

**NICHINO AMERICA, INC.
MATERIAL SAFETY DATA SHEET**

Courier[®] SC

01 September 2010

NICHINO AMERICA, INC.

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Courier SC

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Courier SC

General Use: Insect control in food crops and greenhouse ornamentals

Product Description: Off-white viscous liquid

EPA Registry Number: 71711-20

MSDS ID Code/Number: 021

**Manufacturer
Main Headquarter:** Nihon Nohyaku Co., Ltd., 1-2-5, Nihonbashi, Chuo-ku,
Tokyo, 103 JAPAN

Non-emergency information:
Phone: 81-3-3278-0461
Facsimile: 81-3-3281-2443

Emergency information:
Phone: 81-3-3274-1887

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: 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

Single or Mixed Product: Mixed

Common Name: Buprofezin

Chemical Name: 2-*tert*-butylimino-3-isopropyl-5-phenylperhydro-1,3,5-thiadiazin-4-one (IUPAC)

2-[(1,1-dimethylethyl)imino]tetrahydro-3-(1-methylethyl)-5-phenyl-4*H*-1,3,5-thiadiazin-4-one (CA)

Chemical Formula: C₁₆H₂₃N₃OS

Ingredients and Composition:

<u>Component</u>	<u>CAS Number</u>	<u>Percent</u>
Buprofezin Technical	69327-76-0	40.0%
*Other Ingredients		60.0%

3. HAZARDS IDENTIFICATION

Emergency Overview-WARNING

- Causes substantial but temporary eye injury.
- Causes moderate skin irritation.

Routes of Exposure: Skin contact

Signs and Symptoms of Overexposure:

Symptoms from excessive ingestion of Buprofezin Technical may include subdued mood, slight muscular incoordination, and a slightly enlarged abdomen.

Potential Health Effects:

Avoid contact with skin, eyes, and clothing.

Eye Contact: Contact with this product causes mild but reversible eye irritation.

Ingestion: No specific health effects are known for ingestion of a small amount incidental to routine handling and use. Ingestion of large amounts may be harmful (See "Signs and Symptoms of Overexposure" above).

Inhalation: Inhalation of this product is harmful. The active ingredient (buprofezin technical) is not known to be a significant irritant to the respiratory system, but excessive dust inhalation of the inert ingredients in a confined area may cause irritation and congestion of the upper respiratory tract.

Skin Contact: Absorption through the skin is harmful. This product is a moderate skin irritant but not a skin sensitizer.

Delayed/Long-Term Effects:

Carcinogenic: None of the product ingredients are listed as carcinogenic by NTP, IARC, or OSHA.

4. FIRST AID MEASURES

If in eyes: 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.

If swallowed: Call poison control center or doctor immediately 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.

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.

If on skin or clothing: 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.

Note to Physician: There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Overexposure to materials other than this product may have occurred.
For additional information, call Emergency and Health and Safety Inquiries 800-348-5832 (24 hours)

5. FIRE-FIGHTING MEASURES

Extinguishing Media:	Alcohol-resistant foam, carbon dioxide, dry chemicals, and water spray
Special Fire-Fighting Procedure:	Firemen should wear positive-pressure, self-contained breathing apparatus.
Flammable Properties:	Flashpoint: >200°F
Auto Ignition Temperature:	Not combustible
Hazardous Decomposition Products:	Carbon dioxide, carbon monoxide, nitrogen oxides, and sulfur dioxide

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 and 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.

7. HANDLING AND STORAGE

Handling:	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. See "User Safety Recommendations" on the product label for additional details.
Storage:	Store in a cool, dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use with adequate ventilation to minimize exposure.

Personal Protective Equipment:

Applicators and Handlers of Agricultural Products

All users of agricultural products that are within the scope of the EPA Worker Protection Standards (WPS) (40 CFR Part 170) must refer to the statements below or the product label for WPS-specified PPE, restricted entry interval (REI), and other precautionary statements.

PPE for Applicators and Handlers

Applicators and handlers must wear

- Long-sleeved shirts and long pants.
- Chemical resistant (such as nitrile or butyl) gloves.
- Protective eyewear
- Shoes plus socks.

PPE Required for Early Entry into Treated Areas

If working with plants, soil, or water in treated areas during the REI of 12 hours, personnel must wear

- Coveralls over long-sleeved shirts and long pants.
- Chemical resistant (such as nitrile or butyl) gloves.
- Protective eyewear
- Shoes plus socks.

Manufacturing and Packaging Personnel

Manufacturing and packaging personnel should use this product in well-ventilated areas. In accordance with recommended OSHA standards, they should wear

- Impervious gloves (PVC or rubber), especially when prolonged or repeated contact is anticipated.
- Safety glasses or chemical goggles.
- Use an approved respirator for added protection.

Exposure Guidelines:

Ingredient	Exposure Limit		
	OSHA PEL	ACGIH TLV	HCC WEL
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--- No exposure limit established

Ingredient	Type of Limit	Manufacturer's Exposure Limit

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Off-white liquid
Physical State: Viscous liquid
Melting Point: Not applicable
Solubility (H₂O): Soluble in water
Specific Gravity: 1.09 (at 25°C)
Vapor Pressure: Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability: This product is stable under storage conditions.
Storage condition: 40°C for 3 months

Thermal Stability:

Incompatibility With Other Materials: None known

Hazardous Decomposition Products: May decompose at extreme high temperatures to form oxides of carbon, nitrogen, and sulfur

Hazardous Polymerization: None known

11. TOXICOLOGICAL INFORMATION

The following data were developed using Buprofezin 40SC:

Acute Toxicity:

Oral:	Rat LD ₅₀	>5,000 mg/kg (practically nontoxic)
Dermal:	Rat LD ₅₀	>2,000 mg/kg (moderately toxic)
Inhalation:	Rat LC ₅₀	>2.08 mg/l (4 hrs)
Eye Irritation:	—	Mild but reversible (Category II)
Skin Irritation:	Rabbit:	Moderately irritating (Category III)
	Guinea Pig:	Not a skin sensitizer

The following data pertains to the active ingredient in Buprofezin SC (buprofezin technical):

Subchronic (Target Organ Effects):

Buprofezin technical was shown to have no target organ effects (NOEL) in the 90-day animal studies at dietary levels up to the tested mid-dose: 50 mg/kg per day in dogs and approximately 18 mg/kg/day in rats. At the extreme experimental doses (300 mg/kg/day in dogs and approximately 95 mg/kg/day in rats), effects of enlarged livers were observed in animals after prolonged feeding. Enlarged thyroid was also seen in rats at dose levels >95 mg/kg/day (>1000 ppm).

Chronic (Cancer Information):

In 2-year feeding studies with buprofezin technical, the no-effect levels (NOEL) in the three tested animals were all at a similar dose of approximately 2 mg/kg/day (dogs: 2 mg/kg/day; rats/mice: 20 ppm = 1.8/0.9 mg/kg/day). At the high doses of 200 mg/kg/day or greater, toxic chronic effects of buprofezin technical were seen in all tested dogs, rats, and mice. These include increased liver weights (all species), increased thyroid weights (dogs, rats), elevated incidences of hyperplasia or hypertrophy of hepatocytes (rats, mice), and hyperplasia of thyroid epithelial cells (only in rats). However, no treatment-related increases in tumor incidences in livers or thyroids were reported for all three animal species tested in these 2-year feeding studies.

Carcinogenicity:

NTP:	No
IARC:	No
OSHA:	No

Teratogenicity (Birth Defects):

Pregnant rats in a teratology study were administered orally with three dose levels of buprofezin technical (50, 200, and 800 mg/kg/day) from Day 6 to Day 15 during the 20-day gestation period. No teratogenic effects of buprofezin were observed in pregnant rats at dose levels up to 200 mg/kg/day (NOEL). At the highest test dose of 800 mg/kg/day, buprofezin technical exhibited significant effects on the maternal performance (increased litter resorption, post implantation loss, and reduced litter size) and on the fetal growth/development.

In a separate rabbit teratology study, buprofezin technical (10, 50, or 250 mg/kg/day) showed no significant adverse effects on fetal development and fetal survival in utero even at the highest test dose; the effects observed at the 250 mg/kg/day were on the maternal toxicity (reduced food intake and weight loss). The no-effect level (NOEL) of buprofezin technical in rabbits was 50 mg/kg/day.

Reproductive Effects:

In two multigeneration reproduction studies in rats administered with the three tested dose levels (10, 100, and 1000 ppm), buprofezin technical had no adverse effects on the reproductive performances of the parental rats (fertility/pregnancy), the survival and growth/development of the pups in each generation, and the female parturition status (labor/delivery process). The only effects observed were a decrease in body weight gain of pups from the 1000 ppm group.

Mutagenicity (Genetic Effects):

Buprofezin technical is not mutagenic or genotoxic when tested in Ames's Salmonella gene mutation assay and in two other in vitro mutagenesis systems (mouse lymphoma cells and primary rat hepatocytes). Buprofezin technical was also not mutagenic when tested in an in vivo system, since it did not induce micronuclei formations in bone marrow erythrocytes from mice administered with extreme experimental doses (6,400–10,000 mg/kg/day).

12. ECOLOGICAL INFORMATION

Environmental Toxicity (*buprofezin technical*):

Based on the available information, the acute toxicity of buprofezin technical to mammals is low. It is considered nontoxic to avian species and to aquatic species at its limit of solubility in water (acute studies). Buprofezin technical has no apparent effect on parasitic wasps in the genera *Paracentrobia*, *Anagrus*, and *Microterys*, or the predacious mites *Phytoseilulus persimilis* and *Amblyseius longispinosus*.

Environmental Hazards:

For terrestrial uses, 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 through disposal of equipment washwaters.

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. Pesticide wastes may be toxic. Improper disposal of unused pesticide, spray mixture, or rinse water is a violation of Federal law. If these wastes cannot be used 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 in proper disposal methods.

Container Disposal: 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 None
Ingredients:

14. TRANSPORT INFORMATION

Proper Shipping Name: None
DOT Shipping Label: None

15. REGULATORY INFORMATION

U.S. Federal Regulatory Information:

EPA Registration Number: 71711-20

TSCA Inventory: registered pesticide; exempt from TSCA.

SARA Title III Notification and Information:

Section 302 (EHS) Ingredients: None

Section 304 (CERCLA & EHS) Ingredients (RQ): None

Section 313 Ingredients:

Section 311/312 Notifications and Information:

Hazard Classes:

Acute Health Hazard: Yes

Chronic Health Hazard: No

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: none

Canadian Regulatory Information:

CPC Number: None

The MSDS contains all CPR required hazard-related information.

16. OTHER INFORMATION

Hazard Ratings:	Health	Flamm	React	Other
NFPA	1	1	0	0
HMIS	1	1	0	E

Prepared By:

Dept. of Regulatory Affairs

Phone:

(302) 636-9001

MSDS:

Alternate Brand Name

Date:

September 1, 2010

Disclaimer of Expressed and Implied Warranties:

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