



MATERIAL SAFETY DATA SHEET

Manex®

Date Prepared: October 1, 1998

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: Manex®

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

NFPA: HEALTH-1 FIRE-1 REACTIVITY-0

HMIS: HEALTH-0 FIRE-1 REACTIVITY-0

MANUFACTURER NAME AND ADDRESS

Griffin L.L.C.	Griffin (Europe) S.A.	Griffin FE (Malaysia) S/B
2509 Rocky Ford Road	c/o Minervastraat 8	P.O. Box 6506
P.O. Box 1847	B-1930 Zaventem	47300 KG Tunku
Valdosta, GA 31603-1847	Belgium	Petaling Jaya
		Malaysia

EMERGENCY TELEPHONE NUMBERS

Griffin L.L.C. (USA): (+1) (800) 237 1854

Griffin (Europe) S.A.: (+32)-2-720 6644

Griffin FE (Malaysia) S/B: (+60)-3-757 4773

Chemtrec: (+1) (800) 424 9300

2. COMPOSITION/ INFORMATION ON INGREDIENTS

Component Name	% by Wt.	CAS#	ACGIH TLV	OSHA PEL
Maneb	37.0	12427-38-2	5 mg/m ³ as Mn	Not established
Ethylene Thiourea (ETU)	Trace	96-45-7	Not established	Not established

Components not precisely identified are proprietary or not hazardous.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

May cause irritation to the eyes, skin, nose, and throat. Irritating to the digestive system. Prolonged or frequently repeated skin contact may cause allergic reactions to some individuals. See below for route-specific details.

POTENTIAL HEALTH EFFECTS

Inhalation:	May cause irritation to the nose and throat.
Eye Irritation:	May cause irritation to the eyes.
Skin Irritation:	May cause irritation to the skin.
Skin Sensitization:	May cause dermal sensitization.
Ingestion:	Irritation to the digestive system may cause diarrhea and vomiting.



Hazards Identification continued:

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.

4. FIRST AID MEASURES

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration preferably mouth-to-mouth. Get professional medical attention.

Eye Contact: Hold eyelids open and flush with water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention.

Skin Contact: Remove contaminated clothing and shoes. Wash with plenty of soap and water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention if irritation persists.

Ingestion: Drink 1 to 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person. Get professional medical attention.

5. FIRE FIGHTING MEASURES

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.



Fire Fighting Measures Continued:

Hazardous Combustion
Products:

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

6. ACCIDENTAL RELEASE MEASURES

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

7. HANDLING AND STORAGE

Storage Temperature: Store above 0° C and below 35° C. Average shelf life under proper storage conditions is 2 years.
General Information: Store in a clean, dry area. Do not store near feed, food or within the reach of children.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

PESTICIDE APPLICATORS & WORKERS

These workers must refer to the Product Label and Directions For Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170.

MANUFACTURING, COMMERCIAL BLENDING, & PACKAGING WORKERS

Ventilation: Handle in a well ventilated area.
Respiratory Protection: In enclosed spaces where the TLV or PEL may be exceeded, wear NIOSH/MSHA approved dust or mist respirator.
Eye Protection: Wear protective eyewear to prevent contact with this substance.
Protective Clothing: Applicators and other handlers must wear long-sleeved shirt, long pants, waterproof gloves, shoes plus socks, and a chemical-resistant apron.

9. PHYSICAL AND CHEMICAL PROPERTIES

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 and Chemical Properties continued:**

Physical State: Liquid

10. STABILITY AND REACTIVITY

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, NO_x, and SO_x.

Hazardous Polymerization: Material is not known to polymerize.

11. TOXICOLOGICAL INFORMATION**ACUTE**

Inhalation: Acute inhalation LC₅₀ >5 mg/L (rat - 4 hour).

Eye Irritation: 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 Irritation: 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.

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.

Mutagenicity: Ames mutagenicity: Negative



Toxicological Information continued:

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

12. ECOLOGICAL INFORMATION

For detailed ecological information, write to the USA address listed in Section 1 of this Material Safety Data Sheet or call 912/242-8635 and ask for Regulatory Affairs.

13. DISPOSAL CONSIDERATIONS

Comply with appropriate disposal regulations. Landfill solids at permitted sites. Use registered transporters.

14. TRANSPORT INFORMATION

Department of Transportation (DOT):

Not Regulated (non-bulk)
MARINE POLLUTANT (bulk) and Environmentally Hazardous Substance (bulk)
RQ for ethylenebisdithiocarbamic acid, maganese salt (maneb) = 5000 lbs (2270 kg)

International Air Transport Association (IATA):

Not Regulated

International Maritime Organization (IMO):

Proper Shipping Name: Environmentally Hazardous Substance, Liquid, N.O.S. (Maneb 37% aqueous suspension)
Class: 9
Identification Number: UN 3082
Packing Group: III
RQ: 5000 lbs (2270 kg)
Special Notes: MARINE POLLUTANT

**Transport Information continued:**

"RQ" must be added to proper shipping name for bulk shipments of 5000 lbs or more maneb per package.

15. REGULATORY INFORMATION

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 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.

SARA TITLE III

302: Not listed

311/312 Hazard Categories: This product has been reviewed according to the EPA "Hazard Categories" and is categorized as acute and chronic health hazards (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: 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 (CALIFORNIA PROPOSITION 65).

16. OTHER INFORMATION**REVISION SUMMARY**

This Material Safety Data Sheet has been revised using the standard Griffin ANSI Z400.1 compliant format and replaces the one dated 02/13/98. Revisions have been made in Sections 3 and 15, and in word processing format.

Manex® is a registered trademark of Griffin Corporation.

The information in this Material Safety Data Sheet relates to this specific material. It may not be valid for this material if used in combination with any Other Information continued:



MATERIAL SAFETY DATA SHEET

other materials or in any process. It is the users' responsibility to satisfy themselves as to the suitability and completeness of this information for their own particular use.