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DuPont
Material Safety Data Sheet

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M0000538 "KOCIDE" 101 FUNGICIDE/BACTERICIDE
Revised 5-AUG-2005

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification

KOCIDE is a registered trademark of DuPont.

Tradenames and Synonyms

COPPER HYDROXIDE
DPX-GFJ52
KOCIDE 77WP
KOCIDE 50WP
KOCIDE 101PM
KOCIDE PM-E
KOCIDE 50

Company Identification

MANUFACTURER/DISTRIBUTOR
Griffin L.L.C. (USA)
2509 Rocky Ford Road
P.O. Box 1847
Valdosta
GA.
USA
31603-1847

PHONE NUMBERS

Product Information : 1-800-441-7515 (outside U.S. 302-774-1000)
Transport Emergency : CHEMTREC:1-800-424-9300(outside US
703-527-3887)
Medical Emergency : 1-800-441-3637 (outside U.S.
302-774-1000)

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
COPPER HYDROXIDE*	20427-59-2	77
INERT INGREDIENTS		23

Components (Remarks)

(* Metallic Copper Equivalent 50%)

Components not precisely identified are proprietary or not hazardous.

HAZARDS IDENTIFICATION

Emergency Overview

CORROSIVE. Causes irreversible eye damage. Harmful if swallowed, absorbed through the skin or inhaled. May cause skin sensitization reactions in certain individuals. Avoid contact with skin, eyes and clothing. Avoid breathing dust.

Potential Health Effects

Skin contact may cause skin irritation with discomfort or rash, and discoloration of the skin. While there are no reports of human sensitization with Kocide 101, there are inconclusive or unverified reports of human sensitization with the active ingredient, copper hydroxide.

Eye contact may cause corneal opacity or clouding of the eyes, eye corrosion or ulceration, blindness may occur.

Inhalation may cause irritation of the upper respiratory passages, with coughing.

Ingestion may cause nonspecific discomfort, such as nausea, or weakness, central nervous system depression, which, if severe enough, may lead to death.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

FIRST AID MEASURES

First Aid

IF IN EYES: 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.

IF SWALLOWED: 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 do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF INHALED: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment

(FIRST AID MEASURES - Continued)

advice.

IF ON SKIN OR CLOTHING: 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.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies involving this product, call toll free 1-800-441-3637. See Label for Additional Precautions and Directions for Use.

Notes to Physicians

Probable mucosal damage may contraindicate use of gastric lavage.

FIRE FIGHTING MEASURES

Flammable Properties

Flash Point & Method : Not determined
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.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

(ACCIDENTAL RELEASE MEASURES - Continued)

Spill Clean Up

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.

HANDLING AND STORAGE

Handling (Personnel)

USERS SHOULD: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Storage

Do not contaminate water, food or feed by storage.

Store in a cool, dry place.

Storage Temperature : Store below 35°C (95°F). Average shelf life under proper storage conditions is 2 years.

Storage Pressure : Ambient pressure.

Do not store near feed, food or within the reach of children

EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls

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/OSHA approved dust or mist respirator.

Eye Protection : Wear protective eyewear to prevent

(EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

contact with this substance.

Personal Protective Equipment

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistant category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves made of any waterproof material, such as polyvinyl chloride, nitrile rubber, or butyl rubber.
- Shoes plus socks.
- Protective eyewear.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls.
- Chemical-resistant gloves made of any waterproof material, such as polyvinyl chloride, nitrile rubber, or butyl rubber.
- Shoes plus socks.
- Protective eyewear.

Exposure Guidelines

Applicable Exposure Limits

COPPER HYDROXIDE*

PEL (OSHA)	: 1 mg/m ³ , dusts and mists, as Cu, 8 Hr. TWA
TLV (ACGIH)	: 1 mg/m ³ , dusts and mists, as Cu, 8 Hr. TWA
AEL * (DuPont)	: 1.5 mg/m ³ , 8 & 12 Hr. TWA (approximately 1 mg/m ³ , as Cu)

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

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
Odor : Characteristic copper odor
Color : Light blue
Physical State : Powder

STABILITY AND REACTIVITY

Chemical Stability

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.

TOXICOLOGICAL INFORMATION

Animal Data

Kocide 101
Oral LD50: 833 mg/kg in rats
Dermal LD50: > 5000 mg/kg in rabbits
4-Hour Inhalation LC50: > 0.51 and < 1.02 mg/L in rats

Kocide 101 is severely irritating to the eyes and has produced corneal opacity in rabbits. Kocide 101 was corrosive to rabbit eyes if not washed out immediately. Kocide 101 is a slight skin irritant but not a skin sensitizer in animals.

Repeated dermal administration of Kocide 101 produced atonia and skin effects (discoloration, epidermal thickening, hyperkeratosis, and ulceration) in rabbits.

(TOXICOLOGICAL INFORMATION - Continued)

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.

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.

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 a Class 3 (insufficient evidence in either animals or humans to conclude carcinogenic activity).

COPPER HYDROXIDE

Repeated oral ingestion of copper hydroxide via gavage produced reduced body weights and food consumption at 15 mg/kg/day and mortality at 30 mg/kg/day in rabbits.

No animal data are available to define carcinogenic, reproductive, or mutagenic hazards of copper hydroxide. Animal data show developmental effects only at exposure levels producing other toxic effects in the adult animal.

ECOLOGICAL INFORMATION

Ecotoxicological Information

AQUATIC TOXICITY:

96 hour LC50 - Bluegill sunfish: > 180 ppm.

96 hour LC50 - Rainbow trout: 0.064 ppm.

72 hour, EC50, Freshwater algae: [50% formulation] 18.94-44.94 ug/L.

AVIAN TOXICITY:

LD50 - Honeybee: [50% formulation] > 114 ug/bee.

Acute Oral LD50 - Honeybee: [50% formulation] 98 ug/bee

DISPOSAL CONSIDERATIONS

Waste Disposal

Do not contaminate water, food or feed by disposal.

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. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic sites. Do not contaminate water by disposal of equipment washwaters.

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.

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.

TRANSPORTATION INFORMATION

Shipping Information

DOT/IMDG/IATA :

Proper Shipping Name : Copper Based Pesticides, Solid,
Toxic, (Copper Hydroxide)
Hazard Class : 6.1
UN/NA Number : 2775
Packaging Group : III
Marine Pollutant : Yes (When shipped by water or in
bulk package)
Reportable Quantity : No

REGULATORY INFORMATION

U.S. Federal Regulations

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 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.

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) 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:

(REGULATORY INFORMATION - Continued)

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

EPA Reg. No. 1812-288

OTHER INFORMATION

NFPA, NPCA-HMIS

HAZARDS CLASSIFICATION:

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

HMIS: HEALTH-1 FIRE-1 REACTIVITY-0

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

Responsibility for MSDS: DuPont Crop Protection
Address : Wilmington, DE 19898
Telephone : 1-888-638-7668

Indicates updated section.

This information is based upon technical information believed to be reliable. It is subject to revision as additional knowledge and experience is gained.

End of MSDS