Nichino America, Inc.
ET®X Herbicide/Defoliant

1. IDENTIFICATION

Product Name: ET®X Herbicide/Defoliant (4% EC)
General Use: Herbicide
Product Description: Emulsifiable Concentrate
EPA Reg. No.: 71711-41

Manufacturer
Main Headquarters: Nihon Nohyaku Co., Ltd., Kyobashi OM Building, 19-8 Kyobashi 1-Chome, Chuo-ku, Tokyo 104-8386 JAPAN

Non-emergency information:
Phone: 81-3-6361-1423
Facsimile: 81-3-6361-1451

Emergency information: Phone: 81-3-6361-1426

US Connection: Nichino America Inc.
4550 New Linden Hill Road, Suite 501 Wilmington, Delaware 19808, USA
Phone: 302-636-9001
Facsimile: 302-636-9122

Emergency and Health and Safety Inquiries: (800) 348-5832 (24-hours)
In case of fire or spills, information may be obtained by calling (800) 424-9300
In case of international shipments, call (703) 527-3887

2. HAZARD(S) IDENTIFICATION

Emergency Overview: Corrosive: Causes irreversible eye damage
Toxic to fish and aquatic organisms

Physical Hazards: Combustible liquid
Potential Health Effects: Primary route(s) of entry: Skin contact

Eye Contact: Causes irreversible eye damage
Dermal: Can cause moderate skin irritation. Harmful if absorbed through the skin. Does not cause skin sensitization in animal studies.
Ingestion: Harmful if swallowed. May pose an aspiration pneumonia hazard.
Inhalation: No specific health effects are known.
Chronic (cancer information): Not classified as a carcinogen by NTP, IARC, or OSHA. Refer to Section 11 for detailed toxicological information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Ingredients:

| Active Ingredient: Pyraflufen-ethyl | 4.0% |
| Other Ingredients*: 96.0% |
| Total: 100.0% |
| *contains petroleum distillate |

Specific chemical identity of other ingredient(s) and percentage of composition withheld as trade secret

Chemical Name of Active Ingredient (CAS):
Pyraflufen-ethyl; Acetic acid, 2-[2-chloro-5-[4-chloro-5-(difluoromethoxy)-1-methyl-1H-pyrazol-3-yl]-4-fluorophenoxy]-, ethyl ester

CAS Registry No.: 129630-19-9

4. FIRST AID MEASURES

Eye Contact: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

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.

**Ingestion:**
Call a poison control center or doctor for treatment advice. Do not give any liquid to the person. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

**Inhalation:**
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 a poison control center or doctor for further treatment advice.

**Note to Physician:**
May pose an aspiration pneumonia hazard. Contains petroleum distillate. Probable mucosa damage may contraindicate the use of gastric lavage.

### 5. FIRE FIGHTING MEASURES

**Flash Point:**
> 100°C (closed cup)

**Fire and Explosion Hazards:**
No known explosion characteristics.

**Extinguishing Media:**
Water, foam, dry chemical, or carbon dioxide.

**Special Fire-Fighting Procedure:**
Firefighters should wear positive pressure, self-contained breathing apparatus. Avoid runoff from extinguishing media such as water, foam, and dry chemicals, into ponds, rivers, and lakes due to danger of acute toxicity to aquatic organisms.

**Hazardous Combustion Products:**
Combustion or thermal decomposition may evolve toxic vapors (HCl, HF, CO, NOx, etc.)

### 6. ACCIDENTAL RELEASE MEASURES

**General and Disposal:** Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with federal or local disposal regulations (see Section 13). Notify the appropriate authorities
immediately (see Section 15 for any applicable Reportable Quantity (RQ)). Report to authorities if contamination of waterways has occurred.

**Land Spill or Leak:** Liquid spills on the floor or other impervious surfaces should be contained or diked and then absorbed with sawdust, sand, bentonite, or other absorbent clay. Collect contaminated absorbent and place it in a metal drum. Thoroughly scrub the floor or other impervious surface with a strong industrial-type detergent and rinse with water.

Liquid spills that soak into the ground should be dug up and placed in metal drums. When a large spill or leakage is found, wear protective clothing and respirator to avoid exposure.

Avoid contaminated absorbents or water flow into ponds, rivers, and lakes, due to the danger of acute toxicity to aquatic organisms.

### 7. HANDLING AND STORAGE

**Handling Precautions:**
- Open container with care.
- Use adequate ventilation.
- Avoid handling near an open flame or heat source or ignition source.
- Do not contaminate water by cleaning of equipment or disposal of waste.
- Avoid contact with skin, eyes, or clothing.
- Do not eat, drink, smoke, or chew gum or tobacco while handling this product and until hands and face are thoroughly washed with soap and water.
- Do not use the toilet before thoroughly washing hands.
- Remove contaminated clothing immediately and wash thoroughly before reuse.

**Storage Precautions:**
- Keep container closed. Store in original container.
- Keep container at room temperature or store in a cool place.
- Avoid storage in direct sunlight, excessive heat or cold.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls
(Local exhaust): Ventilation may be necessary under certain confined conditions. If practical, use ventilation at the sources of air contamination. Control airborne contaminants below the exposure guidelines (see below for any applicable OSHA / ACGIH exposure limits).

Personal Protective Equipment:
Eye/Face Protection: Wear protective eyewear (safety glasses; for chemical workers, goggles or face shield) to prevent eye contact.

Skin Protection: Wear coveralls. To prevent skin contact, wear chemical resistant gloves, such as nitrile or butyl, (waterproof gloves for early entry during re-entry interval). Wash contaminated skin promptly. Launder contaminated clothing and protective equipment. Wash thoroughly after handling.

Respiratory Protection: Ensure good ventilation. Avoid breathing mist. If ventilation is inadequate, use approved respiratory protection equipment (combination or gas/vapor respirator) when handling large quantities or handling large spills.

Exposure Limits:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-methylnaphthalene</td>
<td>TWA: 0.5 ppm skin notation</td>
<td>None</td>
</tr>
<tr>
<td>2-methylnaphthalene</td>
<td>TWA: 0.5 ppm skin notation</td>
<td>None</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>TWA: 10 ppm STEL: 15 ppm</td>
<td>10 ppm (50 mg/m³)</td>
</tr>
</tbody>
</table>

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Amber, clear liquid
Odor: Oil/gasoline-like odor

Basic Physical Properties:
Physical State: Liquid
pH: 4.32 (as a 1% w/w solution)
Vapor Pressure: 1.6 x 10⁻⁸ Pa at 25°C (technical active ingredient)
Density: 1.005 g/cm³ at 20°C
Kinematic Viscosity: 8.558 cSt at 20°C and 4.969 cSt at 40°C
10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions (25°C)
Conditions to Avoid (Stability): None known
Auto Ignition: No data available
Hazardous Polymerization: No data available

11. TOXICOLOGICAL INFORMATION

The following data were developed using ETX herbicide/defoliant (4% EC):

Acute Studies:

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD₅₀ (rat)</td>
<td>1750 mg/kg</td>
</tr>
<tr>
<td>Dermal LD₅₀ (rat)</td>
<td>&gt; 2,000 mg/kg</td>
</tr>
<tr>
<td>Inhalation LC₅₀ (rat)</td>
<td>2.13 mg/L (4 hrs.)</td>
</tr>
<tr>
<td>Eye irritation (rabbit)</td>
<td>Corrosive/severe irritant</td>
</tr>
<tr>
<td>Skin irritation (rabbit)</td>
<td>Moderately irritating</td>
</tr>
<tr>
<td>Skin sensitization (guinea pig)</td>
<td>Non-sensitizing</td>
</tr>
</tbody>
</table>

The following data were developed using pyraflufen-ethyl technical:

Subchronic and Chronic Effects:
A 90-day rat feeding study was conducted at dose levels up to 15,000 ppm pyraflufen-ethyl. Liver and kidney effects were observed at the highest dose and the no observed effect level (NOEL) in this study was considered to be 1,000 ppm (~90 mg/kg body weight/day). In a 90-day oral toxicity study in dogs, pyraflufen-ethyl was administered at dose levels up to 1,000 mg/kg body weight/day. No effects in body weight or organ weight, clinical chemistry, hematology, histopathology, or gross pathology were observed.

In long term studies, no effects were observed in dogs exposed for one year to a maximum dose of 1,000 mg/kg body weight/day. In a two year rat chronic study, liver and kidney effects were observed at 2,000 ppm. The NOEL was 400 ppm (~20mg/kg body weight/day).

Cancer Effects:
Pyraflufen-ethyl was tested in lifetime studies in rats and mice. There was no evidence of carcinogenicity in the rat at doses as high as 10,000 ppm (~470
mg/kg body weight/day). In the mouse study, the incidence of hepatocellular adenomas was increased in mice receiving 5,000 ppm (~ 524 - 547 mg/kg body weight/day), a dose level considered to be in excess of a MTD (maximum tolerated dose). Based on the combined incidence of male mouse hepatocellular adenomas, carcinomas, and/or hepatoblastomas, the EPA has classified pyraflufen-ethyl as “Likely to be Carcinogenic to Humans”. The EPA classification of pyraflufen-ethyl represents potential hazard without consideration of exposure information.

**Teratogenicity (Birth Defects):**
Pyraflufen-ethyl is not a developmental toxicant.

**Reproductive Effects:**
Pyraflufen-ethyl is not a reproductive toxicant.

**Neurotoxicity:**
There was no evidence of neurotoxicity after oral exposure in acute or subchronic studies conducted with pyraflufen-ethyl.

**Immunotoxicity:**
Suppression of the humoral immune response was measured in male rats exposed to 12,000 ppm of pyraflufen-ethyl (equivalent to ~ 943 mg/kg body weight/day) in a 28-day feeding study, the same dose at which systemic toxicity was evident. No humoral immune suppression was observed in female rats at any dose level.

**Mutagenicity (Genetic Effects):**
Pyraflufen-ethyl technical was not mutagenic in any of the genotoxicity studies conducted.

**Toxicity of other components:**

**Solvent naphtha (petroleum), heavy aromatic**
Repeated exposure may cause skin dryness or cracking. If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat, and lungs.

**Naphthalene**
Naphthalene caused cancer in laboratory animal studies but the relevance of these findings to humans is uncertain. Naphthalene is listed as “reasonably anticipated to be a human carcinogen” by NTP and “possibly carcinogenic to humans (Group 2B)” by IARC.
N-Methyl-2-pyrrolidone
Causes eye, skin, and respiratory tract irritation. Human experience has demonstrated severe dermatitis, e.g., blister, cracking, edema, and redness upon prolonged or repeated contact. Prolonged contact may induce defatting of skin which may result in redness and/or cracking. Reproductive / developmental effects were observed in rats and rabbits. These effects occurred in the presence of maternal toxicity. The relevance of these findings to humans is unknown.

12. ECOLOGICAL INFORMATION

Ecological data were developed using pyraflufen-ethyl technical.

Environmental Precautions:
This product is toxic to fish and aquatic invertebrates. This product may contaminate water through drift of spray in wind or via runoff events. Use care when applying in areas adjacent to any body of water. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. Do not apply when weather conditions favor drift from treated areas. Do not apply if rainfall is expected within one hour.

13. DISPOSAL CONSIDERATION

General Disposal Guidance:
Any disposal practice must be in compliance with all federal, state/provincial, and local laws and regulations. State/provincial and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Chemical additions, processing, storage or otherwise altering this material may make the waste disposal information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. Waste characterization and disposal compliance are the responsibility solely of the party generating the waste or deciding to discard or dispose of the material. Refer to appropriate federal (RCRA: 40 CFR.261), state/provincial, or local requirements for proper classification information. For regulatory information on the ingredient components, see Section 15. Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Pesticide wastes are toxic. Improper disposal of excess pesticide, pesticide spray, or rinsate is a violation of Federal law. 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:**
Do not reuse empty container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

### 14. TRANSPORT INFORMATION

**DOT:** Non-bulk (< 119 gallons) not regulated  
**IATA:** UN Classification: Class 9, UN 3082, environmentally hazardous substance, liquid, N.O.S., packaging group III.  
**IMDG:** UN Classification: Class 9, UN 3082, environmentally hazardous substance, liquid, N.O.S., packaging group III. Marine Pollutant.

### 15. REGULATORY INFORMATION

**U.S. Federal Regulatory Information:**  
**EPA Registration Number:** 71711-41  
**TSCA Inventory:** Registered pesticide; exempt from TSCA  

**SARA Title III Notification and Information:**  
Section 302 (EHS) Ingredients: None  
Section 304 (EHS) or CERCLA Ingredients (RQ): naphthalene (RQ 100 lb.); alkylaryl sulfonate (RQ 1000 lb.)  
Section 313 Ingredients: n-methyl-2-pyrrolidone

**Section 311/312 Notifications and Information:**  
**Hazard Classes:**  
Acute Health Hazard: Yes  
Chronic Health Hazard: Yes  
Fire Hazard: Yes  
Sudden Release of Pressure Hazard: No  
Reactivity Hazard: No
U.S. State Regulatory Information:

U.S. State Right-to-Know (RTK) Ingredients: naphthalene; 1-methylnaphthalene; 2-methylnaphthalene; n-methyl-2-pyrrolidone; alkylaryl sulfonate

California Proposition 65 List:
N-methyl-2-pyrrolidone Developmental toxicity
Naphthalene Cancer

16. OTHER INFORMATION

HMIS® Hazard Rating:
Health: 2*
Fire: 2
Physical Hazard: 0

*indicates both acute and chronic health hazard

NFPA Hazard Rating:
Health: 2
Fire: 2
Reactivity: 0
Specific Hazard: None

Prepared by: Regulatory Affairs
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