



## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** PROTECT DF™  
**EPA Reg. No.:** 1001-77  
**Product Type:** Fungicide

**Company Name:** Nufarm Americas, Inc.  
 11901 S. Austin Avenue  
 Alsip, IL 60803  
 1-800-345-3330

**Telephone Numbers:** For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,  
 Call CHEMTREC Day or Night: 1-800-424-9300  
 For Medical Emergencies Only, Call 1-877-325-1840

This product is an EPA FIFRA registered pesticide. Some classifications on this SDS are not exactly the same as on the FIFRA label. Certain sections are superseded by federal law governed by EPA for a registered pesticide. Please see Section 15. REGULATORY INFORMATION for explanation.

## 2. HAZARDS IDENTIFICATION

**PHYSICAL HAZARDS:**

Combustible Dust

**HEALTH HAZARDS:**

Skin Sensitizer	Category 1A
Eye Irritation	Category 2B
Reproductive Toxicity	Category 1B
Carcinogen	Category 2
Specific Target Organ Toxicity – Repeated Exposure	Category 1

**ENVIRONMENTAL HAZARDS:**

Hazardous to aquatic environment, acute	Category 1
Hazardous to aquatic environment, chronic	Category 1

**SIGNAL WORD:**

DANGER

**HAZARD STATEMENTS:**

May form combustible dust concentrations in air. May cause an allergic skin reaction. Causes eye irritation. May damage the unborn child. Suspected of causing cancer of the thyroid and liver by ingestion. Causes damage to thyroid through prolonged and repeated exposure.



**PRECAUTIONARY STATEMENTS**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves. Use personal protective equipment as required. Avoid release to the environment.

IF exposed or concerned: Get medical advice. Get medical advice if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice. Wash contaminated clothing before reuse. Collect spillage.

Store locked up.

Dispose of contents in accordance with local, state, and federal regulations.

<b>3. COMPOSITION / INFORMATION ON INGREDIENTS</b>
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COMPONENTS	CAS NO.	% BY WEIGHT
Mancozeb	8018-01-7	72.8 - 77.2
Other Ingredients containing Ethylene thiourea	96-45-7	<25

**Synonyms:** Mancozeb

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

<b>4. FIRST AID MEASURES</b>
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**If in Eyes:** Hold eye open and rinse slowly and gently with water for several minutes. Remove contact lenses, if present, 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. Do not give any liquid to the person. 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.

**If Inhaled:** Move person to fresh air. 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 several minutes. Call a poison control center or doctor for treatment advice.

**Most Important symptoms/effects, acute and delayed:** Causes eye irritation. May cause mild skin irritation. May cause an allergic skin reaction. Prolonged or repeated contact may damage the thyroid. May damage the unborn child. May cause thyroid or kidney cancer.

**Indication of Immediate medical attention and special treatment if needed, if necessary:** Should not be required.

<b>5. FIRE FIGHTING MEASURES</b>
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**Extinguishing Media:** Use extinguishing media suitable for surrounding materials. Dry chemical, carbon dioxide, foam, water spray or fog.

**Special Fire Fighting Procedures:** Firefighters should wear NIOSH approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

**Unusual Fire and Explosion Hazards:** If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

**Hazardous Decomposition Materials (Under Fire Conditions):** May produce gases such as oxides of carbon and nitrogen.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

**Environmental Precautions:** Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

**Methods for Containment:** Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.

**Methods for Cleanup and Disposal:** Avoid creation of dusty conditions. Scrape up and place in appropriate closed container. Wash entire spill area with a detergent slurry, absorb and sweep into container for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

**Other Information:** Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

## 7. HANDLING AND STORAGE

**HANDLING:** Do not get in eyes or on clothing or skin. Users should wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**STORAGE:** Store in the original container in a dry area. If allowed to become wet the product will deteriorate and represent a fire hazard. Keep away from sources of ignition (e.g. sparks and open flame). Close bag when not in use. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. If spilled during storage or handling sweep up spillage and dispose of in accordance with the Pesticide Disposal Instructions. Do not contaminate water, food, or feed by storage or disposal.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Engineering Controls:

Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

**Eye/Face Protection:** Not normally required. To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

**Skin Protection:** To avoid contact with skin, wear long pants, long-sleeved shirt, socks and shoes. An emergency shower or water supply should be readily accessible to the work area.

**Respiratory Protection:** Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

**General Hygiene Considerations:** Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

### Exposure Guidelines:

Component	OSHA		ACGIH		Unit
	TWA	STEL	TWA	STEL	
Mancozeb	NE	NE	NE	NE	

NE = Not Established

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	Yellow to brown solid
<b>Odor:</b>	Must odor
<b>Odor threshold:</b>	No data available
<b>pH:</b>	6.5 – 7.5
<b>Melting point/freezing point:</b>	No data available
<b>Initial boiling point and boiling range</b>	No data available
<b>Flash point:</b>	No data available
<b>Evaporation rate:</b>	No data available
<b>Flammability (solid, gas):</b>	No data available
<b>Upper/lower flammability or explosive limits:</b>	No data available
<b>Vapor pressure:</b>	No data available
<b>Vapor density:</b>	No data available
<b>Relative density:</b>	0.63 g/ml
<b>Solubility(ies):</b>	Dispersible
<b>Partition coefficient: n-octanol/water:</b>	No data available
<b>Autoignition temperature:</b>	No data available
<b>Decomposition temperature:</b>	No data available
<b>Viscosity:</b>	No data available

**Note:** Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

**10. STABILITY AND REACTIVITY**

**Reactivity:** Not expected to be reactive.

**Chemical Stability:** Stable.

**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Conditions to Avoid:** Keep away from moisture, heat, or flames.

**Incompatible Materials:** Avoid contact with oxidizing agents and acids.

**Hazardous Decomposition Products:** Under fire conditions may produce hydrogen sulphide, sulphur oxides, and carbon oxides.

**11. TOXICOLOGICAL INFORMATION**

**Likely Routes of Exposure:** Skin contact, skin absorption, eye contact

**Symptoms of Exposure:**

**Eye Contact:** Mildly irritating based on toxicity studies.

**Skin Contact:** Minimally toxic and slightly irritating based on toxicity studies.

**Ingestion:** Slightly toxic if ingested based on toxicity studies.

**Inhalation:** Low inhalation toxicity based on toxicity studies.

**Delayed, immediate and chronic effects of exposure:** None reported.

**Toxicological Data:**

Data from laboratory studies conducted are summarized below:

**Oral:** Rat LD<sub>50</sub>: > 5,000 mg/kg

**Dermal:** Rat LD<sub>50</sub>: >5,000 mg/kg

**Inhalation:** Rat 4-hr LC<sub>50</sub>: >5.14 mg/L

**Eye Irritation:** Rabbit: Moderately irritating

**Skin Irritation:** Rabbit: Practically non-irritating

**Skin Sensitization:** May cause skin sensitization following repeated skin exposure.

**Subchronic (Target Organ) Effects:** Causes damage to the thyroid through prolonged or repeated exposure.

**Carcinogenicity / Chronic Health Effects:** May cause cancer of the thyroid or liver.

**Reproductive Toxicity:** No known effects

**Developmental Toxicity:** Causes damage to the unborn child.

**Genotoxicity:** Not expected to cause genetic damage.

**Assessment of Carcinogenicity:**

This product contains substances that are considered to be probable or suspected human carcinogens as follows:

Component	Regulatory Agency Listing As Carcinogen			
	ACGIH	IARC	NTP	OSHA
Mancozeb	None	None	None	None
Ethylene thiourea	None	3	R	None

R = Reasonably Anticipated to be a Human Carcinogen

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity:**

Data from laboratory studies conducted on a similar, but not identical, formulation:

48-hour LC <sub>50</sub> Rainbow Trout:	2.2 mg/l	Bobwhite Quail LC <sub>50</sub> :	>10,000 ppm
96-hour LC <sub>50</sub> Rainbow Trout:	0.11 mg/l		
48-hour EC <sub>50</sub> Daphnia:	1.3 mg/l		
Non-toxic to Bees			

**Environmental Fate:**

No data available.

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Method:**

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide is a violation of Federal law.

**Container Handling and Disposal:** Non-refillable container. Do not reuse or refill this container. Offer for recycling, if available. Completely empty container into application equipment. Dispose of container in a sanitary landfill, by incineration, or if allowed by State and local authorities, by burning. If burned, stay out of smoke.

## 14. TRANSPORTATION INFORMATION

**DOT**

**< 250 lbs per completed package:**

Non Regulated

**>250 < 882 lbs per completed package:**

UN3077, Environmentally hazardous substance, solid, n.o.s, (Ethylenethiourea), 9, III, RQ

**≥882 lbs per completed package**

UN3077, Environmentally hazardous substance, solid, n.o.s, (Ethylenethiourea), 9, III, RQ, Marine Pollutant (Mancozeb)

**IMDG**

UN3077, Environmentally hazardous substance, solid, n.o.s, (Ethylenethiourea), 9, III, Marine Pollutant

**IATA**

UN3077, Environmentally hazardous substance, solid, n.o.s, (Ethylenethiourea), 9, III, Marine Pollutant

## 15. REGULATORY INFORMATION

**EPA FIFRA INFORMATION**

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use.

CAUTION. Harmful if absorbed through skin. Causes moderate eye irritation. Harmful if swallowed. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

**U.S. FEDERAL REGULATIONS**

**TSCA Inventory:** This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:

**Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370):**

Acute Health, Chronic Health

**Section 313 Toxic Chemical(s):**

Ethylene thiourea (CAS No. 96-45-7) <25% by weight in product

**Reportable Quantity (RQ) under U.S. CERCLA:**

Ethylene thiourea (CAS No. 96-45-7) 10 pounds

**RCRA Waste Code:**

Ethylenethiourea (CAS No. 96-45-7) U116

**State Information:**

Other state regulations may apply. Check individual state requirements.

**California Proposition 65:** Not Listed.

**16. OTHER INFORMATION****National Fire Protection Association (NFPA) Hazard Rating:**

**Rating for this product: Health: 2 Flammability: 1 Reactivity: 0**

Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

This Safety Data Sheet (SDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This SDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Nufarm Americas Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition

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**Date of Issue:** May 23, 2015

**Supersedes:** August 9, 2013