



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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M0000546 "DuPont" "MANEX" FUNGICIDE
Revised 23-MAY-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Tradenames and Synonyms

"MANEX"
"MANEB"

Tradenames and Synonyms (Remarks)

"MANEX" is a registered trademark of E. I. du Pont de Nemours and Company and its affiliates.

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 | % |
|--|------------|----|
| *MANEB* | 12427-38-2 | 37 |
| (Manganese Ethylenebisdithiocarbamate) | | |
| (Total manganese as metallic 7.6%) | | |
| INERT INGREDIENTS | | 63 |

* Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Components (Remarks)

4 Pounds of Maneb Per Gallon

HAZARDS IDENTIFICATION

Emergency Overview

CAUTION! Harmful if absorbed through skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. Remove contaminated clothing and wash clothing before reuse.

Potential Health Effects

Inhalation: May cause irritation to the nose and throat.

Eye Contact: May cause irritation to the eyes.

Skin Contact: May cause irritation to the skin.

Skin Sensitization: May cause dermal sensitization.

Ingestion: Irritation to the digestive system may cause diarrhea and vomiting.

CHRONIC:

Maneb at high levels has caused birth defects in test animals, hind leg paralysis and an increased incidence of retinal atrophy related to old age. It has caused thyroid tumors in test animals, resulting from ethylene thiourea (ETU) formation. ETU, a trace contaminant and breakdown product of Manex (Maneb) Fungicide, primarily affects the thyroid. It has also caused other endocrine, liver and blood effects, tumors and birth defects in test animals. Rats fed 2 years on a diet containing 250 ppm suffered no ill effects. In long term feeding studies on rodents, some dithiocarbamates, including maneb, have induced carcinogenicity and birth defects at high dietary intake levels.

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.

(FIRST AID MEASURES - Continued)

Rinse skin immediately with plenty of water for 15-20 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 the poison control center or doctor. Do not 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

Flash Point & Method : Not determined
Flammable Limits : Not determined
Autoignition Temperature : Not determined

FIRE FIGHTING HAZARDS & PROCEDURES

General Hazard : Prevent human exposure to fire, smoke, fumes or products of combustion. Large masses of dried product residue may ignite spontaneously.

Extinguishing Media : Use dry chemical, carbon dioxide, water spray or foam.

Fire Fighting Equipment : Wear protective clothing and self-contained breathing apparatus.

Hazardous Combustion Products : Combustion generates toxic fumes of the following: hydrogen sulfide, carbon disulfide, sulfur oxides, nitrogen oxides, and carbon oxides.

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.

Spill Clean Up

Cover spill with absorbent material such as sweeping compound or lime. Sweep up and place in suitable (fiberboard) containers for later disposal.

HANDLING AND STORAGE

Handling (Personnel)

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. 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 fire and sparks. Store in a cool dry place.

Storage

Do not contaminate water, food or feed by storage. Store in a cool, dry place.

Do not store near feed, food or within the reach of children.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

When handlers use closed systems, 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.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

Human flaggers must be in enclosed cabs.

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 selection chart.

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

- Coveralls over long-sleeved shirt and long pants.
- Chemical resistant gloves made of any waterproof material, such as nitrile, latex, or barrier laminate.
- Shoes plus socks.

Mixers and Loaders must wear:

- Coveralls over long-sleeved shirt and long pants.
- Chemical resistant gloves made of any waterproof material, such as nitrile, latex, or barrier laminate.
- 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 made of any waterproof material, such as nitrile, latex, or barrier laminate.
- Shoes plus socks.

Exposure Guidelines

Applicable Exposure Limits

MANEB*

| | | |
|-----|---------|--------------------|
| PEL | (OSHA) | : None Established |
| TLV | (ACGIH) | : None Established |

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Vapor Pressure : Not determined
Density : 1.3 g/ml
Solubility in Water : Disperses to form a suspension.
pH : 7.8
Boiling Point : Decomposes
Freezing Point : Not determined
Odor : Characteristic odor
Color : Yellowish
Physical State : Liquid

STABILITY AND REACTIVITY

Chemical Stability

General : This material is stable under normal conditions.
Incompatible Materials : Oxidizing agents and acids.
Conditions to Avoid : Avoid temperatures above 49°C.
Hazardous Decomposition : Thermal decomposition may yield the following: carbon disulfide, hydrogen sulfide, NOx, and SOx.
Hazardous Polymerization : Material is not known to polymerize.

TOXICOLOGICAL INFORMATION

Animal Data

ACUTE
Inhalation : Acute inhalation
LC50 >5 mg/L (rat - 4 hour).
Eye Contact : Moderate irritation. Conjunctival redness and discharge, chemosis and ocular irritation were observed in the unwashed eyes of rabbits but cleared by day 7. Conjunctival redness and discharge and ocular irritation were observed in the washed eyes of rabbits but cleared by day 4.
Skin Contact : Primary Irritation Index=0.25.
Slight irritation.
Skin Absorption: Acute dermal LD50 > 2,000 mg/kg.
Ingestion : Oral LD50 >5,000 mg/kg.
Sensitization : Possible skin sensitization.

(TOXICOLOGICAL INFORMATION - Continued)

CHRONIC:

A three-month feeding study in rats indicated hind leg paralysis after a two-week exposure, at a high dose level of 5000 ppm, which also caused significant systemic toxicity and 40% mortality. A two-year feeding study in rats indicated an increased incidence of old age-related retinopathy at a dose level of 750 ppm.

Carcinogenicity:

No evidence of carcinogenicity was observed in long-term studies with mice.

Two-year feeding studies of ETU indicated thyroid and pituitary tumors in rats at dietary concentrations of 83 ppm or higher and also thyroid, pituitary and liver tumors in mice at dietary concentrations of 330 ppm or higher.

Carcinogenic effects are considered to be secondary to inhibition of thyroid synthesis and disruption of hormonal balance.

Tests have shown that ETU causes developmental toxicity but does not affect reproductive performance in animals. Tests in some animals indicate that Maneb may have developmental toxicity but only at levels also producing maternal toxicity. Tests in animals demonstrate that Maneb does not produce reproductive toxicity.

Mutagenicity:

Ames mutagenicity: Negative

Mouse Host Mediated Bacterial Gene Mutation Test: Negative

In vitro rat hepatocyte Unscheduled DNA Synthesis: Negative
Mammalian cell gene-mutation assay in Chinese hamster ovary cells (CHO): Negative

In vivo cytogenetic assay (mouse): Negative

Sex-linked recessive lethal assay (Drosophila): Negative
Sister Chromatid Exchange: Positive without metabolic activation; negative with metabolic activation Cell

Transformation in 10T 1/2 Cells: Negative

ECOLOGICAL INFORMATION

Ecotoxicological Information

Ecotox:

Maneb: 96-hour LC50 = 0.53 mg/L in the harlequin fish

Wildlife Tox:

Maneb: 5-day dietary LC50 > 10,000 ppm in mallard ducks

Maneb: 5-day dietary LC50 > 10,000 ppm in bobwhite quail

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 when disposing of equipment washwaters.

Container Disposal

Triple rinse (or equivalent). 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.

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., (maneb 37% aqueous suspension)

Hazard Class : 9

UN/NA Number : UN 3082

(TRANSPORTATION INFORMATION - Continued)

Packaging Group : III
Marine Pollutant : Yes
Reportable Quantity : Yes - add RQ if 5,000 or more pounds
maneb. In a single package.
IATA/ICAO : Not Regulated.

REGULATORY INFORMATION

U.S. Federal Regulations

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 to air, land, or water are not 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.

RCRA:

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

SARA TITLE III

311/312 Hazard Categories: This product has been reviewed according to the EPA "Hazard Categories" and is categorized as an acute health hazard (40 CFR §370.41).
313 Reportable Ingredients: This product contains a material (CAS # 12427-38-2) listed in Section 313 of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

STATE REGULATIONS

CALIFORNIA PROPOSITION 65

This product contains Maneb 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.

EPA Reg. No. 352-655

OTHER INFORMATION

NFPA, NPCA-HMIS

HAZARDS CLASSIFICATION:
(0-minimal, 1-slight, 2-moderate, 3-serious, 4-severe)

HMIS: HEALTH-0 FIRE-1 REACTIVITY-0
NFPA: HEALTH-1 FIRE-1 REACTIVITY-0

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