



Bonide Mancozeb Flowable with Zinc Concentrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : Bonide Mancozeb Flowable with Zinc Concentrate
Product code : 627193964

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Fungicide

1.3. Details of the supplier of the safety data sheet

Bonide Products, Inc.
6301 Sutliff Road
Oriskany, NY 13424

Telephone Number: (315) 736-8231

Comment: Bonide hours of operation are 8:00 a.m. to 4:30 p.m EST.

Website: www.bonide.com

Email address: sales@bonide.com

1.4. Emergency telephone numbers (24 hour)

Medical : SafetyCall - (833) 972-1101
Spills : CHEMTREC - 1 (800) 424-9300 and/or 1 (703) 527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Skin sensitisation 1 : H317
Reproductive toxicity 2 : H361

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07

GHS08

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : H317 - May cause an allergic skin reaction
H361 - Suspected of damaging fertility or the unborn child

Precautionary statements (GHS-US) : P203 - Obtain, read and follow all safety instructions before use.
P261 - Avoid breathing mist.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P280 - Use personal protective equipment as required.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P318 - If exposed or concerned, get medical advice.
P321 - Specific treatment (see first aid on this label).
P333+P317 - If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to in accordance with local/national regulations

SECTION 3: Composition/information on ingredients

Mixture

Name	Product identifier	%
Mancozeb	(CAS No) 8018-01-7	37
Hexamethylenetetramine	(CAS No) 100-97-0	1.4

Bonide Mancozeb Flowable with Zinc Concentrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Assure fresh air breathing. Allow the person to rest. If person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask). Call a poison control center or doctor for treatment advice.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Wash with plenty of soap and water. Get medical advice/attention. Wash contaminated clothing before reuse. If irritation occurs and persists see a doctor.
- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : No emergency medical treatment necessary.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : May cause an allergic skin reaction.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physician: May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or for going to treatment. Repeated excessive exposure may aggravate preexisting lung disease.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Dry powder or carbon dioxide fire extinguishers.
- Unsuitable extinguishing media : Do not use a heavy or direct water stream. May spread fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Sulfur oxides. Nitrogen oxides. Hydrogen sulfide. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards

Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

5.3. Advice for firefighters

Fire Fighting Procedures

Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream as it may spread the fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product being carried across water surface could spread fire or contact an ignition source. Contain fire water run-off if possible. Fire water run-off if not contained may cause environmental damage.

Special protective equipment for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to section 8.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Keep upwind of spill. Ventilate the area with the leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2. Environmental precautions

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See section 12 ; Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

6.3. Methods and material for containment and cleaning up

Contain spilled material if possible. Absorb with materials such as, clay, dirt, sand, then sweep up. Collect in suitable and properly labeled containers.

Bonide Mancozeb Flowable with Zinc Concentrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Keep out of reach of children. Provide good ventilation in process area to prevent formation of vapor. Avoid breathing vapor or mist. Do not swallow. Avoid contact with eyes, skin and clothing. Keep container closed when not in use.
- Hygiene measures : Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in original container. Keep container closed when not in use. Store in a dry place. Do not store near food, foodstuffs, drugs, or potable water supplies.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Component	Regulation	Type of Listing	Value/Notification
Mancozeb	OSHA Z-1	C	5 mg/m3, Manganese
	US WEEL	TWA Total	1 mg/m3
	US WEEL	TWA	Skin Sensitizer
Hexamethylenetetramine	Dow IHG	TWA	10 mg/m3

Recommendations in this section are for manufacturing, commercial blending and packaging workers. Applicators and handlers should see the product label for proper personal protective equipment and clothing.

8.2. Exposure controls

- Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. Use with adequate ventilation
- Hand protection : Wear protective gloves chemically resistant to the material, such as Nitrile/butadiene rubber (nitrile or NBR), or Polyvinyl chloride (PVC or vinal) or neoprene.
- Eye protection : Chemical goggles or safety glasses (with side shields).
- Respiratory protection : Wear approved air purifying respirator; organic vapor cartridge with a particulate pre-filter.
- Other information : Use protective clothing chemically resistant to the material, such as face shield, boots, apron, or full body suit. When using, do not eat, drink or smoke.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Appearance : Yellowish thick liquid.
- Color : Yellow.
- Odor : Sulfur like.
- Odor threshold : No data available
- pH : 6.43 (1% pH electrode)
- Relative evaporation rate (butyl acetate=1) : No data available
- Melting point : Not applicable
- Freezing point : No data available
- Boiling point : No data available
- Flash point : 212 °F (100 °C)
- Self ignition temperature : No data available
- Decomposition temperature : No data available
- Flammability (solid, gas) : No data available
- Vapor pressure : No data available
- Relative vapor density at 20 °C : No data available
- Relative density : 1.3274 g/cm3 at 20°C (68°F) Digital density meter
- Solubility : No data available
- Viscosity, kinematic : No data available
- Explosive properties : No data available
- Oxidizing properties : No data available
- Explosive limits : No data available

9.2. Other information

The physical data presented above are typical values and should not be construed as a specification.

Bonide Mancozeb Flowable with Zinc Concentrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Thermally stable at typical use temperatures.

10.3. Possibility of hazardous reactions

Polymerization will not occur.

10.4. Conditions to avoid

Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.

10.5. Incompatible materials

Acids. Oxidizers.

10.6. Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products include and are not limited to: Hydrogen sulfide, sulfur oxides, and other toxic gases. Toxic gases are released during decomposition.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Prolonged excessive exposure to mist may cause adverse effects. Mist may cause irritation of upper respiratory tract (nose and throat) and lungs. (as product: LC50 has not been determined.)

Mancozeb (8018-01-7)	
LD50 oral rat	5000 mg/kg (Rat)
LD50 dermal rat	10000 mg/kg (Rat)
LD50 dermal rabbit	5000 mg/kg (Rabbit)

Hexamethylen Tetramine (100-97-0)	
LD50 oral rat	> 5000 mg/kg (Rat)

Skin corrosion/irritation : Brief contact may cause slight skin irritation with local redness.
Serious eye damage/irritation : Nonirritating to eyes
Respiratory or skin sensitization : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
Carcinogenicity : Active ingredient has caused cancer at high doses in rats.
Reproductive toxicity : Did not interfere with reproduction or fertility.
Teratogenicity : Has only caused birth defects in laboratory animals at doses toxic to the mother. Has only been toxic to fetus in lab animals at doses toxic to the mother.
Mutagenicity : In vitro genetic toxicity studies were predominantly negative. Animal genetic toxicity studies were negative.
Specific target organ toxicity (single exposure) : Available data is inadequate to determine.
Specific target organ toxicity (repeated exposure) : Active ingredient has been reported (in animals) to have effects on the following organs; Liver and Thyroid.
Minor components has been reported (in humans) to have effects on the following organs; Kidney.
Aspiration hazard : Not likely to be a hazard.

11.2. Components influencing toxicology

Mancozeb: Acute inhalation toxicity; Prolonged excessive exposure to dust may cause adverse effects. Dust may cause irritation of the upper respiratory tract (nose and throat) and lungs. LC50, Rat, 4 hour, dust/mist, > 5.14 mg/l

Hexamethylenetetramine: Acute inhalation toxicity; As product, the LC50 has not been determined.

SECTION 12: Ecological information

12.1. Toxicity

Acute toxicity to fish. (For similar materials, it is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species.) LC50, *Oncorhynchus mykiss* (rainbow trout), 96 hours, 1.1 mg/l, OECD test guideline 203 or equivalent

Acute toxicity to aquatic invertebrates; for similar materials; LC50, *Daphnia magna* (Water flea), 48 hour, 23 mg/l; LC50 saltwater mysid *Mysidopsis bahia*, 96 hour, 0.0257 mg/l; EC50, eastern oyster (*Crassostrea virginica*), 96 hour, 5.88 mg/l

Bonide Mancozeb Flowable with Zinc Concentrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

12.2. Persistence and degradability

Mancozeb: Biodegradability: Degradation is expected in the soil environment within days to weeks. Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Stability in water (1/2-life) - Hydrolysis, half-life, 17 hour, pH 7, Half-life temperature 25 °C

Photodegradation - test type: Half-life (indirect photolysis), Sensitization: OH radicals, Atmospheric half-life: 0.05 d, Method: estimated.

Hexamethylenetetramine: Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. 10-day window is not applicable. Biodegradation: 54 -97%, Exposure time: 28 d, Method: OECD Test Guideline 301C or Equivalent, Theoretical Oxygen Demand: 3.2 mg/mg

12.3. Bioaccumulative potential

Mancozeb: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Partition coefficient: n-octanol/water (log Pow): 1.33 estimated. Bioconcentration factor (BCF): 2.1 - 3.1 estimated.

Hexamethylenetetramine: Bioconcentration potential is low (BCF < 100 or Log Pow < 3). Partition coefficient: n-octanol/water (log Pow): -4.15 estimated.

12.4. Mobility in soil

Mancozeb: Potential for mobility in soil is low (Koc 500 and 2000). Partition coefficient (Koc): 1000 Estimated.

Hexamethylenetetramine: Potential for mobility in soil is very high (Koc between 0 and 50). Partition coefficient (Koc): < 1 estimated.

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Not regulated for transport by DOT, due to size of container; consumer quantity

Additional information

DOT:	Proper shipping name	Environmentally hazardous substance, liquid, n.o.s. (Mancozeb)
	UN number	UN 3082
	Class	9
	Packing group	III
	Marine pollutant	Mancozeb

SECTION 15: Regulatory information

This chemical is a pesticide product registered by the 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, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

15.1. US Federal regulations

SARA Title III Section 311 and 312 - Reproductive Toxicity, Respiratory or skin sensitisation

Section 313 - Components: Mancozeb CAS# 8018-01-7

15.2. US State regulations

Pennsylvania Right To Know : Mancozeb CAS# 8018-01-7

California Prop. 65: WARNING: This product can expose you to chemicals including Mancozeb, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

Other information : None.

C	ceiling
DOW IHG	Dow Industrial Hygiene Guideline
OSHA Z-1	USA Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
TWA	8-hour TWA
US WEEL	USA Workplace Environmental Exposure Levels

SDS US (GHS HazCom 2012) - Pesticides

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.