



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont
Material Safety Data Sheet

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 "DuPont" "MANZATE" FLOWABLE FUNGICIDE
 M0000551 Revised 3-NOV-2006

 CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

"MANZATE" is a registered trademark of DuPont.

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Tradenames and Synonyms

MANEX II
 EURO SC
 MANZATE 200 FLOWABLE
 MANCOZEB

Tradenames and Synonyms (Remarks)

Inactive EPA Reg. No. 1812-416 (Griffin)

Company Identification

MANUFACTURER/DISTRIBUTOR
 DuPont
 1007 Market Street
 Wilmington, DE 19898

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside the U.S.
 302-774-1000)
 Transport Emergency : CHEMTREC 1-800-424-9300(outside U.S.
 703-527-3887)
 Medical Emergency : 1-800-441-3637 (outside the U.S.
 302-774-1000)

 COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
MANCOZEB	8018-01-7	37
A COORDINATION PRODUCT OF ZINC ION AND MANGANESE ETHYLENEBISDITHIOCARBAMATE		
INERT INGREDIENTS		63

Components (Remarks)

Contains 4.0 Pounds Active Ingredient Per Gallon

HAZARDS IDENTIFICATION

Emergency Overview

CAUTION! Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist. Remove contaminated clothing and wash clothing before reuse. Causes moderate eye irritation.

Potential Health Effects

Skin contact with Mancozeb may cause skin irritation with discomfort or rash. Mancozeb has been infrequently associated with skin sensitization in humans. Significant skin permeation and systemic toxicity after contact appears unlikely.

Eye contact with Mancozeb may cause eye irritation with discomfort, tearing, or blurring of vision.

Based on animal studies, long-term exposure to high levels of mancozeb may cause abnormal thyroid function.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably 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 to 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 a 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 a poison control center or doctor. Do not

(FIRST AID MEASURES - Continued)

give anything by mouth to an unconscious person.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies involving this product, call toll free 1-800-441-3637. See Label for Additional Precautions and Directions for Use.

FIRE FIGHTING MEASURES

Flammable Properties

Pesticide particulates can become airborne. Combustion generates toxic fumes of hydrogen sulfide, carbon disulfide, sulfur oxides, nitrogen oxides, and carbon oxides.

Extinguishing Media

Dry Chemical, CO₂, Water Spray.

Fire Fighting Instructions

Wear self-contained breathing apparatus (SCBA) and full protective equipment. Cool tank/container with water spray.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus.

Initial Containment

Prevent material from entering sewers, waterways, or low areas.

Spill Clean Up

Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal.

For minor spills or leaks, follow all precautions indicated on the product label clean up immediately. Take special care to avoid contamination of equipment and facilities during cleanup procedures and disposal of wastes.

In the event of a major spill, fire or other emergency,

(ACCIDENTAL RELEASE MEASURES - Continued)

call 1800-441-3637 day or night.

HANDLING AND STORAGE

Handling (Personnel)

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Handling (Physical Aspects)

Keep away from heat, sparks and flames.

Do not handle material near food, feed or drinking water.

Storage

Do not contaminate water, food or feed by storage.

Important - Keep in a cool place but not below 32°F. Temperature extremes will affect the quality of the product. Store product in original container only, away from other pesticides, fertilizer, food or feed.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

During aerial application, human flaggers must be in enclosed cabs.

When handlers use enclosed cabs or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Personal Protective Equipment

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical-resistance category selection chart.

Applicators and other handlers (other than mixers and loaders) must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves, such as nitrile rubber, natural rubber, or butyl rubber

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

- Shoes plus socks
- Protective eyewear

Mixers and Loaders must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves, such as nitrile rubber, natural rubber, or butyl rubber
- Shoes plus socks
- Protective eyewear
- Chemical-resistant apron when mixing and loading

Follow the manufacturer's instructions for cleaning/-maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves, such as nitrile rubber, natural rubber, or butyl rubber
- Shoes plus socks
- Protective eyewear

Exposure Guidelines

Applicable Exposure Limits

MANCOZEB		
PEL (OSHA)	:	None Established
TLV (ACGIH)	:	None Established
WEEL (AIHA)	:	1 mg/m ³ , 8 Hr. TWA, SEN

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Color	:	Pale Yellow
Physical State	:	Liquid
Odor	:	Sulphur odor
Boiling Point	:	100°C/212°F Water
Melting Point	:	0°C/32°F Water
Density	:	1.30 g/cm ³
Specific Gravity (H ₂ O=1)	:	1.29 to 1.31 g/cm ³
Solubility in Water (@ 20°C)	:	Dispersible
Vapor Pressure	:	2266.5 Pa @ 20°C/68°F Water
pH @ 20°C	:	7.5
Viscosity	:	1160 cps
Vapor Density (Air=10)	:	< 1 Water
Evaporation Rate (BAC - 1)	:	< 1 Water
Percent Volatility	:	53 to 56% Water

STABILITY AND REACTIVITY

Chemical Stability

General : Material is considered stable, however, temperatures above 49°C/120°F should be avoided.

Conditions to Avoid : Avoid temperatures above 49°C.

Hazardous Decomposition : Thermal decomposition may yield carbon disulfide and hydrogen sulfide.

Hazardous Polymerization : Material is not known to polymerize.

Incompatibility : Avoid contact with oxidizing agents and acids.

TOXICOLOGICAL INFORMATION

Animal Data

Oral LD50: > 5000 mg/kg in rats
Skin absorption LD50: > 2000 mg/kg in rabbits
Inhalation 4 hour LC50: > 4.8 mg/L in rats

Manzate Flowable is a slight skin irritant, a moderate eye irritant, but is not a skin sensitizer in animal tests.

MANCOZEB

The effects in animals from repeated very high inhalation doses of Mancozeb (dust) include reduced body weight, inflammation of the lungs, and abnormal thyroid function.

Toxic effects in animals from repeated ingestion of high doses of Mancozeb include reduced body weight and thyroid effects. In a different study, repeated dosing caused toxic and neuropathological effects in male and female rats which included compound-related mortality, decreased body weight, impaired hind limb motor activity and histopathological evidence of nerve damage.

Increased incidences of thyroid tumors and ocular lesions (retinopathy) were observed in rats administered mancozeb in their diet for two years. Mancozeb is considered to show weak carcinogenic activity. Tests in some animals indicate that Mancozeb may produce embryo and fetal toxicity, but only at maternally toxic doses. Multi-generation studies in animals demonstrate no reproductive toxicity.

Mancozeb is in the ethylene-bis-dithiocarbamate (EBDC) class of fungicides. EBDCs including mancozeb, which are metabolized to ethylene thiourea (ETU), have produced thyroid tumors in animal studies.

(TOXICOLOGICAL INFORMATION - Continued)

Mancozeb does not produce genetic damage in bacteria. It produced genetic damage in some in vitro mammalian cell assays, but was negative in mammalian in vivo assays.

ECOLOGICAL INFORMATION

Ecotoxicological Information

MANCOZEB

AQUATIC TOXICITY:

96 hour LC50 - Rainbow trout: 0.073 mg/L.
96 hour LC50 - Fathead minnows: 0.57 mg/L.
96 hour LC50 - Bluegill sunfish: 0.84 mg/L.

72 hour EC50 (growth inhibition) - freshwater algae: 0.43 mg/L.

DISPOSAL CONSIDERATIONS

Waste Disposal

Do not contaminate water, food or feed by disposal.

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

ENVIRONMENTAL HAZARDS:

This product is toxic to fish. Drift or runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Cover or incorporate spilled treated seed. Do not contaminate water by disposing of equipment washwaters.

Container Disposal

Triple rinse (or equivalent) the container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by State and local authorities by burning. If burned, stay out of smoke.

CONTAINER DISPOSAL FOR LARGE CONTAINERS:

Container Refilling and Disposal (For containers up to 250 gal.):

Refer to the product label for instructions.

Container Disposal for Bulk Containers:

Refer to the product label for instructions.

(DISPOSAL CONSIDERATIONS - Continued)

If the container is to be refilled, do not rinse with any material or introduce any pesticide other than this product. Do not reuse the container for any other purpose. Do not transport if the container is damaged or leaking.

Disposal of the container must be in compliance with state and local regulations.

TRANSPORTATION INFORMATION

Shipping Information

DOT :
Proper Shipping Name : Not Regulated by DOT unless shipped in bulk package or by water. See IMO/IMDG description.

IMO/IMDG:
Proper Shipping Name : Environmentally Hazardous Substances, Liquid, n.o.s., (Mancozeb 37% aqueous suspension)

Hazard Class : 9
UN/NA Number : 3082
Packaging Group : III
Marine Pollutant : Yes
Reportable Quantity : Yes - add RQ if 5,000 or more pounds mancozeb in a single package.

IATA/ICAO : Not Regulated.

REGULATORY INFORMATION

U.S. Federal Regulations

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

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

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-706

(REGULATORY INFORMATION - Continued)

OSHA:

This product is considered hazardous under the OSHA Hazardous Communication Standard (29 CFR §1910.1200).

TSCA:

All product components are on the TSCA Chemical Inventory.

CERCLA:

Releases of this material (mancozeb as ethylenebisdithiocarbamic acid, salts, and esters CAS No. 111-54-6; RQ: 5000 lbs) to air, land, or water are reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to the state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304 and 40 CFR Part 302.

RCRA:

Wastes of this commercial chemical product are classified as hazardous by 40 CFR §261.33 being a listed waste U114.

State Regulations (U.S.)

CALIFORNIA PROPOSITION 65

This product contains Mancozeb and ETU, chemicals known to the State of California to cause cancer in laboratory animals. ETU is also known to the State of California to cause birth defects or other reproductive harm in laboratory animals.

OTHER INFORMATION

NFPA, NPCA-HMIS

NFPA Rating	
Health	: 1
Flammability	: 1
Reactivity	: 0

NPCA-HMIS Rating	
Health	: 1
Flammability	: 1
Reactivity	: 0

Additional Information

Inactive EPA Reg. No. 1812-416 (Griffin)

(Continued)

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.

Responsibility for MSDS: DuPont Crop Protection
Address : Wilmington, DE 19898
Telephone : 1-888-638-7668

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS