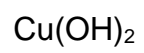


AGP:CP/362, 1998

**COPPER HYDROXIDE**



## INFORMATION

<b>COMMON NAME:</b>	copper hydroxide
<b>STRUCTURAL FORMULA:</b>	$\text{Cu}(\text{OH})_2$
<b>EMPIRICAL FORMULA:</b>	$\text{Cu}(\text{OH})_2$
<b>RMM:</b>	97.6
<b>CAS REGISTRY NUMBER:</b>	20427-59-2
<b>CIPAC CODE NUMBER:</b>	44
<b>CHEMICAL NAMES:</b>	copper hydroxide, copper (II) hydroxide, cupric hydroxide (IUPAC) copper hydroxide (CA)

# COPPER HYDROXIDE TECHNICAL

FAO Specification 44/TC/S/F (1998)

## .1 DESCRIPTION

The material shall consist of copper hydroxide,  $\text{Cu}(\text{OH})_2$ , together with related manufacturing impurities, which is a light blue powder free from visible extraneous matter and added modifying agents other than stabilizers.

## .2 ACTIVE INGREDIENT

### .2.1 Identity test<sup>1</sup>

An identity test is required if the identity of the active ingredient is in doubt.

### .2.2 Total copper (44/TC/M3.1, CIPAC E, p.42 (Referee method) or 44/TC/M3.2, CIPAC E, p.44)

The total copper content shall be declared (not less than 573 g/kg) and when determined, the content obtained shall not differ from the declared by more than  $\pm 25$  g/kg.

## .3 IMPURITIES

### .3.1 Arsenic<sup>1</sup>

Maximum:  $0.1 \times X$  mg/kg where X is the copper content in g/kg found under .2.2.

### .3.2 Lead (MT 92, CIPAC F, p.224)

Maximum:  $0.5 \times X$  mg/kg where X is the copper content in g/kg found under .2.2.

### .3.3 Cadmium<sup>1</sup>

Maximum:  $0.1 \times X$  mg/kg where X is the copper content in g/kg found under .2.2.

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1. Method available from the Pesticide Information Officer, FAO Plant Production and Protection Division.

# COPPER HYDROXIDE WETTABLE POWDERS

FAO Specification 44/WP/S/F (1998)

## .1 DESCRIPTION

The material shall consist of a homogeneous mixture of technical copper hydroxide complying with the requirements of FAO specification 44/TC/S/F (1998) together with fillers and any other necessary formulants. It shall be in the form of a fine powder free from visible extraneous matter and hard lumps.

## .2 ACTIVE INGREDIENT

### .2.1 Identity test<sup>1</sup>

An identity test is required if the identity of the active ingredient is in doubt.

### .2.2 Total copper (44/WP/M3.1, CIPAC E, p.46 (Referee method) or 44/WP/M3.2, CIPAC E, p.46)

The total copper content shall be declared (g/kg) and when determined, the content obtained shall not differ from the declared by more than the following amount;

<u>Declared content</u>	<u>Permitted tolerance</u>
Above 250 up to 500 g/kg	± 5 % of the declared content
Above 500 g/kg	± 25 g/kg

## .3 IMPURITIES

### .3.1 Arsenic<sup>1</sup>

Maximum: 0.1 x X mg/kg where X is the copper content in g/kg found under .2.2.

### .3.2 Lead (MT 92, CIPAC F, p.224)

Maximum: 0.5 x X mg/kg where X is the copper content in g/kg found under .2.2.

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1. Method available from the Pesticide Information Officer, FAO Plant Production and Protection Division.

### .3.3 Cadmium<sup>1</sup>

Maximum: 0.1 x X mg/kg where X is the copper content in g/kg found under .2.2.

## **.4 PHYSICAL PROPERTIES**

### .4.1 pH range (MT 75.2, CIPAC F, p.206)

pH range: 7.0 to 10.5.

### .4.2 Wet sieve test (MT 59.3, CIPAC F, p.179)

Maximum: 2% of the copper content found under .2.2 retained on a 75 µm test sieve.

### .4.3 Wettability of the product (MT 53.3.1, CIPAC F, p.165)

The product shall be completely wetted in one minute without swirling.

### .4.4 Suspensibility (MT 15.1, CIPAC F, p.45. Note 1)

A minimum of 60% of the copper content found under .2.2 shall be in suspension after 30 minutes in CIPAC standard water D (MT 18.1.4) at 30°± 2°C.

### .4.5 Persistent foam (MT 47, CIPAC F, p.152. Note 2)

Maximum: 10 ml after 1 minute.

## **.5 STORAGE STABILITY**

### .5.1 Stability at 54°C (MT 46.1.1, CIPAC F, p.149. Note 3)

After storage at 54°± 2°C for 14 days ( Note 4) the product shall continue to comply with .2.2, 4.1, .4.2 and .4.4.

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1. Method available from the Plant Protection Officer, FAO Plant Production and Protection Service

## NOTES

1. *The product should be tested at the highest and lowest rates of use recommended by the supplier, provided this is consistent with the conditions given in the method.*
2. *The mass of sample to be used in the test should correspond to the highest rate of use recommended by the supplier.*
3. *Samples of the product taken before and after the storage stability test should be analysed together after the test to reduce the analytical error.*
4. *Unless other temperatures and/or times are specified.*

# COPPER HYDROXIDE WATER DISPERSIBLE GRANULES

FAO Specification 44/WP/S/F (1998)

## .1 DESCRIPTION

The material shall consist of a homogeneous mixture of technical copper hydroxide complying with the requirements of FAO specification 44/TC/S/F (1998) together with fillers and any other necessary formulants. It shall be in the form of granules for application after disintegration and dispersion in water. The product shall be dry, free-flowing and free from visible extraneous matter and hard lumps.

## .2 ACTIVE INGREDIENT

### .2.1 Identity test<sup>1</sup>

An identity test is required if the identity of the active ingredient is in doubt.

### .2.2 Total copper (44/WP/M3.1, CIPAC E, p.46 (Referee method) or 44/WP/M3.2, CIPAC E, p.46)

The total copper content shall be declared (g/kg) and when determined, the content obtained shall not differ from the declared by more than the following amount;

<u>Declared content</u>	<u>Permitted tolerance</u>
Above 250 up to 500 g/kg	± 5 % of the declared content
Above 500 g/kg	± 25 g/kg

## .3 IMPURITIES

### .3.1 Arsenic<sup>1</sup>

Maximum: 0.1 x X mg/kg where X is the copper content in g/kg found under .2.2.

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1. Method available from the Pesticide Information Officer, FAO Plant Production and Protection Division.

.3.2 Lead (MT 92, CIPAC F, p.224)

Maximum: 0.5 x X mg/kg where X is the copper content in g/kg found under .2.2.

.3.3 Cadmium<sup>1</sup>

Maximum: 0.1 x X mg/kg where X is the copper content in g/kg found under .2.2.

**.4 PHYSICAL PROPERTIES**

.4.1 pH range (MT 75.2, CIPAC F, p.206)

pH range: 7.0 to 10.5.

.4.2 Wet sieve test (MT 59.3, CIPAC F, p.179)

Maximum: 2% of the copper content found under .2.2 retained on a 75 µm test sieve.

.4.3 Suspensibility (MT 15.1, CIPAC F, p.45. Note 1)

A minimum of 60% of the copper content found under .2.2 shall be in suspension after 30 minutes in CIPAC standard water D (MT 18.1.4) at 30°± 2°C.

.4.4 Persistent foam (MT 47, CIPAC F, p.152. Note 2)

Maximum: 60 ml after 1 minute.

.4.5 Dispersion of the product (MT 174, CIPAC F, p.435)

The product shall have a minimum dispersibility of 80% under the conditions of the test method.

.4.6 Dustiness (MT 171, CIPAC F, p.425)

The product shall comply with category 1 or 2 under the conditions of the test.

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1. Method available from the Pesticide Information Officer, FAO Plant Production and Protection Division.



.4.7 Flowability (MT172, CIPAC F, p.430)

The product shall have no residue on a 4 mesh (4.76 mm) sieve after 2 weeks at  $54 \pm 2^\circ\text{C}$ . under the conditions of the test method.

**.5. STORAGE STABILITY**

5.1 Stability at  $54^\circ\text{C}$  (MT 46.1.1, CIPAC F, p.149. Note 3)

After storage at  $54 \pm 2^\circ\text{C}$  for 14 days ( Note 4 ) the product shall continue to comply with 2.2, 4.1, 4.2, 4.3, 4.5 and 4.7.

NOTES

1. *The product should be tested at the highest and lowest rates of use recommended by the supplier, provided this is consistent with the conditions given in the method.*
2. *The mass of sample to be used in the test should correspond to the highest rate of use recommended by the supplier.*
3. *Samples of the product taken before and after the storage stability test should be analysed together after the test to reduce the analytical error.*
4. *Unless other temperatures and/or times are specified.*

# COPPER HYDROXIDE SUSPENSION CONCENTRATES

FAO Specification 44/SC/S/F (1998)

## .1 DESCRIPTION

The material shall consist of a blue suspension of fine particles of technical copper hydroxide complying with the requirements of FAO specification 44/TC/S/F (1998), in an aqueous phase together with suitable formulants. After gentle agitation the material shall be homogeneous and suitable for further dilution in water.

## .2 ACTIVE INGREDIENT

### .2.1 Identity test<sup>1</sup>

An identity test is required if the identity of the active ingredient is in doubt.

### .2.2 Total copper (44/WP/M3.1, CIPAC E, p.46 (Referee method) or 44/WP/M3.2, CIPAC E, p.46)

The total copper content shall be declared (g/kg) and when determined, the content obtained shall not differ from the declared by more than the following amount;

<u>Declared content</u>	<u>Permitted tolerance</u>
Above 100 up to 250 g/l or g/kg	± 6 % of the declared content
Above 250 up to 500 g/l or g/kg	± 5 % of the declared content

## .3 IMPURITIES

### .3.1 Arsenic<sup>1</sup>

Maximum: 0.1 x X mg/kg where X is the copper content in g/kg found under .2.2.

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1. Method available from the Pesticide Information Officer, FAO Plant Production and Protection Division.

.3.2 Lead (MT 92, CIPAC F, p.224)

Maximum: 0.5 x X mg/kg where X is the copper content in g/kg found under .2.2.

.3.3 Cadmium<sup>1</sup>

Maximum: 0.1 x X mg/kg where X is the copper content in g/kg found under .2.2.

**.4 PHYSICAL PROPERTIES**

.4.1 pH range (MT 75.2, CIPAC F, p.206)

pH range: 7.0 to 10.5.

.4.2 Pourability (MT 148, CIPAC F, p.348)

Maximum residue: 5%.

.4.3 Rinsability (CIPAC, MT 148.1)<sup>1</sup>

Maximum rinsed non-volatile residue: 0.6%.

.4.4 Wet sieve test (MT 59.3, CIPAC F, p.179)

Maximum: 1% of the copper content found under .2.2 retained on a 75 µm test sieve.

.4.5 Suspensibility (MT 15.1, CIPAC F, p.45. Note 1)

A minimum of 60% of the copper content found under .2.2 shall be in suspension after 30 minutes in CIPAC standard water D (MT 18.1.4) at 30°± 2°C.

.4.6 Persistent foam (MT 47.2, CIPAC F, p.152. Note 2)

Maximum: 60 ml after 1 minute.

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1. Method available from the Pesticide Information Officer, FAO Plant Production and Protection Division.

## **.5. STORAGE STABILITY**

### 5.1 Stability at 54°C (MT 46.1.1, CIPAC F, p.149. Note 3)

After storage at  $54 \pm 2^{\circ}\text{C}$  for 14 days ( Note 4 )the product shall continue to comply with 2.2, 4.1, 4.2, 4.3, 4.4 and 4.5.

#### NOTES

1. *The product should be tested at the highest and lowest rates of use recommended by the supplier, provided this is consistent with the conditions given in the method.*
2. *The mass of sample to be used in the test should correspond to the highest rate of use recommended by the supplier.*
3. *Samples of the product taken before and after the storage stability test should be analysed together after the test to reduce the analytical error.*
4. *Unless other temperatures and/or times are specified.*