



1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: Kocide® LF

HAZARD CLASSIFICATION (0-minimal, 1-slight, 2-moderate, 3-serious, 4-severe)

NFPA: HEALTH-2 FIRE-1 REACTIVITY-0

HMIS: HEALTH-1 FIRE-1 REACTIVITY-0

MANUFACTURER

Company Name: Griffin Corporation
Address: PO Box 1847, Rocky Ford Road
Valdosta, GA 31603-1847

EMERGENCY TELEPHONE NUMBERS

Griffin Corporation: (800) 237 1854
Chemtrec: (800) 424 9300

2. COMPOSITION/ INFORMATION ON INGREDIENTS

Component Name	% by Wt.	CAS#	ACGIH TLV	OSHA PEL
Copper Hydroxide	23.0	20427-59-2	1 mg/m ³ *	1 mg/m ³ *

* As copper dusts or mists (CAS # 7440-50-8)
Components not precisely identified are proprietary or not hazardous.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

May cause mild irritation to the eyes. Slightly to non-toxic orally, dermally, and by inhalation. See below for route-specific details.

POTENTIAL HEALTH EFFECTS

Inhalation: Slightly toxic by inhalation. Excessive exposure may cause cough, mucous production, shortness of breath, reflecting metal fume fever.

Eye Irritation: May cause mild irritation to the eyes.

Skin Irritation: Slight skin irritant. Excessive exposure, especially if prolonged, may produce skin irritation. Repeated exposure may cause allergic contact dermatitis.

Skin Absorption: Not a skin absorption hazard.

Ingestion: Slightly toxic by oral exposure. This material may produce toxicity if ingested in large quantities. Symptoms of over-exposure may include nausea and vomiting, abdominal pain, and central nervous system depression, which, if severe enough, may lead to death.



Hazards Identification continued:

Chronic: Low chronic toxicity unless excessive exposure is encountered. Excessive exposure to copper by inhalation may result in irritation of the upper respiratory tract which, if severe, may lead to perforation of the nasal septum after long periods of exposure.

4. FIRST AID MEASURES

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration preferably mouth-to-mouth. Get professional medical attention immediately.

Eye Contact: Hold eyelids open and flush with water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention.

Skin Contact: Remove contaminated clothing and shoes. Wash with plenty of soap and water for 15-20 minutes until no evidence of chemical remains. Get professional medical attention.

Ingestion: Drink promptly a large quantity of milk, egg white, gelatin solution or if these are not available, large quantities of water. Unless extensive vomiting has occurred, empty the stomach by gastric lavage with water, milk, sodium bicarbonate solution of a 0.1% solution of potassium ferrocyanide. (**Gosselin, Clinical Toxicology of Commercial Products, 5th Ed.**). Administration of gastric lavage should be performed by qualified medical personnel. Probable mucosal damage may contraindicate use of gastric lavage.

Emergency Medical Treatment: Treat symptomatically. Acute oral overexposure to copper hydroxide, a major component of this product, may cause hypotension, hemolysis, and, rarely, methemoglobinemia. Severe intoxication is associated with serum copper levels greater than 500 mcg/dl. Copper hydroxide is an emetic, however, dilution with fluids, adsorption with activated charcoal, or lavage may be indicated. Chelation therapy with BAL or D-penicillamine has proved useful in cases of acute overexposure.

5. FIRE FIGHTING MEASURES

Flash Point & Method: Not determined
Flammable Limits: Not determined
Autoignition Temperature: Not determined



Fire Fighting Measures continued:

FIRE FIGHTING HAZARDS & PROCEDURES

General Hazard: Negligible fire hazard when exposed to heat or flame.
Extinguishing Media: Use dry chemical, carbon dioxide, water spray, or foam.
Fire Fighting Equipment: Wear protective clothing and self-contained breathing apparatus.
Hazardous Combustion Products: Decomposes to CuO and H₂O above 140°F.

6. ACCIDENTAL RELEASE MEASURES

Land Spill: Cover spill with absorbent material such as sweeping compound or lime. Sweep up and place in suitable (fiberboard) containers for later disposal.
Water Spill: If feasible, copper may be precipitated/ultrafiltrated with caustics or other chemicals and resulting sludge disposed of in a chemical landfill.

7. HANDLING AND STORAGE

Storage Temperature: Store above 0°C and below 35°C (95°F). Average shelf life under proper storage conditions is 2 years.
General Information: Store in a clean, dry area. Do not store near feed, food or within the reach of children.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

PESTICIDE APPLICATORS & WORKERS

These workers must refer to the Product Label and Directions For Use attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection Standard 40 CFR part 170.

MANUFACTURING, COMMERCIAL BLENDING, & PACKAGING WORKERS

Ventilation: Control enclosed spaces with adequate ventilation to prevent exceedance of ACGIH TLV or OSHA PEL (1 mg/m³).
Respiratory Protection: In enclosed spaces where the TLV or PEL may be exceeded, wear NIOSH/MSHA approved dust or mist respirator.
Eye Protection: Wear protective eyewear to prevent contact with this substance.
Protective Clothing: Applicators and other handlers must wear long-sleeved shirt and long pants, waterproof gloves, and shoes plus socks.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Vapor Pressure:	Not determined
Density:	10.5 lb/gal.
Specific Gravity(H ₂ O=1):	1.26
Solubility in Water:	Disperses to form a stable suspension. Copper hydroxide is insoluble in cold water and decomposes in hot water.
pH:	9.3
Boiling Point:	100°C
Melting Point:	Not determined
Viscosity:	Not determined
Odor:	Slight characteristic copper odor
Color:	Medium blue
Physical State:	Liquid (dispersion)

10. STABILITY AND REACTIVITY

General:	This material is stable under normal conditions.
Incompatible Materials:	None determined
Conditions to Avoid:	Excessive heat.
Hazardous Decomposition:	Decomposes to CuO and H ₂ O above 140°F.
Hazardous Polymerization:	Material is not known to polymerize.

11. TOXICOLOGICAL INFORMATION**ACUTE**

Inhalation:	Acute inhalation LC ₅₀ > 1.7 mg/L (rat - 4 hour). May cause irritation of the mucous membranes. Exposure to copper fume may result in metallic taste, nausea, vomiting, and metal fume fever with chills, fever, aching muscles, dry throat and headache.
Eye Irritation:	Considered to be mildly irritating to the eye of a rabbit.
Skin Irritation:	May cause irritation. Primary dermal irritation tests in rabbits indicate this product is a non-irritant; however, many copper salts cause itching, eczema and, rarely, sensitization reactions in previously exposed persons.
Skin Absorption:	Acute dermal LD ₅₀ > 5,000 mg/kg. This product is slightly toxic by dermal exposure.
Ingestion:	Oral LD ₅₀ = 2362 mg/kg (rat). Ingestion of large doses of copper salts may result progressively in irritation of the gastrointestinal tract, nausea, vomiting, salivation, gastric pain, hemorrhagic gastritis, diarrhea, capillary damage, liver and kidney damage, and central nervous system stimulation followed by depression. Jaundice, pain in the liver, and hemolytic anemia have been reported following acute human poisonings.



Toxicological Information continued:

CHRONIC: Repeated ingestion of copper salts may results in anemia, liver, and kidney damage. Chronic inhalation exposure may cause a metallic taste in the mouth, irritation of the upper respiratory tract such as the nasal mucosa that may progress to perforation of the nasal septum. Chronic cough may also occur. Copper hydroxide which comprises 23% of this product governs the toxicity of the product. The remaining components have low to negligible toxicity.

Special Health Effects: Copper-intolerant individuals should not be exposed to this material. No additional information is available on whether overexposure to this material would aggravate other existing special medical conditions.

12. ECOLOGICAL INFORMATION

Chemical Fate: The degree of mobility of copper in the environment depends upon the pH of ambient soils and waters. The higher the acidity, the more soluble copper salts are and, hence, the more mobile. Partitioning of copper into air is negligible due to the low vapor pressure of copper salts.

ECOTOXICITY (copper hydroxide)

Test Type	Species	Value
Aquatic LC ₅₀	Bluegill	180,000 ppb
Aquatic LC ₅₀ (96 hr)	Fathead Minnow	23 ppb
Aquatic LC ₅₀	Rainbow Trout	23 ppb
Aquatic EC ₅₀	<i>Daphnia magna</i>	6.5 ppb
Avian - acute oral LD ₅₀	Bobwhite Quail	>340 mg/kg
Avian - 8-day dietary LD ₅₀	Bobwhite Quail	>10,000 ppm
Avian - 8-day dietary LD ₅₀	Mallard Duck	>10,000 ppm

13. DISPOSAL CONSIDERATIONS

Comply with appropriate disposal regulations. Landfill solids at permitted sites. Use registered transporters.



14. TRANSPORT INFORMATION

Department of Transportation (DOT): Not Regulated
International Air Transport Association (IATA): Not Regulated
International Maritime Organization (IMO): Not Regulated

Note: Inhalation data generated using a smaller particle size than is reasonably foreseeable to be encountered by a human during transport. Since a mist is not likely to be generated in a leakage of the transport containment, this material is not regulated for transport per DOT 49 CFR 173.132 (b) (3), IATA 3.6.3.3, IMO IV / 6.1 / 2.2.3, RID / ADR 2600 / 2.5.

15. REGULATORY INFORMATION

OSHA: This product is considered hazardous under the OSHA Hazardous Communication Standard 29 CFR 1910.1200.

TSCA: All product components are on the TSCA Chemical Inventory.

CERCLA: Releases of a component of this material (metallic copper, CAS No. 7440-50-8, RQ = 5000 lbs) to air, land, or water are reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to the state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304 and 40 CFR Part 304.

RCRA: When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR 261.33.

SARA TITLE III

311/312 Hazard Categories: This product has been reviewed according to the EPA "Hazard Categories" and is categorized as an acute health hazard (40 CFR 370.41).

313 Reportable Ingredients: This product contains a percentage of metallic copper (CAS No. 7440-50-8) which is listed in Section 313 above de minimis concentrations (40 CFR 372).

STATE REGULATIONS

California: Listed under copper (CAS No. 7440-50-8) with footnotes referencing above federal standards.

New Jersey: Footnotes reference above federal standards plus listing of copper on the New Jersey Environmental Hazardous Substances List (NJ Department of Environmental Protection, Title 7 New Jersey Administrative Code (NJAC) Chapter 1G).

Massachusetts: Listed as copper (CAS No. 7440-50-8) and copper-based pesticide, solid, toxic (no CAS No. assigned).

Pennsylvania: Listed as copper fume or dust (CAS No. 7440-50-8) as an environmental hazard.



16. OTHER INFORMATION

REVISION SUMMARY

This Material Safety Data Sheet replaces the one dated 06/11/96 and has been revised using the standard Griffin Corporation ANSI Z400.1 compliant format. Revisions have been made in Section 14.

Kocide® is a registered trademark of Griffin Corporation.

The information in this Material Safety Data Sheet relates to this specific material. It may not be valid for this material if used in combination with any other materials or in any process. It is the users' responsibility to satisfy themselves as to the suitability and completeness of this information for their own particular use.