1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Nufarm Quinclorac SPC 75 DF
EPA Reg. No.: 228-592
Product Type: Herbicide
Company Name: Nufarm Americas Inc.
11901 S. Austin Avenue
Alsip, IL 60803
1-800-345-3330

Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300
For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

2. HAZARDS IDENTIFICATION

PHYSICAL HAZARDS:
None

HEALTH HAZARDS:
None

ENVIRONMENTAL HAZARDS:
Hazardous to Aquatic Environment, Acute Category 3

SIGNAL WORD:
No Signal Word

HAZARD STATEMENTS:
Harmful to aquatic life.

PRECAUTIONARY STATEMENTS
Avoid release to the environment.
Collect spillage.
Dispose of contents in accordance with local, state, and federal regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENTS</th>
<th>CAS NO.</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinclorac</td>
<td>84087-01-4</td>
<td>67.5 – 77.25</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>14808-60-7</td>
<td>≤ 1.0</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-6</td>
<td>≤ 0.2</td>
</tr>
<tr>
<td>Other Ingredients</td>
<td>Trade Secret</td>
<td>Trade Secret</td>
</tr>
</tbody>
</table>

Synonyms: 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid

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

4. FIRST AID MEASURES

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
5. FIRE FIGHTING MEASURES

Extinguishing Media: Water fog, carbon dioxide, dry chemical or foam.
Special Fire Fighting Procedures: Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazards: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard. If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.
Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as oxides of carbon, hydrogen and nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.
Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.
Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.
Methods for Cleanup and Disposal: Avoid creation of dusty conditions. If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.
Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

HANDLING:
Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist. 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.
Spray solutions of this product should be mixed, stored, and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers. DO NOT mix, store, or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

STORAGE:
Always use original container to store pesticides in a secured warehouse or storage building. Store at temperatures above 32°F. If allowed to freeze, remix before using. This does not alter the product. Do not store box under dampness or high humidity. Containers should be opened in well ventilated areas. Keep container tightly sealed when not in use. Do not stack cardboard cases more than two pallets high. Do not store near open containers of fertilizer, seed or other pesticides.
Engineering Controls:
Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection: To avoid contact with skin wear long-sleeved shirt and long pants, shoes plus socks, chemical-resistant gloves made of any waterproof material. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.
General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quinclorac</td>
<td>TWA NE</td>
<td>TWA NE</td>
</tr>
<tr>
<td>Crystalline silica</td>
<td>0.3 0.1</td>
<td>0.025 NE</td>
</tr>
<tr>
<td>Titanium dioxide</td>
<td>10 15</td>
<td>10 NE</td>
</tr>
<tr>
<td>Other Ingredients</td>
<td>NE NE</td>
<td>NE NE</td>
</tr>
</tbody>
</table>

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid tan granules
Odor: Mild
Odor threshold: No data available
pH: 3.2 (1% w/w dispersion in DIW)
Melting point: No data available
Initial boiling point and boiling range: No data available
Flash point: Not applicable due to product form.
Evaporation rate: No data available
Flammability (solid, gas): No data available
Upper/lower flammability or explosive limits: No data available
Vapor pressure: No data available
Vapor density: No data available
Relative density: 0.53 g/mL @ 20º C
Solubility(ies): No data available
Partition coefficient: n-octanol/water: No data available
Autoignition temperature: No data available
Decomposition temperature: No data available
Viscosity: Not applicable due to product form
VOC Emission Potential (%): No data available

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.
Chemical Stability: This material is stable under normal handling and storage conditions.
Possibility of Hazardous Reactions: Will not occur
Conditions to Avoid: Excessive heat. Do not store near heat or flame. Do not mix or store this product or solutions of this product in unlined steel containers
Hazardous Decomposition Products: Under fire conditions may produce gases such as oxides of carbon, hydrogen and nitrogen.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Eye contact, Skin contact
Eye Contact: Minimally irritating. May cause irritation, redness and tearing.
Skin Contact: Slightly toxic and no more than mildly irritating based on toxicity studies.
Ingestion: Low toxicity based on toxicity studies.
Inhalation: Low toxicity based on toxicity studies.
Delayed, immediate and chronic effects of exposure: None expected.

Toxicological Data:
Data from laboratory studies conducted on Imazapyr Technical:
- Oral: Rat LD$_{50}$: $>2,200$ mg/kg
- Dermal: Rabbit LD$_{50}$: $>2,000$ mg/kg
- Inhalation: Rat 4-hr LC$_{50}$: $>6.1$ mg/l
- Eye Irritation: Rabbit: Moderate irritation
- Skin Irritation: Rabbit: Moderate irritation
- Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Repeated overexposure to quinclorac may cause effects to kidneys, liver and blood.
Carcinogenicity / Chronic Health Effects: Prolonged overexposure to quinclorac may cause effects to liver and kidneys. Quinclorac did not cause cancer in laboratory animal studies. The carrier for this product is not listed as a carcinogen. However, it may contain crystalline silica (e.g. quartz), a naturally occurring component. Inhalation of crystalline silica may cause pulmonary fibrosis (silicosis). Crystalline silica has been classified by IARC as carcinogenic to humans (Group 1), by the U.S. National Toxicology Program as a known human carcinogen and by ACGIH as a suspected human carcinogen (A2).

Reproductive Toxicity: The results of animal studies with quinclorac gave no indication of a fertility impairing effect.

Developmental Toxicity: Quinclorac did not cause developmental effects in rats. In rabbit studies, effects were observed only at maternally toxic dose levels.
Genotoxicity: Animal tests with quinclorac did not demonstrate mutagenic effects.

Assessment Carcinogenicity:
This product contains substances that are considered to be probable or suspected human carcinogens as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulatory Agency Listing As Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica, Quartz</td>
<td>A2</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

Ecotoxicity:
Data on Quinclorac:
- 96-hour LC$_{50}$ Bluegill: $>100$ mg/l
- 96-hour LC$_{50}$ Rainbow Trout: $>100$ mg/l
- 48-hour EC$_{50}$ Daphnia: 113 ppm
- 96-hour Bee LD$_{50}$: $>100$ µg/bee
- Bobwhite Quail Oral LD$_{50}$: $>2,000$ mg/kg
- Mallard Duck 8-day Dietary LC$_{50}$: $>5,000$ ppm

Environmental Fate:
Quinclorac can be moderately persistent in the soil. Soil mobility of quinclorac is highly variable and depends on soil type and organic matter. The Koc, depending on soil type, ranged from 13 to 54. Quinclorac is stable to hydrolysis and photolysis. Typical soil half-lives for quinclorac range from 10 to 40 days.
13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Pesticide wastes are toxic. If container is damaged or if pesticide has leaked, contain all spillage. Absorb and clean up all spilled material with granules or sand. Place in a closed, labeled container for proper disposal. Improper disposal of excess pesticide, spray mixtures, 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 Handling and Disposal:
Non-refillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying.

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container half full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after flow begins to drip. Repeat this procedure two more times.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this SDS.

DOT
Not Regulated

IMDG
Not Regulated

IATA
Not Regulated

15. REGULATORY INFORMATION

EPA FIFRA INFORMATION

This chemical is a pesticide product registered 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 or absorbed through the skin. Causes moderate eye irritation. Avoid contact with skin, clothing, eyes. Avoid breathing dust or spray mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

U.S. FEDERAL REGULATIONS

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:
Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):
Fire Hazard

Section 313 Toxic Chemical(s):
None

Reportable Quantity (RQ) under U.S. CERCLA:
None

RCRA Waste Code:
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.

State Information:
Other state regulations may apply. Check individual state requirements.
California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm (crystalline silica).

16. OTHER INFORMATION

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 1 Flammability: 1 Reactivity: 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED 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-accepted label.

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