



MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Formulator: Gowan Company
P.O. Box 5569
Yuma, Arizona 85366-5569
(800) 883-1844

Emergency Phone: (928) 783-3803
For 24-Hour Emergency Assistance (Spill, Leak, Fire, or Exposure), Call CHEMTREC®: **Inside the U.S.:** (800) 424-9300
Outside the U.S.: (703) 527-3887
(888) 478-0798

For Medical Emergency:

Product: MonCoat® MZ Fungicide

EPA Signal Word: CAUTION **EPA Registration No.:** 10163-320

Active Ingredient: Mancozeb (6.0%) **CAS No.:** 8018-01-7

Chemical Name: A coordination product of zinc ion and manganese ethylene bisdithiocarbamate

Chemical Class: EBDC

Active Ingredient: Flutolanil (1.5%) **CAS No.:** 66332-96-5

Chemical Name: N-[3-(1-methylethoxy) phenyl]-2-(trifluoromethyl) benzamide

Chemical Class: Analide

2. HAZARDS IDENTIFICATION

DO NOT ALLOW THE PRODUCT TO BECOME WET OR OVERHEATED IN STORAGE.

MonCoat MZ contains mancozeb which decomposes under conditions of moisture/heat, resulting in impaired biological activity. The product is a moderate eye irritant. It may contain a very small amount of ethylenethiourea (a metabolite of mancozeb) which is considered by NTP as a probable human carcinogen. The product is a light grayish-yellow powder with no distinct odor.

Potential Health Effects:

Primary route(s) of entry: Dust inhalation, skin contact

Eyes: A moderate eye irritant.

Skin: May be a slight skin irritant. May have a weak potential for skin sensitization in certain individuals (mancozeb, positive in Maximization Test in guinea pigs, but negative in Buehler's contact-test).

Ingestion: No specific health effects are known for ingestion of a minute amount incidental to routine handling and use (see Signs and Symptoms below).

Inhalation: Excessive dust inhalation can cause irritation of nose, throat, and the upper respiratory tract.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT NAME	OSHA – PEL	ACGIH – TLV	OTHER	NTP/IARC/OSHA CARCINOGEN
Mancozeb (6%)	---	---	TWA=1.0 mg/m ³	---
Flutolanil (1.5%)	---	---	---	---
Ethylene thiourea CAS No. 96-45-7	---	---	---	NTP - Yes
Hydrous Magnesium Silicate CAS No. 14807-96-9	2 mg/m ³ (respirable dust)	---	---	---

Only the identities of the active ingredient(s) and any *hazardous* inert ingredients are listed. Specific information on all of this product's ingredients can be obtained by the treating medical professional or spill emergency responder for the management of exposures, spills, or safety assessments.

4. FIRST AID MEASURES

IF SWALLOWED:	<ul style="list-style-type: none">• 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 by a poison control center or doctor.• Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING:	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes.• Call a poison control center or doctor for treatment advice.
IF IN EYES:	<ul style="list-style-type: none">• 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.

HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-888-478-0798 for emergency medical treatment information.

5. FIRE FIGHTING MEASURES

Flash Point:	137.8° C Stabilized Mn/Zn complex
Fire or Explosion Hazards:	Dispersion of fine dust in the air can form an explosive mixture. Will burn to give off toxic oxides of carbon and nitrogen.
Extinguishing Media:	Water, foam, carbon dioxide, or dry powder.
Fire Fighting Instructions:	Wear positive pressure self-contained breathing apparatus. Spray containers with water to keep cool.

6. ACCIDENTAL RELEASE MEASURES

General and Disposal: Use proper protective equipment to minimize exposure (see Section 8). Take all necessary action to prevent and to remedy the adverse effect of the spill. Ensure the disposal is in compliance with federal requirements and state or local regulations.

Land Spill or Leak: Sweep up carefully, avoiding the formulation of a dust cloud. Place in suitable container and seal for disposal. Area can be washed with water to remove last traces of material, but keep out of watercourses or sewers. Inform authorities immediately if contamination occurs.

7. HANDLING AND STORAGE

Handling Precautions: Avoid contact with skin, eyes, or clothing. Use proper protective equipment for routine handling and use (See Section 8). Avoid breathing dust. In cases of contact, immediately flush eyes or the skin with plenty of water. Wash hands and exposed skin before eating, drinking, or smoking and after handling. Wash all contaminated clothing thoroughly before reuse.

Storage Precautions: Store in a cool, dry area and keep container tightly closed. DO NOT allow this product to become wet or overheated in storage; the product is stable in normal storage conditions but decomposes by moisture at high temperatures and represents a fire hazard. Do not store near or contaminate food or feed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering Controls:** Control airborne concentrations below the exposure guideline (see Section 3 for any applicable OSHA/ACGIH exposure limits). Use with adequate ventilation. Local exhaust ventilation is highly recommended, especially when used in a confined area. Large scale seed-piece treatment facilities that, on any given week in the current year or in the past year treated $\geq 50,000$ cwt ($\geq 2,500$ tons) must use a dust collection system during the treatment of the seed pieces that prevents dust from contacting handlers or other persons.
- Eye/Face Protection:** Safety glasses; chemical workers goggles.
- Skin Protection:** Use only chemical resistant gloves (e.g. PVC). Replace damaged gloves at once. Rinse/remove gloves immediately after use and wash hands thoroughly.
- Respiratory Protection:** Ensure good ventilation. Use a NIOSH-approved respirator with a dust/mist filter with MSHA/NIOSH approval number prefix TX-21C or any N, R, P, or HE filter.
- Other/General Protection:** Use chemical resistant apron or other impervious clothing to avoid prolonged or repeated skin contact. Work clothing should be removed at the end of the shift and laundered clean thoroughly.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Light grayish-yellow powder
Odor:	No distinct odor
Physical state:	Solid
Boiling point:	Not applicable
Melting point*:	219-221°F; 104-105°C
Vapor pressure:	1.33 x 10 ⁻⁵ mm Hg (20°C or 68°F)
Vapor density:	Not volatile
Packing density:	30 lb/ft ³ (est)
Solubility (H₂O)*:	9.6 mg/L (9.6 ppm) (20°C or 68°F)

*No data available for the formulated product; values shown are for the active ingredient.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal storage conditions (see below).
Conditions to Avoid:	Keep away from moisture, heat or flame.
Hazardous Decomposition Products:	carbon disulfide, ethylene thiourea
Hazardous Polymerization:	None

11. TOXICOLOGICAL INFORMATION

The following information is based on the end-use product:

Acute Data:

Ingestion:	Oral LD ₅₀ (rat) = >5,000 mg/kg
Dermal:	Dermal LD ₅₀ (rat) = >2,000 mg/kg
Inhalation:	Inhalation LC ₅₀ (rat) = > 2.03 mg/L
Eye Irritation:	Moderate irritant (rabbit)
Skin Irritation:	Slight irritant (rabbit)
Skin Sensitization:	Non-sensitizing (guinea pig)

The following information is based on technical materials within the product:

Subchronic (Target Organ Effects):

MonCoat MZ contains low concentrations (6% and 1.5%, respectively) of mancozeb and flutolanil. Results from 90- day animal studies with the technicals suggest no target organ effects under the conditions of normal handling and use.

Chronic (Cancer Information):

Flutolanil technical: In 2-year feeding studies with flutolanil in rats, no organotoxic effects were observed at dose levels up to 200 ppm. At very high experimental dose levels (2,000–10,000 ppm), slight anemia, minor liver damage, and some nephrosis were observed. However, flutolanil had no significant effect on mortality and was not carcinogenic at any of the doses tested. Similar results were seen in dogs administered up to 1250 mg/kg/day.

11. TOXICOLOGICAL INFORMATION

Mancozeb: Two-year feeding study of mancozeb indicated thyroid tumors in rats at a dietary concentration of 750 ppm. No evidence of carcinogenicity was observed in long-term studies with mice.

Ethylenethiourea (ETU): Two-year feeding study in rats with ETU indicated thyroid tumors at dietary concentrations of 83 ppm and higher. Two-year feeding study in mice indicated thyroid, pituitary and liver tumors at dietary concentrations of 330 ppm or higher. The carcinogenic effects observed for ETU and Mancozeb are considered to be secondary to inhibition of thyroid synthesis and disruption of hormonal balance.

Carcinogenicity: NTP: Yes IARC: No OSHA: No

Teratogenicity (Birth Defects):

Flutolanil technical: The technical demonstrated no teratogenic effects in rabbits at oral dose levels up to 1000 mg/kg/day.

Mancozeb: Developmental toxicity studies with mancozeb indicated a maternal toxicity level of 80 mg/kg/day in rabbits. There was no evidence of developmental effects. The NOEL was 30 mg/kg/day. In rats, a developmental toxicity study indicated a maternal toxicity level of 128 mg/kg/day; developmental effects including malformations were noted at 512 mg/kg/day. The NOEL was 32 mg/kg/day.

Ethylenethiourea (ETU): In developmental toxicity studies with ETU in rats and hamsters, malformations were produced at thyroid-inhibiting dose levels. In comparison, no malformations were produced in rabbits, mice, guinea pigs or cats. The overall NOEL is 5 mg/kg/day in the rat.

Reproductive Effects:

Flutolanil technical demonstrated no adverse effect on reproduction in a 3-generation rat reproduction study at dietary doses up to 10,000 ppm. No adverse effects on reproduction were seen in the 2-generation rat studies with Mancozeb or ETU.

Neurotoxicity: Data not available.

Mutagenicity (Genetic Effects):

Flutolanil technical was not a mutagenic or genotoxic when tested in the Ames gene mutation assay, the mouse micronucleus test, or the chromosomal aberration assay. Mancozeb was not known to be mutagenic or genotoxic when tested in the Ames and several other mutagenic assay systems. Mutagenicity assays with ETU also demonstrated negative results in 10 of the 13 systems tested; the results from the remaining three assays were inconclusive or equivocal.

12. ECOLOGICAL INFORMATION

Environmental Hazard: This product is toxic to aquatic organisms. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not apply directly to water, areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

13. DISPOSAL CONSIDERATION

Handling and disposal of pesticide wastes, including spills or rinsates, must be in accordance with federal requirements under the Resource Conservation and Recovery Act (RCRA). Also must ensure that the waste disposal is in compliance with state and local regulations, which may be more restrictive or otherwise different from the RCRA requirements.

Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved disposal facility. Incineration at a federal/state/local approved site is recommended.

14. TRANSPORT INFORMATION

DOT Classification

Not regulated

IMDG Classification

UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (mancozeb), 9, PGIII, Marine Pollutant, F-A, S-F

IATA Classification

UN3077, Environmentally Hazardous Substance, Solid, N.O.S. (mancozeb), 9, PGIII

15. REGULATORY INFORMATION

SARA Title III Classification

Section 302/304:

This product may contain ethylenethiourea (ETU), a metabolite from decomposed mancozeb. The RQ (for ETU) is 10 lbs. Based on the manufacturer's information for mancozeb (85%), the RQ for MonCoat MZ >=70,000 lbs.

Section 311/312:

Releases in excess of its RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.

Section 313 chemical(s):

Immediate (acute) health hazard
Delayed (chronic) health hazard
This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS No.	Ingredient Name	% by Weight
8018-01-7	Mancozeb (Manganese-Zn)	6.0
96-45-7	Ethylenethiourea (2-imidazolidinethione)	unknown

Proposition 65

CERCLA Reportable Quantity (RQ) 70,833 lbs

RCRA Classification

Classified as a RCRA hazardous waste (40 CFR 261), number U116.

TSCA Status

Flutolanil and mancozeb are registered pesticides under US-FIFRA regulations and are therefore exempt from TSCA listing. All other inert ingredients are listed in the TSCA Inventory.

Clean Air Act, Section 112: This product contains the following Hazardous Air Pollutants (HAPs) (40 CFR 61):

- Ethylenethiourea (96-45-7)
- Mancozeb (8018-01-7)

California Proposition 65: This product contains levels of a component or components known to the state of California to cause cancer and birth defects or other reproductive harm:

- Ethylenethiourea (96-45-7)
- Mancozeb (8018-01-7)

State Right-to-Know:

Massachusetts:	ETU
New Jersey:	ETU, mancozeb
Pennsylvania:	ETU
Illinois:	ETU, mancozeb
Rhode Island:	ETU, mancozeb

16. OTHER INFORMATION

NFPA Hazard Ratings

Health: 2
Flammability: 2
Reactivity: 1

0	Least
1	Slight
2	Moderate
3	High
4	Severe

Prepared By:

Gowan Company
(800) 883-1844

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