

Nichino America, Inc.

Centaur® WDG insect growth regulator

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Centaur® WDG

General Use: Insect control in food crops

Product Description: Tan granule

EPA Registration Number: 71711-21

MSDS Identification

Code/Number: 025

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: 81-3-3281-1887

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: 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-4H-1,3,5-thiadiazin-4-one (CA)

Chemical Formula: C₁₆H₂₃N₃OS

Ingredients and Composition:

Component	CAS Number	Percent
Buprofezin Technical	69327-76-0	70%
Other Ingredients		29%
hydrated amorphous fumed silica	7631-86-9	1%

3. HAZARDS IDENTIFICATION

Emergency Overview-Caution:

- Harmful if swallowed, inhaled, or absorbed through the skin.
- Causes moderate eye irritation.
- Product is a tan granule.

Routes of Exposure:

- Dust inhalation
- 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:

Eye Contact: Contact with this product causes moderate 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 slight 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.

Medical Conditions Aggravated by Exposure:

Excessive dust inhalation may aggravate pre-existing respiratory conditions.

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.

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.

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.

HOT LINE NUMBER: Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-348-5832 for emergency medical treatment information. In case of fire or spills, information may be obtained by calling 1-800-424-9300.

NOTE TO PHYSICIAN: There is no specific antidote. All treatment should be based on observed signs and symptoms of distress in the patient. Over-exposure to materials other than this product may have occurred.

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:	Flash point: Does not flash.
Auto Ignition Temperature:	Not combustible.
Hazardous Decomposition Products:	Carbon dioxide, carbon monoxide, nitrogen oxides, and sulfur dioxide.

6. ACCIDENTAL RELEASE MEASURES

General and Disposal: Take all necessary actions to prevent and remedy the adverse effects of the spill. Ensure that disposal is in compliance with federal requirements and local disposal regulations. Notify the appropriate authorities immediately.

Land Spill and Leak: Do not breathe the dust. Use a suitable dust respirator. Avoid contact with skin and eyes. Carefully sweep up the spilled product, avoiding formation of a dust cloud, and place it in a suitable container. Seal the container. The area can be washed with water to remove the last traces of the product, but keep out of watercourses or sewers. Inform authorities immediately if contamination occurs.

7. HANDLING AND STORAGE

Handling:

Caution: This product is harmful if swallowed, inhaled, or absorbed through the skin. It causes moderate eye irritation. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing, and wash them before reuse.

- Users Should:**
- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
 - Follow the manufacturer's instructions for cleaning and maintaining personal protective equipment (PPE). If no such instructions are provided for washables, use detergent and hot water. Keep PPE separate from other laundry; wash it separately.
 - Do not apply this product in a way that will contact workers or other persons, either directly or through drift.
 - Do not apply this product through any type of irrigation system. Allow only protected handlers in the area during application.
 - For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Storage: Store in a cool, dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Control airborne contaminants below the exposure guidelines (see below for any applicable OSHA/ACGIH exposure limits). Use with adequate ventilation to minimize exposure. Local exhaust ventilation may be necessary, especially when the product is used in a confined area.

Personal Protective Equipment (PPE):

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
- Waterproof gloves
- 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.
- Waterproof gloves
- Socks and chemical-resistant footwear

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
- Approved dust respirators, especially when handling the product in a confined space.

Exposure Guidelines:

Ingredient	Exposure Limit		
	OSHA PEL	ACGIH TLV	HCC WEL
hydrated amorphous fumed silica	--	10 mg/m ³ (TWA)	--
	--		--

--No exposure limit established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Tan granule
Physical State:	Solid
Melting Point:	219-221°F or 104.2-105.5°C*
Solubility (H₂O):	0.382 mg/l (very slight) @ 25°C*
Bulk Density:	15.6 lb/cu. Ft.
Vapor Pressure:	9.4 x 10 ⁻⁶ mmHg (20°C, 68°F)*

* The data cited were for the active ingredient (buprofezin technical)

10. STABILITY AND REACTIVITY

Chemical Stability:	This product is stable. The active ingredient is stable under dark and cool storage conditions; it is also stable in acid and alkali.
Thermal Stability:	130°C (266°F), maximum for buprofezin technical.
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

Acute Toxicity:		
Oral:	Rat LD ₅₀	>5,000 (slightly toxic)
Dermal:	Rat LD ₅₀	>2,000 mg/kg (moderately toxic)
Inhalation:	Rat LC ₅₀	>2.2 mg/l (4 hrs)
Eye Irritation:	—	Causes moderate eye irritation
Skin Irritation:	Rabbit:	Slightly irritating (PII = 1.146)
Skin Sensitization:	Guinea Pig:	Not a sensitizer

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:

Based on the available information, the acute toxicity of buprofezin to mammals is low. It is considered non-toxic to avian species and to aquatic species at its limit of solubility in water (acute studies). Buprofezin 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

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

Container Disposal: Completely empty container into application equipment. Then dispose of empty packaging in a sanitary landfill, or by incineration, or, if allowed by State or local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

Proper Shipping Name:	None
DOT:	Not Regulated
IATA:	Not Regulated
IMD:	Not Regulated

15. REGULATORY INFORMATION

U.S. Federal Regulatory Information:

EPA Registration Number: 71711-21
TSCA Inventory: Registered pesticide; exempt from TSCA

Regulatory Controls:

This product is registered under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C.). It is a violation of Federal law to use this product in a manner that is inconsistent with its labeling. Read and follow all label directions.

State Regulations:

The following chemicals associated with the product are subject to the right-to-know regulations in the specified states:

hydrated amorphous fumed silica (7631-86-9): Massachusetts

SARA Title III Notification and Information

SARA Title III – Hazard Classes

Acute Health Hazard:	Yes
Chronic Health Hazard:	No
Fire Hazard:	No
Sudden Release of Pressure Hazard:	No
Reactivity Hazard:	No
SARA 313:	No components listed

16. OTHER INFORMATION

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

Prepared By:	Dept. of Regulatory Affairs	Toll Free: 1-888-740-7700
Date:	February 28 2007	
MSDS Revision (new):	Revisions in ingredients and composition, exposure guidelines, and regulatory information; add EPA registration number.	

Disclaimer of Expressed and Implied Warranties:

This information is provided in good faith but without express or implied warranty.