

NICHINO AMERICA, INC.
MATERIAL SAFETY DATA SHEET

ET™ Herbicide/Defoliant
(2.5% EC)

12 May 2003

NICHINO AMERICA, INC.

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ET™ Herbicide/Defoliant

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ET
Chemical Name: (active ingredient) Pyraflufen ethyl (ethyl 2-chloro-5-(4-chloro-5-difluoromethoxy-1-methyl-1*H*-pyrazol-3-yl) 4 fluorophenoxyacetate

Chemical Formula: C₁₅H₁₃Cl₂F₃N₂O₄

EPA Registration Number: 71711-7
MSDS Identification Code/Number: 013
Synonyms: ET, ET-751, ET-751 2.5%
End-Use Product Description: For Terrestrial Use as a Cotton Harvest Aid/Defoliant, Potato Harvest Aid/Desiccant, for Preplant or Preemergence Burndown in Cotton, Corn, and Soybeans, Postemergence Weed Control in Cotton, and for Noncrop Weed Control

Manufacturer
Main Headquarter: Nihon Nohyaku Co., Ltd., 1-2-5,
Nihonbashi, Chuo-ku, Tokyo 103, JAPAN
Non-emergency information:
Phone: 81-3-3278-0461
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Emergency information:
Phone: 81-3-3281-1887

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: 1-800-348-5832 (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. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name	Exposure Limits	Concentration % by Weight
Pyraflufen ethyl CAS No.: 129630-19-9	OSHA-PEL: not established ACGIH-TLV: not established	2.6
Other Ingredients, including:		13.0
Emulsifying Agents		84.4
Solvents		

3. HAZARDS IDENTIFICATION

*****EMERGENCY OVERVIEW*****

- ***Corrosive. Causes irreversible eye damage.***
- ***Toxic to fish.***

Potential Health Effects:

Primary route(s) of entry:	Skin contact
Eyes:	Causes irreversible eye damage
Skin:	Can cause moderate skin irritation. Harmful if absorbed through the skin. Does not cause skin sensitization in animal studies.
Ingestion:	No specific health effects are known for ingestion of a small amount incidental to routine handling and use.
Inhalation:	No specific health effects are known.
Chronic (cancer information):	EPA has determined that pyraflufen-ethyl shows suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential.

4. FIRST AID MEASURES

- Inhalation:** 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.
- Eye Contact:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
- Skin/Clothing 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. Have person sip a glass of water if able to swallow. 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. Avoid alcohol.

5. FIRE FIGHTING MEASURES

- Flash Point:** 86.9°C (188.42°F)
- Fire and Explosion Hazards:** No known explosion characteristics. Will burn to give off toxic oxides of carbon and nitrogen.
- Extinguishing Media:** Water, foam, carbon dioxide, or dry powder.
- Fire Fighting Instructions:** Wear positive pressure self-contained breathing apparatus. Spray containers with water to keep cool. 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.

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 water enters watercourse or sewer.
- 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 self-breathing apparatus 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:	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:	Store in the original container. Store in a cool place. Protect from excessive heat. Avoid direct sunlight and freezing.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	Control airborne concentrations below the exposure guideline (see Section 2 for any applicable OSHA/ACGIH exposure limits). Local exhaust ventilation may be necessary under certain confined conditions.
Eye/Face Protection:	Safety glasses; chemical workers goggles.
Skin Protection:	Chemical resistant gloves
Respiratory Protection:	Ensure good ventilation. If not adequate, use a suitable respirator.
Other/General Protection:	<p>The following personal protective equipment (PPE) must be worn when using product or upon early entry into treated areas during the Restricted Entry Interval (REI):</p> <ul style="list-style-type: none">• Coveralls• Chemical-resistant gloves, such as nitrile or butyl (waterproof gloves for early entry during REI)• Shoes plus socks• Protective eyewear• For overhead exposure, wear chemical resistant headgear for applicators and other handlers only <p>Note: Refer to the product label for applicable details concerning the "User Safety Recommendations" and the use of PPE under the EPA Worker Protection Standards (40 CFR Part 170).</p>

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Brownish yellow mobile liquid
Odor:	Similar to paraffin or naphthalene
Basic Physical Properties:	
Physical State:	Liquid
Boiling Point:	Not required
Melting Point:	Not applicable
Vapor Pressure:	Not required
Density:	1.016 g/cm ³ at 20°C
Viscosity:	5.34 cP at 25°C

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions
Conditions to Avoid (Stability):	None known
Flash Point:	86.9°C (188.42 °F)
Auto Ignition:	No ignition below 400°C
Hazardous Polymerization:	None

11. TOXICOLOGICAL INFORMATION

The following data were developed using ET-751 2.5%EC:

Acute Studies:

Oral LD ₅₀ (rat):	male: > 5,000 mg/kg (practically nontoxic)
	female > 3,712 mg/kg (practically nontoxic)
Dermal LD ₅₀ (rat):	> 2,000 mg/kg (practically nontoxic)
Inhalation LC ₅₀ (rat):	> 72.03mg/L (practically nontoxic)
Eye irritation (rabbit):	Corrosive/severe irritant
Skin irritation (rabbit):	Moderate irritant (primary irritation index: 4.0)
Skin sensitization (guinea pig):	Not a sensitizer

The following data were developed using ET-751 technical (pyraflufen-ethyl)

Subchronic (Target Organ Effects):

A 90-day rat feeding study was conducted at dose levels up to 15,000 ppm pyraflufen-ethyl. The NOEL in this study was considered to be 1,000 ppm based on slightly increased phosphorous concentrations and hepatocytic hypertrophy. The highest dose of 15,000 ppm resulted in erythrocyte toxicity, and mitochondrial changes in the hepatocytes and the presence of Kupffer cells. Also, at the high dose level, increased kidney weights and increased absolute and relative spleen weights were observed.

In a 90-day oral toxicity study in dogs, pyraflufen-ethyl was administered at dose levels up to 1,000 mg/kg/day. No effects in body weight or organ weight, clinical chemistry, hematology, histopathology, or gross pathology were observed.

Chronic (Cancer Information):

In a combined 2-year chronic toxicity/oncogenicity study, pyraflufen-ethyl was administered to CD rats at dietary levels up to 10,000 ppm. Mortality was unaffected by treatment. The NOEL was 17.2 mg/kg/day for males and 21.8 mg/kg/day for females. No evidence of carcinogenicity was observed.

In a 78-week carcinogenicity study, mice were fed pyraflufen-ethyl in the diet at levels up to 5,000 ppm. An MTD was reached at 1,000 ppm, based on increased liver weight and liver histopathological changes (including necrosis) seen at this feeding level. In the highest dose group, effects of pyraflufen-ethyl on hematological parameters were observed. The incidence of hepatocellular adenoma was increased in animals receiving 5,000 ppm, a dose level considered to be in excess of a MTD. This benign tumor was likely induced by the adaptive response to the hepatocellular degeneration and not as a result of any genotoxic potential of pyraflufen-ethyl.

Male and female beagle dogs (4/sex/group) were orally administered pyraflufen-ethyl in gelatin capsules for 52 weeks at concentrations up to 1,000 mg/kg /day. There were no mortalities and no clinical signs of toxicity. No treatment-related effects were noted on body weights, food consumption, hematology and clinical chemistry parameters, urinalysis, ophthalmoscopy, and organ weights. No macro- or microscopic lesions were noted. The NOEL was > 1,000 mg/kg/day.

Carcinogenicity: NTP: No IARC: No OSHA: No

Teratogenicity (Birth Defects):

In a developmental toxicity study in rats, pyraflufen-ethyl was administered by gavage on gestation days 6-15 and showed no adverse effects on dams or fetuses at dose levels up to and including a limit dose of 1,000 mg/kg/day. The maternal and developmental toxicity NOELS were both >1,000 mg/kg/day.

In a developmental toxicity study in rabbits fed pyraflufen-ethyl up to 150 mg/kg/day, pyraflufen-ethyl resulted in severe maternal toxicity, including lethality, from gastrointestinal irritation at doses of 60 and 150 mg/kg/day. The maternal NOEL was 20 mg/kg/day. The NOEL for the offspring was 60 mg/kg/day, based on increased post-implantation loss observed at 150 mg/kg/day. There was no evidence of developmental toxicity or teratogenicity seen in this study. Neither the rat nor the rabbit developmental study showed evidence of unique fetal susceptibility to pyraflufen-ethyl.

Reproductive Effects:

In a multigeneration rat reproduction study conducted at dietary concentrations up to 10,000 ppm, pyraflufen-ethyl had no effect on reproductive parameters, including mating indices, fertility index, gestation index, duration of gestation, numbers of implantation sites, numbers and morphology of epididymal sperm, and estrous cycle at any dose level. The NOAEL was 1,000 ppm based on effects on body weight and histopathological changes in liver and kidney. Reproductive performance was not affected by pyraflufen-ethyl at the highest dose level of 10,000 ppm. The pup NOAEL was 1,000 ppm, based on decreased body weight at the 10,000 ppm dose level.

Neurotoxicity:

No neurotoxicity studies have been done because there is no indication based on the structure chemistry of pyraflufen-ethyl that such a study would be required. There was no neurotoxicity seen in acute, subchronic, chronic, reproduction, and teratology studies conducted with pyraflufen-ethyl after exposure in the diet.

Mutagenicity (Genetic Effects):

Pyraflufen-ethyl technical was not mutagenic in any of the genotoxicity studies conducted.

12. ECOLOGICAL INFORMATION**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.

RCRA Information:

RCRA Hazardous Waste Ingredients: None

14. TRANSPORT INFORMATION**Proper Shipping Name:** None**Dot Shipping Label:** None

15. REGULATORY INFORMATION**U.S. Federal Regulatory Information:**

EPA Registration Number: 71711-7

TSCA Inventory: Registered pesticide; exempt from TSCA.

SARA Title III Notification and Information:

Section 302 (EHS) Ingredients: None

Section 304 (CERCLA & EHS) Ingredients (RQ): naphthalene (RQ 100 lb)

Section 313 Ingredients: pyrrolidone

Section 311/312 Notifications and Information:

Hazard Classes:

Acute Health Hazard:	No
Chronic Health Hazard:	Yes
Fire Hazard:	No
Sudden Release of Pressure Hazard:	No
Reactivity Hazard:	No

U.S. State Regulatory Information:

U.S. State Right-to-Know (RTK) Ingredients: naphthalene; xylene

Canadian Regulatory Information:

CPC Number: None

The MSDS contains all CPR required hazard-related information.

16. OTHER INFORMATION

HMIS Hazard Rating: Health: 2 Moderate
 Fire: 2 Moderate
 Reactivity: 0 Minimal

NFPA Hazard Rating: Health: 2 Moderate
 Fire: 2 Moderate
 Reactivity: 0 Minimal
 Spec. Haz.: None

MSDS Identification Code/Number: 013

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Disclaimer of Expressed and Implied Warranties:

This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instructions.