1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

**Roundup Xtend™ With VaporGrip™ Technology Herbicide**

1.1.1. Chemical name
Not applicable.

1.1.2. Synonyms
None.

1.1.3. PCP Reg. No.
32274

1.2. Product use
Herbicide

1.3. Company
Monsanto Canada, 900 - One Research Road, Winnipeg, MB, R3T 6E3
**Telephone:** 204-985-1000 or 800-667-4944, **Fax:** 204-488-9599
**E-mail:** safety.datasheet@monsanto.com

1.4. Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CANUTEC - Day or Night: 613-996-6666 (collect calls accepted) or MONSANTO: 314-694-4000 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

2.1. Classification
Classification according to the Hazardous Products Regulations, 2015 Workplace Hazardous Materials Information System (WHMIS 2015)
Not classified as hazardous.

2.2. Label elements
**Hazard pictogram/pictograms**
Not Applicable

**Signal word**
Not applicable.

**Hazard statement/statements**
Hxxx Not applicable.

2.3. Other hazards
Not applicable.
2.4. Appearance and odour (colour/form/odour)
   Blue-Green / Liquid / Sweet

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance: Not applicable.

3.2. Mixture: Yes.

Composition/information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diglycolamine salt of dicamba</td>
<td>104040-79-1</td>
<td>14.5 %</td>
</tr>
<tr>
<td>Monoethanolamine salt of glyphosate</td>
<td>40465-76-7</td>
<td>29.2 %</td>
</tr>
<tr>
<td>Amine Alkoxylate</td>
<td>68478-96-6</td>
<td>&lt;=5.0 %</td>
</tr>
<tr>
<td>Water and minor formulating ingredients</td>
<td></td>
<td>&lt;=53.0 %</td>
</tr>
</tbody>
</table>

The specific chemical identity and/or concentration range is being withheld because it is trade secret information of Monsanto Company.

Active ingredient
Diglycylamine salt of dicamba (3,6-dichloro-o-anisic acid); \{Diglycylamine salt of dicamba\}
N-(phosphonomethyl)glycine, in the form of its ethanolamine salt; \{Monoethanolamine salt of glyphosate\}

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.

4.2. Most important symptoms and effects, both acute and delayed
4.2.1. Potential health effects
   Likely routes of exposure: Skin contact, eye contact, inhalation, ingestion
   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.

Single ingestion: Not expected to produce significant adverse effects when recommended use instructions are followed.

4.3. Indication of any immediate medical attention and special treatment needed
Not applicable.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media
5.1.1. Recommended: Water, Foam, Dry chemical, Carbon dioxide (CO2)

5.2. Special hazards
5.2.1. Unusual fire and explosion hazards
Minimise use of water to prevent environmental contamination. Environmental precautions: see section 6.

5.2.2. Hazardous products of combustion
Carbon monoxide (CO), Hydrogen chloride (HCl), Nitrogen oxides (NOx), Phosphorus oxides (PxOy)

5.3. Advice for firefighters
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 handling recommendations in Section 7 and personal protection recommendations in Section 8.

6.2. Environmental precautions
Minimise spread. Contain spillage with sand bags or other means. Keep out of drains, sewers, ditches and water ways. Do NOT contaminate water when disposing of rinse waters.

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. 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

7.1. Precautions for safe handling
Good industrial practice in housekeeping and personal hygiene should be followed. Do NOT taste or swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. When using do not eat, drink or smoke. Wash hands thoroughly after handling or contact. Wash contaminated clothing before re-use. Thoroughly clean equipment after use. Do not contaminate drains, sewers and water ways when disposing of equipment rinse water. Refer to section 13 of the safety data sheet for disposal of rinse water.
Emptied containers retain vapour and product residue. FOLLOW LABELLED WARNINGS EVEN AFTER CONTAINER IS EMPTIED.

7.2. **Conditions for safe storage, including any incompatibilities**

**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. Keep container tightly closed in a cool, well-ventilated place. Protect from freezing. 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.

7.3. **Specific end use(s)**

Pesticide: Read and follow label instructions

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### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1. Control parameters

**Airborne exposure limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>Exposure Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diglycolamine salt of dicamba</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
<tr>
<td>Monoethanolamine salt of glyphosate</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
<tr>
<td>Amine Alkoxylate</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
<tr>
<td>Water and minor formulating ingredients</td>
<td>No specific occupational exposure limit has been established.</td>
</tr>
</tbody>
</table>

#### 8.2. Exposure controls

**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. If repeated or prolonged contact: Wear chemical resistant gloves.

**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.

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Colour/colour range:</th>
<th>Blue - Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odour:</td>
<td>Sweet</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>Odour threshold:</td>
<td>No data.</td>
</tr>
<tr>
<td>Physical form changes (melting, boiling, etc.):</td>
<td></td>
</tr>
<tr>
<td>Freezing point:</td>
<td>Not available.</td>
</tr>
<tr>
<td>Boiling point:</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Does not flash.</td>
</tr>
<tr>
<td>Explosive properties:</td>
<td>No data.</td>
</tr>
<tr>
<td>Auto ignition temperature:</td>
<td>No data.</td>
</tr>
<tr>
<td>Self-accelerating decomposition temperature (SADT):</td>
<td>No data.</td>
</tr>
<tr>
<td>Oxidizing properties:</td>
<td>No data.</td>
</tr>
<tr>
<td>Specific gravity:</td>
<td>1.225</td>
</tr>
<tr>
<td>Vapour pressure:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapour density:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Dynamic viscosity:</td>
<td>Not available.</td>
</tr>
<tr>
<td>Kinematic viscosity:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Density:</td>
<td>1.225 g/cm³</td>
</tr>
<tr>
<td>Solubility:</td>
<td>Water: Soluble</td>
</tr>
<tr>
<td>pH:</td>
<td>5</td>
</tr>
<tr>
<td>Partition coefficient:</td>
<td>log Pow: 2.21 (Dicamba - unionized)</td>
</tr>
<tr>
<td></td>
<td>log Pow: 0.54 (Dicamba - ionized)</td>
</tr>
<tr>
<td></td>
<td>log Pow: &gt; -3.2 @ 25 °C (Glyphosate)</td>
</tr>
</tbody>
</table>

9.2 Other information

| Evaporation rate: | No data. |

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 Chemical 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 Conditions to avoid

None

10.5 Incompatible materials

Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.

Compatible materials for storage: see section 7.2.

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

11. TOXICOLOGICAL INFORMATION

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

11.1. Information on toxicological effects

Acute oral toxicity:

Acute dermal toxicity:

Acute inhalation toxicity:

Skin corrosion/irritation:

Eye corrosion/irritation:

Skin sensitization:

Respiratory sensitization:

Mutagenicity:

Carcinogenicity:

Reproductive/Developmental Toxicity:

Specific Target Organ Toxicity - Single Exposure:

Specific Target Organ Toxicity - Repeated Exposure:

Aspiration hazard:

Most important symptoms and effects, both acute and delayed

Potential health effects

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

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.

Single ingestion: Not expected to produce significant adverse effects when recommended use instructions are followed.

If available, data obtained on similar products and/or on components are summarized below.

**Similar formulation**

**Acute oral toxicity**

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

No mortality. Practically non-toxic.

**Acute dermal toxicity**

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

No mortality. Practically non-toxic.

**Skin irritation**

*Rabbit, 3 animals:*

Redness, individual EU scores: 0; 0.3; 0

Swelling, individual EU scores: 0; 0; 0

Days to heal: 3

Practically non irritating to skin (rabbit).

**Eye irritation**

*Rabbit, 3 animals:*

Conjunctival redness, individual EU scores: 0.7; 0.7; 1.0

Conjunctival swelling, individual EU scores: 0.3; 0.0; 0.0
Corneal opacity, individual EU scores: 0.0; 0.0; 0.3
Iris lesions, individual EU scores: 0.0; 0.0; 0.0
Days to heal: 3
Slightly irritating to eyes but not sufficient for classification.
Slight irritation.

**Acute inhalation toxicity**
Rat, LC50, 4 hours, aerosol: > 5.13 mg/L
Practically non-toxic.

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

3,6-Dichloro-O-anisic acid; (Dicamba)
Data obtained on active ingredient(s) are summarized below.

**Genotoxicity**
Not genotoxic on the basis of weight of evidence analysis.

**Carcinogenicity**
Not carcinogenic in rats or mice.

**Reproductive/Developmental Toxicity**
No reproductive effects in rats. Decreased pup weights in rats. No developmental effects in rabbits.

N-(phosphonomethyl)glycine; {glyphosate acid}

**Genotoxicity**
Not genotoxic.

**Carcinogenicity**
Not carcinogenic in rats or mice.

**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.

### 12. ECOLOGICAL INFORMATION

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

Data obtained on active ingredient(s) are summarized below. The toxicity of this formulation to aquatic animals may be greater than the toxicity of the active ingredient if surfactants are present.

**12.1 Toxicity**
No data.

**12.2 Persistence and degradability**
No data.

**12.3 Bioaccumulative potential**
Refer to section 9 for partition coefficient data.

**12.4 Mobility in soil**
No data.
12.5 Results of PBT and vPvB assessment
No data.

12.6 Other adverse effects
No data.

12.7 Additional information
If available, data obtained on similar products and/or on components are summarized below.

N-(phosphonomethyl)glycine; {glyphosate acid}

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
  Acute toxicity, 96 hours, static, LC50: 120 mg/L
Rainbow trout (Oncorhynchus mykiss):
  Acute toxicity, 96 hours, static, LC50: 86 mg/L

Aquatic toxicity, invertebrates
Water flea (Daphnia magna):
  Acute toxicity, 48 hours, static, EC50: 780 mg/L

Aquatic toxicity, algae/aquatic plants
Green algae (Pseudokirchneriella subcapitata):
  Acute toxicity, 96 hours, static, EbC50 (biomass): 17 mg/L
Diatom (Skeletonema costatum):
  Acute toxicity, 96 hours, static, EbC50 (biomass): 11 mg/L
Duckweed (Lemna gibba):
  Acute toxicity, 14 days, static, EC50 (frond number): 25.5 mg/L

Avian toxicity
Bobwhite quail (Colinus virginianus):
  Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight

Arthropod toxicity
Honey bee (Apis mellifera):
  Oral, 48 hours, LD50: 100 µg/bee
Honey bee (Apis mellifera):
  Contact, 48 hours, LD50: > 100 µg/bee

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

3,6-Dichloro-O-anisic acid; (Dicamba)
Data obtained on components are summarized below.

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
  Acute toxicity, 96 hours, static, LC50: 135.3 mg/L
Rainbow trout (Oncorhynchus mykiss):
    Acute toxicity, 96 hours, static, LC50: 28 - 135.4 mg/L

Aquatic toxicity, invertebrates

Water flea (Daphnia magna):
    Acute toxicity, 48 hours, static, EC50: 110.7 mg/L

Aquatic toxicity, algae/aquatic plants

Green algae (Selenastrum capricornutum):
    Acute toxicity, 120 hours, static, EC50: > 3.7 mg/L

Green algae (Selenastrum capricornutum):
    Acute toxicity, 120 hours, static, NOEC: 3.7 mg/L

Diatom (Skeletonema costatum):
    Acute toxicity, 72 hours, static, EbC50 (biomass): 1.8 mg/L

Avian toxicity

Mallard duck (Anas platyrhynchos):
    Acute oral toxicity, single dose, LD50: 1,373 mg/kg body weight

Bobwhite quail (Colinus virginianus):
    Acute oral toxicity, single dose, LD50: 216 mg/kg body weight

Arthropod toxicity

Honey bee (Apis mellifera):
    Contact, 48 hours, LD50: > 90.65 µg/bee

Bioaccumulation

No significant bioaccumulation is expected.

Biodegradation

Not readily biodegradable.

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 containers retain vapour and product residue. Observe all labeled 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.

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.

Transport of Dangerous Goods Regulations (TDG)

14.1 UN No.: Not applicable.
14.2 Proper Shipping Name (Technical Name if required): Not regulated for domestic ground transportation.
14.3 Transport hazard class: Not applicable.
14.4 Packing Group: Not applicable.
14.5 Environmental hazards: Not applicable.
14.6 Special precautions for the user: Not applicable.

IMO
14.1 UN No.: Not applicable.
14.2 Proper Shipping Name (Technical Name if required): Not regulated for transport under IMO Regulations.
14.3 Transport hazard class: Not applicable.
14.4 Packing Group: Not applicable.
14.5 Environmental hazards: Not applicable.
14.6 Special precautions for the user: Not applicable.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.

IATA/ICAO
14.1 UN No.: Not applicable.
14.2 Proper Shipping Name (Technical Name if required): Not regulated for transport under IATA/ICAO Regulations.
14.3 Transport hazard class: Not applicable.
14.4 Packing Group: Not applicable.
14.5 Environmental hazards: Not applicable.
14.6 Special precautions for the user: Not applicable.

15. REGULATORY INFORMATION


PCPA registered.

Read the label, authorized under the Pest Control Products Act, prior to using or handling the pest control product.

This chemical is a pest control product regulated by Health Canada Pest Management Regulatory Agency and is subject to certain labelling requirements under the Pest Control Products Act. These requirements differ from the classification criteria and hazard information required for GHS-consistent safety data sheets. The following is the hazard information required on the pest control product label:

CAUTION!
CAUSES TEMPORARY EYE IRRITATION

There are Canada-specific environmental requirements for handling, use, and disposal of this pest control product that are indicated on the label.

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.

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),
This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE Pest Management Regulatory (PMRA)- 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 product labeling and provincial legislation, 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 PMRA-approved label.

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