

# HOLDFAST<sup>®</sup> METALEX<sup>®</sup> TIMBER PRESERVATIVE GREEN CONCENTRATED DATA SHEET

**Product Code:** 44001 (500ml), 44002 (1L), 44003 (4L), 44009 (20L)

**Product Name:** Metalex<sup>®</sup> Timber Preservative Green Concentrated

## Description

Copper Naphthenate 4% is a copper naphthenate fungicide containing 4% copper as metal in a mineral turps base designed for manufacturing use in solvent applications to protect fibrous substrates (textiles, cordage, wood). It can be applied by pressure treatment, brushing, spraying, padding or dipping. It is easily formulated with water repellents for moisture resistance and at recommended use levels will not affect the hand of the treated fabric.



## Technical Data

<i>Active Ingredient</i>	Copper Naphthenate 40% (copper as metal 4%)
<i>Odour</i>	Mild, mineral turps odour
<i>Viscosity Max (25°C)</i>	Gardner B Max
<i>Specific Gravity (25°C)</i>	0.90 - 0.92

## Solubility

*Insoluble in water; soluble in mineral spirits, xylene, naphtha, turpentine, kerosene, mineral oil, orthodichlorobenzene, Solvesso 100, toluene, etc.*

## Stability

*Stable under normal conditions of storage.*

## Packaging

**Colour:** Dark Green Viscous liquid.

## Surfaces

### CONTACT WITH GALVANISED METAL SURFACES

Galvanised steel or Zinalume surfaces display no ill effects resulting from contact with Metalex (Copper Naphthenate 4%) treated materials

eg wood, fabric or cordage. However, to avoid staining ensure that treated surfaces are completely dry before assembly.

## Typical Preservative Properties

### TEXTILES

Copper Naphthenate 4% is effective for decay and mildew protection of canvas goods (awnings, tents etc), tarpaulins, burlap, sand bags, base fabric for vinyl coatings and other textile substrates.

Effective concentrations are in the range of 0.4 to 0.8% copper metal based on weight of fabric. Copper Naphthenate 4% has excellent weather resistance. A typical response with treated (by dipping) cotton duck (9oz) is shown below:

### 1. Agar Plate Evaluation

Sample	% Cu Metal Deposition	Mildew Rating (Mixed Fungi) <sup>1</sup>		
		Unleached	Leached	Weathered
Control	-	4	4	4
A	0.4	0	1	2-3
B	0.6	0	0-1	1-2
C	0.8	0	0	0-1

### 2. Soil Burial Evaluation

Sample	% Cu Metal Deposition	% Retained Tensile <sup>2</sup> Strength		
		Unleached	Leached	Weathered
Control	-	0	0	0
A	0.4	98	90	50
B	0.6	99	95	80
C	0.8	100	100	92

Under severe agar plate evaluation and rigorous soil burial study, Copper Naphthenate 4% shows excellent textile preservation. It shows excellent leach and weather resistance, thus providing superior utility in humid environments.

<sup>1</sup> Rating scale was 0 to 4.

0 indicating no surface growth and 4 indicating complete coverage of the sample.

2x2" section of cotton duck were leached and/or weathered in the following manner: Samples to be leached were suspended in gallon jars and allowed to fully contact running tap water for 72 hours. Flow rate was 2.2 litres/hour. Weathered samples were subjected to simulated weathering in an Atlas Weather-Ometer (Model XW-2) for 200 hours. Exposure consisted of UV light for 102 minutes, followed by 18 minutes of water spray and UV light. After drying, the cotton duck samples were placed on the surface of solidified Nutrient Salts Agar (Difco) in Petri dishes and spray inoculated with a mixture of fungi. The samples were incubated for 3 weeks at 30°C and 80-85% relative humidity. At the end of the incubation period, samples were monitored for degree of surface fungal growth. The mixed fungal inoculum consisted of an equal mixture of Aspergillus niger, ATCC 6275; Penicillium islandicum, ATCC 10127; Chaetonium globosum, ATCC 6205; Trichoderma sp., ATCC 9645; and Aureobasidium pullulans, ATCC 9348.

<sup>2</sup> 1x6" sections of cotton duck were leached and/or weathered as described above. Soil burial consisted of a 30 day exposure to biologically active soil. Tensile strength losses were measured on an Instron.

## **CORDAGE**

As with textiles, Copper Naphthenate 4% is highly effective in the control of fungi associated with the decay and mildew of thread and cordage. It can be added to the cordage oil and applied during manufacture or used as a post treatment in solution.

Effective concentrations are in the range of 0.4 to 0.8% copper metal based on weight of the substrate. A typical response with baler twine (1/8" diameter) is shown below:

### **1. Soil Burial Evaluation**

Sample	% Cu Metal Deposition	% Retained Tensile <sup>3</sup> Strength		
		Unleached	Leached	Weathered
Control	-	0	0	0
A	0.4	92	90	55
B	0.6	95	97	85
C	0.8	97	100	93

## **Wood**

Copper Naphthenate 4% is very effective as a preservative for wood and wood products. Effective dilution concentrations range from 0.5-2.0% copper metal depending on the method of treatment of the wood. In surface treatments (brush, dip or spray) and cold soak treatment, the copper metal concentration in the treating solution should be 1.5 to 2.0%. In open tank, hot and cold treatments and pressure treatments, the copper metal concentration in the treating solution should be 0.5-1.0%. For dressed lumber and cut timbers, soak (dip) 30-45 minutes/inch of thickness.

If spraying or bushing (recommended for above ground use only), generously coat on all surfaces. For wood in contact with masonry posts, poles etc, use pressure treatment or hot and cold soak treatments. Soak 12-48 hours. Treated lumber that will come in contact with growing plants should be thoroughly dry before use. Wood may be painted 24 hours after treatment. Use two coats since the first coat may show a green discoloration. Typical responses using a surface treatment (brush) and a hot and cold soak treatment are shown below:

<sup>3</sup> See Soil Burial – TEXTILES.

## Application

In applications requiring water repellency, the following is a suggested formula and recommended procedure for incorporating Copper Naphthenate 4% with water repellents to prepare a solution containing 2% copper as metal.	Copper Naphthenate 4%	50kgs
	Mineral Oil	5kgs
	Heat to 66°C and add Paraffin Wax (melting point 53-55°C	5kgs
	When homogeneous, dilute with Mineral Turps	40kgs
	<b>TOTAL</b>	<b>100KGS</b>

## Application Limitations

1. Surface Treatment <sup>4</sup>									
Sample	% Cu Metal Treatment	% Retained Weight <sup>5</sup>							
		Unleached Soil Burial Days				Leached Soil Burial Days			
		30	60	90	120	30	60	90	120
Control	-	73	50	35	12	75	52	30	6
A	0.5	84	70	61	50	79	65	50	35
B	1.0	95	90	79	70	88	73	64	58
C	1.5	100	100	100	93	100	100	100	91
C	2.0	100	100	100	96	100	100	92	89

2. Hot and Cold Soak Treatment <sup>6</sup>									
Sample	% Cu Metal Treatment	% Retained Weight <sup>7</sup>							
		Unleached Soil Burial Days				Leached Soil Burial Days			
		30	60	90	120	30	60	90	120
Control	-	73	50	35	12	75	52	30	6
A	0.25	95	86	78	62	90	79	62	53
B	0.5	100	93	90	85	100	90	83	75
C	1.0	100	100	100	96	100	98	99	93
C	1.5	100	100	100	99	100	100	100	100

<sup>4</sup> Copper Naphthenate 4% was diluted to 0.5, 1.0, 1.5 and 2.0% with normal turps and brush coated on the surface of 1x6x1/16" dried yellow pine strips. Five samples at each dilution were treated. The strips were allowed to dry for 48 hours, weighed and then buried in biologically active soil. Controls consisted of a mineral turps coating.

<sup>5</sup> After the appropriate incubation period, the strips were removed, external growth and dirt carefully removed and the blocks weighed. Losses calculated on the basis of original vs final weight.

<sup>6</sup> Samples were suspended in gallon jars and allowed to fully contact running water for 72 hours. Flow rate was 2.2 litres/hour.

<sup>7</sup> The wood strips were soaked in hot water (82°C) for 1 hour and then immediately transferred to cold preservative solution for 30 minutes, removed and allowed to dry for 48 hours, weighed and buried in biologically active soil. Controls consisted of a hot water/cold mineral turps treatment.

The above data clearly demonstrates the utility of Copper Naphthenate 4% as a wood preservative. This data as well as the long history of successful usage of copper naphthenate as a wood preservative, corroborate the overall excellent efficacy of copper naphthenate. The effective concentration of Copper Naphthenate 4% may vary in individual cases. Manufacturing procedures, raw materials and conditions of application and exposure may require higher or lower concentrations for optimum protection.

### **Health and Safety Recommendation**

- Investigations of the toxicological properties of Copper Naphthenate 4% using laboratory animals and its long history of usage indicate a very low order of toxicity.
- Copper Naphthenate 4% can be stored in the original container, preferably in a cool, dry place.
- Keep out of reach of children and away from food and feed products.
- Combustible.
- Keep away from heat and open flame.
- Do not use container for other purposes.
- Rinse empty drum with mineral turps and then water, and return to drum reconditioner, or bury.

In handling:

- Avoid contact with eyes and skin.
- Wash thoroughly after handling.
- Avoid prolonged breathing vapour or spray mist.
- Remove and wash contaminated clothing before re-use.

### **Remark**

*The directives contained in this documentation are the result of our experiments and of our experience and have been submitted in good faith. Because of the diversity of the materials and substrates and the great number of possible applications which are out of our control, we cannot accept any responsibility for the results obtained. In every case it is recommended to carry out preliminary experiments.*

**If any clarification is required please contact Holdfast Technical Services or email [sales@holdfast.co.nz](mailto:sales@holdfast.co.nz).**

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