Liver, Gastrointestinal tract.
Imazapic, ammonium salt: Based on available data, the classification criteria are not met.
Diquat dibromide caused specific target organ toxicity in experimental animal studies in the following organ(s): Eyes, Kidney. Diquat dibromide caused Cataract in animal studies.

Assessment mutagenicity

Triclopyr was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.
Imazapic, ammonium salt is not considered mutagenic.
Diquat dibromide was not mutagenic or genotoxic in a battery of in vitro and in vivo tests.

Assessment carcinogenicity

Triclopyr was not carcinogenic in lifetime feeding studies in rats and mice.
Imazapic, ammonium salt is not considered carcinogenic.
Diquat dibromide was not carcinogenic in lifetime feeding studies in rats and mice.

ACGIH

Diquat dibromide	85-00-7	Group A4

NTP

None.

IARC

None.

Assessment toxicity to reproduction

Triclopyr did not cause reproductive toxicity in a two-generation study in rats.
Imazapic, ammonium salt: Based on available data, the classification criteria are not met.
Diquat dibromide did not cause reproductive toxicity in a two-generation study in rats.

Assessment developmental toxicity

Triclopyr caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Triclopyr are related to maternal toxicity.
Imazapic, ammonium salt is not considered a developmental toxicant.
Diquat dibromide caused developmental toxicity only at dose levels toxic to the dams. The developmental effects seen with Diquat dibromide are related to maternal toxicity.

Aspiration hazard

Based on available data, the classification criteria are not met.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish

LC50 (Oncorhynchus mykiss (rainbow trout)) 117 mg/l
Exposure time: 96 h
The value mentioned relates to the active ingredient triclopyr.

LC50 (Lepomis macrochirus (Bluegill sunfish)) > 100 mg/l
static test; Exposure time: 96 h

	The value mentioned relates to the active ingredient imazapic.
	LC50 (Oncorhynchus mykiss (rainbow trout)) > 100 mg/l static test; Exposure time: 96 h The value mentioned relates to the active ingredient imazapic.
Toxicity to aquatic invertebrates	EC50 (Daphnia magna (Water flea)) 6.02 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient fluazifop-P-butyl.
	EC50 (Daphnia magna (Water flea)) 132.9 mg/l Exposure time: 48 h The value mentioned relates to the active ingredient triclopyr.
	EC50 (Daphnia magna (Water flea)) > 100 mg/l static test; Exposure time: 48 h The value mentioned relates to the active ingredient imazapic.
Toxicity to aquatic plants	EC50 (Raphidocelis subcapitata (freshwater green alga)) > 1.8 mg/l Exposure time: 96 h The value mentioned relates to the active ingredient fluazifop-P-butyl.
	EC50 (Raphidocelis subcapitata (freshwater green alga)) 32.5 mg/l static test; Exposure time: 5 d The value mentioned relates to the active ingredient triclopyr.
	EC50 (Raphidocelis subcapitata (freshwater green alga)) > 0.0523 mg/l static test; Exposure time: 5 d The value mentioned relates to the active ingredient imazapic.
Biodegradability	Triclopyr: Not rapidly biodegradable Imazapic, ammonium salt: no validated data found Diquat dibromide: Not rapidly biodegradable
Koc	Triclopyr: Koc: 0 - 50 Imazapic, ammonium salt:No data available Diquat dibromide: Koc: 2184750
Bioaccumulation	Triclopyr: Bioconcentration factor (BCF) 1 Does not bioaccumulate. Imazapic, ammonium salt: no validated data found Diquat dibromide: Bioconcentration factor (BCF) 1 Does not bioaccumulate.
Mobility in soil	Triclopyr: Highly mobile in soils Imazapic, ammonium salt: no validated data found Diquat dibromide: Immobile in soil

Results of PBT and vPvB assessment

PBT and vPvB assessment	Triclopyr: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB). Imazapic, ammonium salt: No data available Diquat dibromide: This substance is not considered to be persistent, bioaccumulative and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulative (vPvB).
Environmental precautions	Apply this product as specified on the label. 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 surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Retain and dispose of contaminated wash water.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods

Product	Dispose in accordance with all local, state/provincial and federal regulations.
Contaminated packaging	Consult state and local regulations regarding the proper disposal of container. Follow advice on product label and/or leaflet.
RCRA Information	Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

SECTION 14: TRANSPORT INFORMATION

49CFR	Not dangerous goods / not hazardous material

IMDG

UN number	**3082**
Class	9
Packaging group	III
Marine pollutant	YES
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (IMAZAPIC SOLUTION)

IATA

UN number	**3082**
Class	9
Packaging group	III
Environm. Hazardous Mark	YES

Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (IMAZAPIC SOLUTION)

This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

Further Information	Marine Pollutants assigned UN number 3077 or 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code and IATA special provision A197.

SECTION 15: REGULATORY INFORMATION

EPA Registration No. 71995-69
US Federal Regulations
TSCA list

Water	7732-18-5
Castor oil, ethoxylated	61791-12-6
Polyethylene glycol	25322-68-3

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
No export notification needs to be made.
SARA Title III - Section 302 - Notification and Information
Not applicable.
SARA Title III - Section 313 - Toxic Chemical Release Reporting
Yes

US States Regulatory Reporting
CA Prop65
This product does not contain any substances known to the State of California to cause cancer.

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients

Polyethylene glycol	25322-68-3	MN
Triclopyr, triethylamine salt	57213-69-1	NJ
Diquat dibromide	85-00-7	CA, CT, IL, NJ, RI

Environmental
CERCLA

Yes
Diquat dibromide 85-00-7
Listed
Clean Water Section 307(a)(1)
None.
Safe Drinking Water Act Maximum Contaminant Levels
Yes
Diquat dibromide 85-00-7

EPA/FIFRA Information:
This chemical is a pesticide product regulated by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information required on the pesticide label:

Signal word: Caution!

Hazard statements: May cause eye irritation.
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

49CFR	Code of Federal Regulations, Title 49
ACGIH	US. ACGIH Threshold Limit Values
ATE	Acute toxicity estimate
CAS-Nr.	Chemical Abstracts Service number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EINECS	European inventory of existing commercial substances
ELINCS	European list of notified chemical substances
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
N.O.S.	Not otherwise specified
NTP	US. National Toxicology Program (NTP) Report on Carcinogens
OECD	Organization for Economic Co-operation and Development
TDG	Transportation of Dangerous Goods
TWA	Time weighted average
UN	United Nations
WHO	World health organisation

NFPA 704 (National Fire Protection Association):

Health - 1	Flammability - 0	Instability - 0	Others - none

HMIS (Hazardous Materials Identification System, based on the Fourth Edition Ratings Guide)

Health - 1	Flammability - 0	Physical Hazard - 0	PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard,
* = chronic health hazard

Reason for Revision: The following sections have been revised: Section 14: Transport Information. Reviewed and updated for general editorial purposes.

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Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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