

Sheet / Class



# MATERIAL SAFETY DATA SHEET FOR

## MATERIAL IDENTIFICATION

NUMBER : M0000006  
 NAME : "Benlate" Fungicide  
 GRADE : 50% Formulation  
 CHEMICAL FAMILY : Benzimidazole  
 CAS NAME : See Additional Information Section  
 MANUFACTURER/DISTRIBUTOR: E.I. du Pont de Nemours & Co., Inc.  
 1007 Market Street  
 Wilmington, DE 19898  
 PRODUCT INFORMATION PHONE : 1-(800)441-7515  
 TRANSPORTATION EMERGENCY PHONE : 1-(800)424-9300  
 MEDICAL EMERGENCY PHONE : 1-(800)441-3637

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## COMPONENTS

Material	CAS Number	%
Benomyl	17804-35-2	50
Inert Ingredients		50

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## PHYSICAL DATA

Odor : None  
 Form : Solid  
 Color : Off-white  
 Solubility in Water : Dispersible  
 Bulk Density : 24 lb/ft<sup>3</sup>

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## HAZARDOUS REACTIVITY

Instability : Stable at normal temperatures and storage conditions.  
 Incompatibility : None reasonably foreseeable.  
 Decomposition : Decomposes with heat. Hazardous gases/vapors produced are n-butylisocyanate, a strong lachrymator.  
 Polymerization : Polymerization will not occur.

H-01552  
 Revision Date: 1/89

THE DATA IN THIS MATERIAL SAFETY DATA SHEET RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DOES NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS

(HEALTH HAZARD INFORMATION - CONTINUED)

FEEDING STUDY: (rat, dog) In two-year feeding studies (with 2,500 ppm, the highest dietary level), the no observable effect level was 2,500 ppm for rats and 500 ppm for dogs. In dogs fed 2,500 ppm, there was biochemical evidence of impaired liver function and histological evidence of liver cirrhosis. No oncogenic effects were observed in either rats or dogs. In a two-year feeding study with mice, the NOEL was 500 ppm except for changes in the liver. Oncogenic effects were observed in the livers of male and female mice at all dietary levels (500 to 5,000 ppm).

TERATOGENICITY: (rat, rabbit): Not embryotoxic or teratogenic to rats by dietary administration at levels as high as 5,000 ppm (equivalent to 373 mg/kg/day, approx.). By gavage, statistically significant teratogenic response was obtained at dose levels of 62.5 mg/kg/day and above, but not at 30 mg/kg/day and below. No teratogenic effects were found in studies with rabbits fed 500 ppm in the diet (equivalent to 20 mg/kg/day, approx.).

MUTAGENICITY: Negative results were obtained in the following assays: Host mediated assay; CHO point mutation; Reverse-mutation tests; Rat dominant lethal at 2,500 ppm in diet; Drosophila test for measuring recessive lethal damage; DNA repair (UDS).

REPRODUCTION: (3 generations) No adverse effect on reproduction performance at dietary levels as high as 2,500 ppm; no pathological changes found in tissues from weanling pups of F3B generation (2,500 ppm).

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Limits for "Benlate" Fungicide

TLV \*\* (ACGIH) : None Established  
PEL (OSHA) : None Established

Other Applicable Exposure Limits:

Exposure Limits for Benomyl

AEL \* (DuPont): 5 mg/m<sup>3</sup>, 8 & 12 Hr. TWA  
TLV \*\* (ACGIH) : 0.8 ppm, 10 mg/m<sup>3</sup>  
PEL (OSHA) : None Established

\* AEL is DuPont's Acceptable Exposure Limit.  
\*\* TLV is a registered trademark.

FIRE AND EXPLOSION DATA

Flammable Limits in Air, % by Vol.  
LEL : 0.08 g/L  
Autoignition Temperature : 220 deg C  
May be ignited by heat or open flame.

FIRE AND EXPLOSION HAZARDS

Dust forms explosive mixture with air. Hazardous gases/vapors produced in fire are n-butylisocyanate.

EXTINGUISHING MEDIA

Water Spray. Dry Chemical.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Evacuate personnel to a safe area. Keep personnel removed & upwind of fire. Wear self-contained breathing apparatus. Use water spray. Cool tank/container with water spray.

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HEALTH HAZARD INFORMATION

CAUTION! May irritate eyes, nose, throat and skin.

ROUTES OF EXPOSURES AND EFFECTS:

INGESTION-(fasted rats): LD50 is greater than 10,000 mg/kg (male and female). Very low toxicity.

INHALATION-(4 hour exposure, rat): LC50 is greater than 2 mg/L (dry product). Moderately toxic.

SKIN IRRITATION AND SENSITIZATION-(Rabbit): LD50 is greater than 10,000 mg/kg (male guinea pig); application to shaved skin with formulated product (in distilled water) produced moderate sensitization.

This product may cause a temporary allergic skin reaction in a few susceptible persons. This condition should be treated as an allergic dermatitis. There is no evidence of aftereffects or permanent injury. If sensitivity occurs, protective clothing should be worn during periods of exposure such as during application or when contacting treated foliage.

EYE IRRITATION-(Rabbit): 10 mg of dry 50% powder or 0.1 ml of 10% suspension in mineral oil caused only temporary mild conjunctival irritation.

CHRONIC STUDIES: Benomyl

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(HEALTH HAZARD INFORMATION - CONTINUED)

Safety Precautions

Avoid breathing vapors or mist. Avoid breathing dust. Avoid contact with eyes, skin, or clothing. Wash thoroughly after handling.  
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FIRST AID

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with plenty of water.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary.

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PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Use only with adequate ventilation. Keep away from heat, sparks and flames. Avoid dust generation. Do not consume food, drink or tobacco in the areas where they may become contaminated with this material.

Personal Protective Equipment

Eye/Face : Coverall chemical splash goggles.  
Additional : Protective clothing  
Wear an approved pesticide respirator if exposure may reach or exceed AEL level.

Aerial Mixer-Loaders: Wear a cloth or disposable paper dust mask during handling and mixing as this product may be harmful if inhaled.

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DISPOSAL INFORMATION

Aquatic Toxicity :  
Rainbow trout LC50 (96 hr exposure) is 0.41 ppm.

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Du Pont Material Safety Data Sheet

(DISPOSAL INFORMATION - CONTINUED)

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up. Dike spill. Prevent liquid from entering sewers, waterways or low areas. Shovel or sweep up.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Remove nonusable solid material and/or contaminated soil, for disposal in an approved and permitted landfill. Do not flush to surface water or sanitary sewer system. Do not reuse container; dispose of according to approved Federal, State or local procedures under the Resource Conservation and Recovery Act.

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SHIPPING INFORMATION

DOT  
Proper Shipping Name :  
Not regulated by D.O.T.  
Freight Class : Agricultural Fungicide, N.O.S.

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STORAGE CONDITIONS

Store in well ventilated area. Keep container tightly closed. Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material.

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TITLE III HAZARD CLASSIFICATIONS

Acute: Yes  
Chronic: Yes  
Fire: No  
Reactivity: No  
Pressure: No

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ADDITIONAL INFORMATION AND REFERENCES

Never allow "Benlate" to become wet during storage. This may lead to certain chemical changes which will reduce the effectiveness of "Benlate" as a fungicide.

CAS NAME: Methyl 1-(butylcarbamoyl)-2-benzimidazolecarbamate

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