MONSANTO COMPANY
Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

Roundup QuikPRO™ Herbicide

1.1.1. Chemical name
Not applicable.
1.1.2. Synonyms
None.
1.1.3. EPA Reg. No.
524-535

1.2. Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com

1.3. 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. HAZARDS IDENTIFICATION

2.1. Classification
OSHA Hazard Communication Standard, 29 CFR 1910.1200 (2012)
STOT RE - Category 2
2.2. Label elements
2.2.1. Signal word
WARNING!
2.2.2. Hazard pictogram/pictograms

2.2.3. Hazard statement/statements
May cause damage to eyes or kidney through prolonged or repeated exposure.
2.2.4. Precautionary statement/statements
Do not breathe dust/fume/gas/mist/vapours/spray.
Get medical advice/attention if you feel unwell.
Dispose of contents/container in accordance with local, regional, national and international regulations.

2.3. Appearance and odour (colour/form/odour)
Pale yellow-Brown /Granules / Slight

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

Refer to section 11 for toxicological and section 12 for environmental information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient
Ammonium salt of N-(phosphonomethyl)glycine; {Ammonium salt of glyphosate}
6,7-Dihydrodipyrido(1,2-a:2',1'c) pyrazinedium dibromide; {Diquat dibromide}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Ammonium salt of glyphosate	114370-14-8	73.3
Diquat dibromide	85-00-7	2.9
Other ingredients		23.8

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.

4.1. Description of first aid measures

4.1.1. 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. Call a poison control center or doctor for treatment advice.

4.1.2. Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.1.3. Inhalation: If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

4.1.4. Ingestion: Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person. QUICK TREATMENT IS ESSENTIAL TO COUNTERACT POISONING and should be initiated before signs and symptoms of injury appear.

4.2. Most important symptoms and effects, both acute and delayed

4.2.1. Eye contact, short term: May cause temporary eye irritation.

4.2.2. Skin contact, short term: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.2.3. Inhalation, short term: Harmful by inhalation.

4.2.4. Single ingestion: Harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

4.3.1. Advice to doctors: This product is not an inhibitor of cholinesterase.

4.3.2. Antidote: Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

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

5.2. Special hazards

5.2.1. Unusual fire and explosion hazards

None.

Environmental precautions: see section 6.

5.2.2. Hazardous products of combustion

Carbon monoxide (CO), nitrogen oxides (NOx), phosphorus oxides (PxOy), hydrogen bromide (HBr)

5.3. Fire fighting equipment: Self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

5.4. Flash point

Does not flash.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

Use personal protection recommended in section 8.

6.2. Environmental precautions

SMALL QUANTITIES:
Low environmental hazard.
LARGE QUANTITIES:
Minimise spread.
Keep out of drains, sewers, ditches and water ways.

6.3. 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.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

7.1. Precautions for safe handling

Avoid breathing dust. Avoid contact with eyes, skin and clothing. Wash contaminated clothing before re-use. Wash hands thoroughly after handling or contact.

7.2. Conditions for safe storage

Compatible materials for storage: stainless steel, 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Airborne exposure limits

Components	Exposure Guidelines
Ammonium salt of glyphosate	No specific occupational exposure limit has been established.
Diquat dibromide	TLV (ACGIH): 0.5 mg/m3: inhalable fraction, skin, The exposure limit indicated is for the diquat cation. TLV (ACGIH): 0.1 mg/m3: respirable fraction, skin, The exposure limit indicated is for the diquat cation. PEL (OSHA): No specific occupational exposure limit has been established.
Other ingredients	No specific occupational exposure limit has been established.

8.2. Engineering controls: Provide local exhaust ventilation.

8.3. Recommendations for personal protective equipment

8.3.1. Eye protection: If there is significant potential for contact: Wear dust goggles.
8.3.2. Skin protection: No special requirement when used as recommended.
If repeated or prolonged contact: Wear chemical resistant gloves.
8.3.3. Respiratory protection: If airborne exposure is excessive:
Wear respirator.
Full facepiece/hood/helmet respirator replaces need for chemical goggles.

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:	Pale yellow - Brown
Odour:	Slight
Form:	Granules
Physical form changes (melting, boiling, etc.):	
Melting point:	No data.
Flash point:	Does not flash.
Explosive properties:	No explosive properties
Auto ignition temperature:	No data.
Self-accelerating decomposition	No data.

temperature (SADT):	
Oxidizing properties:	none
Specific gravity:	No data.
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	Not applicable.
Evaporation rate:	No data.
Dynamic viscosity:	Not applicable.
Kinematic viscosity:	Not applicable.
Density:	36 lb/ft3; (loose bulk density)
	42.6 lb/ft3; (tapped bulk density)
Solubility:	Water: Soluble
pH:	3.7 10 g/l
Partition coefficient:	log Pow: -3.2 @ 25 °C (glyphosate)

10. STABILITY AND REACTIVITY

10.1. Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.2. Stability

Stable under normal conditions of handling and storage.

10.3. Possibility of hazardous reactions

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

10.4. Incompatible materials

galvanised steel;unlined mild steel;see section 10.;
Compatible materials for storage: see section 7.2.

10.5. Hazardous decomposition

Thermal decomposition: Hazardous products of combustion: see section 5.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Likely routes of exposure: Skin contact, eye contact, inhalation

Potential health effects

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: Harmful by inhalation.
Single ingestion: Harmful if swallowed.

Data obtained on product and components are summarized below.

Acute oral toxicity

Rat, LD50: 4,443 mg/kg body weight
Slightly toxic.

Acute dermal toxicity

Rat, LD50: > 5,000 mg/kg body weight
Practically non-toxic.

Acute inhalation toxicity

Rat, LC50, 4 hours, aerosol:
Slightly toxic. No 4-hr LC50 at the maximum achievable concentration.

Skin irritation

Rabbit, 3 animals, OECD 404 test:
Days to heal: 2
Primary Irritation Index (PII): 0.5/8.0
Slight irritation.

Eye irritation

Rabbit, 3 animals, OECD 405 test:
Days to heal: 3
Moderate irritation.

Skin sensitization

Guinea pig, 3-induction Buehler test:
Positive incidence: 0 %
Negative.

N-(phosphonomethyl)glycine; [glyphosate acid]

Genotoxicity
Not genotoxic.

Carcinogenicity
Not carcinogenic in rats or mice. Listed as Category 2A by the International Agency for Research on Cancer (IARC) but our expert opinion is that classification as a carcinogen is not warranted.

Reproductive/Developmental Toxicity
Developmental effects in rats and rabbits only in the presence of significant maternal toxicity.
Reproductive effects in rats only in the presence of significant maternal toxicity.

Diquat dibromide

Genotoxicity
Not genotoxic in vivo.

Carcinogenicity
Not carcinogenic in rats or mice.

Reproductive/Developmental Toxicity
Reproductive effects in rats only in the presence of maternal toxicity.
Developmental effects in rats, rabbits, and mice only in the presence of maternal toxicity.

Surfactant

Genotoxicity
Not genotoxic.

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 glyphosate formulation

Aquatic toxicity, fish
Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, static, LC50: 5.4 mg/L
Moderately toxic.
Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 11 mg/L
Slightly toxic.
Arthropod toxicity
Honey bee (Apis mellifera):
Oral/contact, 48 hours, LD50: > 100 µg/bee
Practically non-toxic.

Isopropylamine salt of glyphosate (62%)

Data obtained on product and components are summarized below.

Aquatic toxicity, algae/aquatic plants
Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, static, EbC50 (biomass): 72.9 mg/L
Slightly toxic.
Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, static, NOEC (growth rate): 26.4 mg/L

Diquat dibromide

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
Acute toxicity, 72 hours, static, LC50: 12.1 - 21.5 mg/L
Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, static, LC50: 14.8 mg/L
Slightly toxic.
Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 0.77 - 1.19 mg/L
Highly toxic.
Aquatic toxicity, algae/aquatic plants
Green algae (Selenastrum capricornutum):
Acute toxicity, 96 hours, static, EC50: 0.0094 mg/L
Very highly toxic.
Avian toxicity
Bobwhite quail (Colinus virginianus):
Dietary toxicity, 5 days, LC50: 575 mg/kg diet
Moderately toxic.
Mallard duck (Anas platyrhynchos):
Dietary toxicity, 5 days, LC50: > 980 mg/kg diet
Mallard duck (Anas platyrhynchos):
Acute oral toxicity, single dose, LD50: 60.6 - 89.6 mg/kg body weight

Moderately toxic.

Bioaccumulation

Bluegill sunfish (Lepomis macrochirus):

Edible portion: BCF: < 1

No significant bioaccumulation. Rapid depuration after end of exposure.

Dissipation

Water/sediment, field:

Half life: 1 - 2 days

Rapid removal by adsorption to sediments.

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

Adsorbs strongly to soil.

Water, aerobic:

Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

13.1.1. 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.

13.1.2. Container

See the individual container label for disposal information. Emptied packages retain product residue and dust. Observe all labeled 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. Bury in approved landfill. Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

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.

14.1. US Dept. of Transportation (DOT) Hazardous Materials Regulations (49 CFR Parts 105-180)

UN No.:	UN3077
Proper Shipping Name (Technical Name if required):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (diquat dibromide)
Class:	9
Packing Group:	III

14.1.1. Note

Applies ONLY to packages which contain an RQ.

14.1.2. US DOT Reportable quantity

RQ Component	RQ	Minimum package size containing RQ
diquat	1,000 lb	34,483 lb

14.2. IMDG Code

UN No.:	UN3077
Proper Shipping Name (Technical Name if required):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., LIMITED QUANTITY (diquat dibromide)
Class:	9
Packing Group:	III

14.3. IATA/ICAO

UN No.:	UN3077
Proper Shipping Name (Technical Name if required):	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., LIMITED QUANTITY ()
Class:	9
Packing Group:	III

15. REGULATORY INFORMATION

15.1. Environmental Protection Agency

15.1.1. TSCA Inventory

Exempt

15.1.2. SARA Title III Rules

Section 311/312 Hazard Categories: Immediate
Section 302 Extremely Hazardous Substances: Not applicable.
Section 313 Toxic Chemical(s): Not applicable.

15.1.3. CERCLA Reportable quantity

RQ Component	RQ	Minimum package size containing RQ
diquat	1,000 lb	34,483 lb

Release of more than any reportable quantity to the environment in a 24 hour period requires notification to the National Response Center (800-424-8802 or 202-426-2675).

15.1.4. Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)

This chemical is a pesticide product regulated by the United States 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 (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION!
HARMFUL IF SWALLOWED, HARMFUL IF INHALED, CAUSES MODERATE EYE IRRITATION

Acute oral toxicity: FIFRA category III.

Acute dermal toxicity: FIFRA category IV.
Acute inhalation toxicity: FIFRA category III.
Skin irritation: FIFRA category IV.
Eye irritation: FIFRA category III.

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.
‖ Significant changes versus previous edition.

	Health	Flammability	Instability	Additional Markings
NFPA	2	1	2	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

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), STOT SE (Specific Target Organ Toxicity, Single Exposure), STOT RE (Specific Target Organ Toxicity, Repeated Exposure),TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This SDS 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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