



The MSDS format adheres to the standards and regulatory requirements of the United States and may not meet regulatory requirements in other countries.

DuPont  
Material Safety Data Sheet

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"DuPont" "KOCIDE" 101 FUNGICIDE/BACTERICIDE  
M0000657 Revised 6-FEB-2007  
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CHEMICAL PRODUCT/COMPANY IDENTIFICATION  
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Material Identification

"KOCIDE" is a registered trademark of DuPont.

"DuPont" is a trademark of DuPont.

Tradenames and Synonyms

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

# Tradenames and Synonyms (Remarks)

Inactive EPA Reg. No.: 1812-288 (Griffin)

Company Identification

MANUFACTURER/DISTRIBUTOR  
DuPont  
1007 Market Street  
Wilmington, DE 19898

PHONE NUMBERS

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

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COMPOSITION/INFORMATION ON INGREDIENTS  
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Components

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

## (COMPOSITION/INFORMATION ON INGREDIENTS - Continued)

## Components (Remarks)

(\* Metallic Copper Equivalent 50%)

Components not precisely identified are proprietary or not hazardous.

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HAZARDS IDENTIFICATION  
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## Emergency Overview

DANGER. 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.

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FIRST AID MEASURES  
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## 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.

## (FIRST AID MEASURES - Continued)

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 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.

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FIRE FIGHTING MEASURES-----  
Flammable Properties

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

## FIRE FIGHTING HAZARDS &amp; 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 H<sub>2</sub>O above 140°C.

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ACCIDENTAL RELEASE MEASURES  
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## Safeguards (Personnel)

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

## 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.

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HANDLING AND STORAGE  
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## 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

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EXPOSURE CONTROLS/PERSONAL PROTECTION  
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## Engineering Controls

## PESTICIDE APPLICATORS &amp; 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, &amp; PACKAGING WORKERS

Ventilation : Control enclosed spaces with adequate ventilation to prevent

## (EXPOSURE CONTROLS/PERSONAL PROTECTION - Continued)

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 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/m3, dusts and mists, as Cu, 8 Hr. TWA
TLV (ACGIH)	: 1 mg/m3, dusts and mists, as Cu, 8 Hr. TWA
AEL * (DuPont)	: 1.5 mg/m3, 8 & 12 Hr. TWA (approximately 1 mg/m3, 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.

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PHYSICAL AND CHEMICAL PROPERTIES  
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## 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

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STABILITY AND REACTIVITY  
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## 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.

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TOXICOLOGICAL INFORMATION  
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## 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

## (TOXICOLOGICAL INFORMATION - Continued)

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.

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.

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ECOLOGICAL INFORMATION  
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## 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.

## ( ECOLOGICAL INFORMATION - Continued )

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



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REGULATORY INFORMATION  
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## # U.S. Federal Regulations

## TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute : Yes  
Chronic : No  
Fire : No  
Reactivity : No

In the United States this product is regulated by the US Environmental Protection Agency under the Federal Insecticide, Fungicide and Rodenticide Act. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

EPA Reg. No. 352-681

## 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, corrositivity, or reactivity, and is not listed in 40 CFR §261.33.

## SARA TITLE III

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.

## (REGULATORY INFORMATION - Continued)

## State Regulations (U.S.)

## 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.

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OTHER INFORMATION  
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## NFPA, NPCA-HMIS

## HAZARDS CLASSIFICATION:

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

HMIS: HEALTH-1 FIRE-1 REACTIVITY-0

## # Additional Information

Inactive EPA Reg. No.: 1812-288 (Griffin)

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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