

## RESOLUTE® 4FL Herbicide

Date: 6/9/2015  
 Replaces: 1/28/2015

### 1. PRODUCT IDENTIFICATION

Product identifier on label: **RESOLUTE® 4FL Herbicide**

Product No.: A12333G

Use: Herbicide

Manufacturer: Syngenta Crop Protection, LLC  
 Post Office Box 18300  
 Greensboro NC 27419

Manufacturer Phone: 1-800-334-9481

**Emergency Phone: 1-800-888-8372**

### 2. HAZARDS IDENTIFICATION

Classifications: Skin Sensitizer: Category 1B  
 Carcinogenicity: Category 2  
 Specific Target Organ Toxicity: Repeated Category 2

Signal Word (OSHA): Warning

Hazard Statements: May cause an allergic skin reaction  
 Suspected of causing cancer  
 May cause damage to organs through prolonged or repeated exposure

Hazard Symbols:



Precautionary Statements: Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Do not breathe mist, vapors, spray.  
 Contaminated work clothing must not be allowed out of the workplace.  
 Wear protective gloves, protective clothing, eye protection.  
 If on skin: Wash with plenty of soap and water.  
 If skin irritation or rash occurs: Get medical advice.  
 If exposed or concerned: Get medical advice/attention.  
 See Section 4 First Aid Measures.  
 Wash contaminated clothing before reuse.  
 Store locked up.  
 Dispose of contents and container in accordance with local regulations.

Other Hazard Statements: None

## RESOLUTE® 4FL Herbicide

Date: 6/9/2015  
 Replaces: 1/28/2015

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name   | Common Name       | CAS Number   | Concentration |
|---|-------------------|--------------|---------------|
| 1,2-Propanediol   | Propylene Glycol  | 57-55-6      | Trade Secret  |
| Attapulgite Clay  | Attapulgite Clay  | 12174-11-7   | Trade Secret  |
| Other ingredients   | Other ingredients | Trade Secret | 59.3%         |
| N3, N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine | Prodiamine        | 29091-21-2   | 40.7%         |

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

### 4. FIRST AID MEASURES

Have the product container, label or Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

- Ingestion:** If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Most important symptoms/effects:

Allergic skin reaction

Indication of immediate medical attention and special treatment needed:

There is no specific antidote if this product is ingested.

Treat symptomatically.

Persons suffering a temporary allergic reaction may respond to treatment with antihistamines or steroid creams and/or systemic steroids.

### 5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use dry chemical, foam or CO2 extinguishing media. If water is used to fight fire, dike and collect runoff.

Specific Hazards:

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

Special protective equipment and precautions for firefighters:

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion.

## RESOLUTE® 4FL Herbicide

Date: 6/9/2015  
Replaces: 1/28/2015

**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment, and emergency procedures:

Follow exposure controls/personal protection outlined in Section 8.

Methods and materials for containment and cleaning up:

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. Cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

**7. HANDLING AND STORAGE**

Precautions for safe handling:

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage 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.

Conditions for safe storage, including any incompatibilities:

Store locked up.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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

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

Occupational Exposure Limits:

| Chemical Name     | OSHA PEL        | ACGIH TLV       | Other                    | Source         |
|-------------------|-----------------|-----------------|--------------------------|----------------|
| Propylene Glycol  | Not Established | Not Established | 10 mg/m <sup>3</sup> TWA | AIHA           |
| Attapulgite Clay  | Not Established | Not Established | Not Established          | Not Applicable |
| Other ingredients | Not Applicable  | Not Applicable  | Not Applicable           | Not Applicable |
| Prodiamine        | Not Established | Not Established | 5 mg/m <sup>3</sup> TWA  | Syngenta       |

Appropriate engineering controls:

Use effective engineering controls to comply with occupational exposure limits (if applicable).

Individual protection measures:

Ingestion:

Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact:

Where eye contact is likely, use chemical splash goggles.

Skin Contact:

Where contact is likely, wear chemical-resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride [PVC] or Viton), coveralls, socks and chemical-resistant footwear.

## RESOLUTE® 4FL Herbicide

Date: 6/9/2015

Replaces: 1/28/2015

### Inhalation:

A respirator is not normally required when handling this substance. Use effective engineering controls to comply with occupational exposure limits.

In case of emergency spills, use a NIOSH approved respirator with any N, R, P or HE filter.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Yellow liquid

Odor: Not determined

Odor Threshold: Not Available

pH: 4.0 - 7.0 (as packaged)

Melting point/freezing point: Not Applicable

Initial boiling point and boiling range: Not Available

Flash Point (Test Method): > 211°F (Pensky-Martens CC)

Flammable Limits (% in Air): Not Available

Flammability: Not Applicable

Vapor Pressure: Prodiamine <math>5.6 \times 10^{-6}</math> mmHg @ 68°F (20°C)

Vapor Density: Not Available

Relative Density: 1.17 g/cm<sup>3</sup> @ 68°F ; 9.76 lb/gal @ 68°F

Solubility (ies): Prodiamine 0.013 ppm @ 77°F (25°C)

Partition coefficient: n-octanol/water: Not Available

Autoignition Temperature: Not Available

Decomposition Temperature: Not Available

Viscosity: Not Available

Other: None

## 10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable under normal use and storage conditions.

Possibility of hazardous reactions: Will not occur.

Conditions to Avoid: Thermal, mechanical and electrical ignition sources

Incompatible materials: None known.

Hazardous Decomposition Products: None known.

**RESOLUTE® 4FL Herbicide**

Date: 6/9/2015  
 Replaces: 1/28/2015

**11. TOXICOLOGICAL INFORMATION**

Health effects information

Likely routes of exposure: Dermal, Inhalation

Symptoms of exposure: Not Applicable

Delayed, immediate and chronic effects of exposure: Possible carcinogenicity, Allergic skin reaction

Numerical measures of toxicity (acute toxicity/irritation studies (finished product))

|                     |   |  |
|---------------------|---|--|
| Ingestion:          | Oral (LD50 Rat) :   | > 5000 mg/kg body weight (based on a substantially similar formulation)  |
| Dermal:             | Dermal (LD50 Rat) :   | > 5000 mg/kg body weight (based on a substantially similar formulation)  |
| Inhalation:         | Inhalation (LC50 Rat) :   | > 2.55 mg/l air - 4 hours (based on a substantially similar formulation) |
| Eye Contact:        | Mildly Irritating (Rabbit)  |  |
| Skin Contact:       | Practically Non-Irritating (Rabbit)                                     |  |
| Skin Sensitization: | Sensitizing (Guinea Pig) (based on a substantially similar formulation) |  |

Reproductive/Developmental Effects

Prodiamine: Fetal toxicity at high dose levels (rats); developmental and maternal toxicity observed at 1g/kg/day. These were congenital anomalies occurring in test and control animals that are not considered to be treatment related.

Chronic/Subchronic Toxicity Studies

Prodiamine: Liver (alteration and enlargement) and thyroid effects (hormone imbalances) at high dose levels (rats); decreased body weight gains.

Carcinogenicity

Prodiamine: Possible human carcinogen based on limited animal evidence in the absence of human data. Information is insufficient for classification.

| Chemical Name   | NTP/IARC/OSHA Carcinogen |
|---|--------------------------|
| 1,2-Propanediol   | No                       |
| Attapulgite Clay  | IARC 2B                  |
| Other ingredients   | No                       |
| N3, N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine | No                       |

Other Toxicity Information

None

Toxicity of Other Components

Attapulgite Clay

Prolonged or repeated inhalation of dust may cause a disabling, progressive pulmonary fibrosis. Inhalation hazard may not exist in the liquid form. May cause eye irritation.

Other ingredients

Not Applicable

**RESOLUTE® 4FL Herbicide**

Date: 6/9/2015

Replaces: 1/28/2015

**Propylene Glycol**

Reported to cause central nervous system depression (anesthesia, dizziness, confusion), headache and nausea. Also, eye irritation may occur with lacrimation but no residual discomfort or injury. Prolonged contact to skin may cause mild to moderate irritation and possible allergic reactions. Chronic dietary exposure caused kidney and liver injury in experimental animals.

Target Organs

Active Ingredients

Prodiamine: Liver, thyroid

Inert Ingredients

Attapulgate Clay: Lung, eye

Other ingredients: Not Applicable

Propylene Glycol: CNS, kidney, liver

**12. ECOLOGICAL INFORMATION**

**Eco-Acute Toxicity**

Prodiamine:

Fish (Bluegill Sunfish) 96-hour LC50 > 552 ppb

Invertebrate (Water Flea) Daphnia Magna 48-hour EC50 > 83 ppb

Bird (Bobwhite Quail) 14-day LD50 > 2250 mg/kg

**Environmental Fate**

Prodiamine:

The information presented here is for the active ingredient, prodiamine.

Does not bioaccumulate. Persistent in soil. Stable in water. Immobile in soil. Sinks in water (after 24 h).

**13. DISPOSAL CONSIDERATIONS**

**Disposal:**

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

**14. TRANSPORT INFORMATION**

**DOT Classification**

Ground Transport - NAFTA

Not regulated

**Comments**

Water Transport - International

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Prodiamine), Marine Pollutant

Hazard Class: Class 9

Identification Number: UN 3082

Packing Group: PG III

**Air Transport**

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Prodiamine)

**RESOLUTE® 4FL Herbicide**

Date: 6/9/2015  
 Replaces: 1/28/2015

Hazard Class: Class 9  
 Identification Number: UN 3082  
 Packing Group: PG III

**15. REGULATORY INFORMATION**

Pesticide Registration:

This chemical is a pesticide product registered 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 as required on the pesticide label:

Caution: May be harmful if swallowed, absorbed through skin, or inhaled. Avoid breathing vapor. Avoid contact with skin, eyes, or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

EPA Registration Number(s):  
 100-1139

EPCRA SARA Title III Classification:

Section 311/312 Hazard Classes: Acute Health Hazard  
 Chronic Health Hazard

Section 313 Toxic Chemicals: None

California Proposition 65:

This product contains trace amounts of chemical(s), known to the State of California to cause cancer as unintended impurities resulting from other entities' manufacturing or processing operations which Syngenta cannot control.

CERCLA/SARA 304 Reportable Quantity (RQ):  
 None

RCRA Hazardous Waste Classification (40 CFR 261):  
 Not Applicable

TSCA Status:  
 Exempt from TSCA, subject to FIFRA

**16. OTHER INFORMATION**

NFPA Hazard Ratings

Health: 2  
 Flammability: 1  
 Instability: 0

HMIS Hazard Ratings

Health: 2  
 Flammability: 1  
 Reactivity: 0

|   |          |
|---|----------|
| 0 | Minimal  |
| 1 | Slight   |
| 2 | Moderate |
| 3 | Serious  |
| 4 | Extreme  |
| * | Chronic  |

Syngenta Hazard Category: D

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 8/20/2010  
 Revision Date: 6/9/2015  
 Section(s) Revised: 2, 4, 11, 16

Replaces: 1/28/2015

## RESOLUTE® 4FL Herbicide

Date: 6/9/2015

Replaces: 1/28/2015

---

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.