

SDS per US OSHA Hazard Communication Standard (HazCom) 2012, 29 CFR §1910.1200

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. PRODUCT IDENTIFIER

Product name: Kocide® 50DF
Product Type: Fungicide
EPA Registration No. 64744-5-70051
Active Ingredient: Copper hydroxide
CAS No.: 20427-59-2

1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

Identified uses: For use as a fungicide
Uses advised against: Any use not listed on the label

1.3. DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Name: Certis USA LLC
Address: 9145 Guilford Road, Suite 175, Columbia, Maryland 21046, USA
Phone Number: +1 (800) 847-5620 (in the US); +1 (301) 604-7340 (outside the US)
Website: www.CertisBio.com

1.4. EMERGENCY TELEPHONE NUMBER

Emergency number: +1 (800) 255-3924 (in the US); +1 (813) 248-0585 (outside the US)
[service provided by ChemTel under Contract Number MIS0001530]

SECTION 2: HAZARDS IDENTIFICATION

2.1. CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

OSHA Hazard Classification: Category 4: Acute toxicity, oral
Category 3: Acute toxicity, inhalation
Category 1: Serious eye damage/eye irritation
Signal Word: Danger
Hazard Statements: H302: Harmful if swallowed.
H331: Toxic if inhaled
H318: Causes serious eye damage.

Pictogram:



Precautionary Statements:

PREVENTION	<p>P264+P265: Wash hands thoroughly after handling. Do not touch eyes. P270: Do not eat, drink or smoke when using this product. P261: Avoid breathing dust. P270: Use only outdoors or in a well-ventilated area. P280: Wear eye protection/face protection. P301+P317: If swallowed: Get medical help. P330: Rinse mouth. P304+P340: If inhaled: Remove person to fresh air and keep comfortable for breathing. P316: Get emergency medical help immediately.</p>
RESPONSE	<p>P321: Specific treatment (see First Aid instructions on this label) Dispose of contents/container according to label directions. P305+P354+P338: IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. P317: Get emergency medical help.</p>
STORAGE	<p>P403+P233: Store in a well-ventilated place. Keep container tightly closed. P405: Store locked up.</p>
DISPOSAL	<p>P501: Dispose of contents/container according to label directions.</p>

2.2. OTHER HAZARDS

H410: Very toxic to aquatic life with long lasting effects.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient		CAS #	% w/w
Copper hydroxide		20427-59-2	76.8
Hazardous Ingredient(s)	Classification	CAS #	% w/w
Copper hydroxide	Category 4: Acute toxicity, oral Category 3: Acute toxicity, inhalation Category 1: Serious eye damage/eye irritation	20427-59-2	76.8
Sucrose	Combustible dust	57-50-1	5 - 10

SECTION 4: FIRST AID MEASURES

4.1. DESCRIPTION OF FIRST AID MEASURES

General advice: When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye contact: Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a poison center or doctor/physician.

Ingestion: Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

Skin contact: Wash off with soap and water. Get medical attention if irritation develops and persists.

4.2. MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin, and eyes.

4.3. INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

SECTION 5: FIREFIGHTING MEASURES

5.1. EXTINGUISHING MEDIA

Suitable Extinguishing Media: Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable Extinguishing Media: Do not use water jet as an extinguisher as this will spread the fire.

5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Hazardous combustion products: During fire, gases hazardous to health may be formed.

5.3. ADVICE FOR FIREFIGHTERS

Protection of Firefighters: Keep upwind of fire. Wear protective clothing and self-contained breathing apparatus. Fight fire from a safe distance. Use water spray to cool unopened containers. Use standard firefighting procedures and consider the hazards of other involved materials. No unusual fire or explosion hazards noted.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

For non-emergency personnel: Avoid substance contact. Ensure adequate ventilation. Evacuate the area and observe emergency procedures. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak.

For emergency responders: Use appropriate personal protective equipment. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

6.2. ENVIRONMENTAL PRECAUTIONS

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Methods for Containment and Clean-Up: Avoid dispersal of dust in the air (*i.e.*, clearing dust surfaces with compressed air). Collect dust using a vacuum cleaner equipped with HEPA filter. Prevent product from entering drains. Stop the flow of material if this is without risk.
Large Spills: Wet down with water and dike for later disposal. Shovel the material into waste container. Following product recovery, flush area with water.
Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean surface thoroughly to remove residual contamination.
 Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Other Information: Dispose of in accordance with all Federal, State, and local procedures.

6.4. REFERENCE TO OTHER SECTIONS

Refer to Section 8 for personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. PRECAUTIONS FOR SAFE HANDLING

Minimize dust generation and accumulation. Do not get this material in contact with eyes. Do not taste or swallow. Avoid breathing dust. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practice.

7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Store locked up. Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Recommended storage temperature: 0 - 30°C.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. CONTROL PARAMETERS

Substance	Occupational Exposure Levels
Copper hydroxide [CAS No. 20427-59-2]	<u>ACGIH:</u> TWA: 1 mg/m ³ (dust and mist) TWA: 0.2 mg/m ³ (fume) <u>NIOSH:</u> TWA: 1 mg/m ³ (dust and mist)

Substance	Occupational Exposure Levels
Sucrose [CAS No. 57-50-1]	<p><u>OSHA:</u> PEL: 5 mg/m³ (respirable fraction) PEL: 15 mg/m³ (total dust)</p> <p><u>ACGIH:</u> TWA: 10 mg/m³</p> <p><u>NIOSH:</u> TWA: 0.1 mg/m³ (fume) TWA: 5 mg/m³ (respirable) TWA: 10 mg/m³ (total)</p>

8.2. EXPOSURE CONTROLS

Wear protective equipment to comply with good occupational hygiene practice. Do not eat, drink, or smoke at the workplace.

8.2.1. ENGINEERING CONTROLS:

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits. Provide eyewash station.

8.2.2. PERSONAL PROTECTIVE EQUIPMENT:

Applicators and other handlers must wear:

EYE/FACE PROTECTION

- Wear safety glasses with side shields (or goggles) and a face shield.

RESPIRATORY PROTECTION

- Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Wear respirator with dust filter.

SKIN PROTECTION

- Wear appropriate chemical resistant gloves.
- Wear suitable protective clothing, at a minimum long-sleeved shirt, long pants, socks, and shoes.
- Wear appropriate thermal protective clothing, when necessary.

8.2.3. ENVIRONMENTAL EXPOSURE CONTROLS

Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

<i>Physical Property</i>	<i>Result</i>
Appearance:	Blue-green granule
Odor:	Practically odorless
Odor Threshold:	Not applicable
pH:	7 (1% solution) [CIPAC MT75]
Melting Point / Freezing Point:	Not determined
Initial Boiling Point:	Not determined
Boiling Range:	Not determined
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability (solid, gas):	Not flammable
Lower & Upper Flammability Limits:	Not applicable
Vapor Pressure:	Not applicable
Vapor Density (Air = 1):	Not applicable
Density:	Bulk density—0.56 g/mL; Pour density—0.55 g/mL
Solubility:	Dispersible in water
Partition Coefficient (n-octanol/water):	Not applicable
Auto-ignition Temperature:	332.6°F (167°C)
Decomposition Temperature:	Not determined
Viscosity:	Not applicable
Other relevant properties:	None

9.2. OTHER INFORMATION

<i>Physical Property</i>	<i>Result</i>
Explosivity	Not explosive

SECTION 10: STABILITY AND REACTIVITY

10.1. REACTIVITY

The product is stable and non-reactive under normal conditions of use, storage and transport.

10.2. CHEMICAL STABILITY

Material is stable under normal conditions.

10.3. POSSIBILITY OF HAZARDOUS REACTIONS

No dangerous reaction known under conditions of normal use.

10.4. CONDITIONS TO AVOID

Contact with incompatible materials. Avoid heat, sparks, open flames and other ignition sources.

10.5. INCOMPATIBLE MATERIALS

Strong oxidizing agents; acids.

10.6. HAZARDOUS DECOMPOSITION PRODUCTS

Copper oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. LIKELY ROUTES OF EXPOSURE

Inhalation, skin, eye, ingestion.

11.2 SYMPTOMS RELATED TO PHYSICAL, CHEMICAL, AND/OR TOXICOLOGICAL CHARACTERISTICS

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Dusts may irritate the respiratory tract, skin, and eyes.

11.3 EFFECTS (DELAYED/IMMEDIATE/CHRONIC) FROM SHORT- AND LONG-TERM EXPOSURE

Severe eye irritation. Dusts may irritate the respiratory tract, skin, and eyes. See section 4.

11.4 ACUTE TOXICITY

Test	Results	US EPA Toxicity Category
Acute oral LD₅₀	LD ₅₀ (rat, female) = 1,250 mg/kg LD ₅₀ (rat, male) = 1,750 mg/kg	III
Acute dermal LD₅₀	LD ₅₀ (rabbit) > 2,000 mg/kg	III
Acute inhalation LC₅₀	LC ₅₀ (rat) = 0.52 – 2.04 mg/L [4-hr]	III
Eye irritation:	Irritant – risk of strong eye injuries (rabbit)	I
Skin irritation:	Non-irritant (rabbit)	IV
Respiratory or skin sensitization:	Not a respiratory or skin sensitizer.	N/A

11.5 OTHER INFORMATION ON ADVERSE HEALTH EFFECTS

Test	Results
STOT – single exposure	Not classified.

Test	Results
STOT – repeated exposure	Not classified.
Genetic Toxicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive Toxicity	This product is not expected to cause reproductive or developmental effects.
Carcinogenicity	Not classifiable as to carcinogenicity to humans. <u>NTP</u> : Not listed. <u>IARC</u> : Not listed. <u>OSHA</u> : Not listed.
Chronic Effects	Prolonged inhalation may be harmful.
Aspiration hazard	Not an aspiration hazard.

SECTION 12: ECOLOGICAL INFORMATION

12.1. TOXICITY

Very toxic to aquatic life with long-lasting effects.

Species	Test	Study Duration	Conditions	Test substance	Results
Crustacea (<i>Daphnia</i>)	Acute toxicity	48-hr		Kocide® 50DF	EC ₅₀ = 2.4 mg/L
Crustacea (<i>Daphnia</i>)	Acute toxicity	48-hr		Copper hydroxide	EC ₅₀ = 0.0422 mg Cu/L
Fish (<i>Oncorhynchus mykiss</i>)	Acute toxicity	96-hr		Kocide® 50DF	LC ₅₀ = 16.5 µg/L
Fish (<i>Oncorhynchus mykiss</i>)	Acute toxicity	96-hr		Copper hydroxide	LC ₅₀ = 0.135 mg Cu/L
Algae	Acute algal inhibition	96-hr		Copper hydroxide	ErC ₅₀ = 22.51 mg Cu/L

12.2. PERSISTENCE AND DEGRADABILITY

No data is available on the degradability of any ingredients in the mixture.

12.3. BIOACCUMULATIVE POTENTIAL

Partition coefficient (log K_{ow}) – Sucrose: -3.7

12.4. MOBILITY IN SOIL

No data available.

12.5. OTHER ADVERSE EFFECTS

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. WASTE TREATMENT METHODS

Do not contaminate water, food, or feed by storage or disposal.

Disposal instructions: Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations: Dispose in accordance with all applicable regulations.

Hazardous waste code: The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues/unused products: Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging: Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: TRANSPORTATION INFORMATION

UN NUMBER	UN PROPER SHIPPING NAME	TRANSPORT HAZARD CLASS(ES)	
UN2775	Copper-based pesticides, solid, toxic (Copper Hydroxide)	Class: Subsidiary risk: Label(s):	6.1 - 6.1
PACKING GROUP	ENVIRONMENTAL HAZARDS	SPECIAL PRECAUTIONS FOR USER	
III	Marine pollutant: Yes	Read safety instructions, SDS, and emergency procedures before handling.	
DOT-SPECIFIC	IATA-SPECIFIC	IMDG-SPECIFIC	
Special provisions: IB8, IP3, T1, TP33 Packaging exceptions: 153 Packaging non bulk: 213 Packaging bulk: 240	ERG Code: 6L	EmS: F-A, S-A	
TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL73/78 AND THE IBC CODE			
The product may be shipped as a Limited Quantity when packed in quantities of 5 kg or less.			

SECTION 15: REGULATORY INFORMATION

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

EPA/FIFRA

This product 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 may differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticidal chemicals. The pesticide label also includes other important information, including directions for use.

- EPA Signal Word: Danger

OSHA	TSCA STATUS	CERCLA REPORTABLE QUANTITY
<p><u>29 CFR §1910.1200</u>: Classified “Hazardous Chemical”</p> <p><u>29 CFR §1910.1001-1053</u>: Not listed.</p>	<p><u>§8(b)</u>: All components of the mixture on the TSCA §8(b) inventory are designated “active.”</p> <p><u>§12(b) Export Notification</u>: Not regulated.</p>	<p><u>40 CFR §302.4</u>: Listed; no RQ assigned.</p> <p>Copper Hydroxide (CAS No. 20427-59-2)</p>
SARA TITLE III, §302, §304	SARA TITLE III, §311/312	SARA TITLE III, §313
<p><u>§302</u>: Not listed.</p> <p><u>§304</u>: Not regulated.</p>	<p>Classified hazard categories</p> <ul style="list-style-type: none"> Acute toxicity (any route of exposure) Serious eye damage or eye irritation 	<p><u>Chemical Name</u>: Copper hydroxide</p> <p><u>CAS No.</u>: 20427-59-2</p> <p><u>% by wt.</u>: 76.8</p>
RCRA STATUS	CAA	SDWA
<p>Not regulated</p>	<p><u>§112 Hazardous Air Pollutants</u>: Not regulated.</p> <p><u>§112(r)</u>: Not regulated</p>	<p>Contains component(s) regulated under SDWA.</p>
STATE RTK LISTING(S)	CALIFORNIA PROP. 65	INTERNATIONAL INVENTORIES
<p>Massachusetts RTK</p> <ul style="list-style-type: none"> Sucrose (CAS No. 57-50-1) <p>New Jersey RTK</p> <ul style="list-style-type: none"> Copper Hydroxide (CAS No. 20427-59-2) <p>Pennsylvania RTK</p> <ul style="list-style-type: none"> Copper Hydroxide (CAS No. 20427-59-2) Sucrose (CAS No. 57-50-1) <p>Rhode Island RTK</p> <ul style="list-style-type: none"> Sucrose (CAS No. 57-50-1) 	<p>This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.</p>	<p>Australia (AICIS): Listed.</p>

SECTION 16: OTHER INFORMATION

ABBREVIATIONS

OSHA	US Occupational Health and Safety Administration
EPA	US Environmental Protection Agency
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TSCA	Toxic Substances Control Act
CAA	Clean Air Act
SDWA	Safe Drinking Water Act
RTK	Right to Know
PEL	Permissible exposure limit
STOT	Specific target organ toxicity
TLV	Threshold limit value
TWA	Time-weighted average
LD ₅₀	Median lethal dose: dose resulting in 50% mortality in the test species
LC ₅₀	Median lethal concentration: concentration resulting in 50% mortality in the test species
EC ₅₀	Median effective concentration: concentration resulting in 50% reduction in algae growth or algae growth rate, or <i>Daphnia</i> immobilization
K _{ow}	n-Octanol/water partition coefficient
PPE	Personal protective equipment
PBT	Persistent, bioaccumulative, and toxic
vPvB	Very persistent, very bioaccumulative
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (Marine Pollution 1973/1978),

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