

MATERIAL SAFETY DATA SHEET

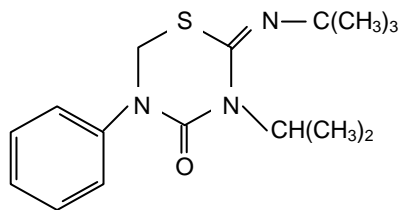
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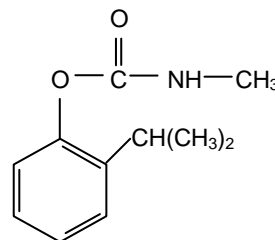
SECTION 1 : CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Details

Product Name : Buprofezin 5% + Isoproc carb 20%
Trade Name : BROADOX
Chemical Name : (1) 2-tert-butylimino-3-isopropyl-5-phenylperhydro-1,3,5-thiadiazin-4-one (Buprofezin)
(2) 2-Isopropylphenyl-N-methylcarbamate (Isoproc carb)
Chemical Formula : (1) C₁₆H₂₃N₃OS
(2) C₁₁H₁₅NO₂
Molar Mass : (1) 305.4
(2) 193.2
Chemical Family : (1) Insect growth regulator
(2) Carbamate compound
Manufacturer's Code : -
Use : Insecticide
Structural Formula :



Buprofezin



Isoproc carb

1.2 Company Identification

Manufacturer

Name and Address : Agricultural Chemicals (M) Sdn. Bhd.
962, Lorong Perusahaan 8, Taman Perindustrian Perai,
13600 Perai, Pulau Pinang, Malaysia.
Telephone Number : 604-390 7988
Emergency Telephone Number : 604-390 7988

1.3 Contact Point

Designation : Ms. Cheong Wai Ching, Product Support Manager /
En. Ahmad Labib bin Yusof, Administrative Assistant
Tel. No. : 604-390 7988

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SECTION 2 : COMPOSITION/INFORMATION ON INGREDIENT

Chemical Name	CAS No.	Proportion	Exposure Limit	Toxicity Data
2-tert-butylimino-3-isopropyl-5-phenylperhydro-1,3,5-thiadiazin-4-one	69327-76-0	5 %	Refer to Section 9	Refer to Section 11
2-Isopropylphenyl-N-methylcarbamate	2631-40-5	20 %		
Surfactant	-	< 5 %		
Others	-	Balance		

SECTION 3 : PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Off-white powder
Odour : Characteristic odour
Solubility : Dispersible in water
Boiling Point (technical) : 128 - 129°C (Isoprocarb)
Melting Point (technical) : 104.5 - 105.5°C (Buprofezin)
96 - 97°C (Isoprocarb)
Vapour Pressure (technical) : 9.4×10^{-6} mmHg at 25°C (Buprofezin)
 2.1×10^{-5} mmHg at 20°C, 1×10^{-3} mmHg at 25°C (Isoprocarb)
Percentage Volatiles : No data available
Evaporation Rate : No data available
Vapour Density : No data available
Specific Gravity : 1.18 at 20°C (Buprofezin)
0.62 (Isoprocarb)
Flash Point : 156°C (Isoprocarb)
Autoignition temperature : No data available
Flammable Limit : No data available
Partition Coefficient : $\log P_{o/w} = 4.3$ (Buprofezin)

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SECTION 4 : HAZARD IDENTIFICATION

Toxic in contact with skin and if swallowed.

Irritating to eyes.

May cause sensitisation by inhalation.

SECTION 5 : FIRST AID MEASURES

- Ingestion : If swallowed, induce vomiting after drinking water. Get medical attention immediately.
- Eye contact : Immediately flush with plenty of water. Get medical attention.
- Skin contact : Remove contaminated clothing and wash skin thoroughly with soap and water.
- Inhalation : Remove patient from exposure, keep warm and at rest. Obtain medical attention as a precaution.
- Notes to physician :
- Poisoning symptoms : Diarrhoea, lacrimation, decrease of locomotive movement.
- Medical treatment : Inject (2 - 4 mg) of atropine sulphate subcutaneously or intravenously, and repeat every 30 minutes until patient is fully atropinised. Do Not use PAM.

SECTION 6 : FIRE FIGHTING MEASURES

- Extinguishing Media : CO₂, foam, dry powder.
- Fire fighting instruction : Fire fighters should wear full-faced self contained breathing apparatus and protective clothing.
- Special hazard : Not explosive. (Isoprocarb)
Hazardous combustion products are carbon dioxide, carbon monoxide, nitrogen oxides and sulfur oxide. (Buprofezin)

SECTION 7 : ACCIDENTAL RELEASE MEASURE

Leak and/or Spill :

Wear protective clothing as indicated in Section 8. Evacuate non essential personnel. Collect the spill into waste container for disposal. Wash the contaminated area with a little water and detergent. Adsorb with inert material such as clay or earth. Collect into the same container for disposal. Prevent the spillage from entering local drainage system.

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SECTION 8 : HANDLING AND STORAGE

Handling : Read the label before use. Wear pesticide respiratory masks to avoid breathing vapour; protective gloves, goggles and clothing to avoid contact with skin and eyes.

Storage : Keep in original container, tightly closed, in a cool dry and well-ventilated place, out of reach of children. Keep away from foodstuffs and animal feeds.

SECTION 9 : EXPOSURE CONTROL AND PERSONAL PROTECTION

- a. Exposure Limit :
Buprofezin - Japan Association of Industrial Health : 2 mg/m³
Nihon Nohyaku exposure limit : 1 mg/m³
- b. Engineering measures : Use only with adequate ventilation or in closed systems.
Prevent deposition of dust.
- c. Personal protection : Wear pesticide respiratory masks, protective gloves, goggles and clothing.

SECTION 10 : STABILITY AND REACTIVITY

- Conditions to avoid : Direct sunlight, heat and extreme temperature
- Incompatible : Alkaline compounds.
- Decomposition products : May evolve carbon monoxide and nitrogen oxides upon combustion.
- Hazardous polymerization : No data available.
- Stability : Stable under normal conditions.
- Dust explosion : Possible (40 mg/l by Hartmann method; Buprofezin)
- Corrosive properties : No data available.

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SECTION 11 : TOXICOLOGICAL INFORMATION

Toxicity Data :

Buprofezin Technical

Acute Oral LD ₅₀	: (Rat) male	2,198 mg/kg
	(Rat) female	2,355 mg/kg
Acute Dermal LD ₅₀	: (Rat) male	> 5,000 mg/kg
	(Rat) female	> 5,000 mg/kg
Acute Inhalation LC ₅₀	: (Rat) male	> 4.57 mg/L (4 hr)
Eye Irritation (Rabbit)	: Slight irritating	
Skin Irritation (Rabbit)	: Slight irritating	
Sensitization (Guinea pig)	: Negative	

Isoprocarb Technical

Acute Oral LD ₅₀	: (Rat) female	178 mg/kg
Acute Dermal LD ₅₀	: (Mouse) female	128 mg/kg
Acute Dermal LD ₅₀	: (Rabbit)	>10250 mg/kg

Carcinogenicity : Buprofezin Technical - Not carcinogen
Isoprocarb Technical - No data available

Reproductive Effect : Buprofezin Technical - No effect
Isoprocarb Technical - No data available

Effects of overexposure :

Isoprocarb Technical

Route of Entry	Effects of exposure
Skin contact	Repeated exposure may cause dermal sensitization.
Eye contact	Irritating to eyes.
Ingestion	Possibly be harmful if swallowed.

Chronic effects : Buprofezin did not produce genetic changes in rec-assay and Ames test.

Target organs : Buprofezin Technical - Organ toxicity in rat was not observed.

Medical Conditions Generally Aggravated by Exposure (Buprofezin) :

- In repeat dosing study for 13 weeks, rats fed Buprofezin exhibited body weight depression, increase of relative liver weight and enlargement of hepatocyte.
- Dogs fed Buprofezin for 2 years exhibited body weight depression, and increase of serum alkaline phosphatase activity and relative liver weight.
- Rats fed Buprofezin for 2 years showed body weight depression. Any clinical parameters showing organ toxicity were not observed.

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- In histopathological examination, an enlargement of hepatocyte and increase of smooth-surfaced endoplasmic reticulum.
- Buprofezin did not produce tumor in both sexes of rats.
- No birth defects were noted in rats and rabbits given Buprofezin orally during pregnancy even at amount which produced body weight depression on the mothers.
- No effects were seen on the ability of male and female rats to reproduce when fed Buprofezin for 2 successive generations.
- Buprofezin did not produce genetic changes in rec-assay and Ames test. In safety pharmacology studies,
- Buprofezin showed any specific pharmacological effect.

SECTION 12 : ECOLOGICAL INFORMATION (TECHNICAL)

Mobility & Bioaccumulation : No data available

Biodegradability : No data available

Aquatic toxicity :

Buprofezin Technical

LC₅₀ (48h) : (Carp) 2.7 mg/l

LC₅₀ (3h) : (Daphnia) > 50.6 mg/l

Isoprocarb Technical

Fish Toxicity TL_m (48 hour) : (Carp) 7.2 ppm

SECTION 13 : DISPOSAL INFORMATION

Dispose of according to local regulation.

SECTION 14 : TRANSPORT INFORMATION

Follow the precaution indicated in the storage and handling section. Follow all regulations in your country.

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SECTION 15 : REGULATORY INFORMATION

Pesticides Act : Class III – Harmful

CPL Regulation : Class – Harmful, Irritant

Risk Phrases : R21/22 Harmful in contact with skin and if swallowed
R36 Irritating to eyes
R43 May cause sensitisation by inhalation

Safety Phrases : S2 Keep out of reach of children
S13 Keep away from food, drink and animal feeding stuff
S24/25 Avoid contact with skin and eyes
S36/37/39 Wear suitable protective clothing, gloves and eyes/face protection

SECTION 16 : OTHER INFORMATION

- Reference : (a) Material Safety Data Sheet - Broadox, Date : 27-12-1994
(b) Material Safety Data Sheet - Applaud Technical (Buprofezin), Date : 11th April 2002
(c) Material Safety Data Sheet - Applaud Technical
Nihon Nohyaku Co., Ltd., MSDS number : 940-10, Date : January 16, 1996
(d) Material Safety Data Sheet - Mipcin Technical (Isoprocarb), Date : 3rd March 2002
(e) Guidelines for The Classification of Hazardous Chemicals, DOSH 1997
(f) Guidelines for The Formulation of A Chemical Safety Data Sheet, DOSH 1997
(g) Guidelines for Labelling of Hazardous Chemicals, DOSH 1997

To the best of our knowledge, the information contained herein is accurate. However, we cannot assume any liability whatsoever for the accuracy or completeness of the information contained herein.