



MATERIAL SAFETY DATA SHEET

Page 1 of 8

Kocide® 101

Date Prepared: October 21, 2002

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Product Name: Kocide® 101

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

HMIS: HEALTH-1 FIRE-1 REACTIVITY-0

MANUFACTURER NAME AND ADDRESS (For additional addresses, see Section 16.)

Griffin L.L.C.
2509 Rocky Ford Road
P.O. Box 1847
Valdosta, GA 31603-1847

EMERGENCY TELEPHONE NUMBERS (For additional numbers, see Section 16.)

Griffin L.L.C. (USA): (+1) (800) 237 1854
Prosar: (+1) (888) 324 7598
Chemtec: (+1) (800) 424 9300

2. COMPOSITION/ INFORMATION ON INGREDIENTS

Component Name	% by Wt.	CAS#
Copper Hydroxide	77.0	20427-59-2

* As copper dusts or mists (CAS 7440-50-8).

Components not precisely identified are proprietary or not hazardous.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Direct contact may seriously damage eye tissue. 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, mucus production, shortness of breath, reflecting metal fume fever.

Eye Irritation: Severely irritating to the eyes. Direct contact may cause destruction of eye tissue. May be corrosive to the eyes if not washed immediately.

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.

3. HAZARDS IDENTIFICATION (con't)

GRIFFIN L.L.C.



MATERIAL SAFETY DATA SHEET

Page 2 of 8

Kocide® 101

Date Prepared: October 21, 2002

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.

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 only 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



MATERIAL SAFETY DATA SHEET

Page 3 of 8

Kocide® 101

Date Prepared: October 21, 2002

Flammable Limits: Not determined
Autoignition Temperature: Not determined

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.
No incompatible fire fighting media known.
Fire Fighting Instructions: Avoid contact with molten product to prevent serious burns.
Fire Fighting Equipment: Wear protective clothing and self-contained breathing apparatus.
Hazardous Combustion Products: Decomposes to CuO and H₂O above 140 °C.

6. ACCIDENTAL RELEASE MEASURES

Land Spill: 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 below 35° C (95° F). Average shelf life under proper storage conditions is 2 years.
Storage Pressure: Ambient pressure.
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.
Respiratory Protection: In enclosed spaces where the TLV or PEL may be exceeded, wear NIOSH/MSHA approved dust or mist respirator.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION (con't)

Eye Protection: Wear protective eyewear to prevent contact with this substance.



MATERIAL SAFETY DATA SHEET

Page 4 of 8

Kocide® 101

Date Prepared: October 21, 2002

Protective Clothing: Applicators and other handlers must wear long-sleeved shirt, long pants, waterproof gloves, and shoes plus socks.

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure: Negligible vapor pressure
Density: 0.4118 g/mL
Solubility in Water: Disperses to form an emulsion. Copper hydroxide is insoluble in cold water and decomposes in hot water.
pH: 7.51
Boiling Point: Not determined
Melting Point: Decomposes at >140 °C
Viscosity: Not determined
Odor: Characteristic copper odor
Color: Light blue
Physical State: Powder

10. STABILITY AND REACTIVITY

General: This material is stable under normal conditions.
Incompatible Materials: Not determined
Conditions to Avoid: Excessive heat.
Hazardous Decomposition: Decomposes to CuO and H₂O above 140 °C.
Hazardous Polymerization: Material is not known to polymerize.

11. TOXICOLOGICAL INFORMATION

ACUTE

Inhalation: Acute inhalation LC₅₀ = 11.65 mg/L (rat 1-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: Severely irritating to the eyes. May cause severe eye irritation including permanent corneal opacity. May be corrosive to the eyes if not washed immediately.
Skin Irritation: May cause slight irritation. Many copper salts cause itching, eczema and, rarely, sensitization reactions in previously exposed persons.

11. TOXICOLOGICAL INFORMATION (con't)

Skin Absorption: Acute dermal LD₅₀ > 5000 mg/kg (rats). This product is slightly toxic by dermal exposure.
Ingestion: Oral LD₅₀ = 833 mg/kg (rats), indicating slight toxicity. Ingestion of large doses of copper salts may result



MATERIAL SAFETY DATA SHEET

Kocide® 101

Date Prepared: October 21, 2002

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.

CHRONIC: Repeated ingestion of copper salts may result 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 77% 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.

Toxicity of Individual Components: This product contains 7 to 8% of an inert vehicle that, itself, contains a small fraction of crystalline silica. Although crystalline silica is associated with silicosis and lung cancer, the International Agency for Research on Cancer (IARC) has evaluated this inert vehicle and designated it as Class 3 (insufficient evidence in either animals or humans to conclude carcinogenic activity).

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.

Environmental Hazards: This pesticide is toxic to fish and aquatic organisms. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark.

12. ECOLOGICAL INFORMATION (con't)

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



MATERIAL SAFETY DATA SHEET

Page 6 of 8

Kocide® 101

Date Prepared: October 21, 2002

Avian - acute oral LD₅₀ Bobwhite Quail >340 mg/kg
Avian - 8-day dietary LD₅₀ Bobwhite Quail >10,000 ppm
Avian - 8-day dietary LD₅₀ Mallard Duck >10,000 ppm

13. DISPOSAL CONSIDERATIONS

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Completely empty bag into application equipment. Dispose of empty bag in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

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

Regulated for transportation in Europe (ADR):

Proper Shipping Name: Environmentally Hazardous Substance, Solid, N.O.S. (Cupric Hydroxide)
Class: 9
Identification Number: UN 3077
Packing Group: III
Marine Pollutant

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) to air, land, or water are reportable to the National Response Center under the Comprehensive



MATERIAL SAFETY DATA SHEET

Page 7 of 8

Kocide® 101

Date Prepared: October 21, 2002

RCRA:	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. 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) that is listed in Section 313 above de minimis concentrations.
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

GRIFFIN L.L.C. ADDRESSES AND TELEPHONE NUMBERS:

Griffin (Europe) S.A. c/o Minervastraat 8 B-1930 Zaventem Belgium 011 32 2 720 6644	Griffin FE (Malaysia) S/B P.O. Box 6506 18 Jalan Persiaran Barat 46050 Petaling Jaya Malaysia 011 60 3 7957 4773	Griffin do Brazil Av. Selma Parada, 201 Galeria Office Park, Bloco II, Salas 211/234 13091-901 Campinas-SP 011 55 19 3 207 0100
Griffin Australia PTY Ltd. 18 Manning Street MiltonQLD 4064	Griffin de Colombia S.A. Bogota Office Calle 114 #9-01 Torre A Piso 14	

GRIFFIN L.L.C.



MATERIAL SAFETY DATA SHEET

Page 8 of 8

Kocide® 101

Date Prepared: October 21, 2002

Australia
011 61 7 3369 5400

Bogota, Colombia
011 57 1 629 2383/2202

REVISION SUMMARY

This Material Safety Data Sheet has been revised using the standard Griffin ANSI Z400.1 compliant format, and replaces the one dated 12/18/02. Revisions have been made in Sections 4, 9, and 16.

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.