



Hangzhou Tianlong Biotechnology Co., Ltd.

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MATERIAL SAFETY DATA SHEET

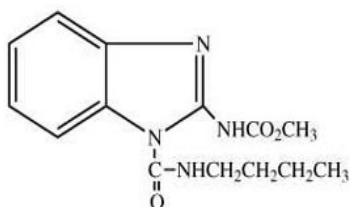
1. Chemical Product and company Identification

Product Name: Benomyl

Molecular Formula: C₁₄H₁₈N₄O₃

Molecular Weight: 290.3

Structural Formula:



Chemical Name: 1-N-Butylamionformacyl-Benzanimidazole-2-Aminofromic ether

CAS No.: 17804-35-2

Supplier: HANZHOU TIANLONG BIOTECHNOLOGY CO., LTD

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2. Composition / Information on Ingredients

Composition	CAS No.	Content %
Benomyl	17804-35-2	95.0
Others ingredients		5.0

3. Hazards Summarizing

Route of Entry: Skin absorption, skin contact, eye contact, inhalation, ingestion

Routes of Exposures: Acute oral LD₅₀: 5000mg/kg in rats

Inhalation 4-hour LC₅₀: 2.0mg/L (rats)

Dermal contact LD₅₀: 1000mg/kg (rat)

Eye Irritation: Temporary irritating

Skin Irritation: Negligible irritating

Sensitization: No skin sensitization to guinea pig.

4. First Aid Measures

Skin contact: Wash with plenty of water.

Eye contact: Rinse immediately with large of water.

Inhalation: Move the patient to fresh air.

Ingestion: If in urgency, take orally or inject 0.5-1 mg of atropine.

Never give anything by mouth to an unconscious person.

Remove all contaminated clothing.

Call a doctor when symptoms aggravate.

5. Fire-Fighting Measures

Extinguishing media

Suitable: Water, sand, foam, carbon dioxide, dry powder.

Not to be used: High pressure water jet.

Exposure hazards: None

Fire-fighters should be provided with impervious clothing and self-containing breathing apparatus.

6. Accidental Release Measures

Personal Precautions: Avoid skin contact and take orally.

Environmental precautions: Avoid breakage of packages.

Spill control/Clean up: Solid spillage should be picked up with an industrial vacuum Cleaner and disposed of in accordance with local regulations.

7. Handling and Storage

Handling: Do not eat, drink at the workplace.

Storage: Keep away from food and feed stuff, store in well-ventilated place.

8. Exposure Controls/personal protection

Technical Protective Measures: Not required.

Exposure Control Limits: None.

Respiratory Protection: Wear a gauze mask.

Hand Protection: Wear robber gloves.

Eye Protection: Wear Dustproof glasses.

Skin Protection: Wear overalls.

9. Physical and Chemical Properties

Form: powder

Color: white

Odour: odorless

Melting point: 140°C.

Flammability: burn and carbonize contacting flame.

Oxidizing properties: none

Flash point: no flash point

Decomposing point: 290°C

Explosive properties: none

Vapor pressure: 0.66mPa (25°C)

Bulk density: 0.38 g/cm³

Stability: soluble in water 2 mg/L 25°C, insoluble in water and slightly soluble in alcohol, soluble in organic solvent, such as N-N-Dimethylaniline, chloroform, acetone etc. Stable in the dry condition. Easily to be decomposed into Carbendazim in water or plant medium.

10. Stability and Reactivity

Thermal Stability: decomposed on heating. Decomposition less than 10% at 50°C for 15days.

Conditions to Avoid: None

Materials to Avoid: strong acids and alkalis.

Hazardous reactions: none

Hazardous Decomposition Products: butyl isocyanate

11. Toxicological Information

LD50 Acute oral for rats: >5000 mg/kg

LD50 Acute dermal for rabbits: 5000 mg/kg

Acute inhalation: LC50 (4h) for rats >2 mg/l air.

Eye irritation: 5% sesame oil rabbit eye: (-)

10% sesame oil rabbit eye: moderate

Skin irritation: 25% water suspension to guinea pig skin: mild

Reproductive effects: A three-generation study on rats showed no reproductive or lactational differences at a dose of 150 mg/kg/day administered in the diet. In another study in rats, the testes were the most affected sites at relatively low doses of about 15 mg/kg/day. Male rats had decreased sperm counts, decreased testicular weight, and lower fertility rates. The animals recovered from these effects 70 days after feeding with the pesticide had stopped. Reproductive effects in humans are unlikely at expected exposure levels.

Teratogenic effects: Very high doses of benomyl can cause birth defects in test animals. Rats fed 150 mg/kg/day in the diet for three generations showed no birth defects. No teratogenicity was observed in another study of rats given 300 mg/kg/day on days 6 to 15 of gestation. At higher doses, some birth defects were noted, but they were accompanied by toxicity to the fetus. In another rat study where mothers were fed 1000 mg/kg/day for 4 months, the offspring showed a decrease in viability and fertility. These data suggest that benomyl is not likely to cause teratogenic effects under normal circumstances.

Mutagenic effects: Conflicting negative and positive results have been found in numerous mutagenicity assays. As a result, no conclusions about the mutagenicity of benomyl can be drawn.

Carcinogenic effects: Tumors in the livers of both male and female mice were observed in lifetime studies at doses of benomyl at 40 to 400 mg/kg/day. In a 2-year dietary study when albino rats were fed up to 2500 mg/kg/day of

benomyl, there were no significant adverse effects at any dose level attributable to benomyl. Based on these data, it is not possible to determine the carcinogenicity of benomyl.

Organ toxicity: Target organs identified in animal studies included the liver and testes.

12. Ecological Information

Effects on birds: In bobwhite quail and mallard ducks, the 5-day dietary LC50 for benomyl is greater than 10,000 ppm. In redwing blackbirds, the LD50 value is 100 mg/kg, which indicates that benomyl is moderately toxic to this species.

Effects on aquatic organisms: Benomyl is highly to very highly toxic to fish. The order of susceptibility to benomyl for various fish species from least susceptible to most susceptible is catfish, bluegill, rainbow trout, and goldfish. The LC50 values for the compound in fish are 0.05 mg/L to 14 mg/L in adults, and 0.006 mg/L in catfish fry. The main breakdown product, carbendazim, had the same order of toxicity as benomyl. Crayfish have an LC50 greater than 100 mg/L. The estimated bioconcentration factor (BCF) ranges from 159 in rainbow trout up to 460 in bluegill sunfish, indicating that benomyl does not tend to significantly concentrate in living tissue.

Effects on other organisms: A single application of benomyl to turf grass can substantially reduce some soil dwelling organisms. The compound is very lethal to earthworms at low concentrations over a long time period. The 7-day LC50 in earthworms is 1.7 mg/L and the 14-day LC50 is 0.4 mg/L. Benomyl also decreases the mixing of soil and thatch. The effects last for up to 20 weeks. Benomyl is relatively nontoxic to bees.

13. Disposal Considerations

Product/Waste disposal: Must be disposed of in accordance with local regulations.

14. Transport Information

Hazard Class: 9

UN No: 3077

Packing Group: III

15. Regulatory Information

Safety Phrases:

Keep out of reach of children

Keep away from food, drink and animal feeding stuff

Do not breathe spray

When using do not eat, drink or smoke

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

In case of accident or if you feel unwell, seek medical advice immediately (Show the label where possible)

Use appropriate containment to avoid environmental

contamination

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.