

MATERIAL SAFETY DATA SHEET

Manufacturer/information service:

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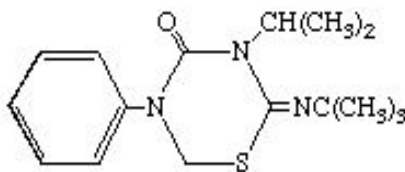
1. Chemical Product Identification

Product Name: Buprofezin

Molecular Formula: C₁₆H₂₃N₃OS

Molecular Weight: 305.4

Structural Formula:



Chemical Name: 2-tert-butylimino- 3- isopropyl- 5- phenyl- 3, 4, 5,
6-tetrahydro-2H-1,3,5-thiatriazin-4-one

Color: White powder

Odor: Odorless

CAS No.: 69327-76-0

UN No.: 2588

2. Composition / Information on Ingredients

Composition	CAS No.	Content %
Buprofezin	69327-76-0	98.0
Other ingredients		2.0

3. Hazards Identification

More important danger for the man: It is not inhibition of acetylcholinesterase, but it is Chitin Synthesis Inhibitors.

Dangers for the environment: Because the chemical itself is very specific to the certain insects, it is very safe to the natural enemies and the other beneficial insects.

Physical-chemical dangers: none

4. First Aid Measures

Skin: Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.

Eyes: First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.]

Inhalation: Fresh air, rest. Refer for medical attention.

Ingestion: contact a Doctor or Poisons Information Centre.

Antidote: not applicable

5. Fire-Fighting Measures

Extinguishing media

To be used: Powder, water spray, foam, carbon dioxide.

Don't use: not applicable

Particular risk: not applicable

Measures of personal protection: Workers involved in transport, storage and retailing should be protected by safe work practices and training. End users should follow the instructions on the product label. Elbow-length PVC gloves and cotton overalls are recommended for users of Applaud Insecticide.

6. Accidental Release Measures

Personal cautions: Workers involved in transport, storage and retailing should be protected by safe work practices and training. End users should follow the instructions on the product label. Elbow-length PVC gloves and cotton overalls are recommended for users of Applaud Insecticide.

Cleaning methods

EX: clear the material in time. Transfer to a properly labeled deposit that will be closed and sealed until the recovery of elimination of the product. Environmental cautions

EX: prevent the contamination of the floor and of beds of water.

7. Handling and Storage:

Handling: It should be under no circumstances what soever be handled by children or incompetent persons. While in storage, drum should be kept well sealed and stored in cool, dry and well ventilated place. In case of accidental ingestion, the patient should be taken to a doctor who should give symptomatic treatment.

Storage: Store in the closed, original container in a cool well-ventilated area. Do not store for prolonged periods in direct sunlight.

Technical protective measures:

Fire and explosion protection: The active ingredient is non-explosive. Intact containers exposed to excessive heat should be cooled with water to reduce drum pressure. If possible, use a foam blanket to contain spill. Avoid using AFFF. Contain runoff. Breathing apparatus will be required.

8. Exposure Controls / Personal Protection

TWA: not applicable

Personal protective equipment

Respiratory protection: approved respirator

Protective gloves: elbow-length PVC gloves.

Eye protection: goggles

Industrial hygiene: use good industrial hygiene. Wear face shield or goggles, elbow length PVC gloves, cotton overalls buttoned to the neck and wrist, washable hat and half face respirator with dust and vapor cartridge. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

9. Physical And Chemical Properties

Boiling point: 225°C

Melting point: 104.5-105.5°C

Density: 1.18 (20°C)

Bulk density: not applicable

Water solubility: 0.9mg/L (20°C)

Other solubility: 240 g/l acetone; 520 g/l chloroform; 80 g/l ethanol; 320 g/l toluene. Stable in acid and alkali. (All in g/l, 25°C).

Stability: stable in acidic and alkaline media, stable to heat and light. PH value: 6.0-10.5

Flash point: 193°C (open cup)

Ignition temperature: Not applicable

10. Stability And Reactivity

Conditions to avoid: fire and high temperature

Products to avoid: highly alkaline materials.

Thermal decomposition:

Hazardous decomposition products: not applicable

Hazardous reaction: none

11. Toxicological Information

Contact with the skin: not irritating to skin.

Contact with the eyes: not irritating to eye.

Inhalation: Inhalation LC50 (4 h) for rats >4.57 mg/l air.

Ingestion: no data

Acute toxicity: Oral Acute oral LD50 for male rats 2198, female rats 2355, male and female mice >10 000 mg/kg. Acute percutaneous LD50 for rats >5000 mg/kg. Mild skin irritant (guinea pigs). NOEL for male rats 0.90, female rats 1.12 mg/kg daily. ADI (JMPR) 0.01 mg/kg.

Chronic toxicity: In a two-year study in dogs buprofezin was administered orally in gelatin capsules at doses of 0, 2, 20 or 200 mg/kg bw/day. The NOAEL was 2 mg/kg bw/day. Increased liver weight (associated with

enlargement of centrilobular hepatocytes and bile duct hyperplasia) was seen at higher doses.

Reproductive effects: In reproductive effects study, the high-dose animals exhibited lower body weight gain compared to the controls; this was most pronounced in F1 and F2 males. Depressed weight gain was also seen at lower doses, especially in F1 animals the first weeks after weaning.

Teratogenic effects: Teratogenic studies in rats at doses of buprofezin of 0, 50, 200 or 800 mg/kg bw/day and in rabbits at 0, 10, 50 or 250 mg/kg bw/day gave no indication of teratogenic potential. The NOAEL for maternal toxicity in both species was 50 mg/kg bw/day.

Mutagenic effects: Buprofezin did not have mutagenic properties when tested in a number of in vitro and in vivo systems, which included assessment of gene mutations, DNA damage, and clastogenic effects.

Carcinogenic effects: increased absolute and relative liver weight and an increased incidence of hepatocellular swelling (centrilobular and diffuse) and hepatocellular hyperplasia were seen in both sexes. It is concluded that the data does not indicate a carcinogenic potential. The noael is 20 ppm (male) equal to 1.82 mg buprofezin/kg bw/day.

12. Ecological And Ecotoxicological Information

Effects on birds: Buprofezin is relatively non-toxic to birds.

Effects on aquatic organisms: Fish LC50 (48 h) for carp 2.7, rainbow trout >1.4 mg/l. Daphnia LC50 (3 h) for *D. pulex* 50.6 mg/l.

Effects on other organisms: Honeybees, no direct effect at 2000 mg/l. No effect on various predators (*Euseius stipulatus* 250 mg/l; *Phytoseiulus persimilis* 500 mg/l; *Cyrtorhinus lividipennis*, *Microvelia atrolineata* 250 mg/l; *Lycosa pseudoannulata* 2000 mg/l) or parasites (*Aphytis linganensis* 125 mg/l; *Cales noacki*, *Encarsia formosa*, *Paracentrobia andoi* 250 mg/l; *Ephedrus japonicus* 1000 mg/l).

13. Disposal Considerations

Disposal: Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If

recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

Spillage disposal: Wear protective equipment (see Safety Directions). Apply absorbent material such as earth, sand, clay granules or cat litter to the spill. When absorption is completed, sweep up material and contain in a refuse vessel for disposal (see Storage and Disposal Section). If necessary wash the spill area with an alkali detergent and water and absorb the wash liquid for disposal as described above.

14. Transport Information

UN No.: 2588

Sub Risk Class: 9

Packing Group: III

15. Regulatory Information

Symbol: Xn

Symvol: X

R phrases: R 21/22-38-43-50/53

S phrases: S 5

16. Other Information

All information and instructions provided in this Material Safety Data Sheet (MSDS) are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to the product as such. In case of new formulations or mixes, it is necessary to ascertain that a new danger will not appear. It is the responsibility of persons on receipt of this MSDS to ensure that the information contained herein is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. If the recipient subsequently produce formulations containing this product, it is the recipients sole responsibility to ensure the transfer of all relevant information from this MSDS to their own MSDS.