



MATERIAL SAFETY DATA SHEET

ENHANCE®

Version: 1.5
Date of Issue: 10/01/2008
Date printed: 10/02/2008

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ENHANCE®

Chemical name: Captan/Carboxin (Actives)

Use of substance/preparation: Seed Treatment Fungicide

Supplier: Chemtura Corporation
199 Benson Road
Middlebury, CT 06749 USA

Emergency telephone number: CHEMTREC (24 hours) 800-424-9300, 703-527-3887
Chemtura Corporation Emergency Response (24 hours) 800-292-5898

Environmental, Health and Safety Department: 866-430-2775

Prepared by Product Safety Department Date of Issue: 10/01/2008
(US) +1 866-430-2775
(EU) +44 (0) 1753.603.000
Email: MSDSRequest@chemtura.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
DANGER!
MAY CAUSE PERMANENT EYE DAMAGE.
HARMFUL IF INHALED.
MAY CAUSE SKIN SENSITIZATION.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT	% BY WEIGHT
Captan CAS# 133-06-2	20
Carboxin CAS# 5234-68-4	20
Graphite CAS# 7782-42-5	5 - 15
Crystalline Silica CAS# 14808-60-7	< 1



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Inerts
CAS# -

< 60

4. FIRST AID MEASURES

Swallowing

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.

Inhalation

Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Skin contact

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.

Eye contact

Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lens, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

Notes to physician

ROUTES OF ENTRY:

- Oral
- Skin
- Eyes
- Ingestion
- Inhalation

Probable mucosal damage may contraindicate the use of gastric lavage.

Acute over-exposure may also cause labored breathing, tearing of the eyes, decreased urine flow, blood in urine, depression and allergic skin reactions.

5. FIRE-FIGHTING MEASURES

NFPA CLASSIFICATION

Health: 3	Flammability: 0	Reactivity: 0	Special provisions:
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Hazardous combustion products

- Irritating fumes.
- Oxides of carbon.
- Oxides of nitrogen.
- Oxides of sulfur.
- Hydrogen chloride.
- Phosgene.

Special fire fighting procedures

Do not discharge extinguishing waters into streams, rivers and lakes.

Special protective equipment for firefighters

- Body covering protective clothing, full "turn-out" gear.
- Self-contained breathing apparatus.

Extinguishing media

- Suitable:**
- Large fires:**
 - alcohol-type foam or universal-type foams
 - Small fires:**
 - CO2
 - dry chemical
 - water spray
- Unsuitable:**
- water jets



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6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Evacuate unnecessary personnel., Avoid all contact with material., Wear suitable protective equipment.

Environmental precautions

Prevent from entering sewer system, surface water or soil.

Methods for cleaning up

Sweep up and collect in a suitable container for disposal.
Avoid dust formation.
Observe government regulations.

7. HANDLING AND STORAGE

HANDLING

Handling precautions

Wear recommended personal protection equipment., Warn personnel about the dangers of the product., Keep container tightly closed., Avoid dispersion of dust to reduce fire and explosion potential.

Other precautions

NOTE TO END-USERS: The employee protection recommendations on this MSDS may differ from those on the product label. For normal use of this product, always refer to the personal protective equipment requirements on the product label.

STORAGE

Storage requirements

Store in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

<u>Component</u>	<u>Country</u>	<u>Type</u>	<u>Value</u>	<u>Remark</u>
Captan	USA	TWA, ACGIH	5 mg/m ³	Toxicity to reproduction/fertility: A3 Respirable fraction
		TWA, OSHA	5 mg/m ³	
				Sensitization danger: SENSITIZER
Graphite		TLV-TWA, ACGIH	2 mg/m ³	respirable fraction, all forms except graphite fibers
Crystalline Silica		TWA, OSHA	0.05 mg/m ³	Respirable dust
		TWA, ACGIH	0.05 mg/m ³	Respirable dust

PERSONAL PROTECTION

Respiratory protection

In the absence of engineering controls sufficient to maintain airborne concentrations below recommended occupational exposure limit values, appropriate respiratory protection should be utilized., The determination of appropriate respiratory protection is best performed, on a case by case basis, taking into consideration the exposure conditions of the particular operation. The respirator manufacturer should be consulted to ensure that the air-purifying cartridges utilized will provide adequate protection for the exposure conditions and period of wear concerned. For emergency conditions where the exposure limit may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.



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Hand protection / protective gloves

Chemical resistant protective gloves

Eye protection

Full face shield.

Skin protection

Chemical resistant protective clothing.

Industrial hygiene measures

Before eating, drinking or smoking, wash hands and face thoroughly with soap and water.

ENGINEERING CONTROLS

Ventilation

Provide local exhaust or process enclosure ventilation system.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Physical state	Powder
Color	Gray
Odor	Pungent

OTHER PROPERTIES

Melting point	Not available
pH	Not available
Bulk density	35 lb/ft ³
Vapor pressure	
Solubility in water	Insoluble
Flash point	Not available

10. STABILITY AND REACTIVITY

Stability: This product is stable under normal storage and handling conditions.

Incompatible materials:

Sulfur
Oxidizing agents.
Strong acids.
Strong bases.

Hazardous combustion products:

Irritating fumes.
Oxides of carbon.
Oxides of nitrogen.
Oxides of sulfur.
Hydrogen chloride.
Phosgene.

Hazardous polymerization: Will not occur.



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11. TOXICOLOGICAL INFORMATION

SWALLOWING

Test results

Acute toxicity: Rat
Result: > 5,000 mg/kg

SKIN ABSORPTION

Test results

Acute toxicity: - Rat
Result: > 5,000 mg/kg

INHALATION

Test results

Acute toxicity: - Rat (Males)
Result: 0.5 - 2.04 mg/l

Test results

Acute toxicity: - Rat (Females)
Result: > 2.04 mg/l

SKIN CONTACT

Test results

Skin irritation: Species: Rabbit
Result: Not irritating

EYE CONTACT

Test results

Eye irritation: Species: Rabbit
Result: Severe irritation
Remark: Risk of serious damage to eyes.
Test results are based on a major component.

SENSITIZATION

Test results: Result: May cause sensitization by skin contact.
Remark: Test results are based on a major component.

12. ECOLOGICAL INFORMATION

Toxic to aquatic organisms.

<u>Component ecotoxicology</u> Carboxin <u>Acute toxicity fish:</u>	LC50 - Rainbow trout (<i>Oncorhynchus mykiss</i>) Result: 2.3 mg/l Exposure time: 96 h
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<u>Component ecotoxicology</u> Carboxin <u>Acute toxicity fish:</u>	LC50 - Bluegill (<i>Lepomis macrochirus</i>) Result: 3.6 mg/l Exposure time: 96 h
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<u>Component ecotoxicology</u> Captan <u>Chronic toxicity fish:</u>	Static LC50 - Fathead minnow (<i>Pimephales promelas</i>) Result: 0.2 mg/l Exposure time: 3 d
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<u>Component ecotoxicology</u> Captan <u>Chronic toxicity fish:</u>	Static LC50 - Rainbow trout (<i>Oncorhynchus mykiss</i>) Result: 0.0732 mg/l Exposure time: 3 d
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Component ecotoxicology Captan Chronic toxicity fish:	Static LC50 - Bluegill (Lepomis macrochirus) Result: 0.141 mg/l Exposure time: 3 d
Component ecotoxicology Carboxin Aquatic toxicity to plants:	EC50 - Selenastrum capricornutum Result: 0.48 mg/l Exposure time: 120 h
Component ecotoxicology Captan Acute toxicity to aquatic invertebrates:	LC50 - Water flea (Daphnia magna): Result: 7.06 mg/l Exposure time: 48 h
Component ecotoxicology Carboxin Acute toxicity to aquatic invertebrates:	EC50 - Water flea (Daphnia magna) Result: > 57 mg/l Exposure time: 48 h

13. DISPOSAL CONSIDERATIONS

General: Dispose of in accordance with appropriate Federal, State, and local regulations., Do not discharge to sewers and natural waters.

14. TRANSPORT INFORMATION

DOT Classification

Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Carboxin / Captan)
Class: 9
UN ID #: UN3077
Packing group: III

Not regulated by ground or rail if shipped or transported in containers less than 50 lbs (22.7 kg).

IMDG Classification

Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
Class: 9
Subsidiary risk: marine pollutant
UN ID #: UN 3077
Packing group: III
Technical description (Carboxin / Captan)

ICAO/IATA Classification

Proper shipping name: Environmentally hazardous substance, solid, n.o.s.
Class: 9
UN ID #: UN 3077
Packing group: III

Technical description (Carboxin / Captan)

Only regulated by air Into, Out of or Within the United States in containers 50 lbs (22.7 kg) or greater.

15. REGULATORY INFORMATION



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Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of hazardous substances equal to or greater than the reportable quantities (RQ's) in 40CFR302.4.

Components present in this product at a level which could require reporting under the statute are:

Chemical name	CAS#	Max weight %
Carboxin	5234-68-4	20.00
Captan	RQ 10 pounds for Captan 133-06-2	20.00

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40CFR372 (for SARA 313). This information must be included in MSDS's that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

Chemical name	CAS#	Max weight %
Carboxin	5234-68-4	20.00
Captan	133-06-2	20.00

EPA Hazard Categories (SARA 311, 312): Immediate Health Hazard, Delayed Health Hazard

California Proposition 65
 This product contains Captan (>1.0%)

CHEMICAL INVENTORY

United States: This product is subject to regulation under the US Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and is therefore exempt from TSCA Inventory listing requirements.

16. OTHER INFORMATION

RECOMMENDED USES AND RESTRICTIONS: NOTE TO END-USERS: This MSDS is being provided to all interested persons in accordance with federal and state right-to-know laws. Precautionary Statements, First Aid Statements and Directions for Use of this product by end-users are contained on the product label and must be followed at all times.

HMIS RATING

Health: 3	Flammability: 0	Reactivity: 1	PPI: J
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STP	Standard temperature and pressure
W/W	Weight/Weight 0 (HMIS)
1 (HMIS)	Slight hazard
2 (HMIS)	Moderate hazard
3 (HMIS)	Serious hazard
4 (HMIS)	Severe hazard
X (HMIS)	Personal protection rating to be supplied by user depending on use conditions

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