

**1. IDENTIFICATION**

Product name: **Defy™ Amine 4**  
 Chemical name of active ingredient(s): Dimethylamine Salt of 2,4-Dichlorophenoxyacetic Acid  
 Manufacturer/Registrant: Makhteshim Agan of North America, Inc.  
 4515 Falls of Neuse Road, Suite 300  
 Raleigh, NC 27609  
 Phone: 919-256-9300

For fire, spill, and/or leak emergencies, contact Infotrac: Phone: 1-800-535-5053

For medical emergencies and health and safety inquiries, contact Prostar: Phone: 1-877-250-9291

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

| CHEMICAL NAME                                                           | CAS #     | %    | OSHA/PEL             | ACGIH/TLV            | OTHER | NTP/IARC/OSHA<br>(Carcinogen) |
|-------------------------------------------------------------------------|-----------|------|----------------------|----------------------|-------|-------------------------------|
| 2,4-Dichlorophenoxyacetic acid, dimethylamine salt<br>NA=not applicable | 2008-39-1 | 47.2 | 10 mg/m <sup>3</sup> | 10 mg/m <sup>3</sup> | NA    | NA                            |

**3. HAZARDS IDENTIFICATION****PHYSICAL PROPERTIES:****Appearance:** Transparent amber liquid**Odor:** Amine odor

**EMERGENCY OVERVIEW: DANGER** Corrosive. Causes irreversible eye damage. Harmful if swallowed, inhaled, or absorbed through the skin. Do not get in eyes, on skin, or on clothing. Wear goggles, face shield, or safety glasses. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse.

**ROUTES OF ENTRY:** Inhalation, skin, eyes and ingestion.

**POTENTIAL HEALTH EFFECTS:****EYE:** Corrosive. Sever eye irritant. May cause permanent eye injury including blindness.**SKIN:** May cause skin irritation in certain individuals. Harmful if absorbed through the skin.**INHALATION:** May cause respiratory tract irritation and delayed pulmonary edema.**INGESTION:** Harmful if swallowed.

**CHRONIC:** May cause liver and kidney damage. May cause reproductive and fetal effects. Effects may be delayed. Chronic exposure will cause neurological degradation and/or abnormalities.

**SYMPTOMS OF OVER EXPOSURE:** Overexposure by ingestion may cause gastrointestinal irritation with nausea, vomiting and diarrhea.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Can decompose at high temperatures forming irritating and toxic gases.

**4. FIRST AID**

| FIRST AID                      |                                                                                                                                                                                                                                                                                                         |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IF IN EYES:</b>             | <ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes; then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul> |
| <b>IF ON SKIN OR CLOTHING:</b> | <ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>                                                                   |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IF SWALLOWED:</b>                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul> |
| <b>IF INHALED:</b>                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth-to-mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>                                                        |
| Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact PROSAR at 1-877-250-9291 for emergency medical treatment information.<br><b>NOTE TO PHYSICIAN:</b> Probable mucosal damage may contraindicate the use of gastric lavage. |                                                                                                                                                                                                                                                                                                                                                                |

## 5. FIRE FIGHTING MEASURES

**FLASHPOINT:** Not flammable.

**FLAMMABLE LIMITS (% in air):** Not determined.

**UNUSUAL FIRE, EXPOSURE AND REACTIVITY HAZARDS:** Thermal decomposition during a fire can produce fumes and irritating gases.

**FIRE FIGHTING PROCEDURES:** Evacuate area and fight fire upwind from a safe distance to avoid hazardous vapors and decomposition products. Dike and collect fire-extinguishing water to prevent environmental damage with excessive water runoff.

**SUITABLE EXTINGUISHING MEDIA:** Use dry foam, dry chemical, carbon dioxide, or water spray when fighting fires involving this material. Minimize the use of water to avoid environmental contamination. Contain all runoff.

**FIRE FIGHTING EQUIPMENT:** Self-contained breathing apparatus with full face-piece. Full fire fighting turnout gear (Bunker gear).

**HAZARDOUS DECOMPOSITION PRODUCTS:** Hydrogen chloride and nitrogen oxides.

## 6. ACCIDENTAL RELEASE MEASURES

**ACTION TO TAKE FOR SPILLS/LEAKS:** Clean up spills immediately, observing precautions in Section 8 of this document. Isolate hazard area. Keep unnecessary personnel from entering.

**SMALL SPILL:** Contain small spill by diking with a suitable absorbent material. Sweep up absorbed spill and place material in appropriate recovery drums for disposal. **LARGE SPILL:** Contain large spill by diking with a suitable absorbent material and recover for disposal. After removal, neutralize the spill area, tools, and equipment with a dilute alkaline solution (soda ash or lime) followed by an appropriate alcohol (methanol, ethanol or isopropanol). Wash the spill area, tools, and equipment with strong soap and water solution. Absorb any excess liquid and add to the recovery drums of waste already collected. Dispose all wastes as described in Section 13.

## 7. HANDLING AND STORAGE

Do not contaminate water, food or feed by storage or disposal.

**PRECAUTIONS TO BE TAKEN IN HANDLING:** Use only in a well ventilated area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

**PRECAUTIONS TO BE TAKEN IN STORAGE:** Keep container tightly closed when not in use. If exposed to subfreezing temperatures, the product should be warmed to at least 40°F and mixed thoroughly before using.

**STORAGE TEMPERATURE (MIN/MAX):** Normal ambient temperatures.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

**EYE PROTECTION:** Safety goggles or full face shield.

**SKIN PROTECTION:** Wear coveralls or long-sleeved uniform, head covering, socks, and chemical resistant shoes. Remove contaminated clothing and wash before rewearing. Wash separately from other laundry.

**HAND PROTECTION:** Chemical resistant gloves such as barrier laminate, nitrile rubber, neoprene rubber or Viton ®.

**RESPIRATOR REQUIREMENTS:** When handling in enclosed areas, when large quantities of mists are generated, or prolonged exposure is possible, use a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

**ADDITIONAL PROTECTIVE MEASURES:** Follow manufacturer's instructions for cleaning/maintaining personal protective equipment. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing or other materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

**USER SAFETY RECOMMENDATIONS:**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**EXPOSURE GUIDELINES:** Refer to Section 2.

**ENGINEERING CONTROLS:** Refer to product label. Proper ventilation is required when handling or using this product. Ventilate all transport vehicles prior to unloading. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**APPEARANCE:** Transparent amber liquid

**ODOR:** Amine odor

**pH:** 9.05 (1% in water)

**DENSITY:** 1.160 gm/cm<sup>3</sup>@25°C; 1.150 gm/cm<sup>3</sup>@40°C

**FLAMMABILITY(°C):** Not applicable

**VISCOSITY (CENTISTOKES):** 9.99 cps@ 25° C; 5.80 cps@ 40° C

**SOLUBILITY:** Miscible with water

## 10. STABILITY AND REACTIVITY

**GENERAL:** Stable under normal use and storage conditions.

**CONDITIONS TO AVOID:** Avoid excessive heat and fire.

**INCOMPATIBLE MATERIALS:** Avoid contact with oxidizing agents and acids.

**HAZARDOUS DECOMPOSITION:** Can decompose at high temperatures forming irritating and toxic gases.

**HAZARDOUS POLYMERIZATION:** Product will not undergo polymerization.

## 11. TOXICOLOGICAL INFORMATION

### ACUTE TOXICITY/IRRITATION STUDIES:

|                                          |                     |
|------------------------------------------|---------------------|
| Acute Oral LD <sub>50</sub> (Rat):       | > 1,000 mg/kg       |
| Acute Dermal LD <sub>50</sub> (Rabbit):  | > 1,500 mg/kg       |
| Acute Inhalation LC <sub>50</sub> (Rat): | > 3.0 mg/L (4 hr)   |
| Eye Irritation (Rabbit):                 | Severely irritating |
| Dermal Irritation (Rabbit):              | Slightly irritating |
| Dermal Sensitization (Guinea pig):       | Non-sensitizer      |

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL HAZARDS:** This product is toxic to fish and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present, or to intertidal area below the mean high water mark. Drift or

runoff may be hazardous to aquatic organisms in water adjacent to treated areas and nontarget plants. Do not contaminate water when disposing of equipment washwaters or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Application around a cistern or well may result in contamination of drinking water or groundwater.

**AQUATIC TOXICITY:** LC50 (96h) for Rainbow Trout: 250 mg/l

LC50 (96h) for Bluegill Sunfish: 524 mg/l

LC50 (48h) for Daphnia: 184 mg/l

**AVIAN TOXICITY:** LD50 Bobwhite Quail: 500 mg/kg

LC50 (8-Day) Mallard Duck: > 5,620 ppm

**ENVIRONMENTAL FATE:**

2,4-D has a low binding affinity in soil and sediment particles and has been detected in groundwater at approximately 15 ppb, which is well below the drinking water levels of concern (DWLOC). Dissipation studies indicate that 2,4-D degrades rapidly in soils by its volatility, photolysis, and aerobic environments, with a half-life in soil and water at 6 to 15 days. 2,4-D is more persistent in anaerobic aquatic environments with a half-life ranging from 41 to 333 days.

### 13. DISPOSAL CONSIDERATIONS

**END USERS MUST DISPOSE OF ANY PRODUCT AS PER THE LABEL RECOMMENDATIONS.**

**PRODUCT DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law and may contaminate groundwater. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** Dispose of product containers, waste containers, and residues according to label instructions and local, state, and federal health and environmental regulations.

### 14. TRANSPORT INFORMATION

**DOT CLASSIFICATION:**

**Package size < 26 gallons:** Not regulated

**Package size ≥ 26 gallons:** UN3082, Environmentally Hazardous Substance, Liquid, N.O.S. (2,4-dichlorophenoxyacetic acid), 9, PG III, RQ

**INTERNATIONAL TRANSPORTATION:**

**IMO (vessel):**

**Package size <26 gallons:** UN 3082, Environmentally hazardous substances, liquid, N.O.S. (2,4-dichlorophenoxyacetic acid), 9, PGIII, Marine pollutant

**Package size ≥26 gallons:** UN 3082, Environmentally hazardous substances, liquid, N.O.S. (2,4-dichlorophenoxyacetic acid), 9, PGIII, Marine pollutant, RQ

**IATA (air):**

**Package size <26 gallons:** UN 3082, Environmentally hazardous substances, liquid, N.O.S. (2,4-dichlorophenoxyacetic acid), 9, PGIII, Marine pollutant

**Package size ≥26 gallons:** UN 3082, Environmentally hazardous substances, liquid, N.O.S. (2,4-dichlorophenoxyacetic acid), 9, PGIII, Marine pollutant RQ

### 15. REGULATORY INFORMATION

**SARA TITLE III CLASSIFICATION:**

**Section 302/304:** Not applicable

**Section 311/312:** Immediate (Acute) Health Hazard  
Delayed health hazard

**Section 313 chemical(s):** 2,4-D Acid (CAS 94-75-7) 39.2%

**CA PROPOSITION 65:** Not applicable.

MATERIAL SAFETY DATA SHEET

**Defy™ Amine 4**

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**CERCLA REPORTABLE QUANTITY (RQ):** 2,4-Dichlorophenoxyacetic acid (100 lbs.) = 26 gallons product

**RCRA CLASSIFICATION:** Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

**TSCA STATUS:** The ingredients of this product are listed on the TSCA inventory or are exempt.

|                              |
|------------------------------|
| <b>16. OTHER INFORMATION</b> |
|------------------------------|

|                        |             |   |          |
|------------------------|-------------|---|----------|
| <b>HAZARD RATINGS:</b> | <b>NFPA</b> | 0 | LEAST    |
| <b>HEALTH:</b>         | 2           | 1 | SLIGHT   |
| <b>FLAMMABILITY:</b>   | 0           | 2 | MODERATE |
| <b>REACTIVITY:</b>     | 0           | 3 | HIGH     |
|                        |             | 4 | SEVERE   |

**MSDS DATE:** 9-27-11. Superceded version dated 5-16-11. Changes made to Section 14.

The information contained herein is given in good faith and is believed to be correct, but no warrant, express or implied, is made. Consult Makhteshim Agan of North America, Inc. for further information.