HOLDFAST® METALEX® CONCENTRATED TIMBER PRESERVATIVE CLEAR DATA SHEET

Product Code: 44004 (500ml clear), 44005 (1L), 44006 (4L), 44010 (20L)

Product Name: HOLDFAST® Metalex® Concentrated Timber Preservative Clear

Description

HOLDFAST® Metalex® Concentrated Timber Preservative Clear is a 60% zinc naphthenate containing 8% zinc as metal in a mineral turps base designed for use in solvent applications to protect fibrous substrates (textiles, cordage, wood). It can be applied by pressure treatment, brushing, spraying, padding or dripping. It is recommended for use where the green colour of copper naphthenate is undesirable.

Technical Data

Appearance:	Amber, slightly viscous liquid
Active Ingredient:	Zinc Naphthenate 60%, (Zinc as metal, 8%)
Odour:	Mild, mineral turps odour
Viscosity, Max. (25°C):	Gardner D, max
Specific Gravity (25°C):	0.97 – 1.0
Stability:	Stable under normal conditions of storage

Zinc Naphthenate 8%	25kgs
Mineral Oil	5kgs
Heat to 66°C and add	
Paraffin Wax (Melting Point 53-55°C)	5kgs
When homogenous, dilute with	
Mineral turps	65kgs
100kgs	

Application

Coverage: Timber - 6 - 8 square metres per litre dependant upon density and moisture content, and the surface finish i.e. either sawn or dressed.

Method: HOLDFAST® Metalex® Clear is effective for decay and mildew protection of canvas Goods (awnings, tents, etc.), tarpaulins, burlap, sandbags, base fabric for vinyl Coatings and other textile substrates. Effective concentrations are in the range of 0.6 to 1.2% Zn metal-based weight on fabric. HOLDFAST® Metalex® Clear fungicide Has excellent weather resistance. A typical response with treated (by dipping) cotton duck (9oz) is shown below:

Recommended System: Dilute two part HOLDFAST® METALEX® Clear with three parts mineral turpentine.
For areas of existing severe fungal attack and decay apply liberally undiluted.
Where surfaces are not to be painted diesel can be used to thin Metalex green only.

Drying: Dependant on temperature and humidity, Kerosene thinned 10 - 12 weeks, Mineral Turpentine thinned 7 - 10 days

Agar Plate Evaluation

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Sample	%Zn Metal Deposition	Mildew Rating (Mixed Fungi) (1)		
		Unleached	*Leached*	*Weathered*
Control	-	4	4	4
A	0.6	0	1	2-3
B	0.9	0	0-1	1-2
C	1.2	0	0	0-1

Legend

Rating scale was 0 to 4; 0 indicating no surface growth and 4 indicating complete coverage of the sample:

1) 2 x 2" sections 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.

2) 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 U.V light for 102 minutes followed by 18 minutes of water spray and U.V 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 three weeks at 30^{o}C and 80-85% relative humidity. At the end of the incubation period, samples were monitored for degree of surface growth. The mixed fungal inoculm consisted of an equal mixture of Aspergillus niger, ATCC 6275; Penicillium islnadicum, ATCC 10127; Chaetonium globosum, ATCC 6205; Trichoderma sp., ATCC9645; and Aureobasidium pullulans, ATCC 9348.

Soil Burial Evaluation

Sample	%Zn Metal Deposition	%Retained Tensile Strength (1)		
		Unleached	*Leached*	*Weathered*
Control	-	0	0	0
A	0.6	98	90	50
B	0.9	99	95	80
C	1.2	100	100	92

Legend

1) 1 x 6" 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 as Instron.

Under a severe agar plate evaluation and rigorous soil burial study, HOLDFAST® Metalex® Clear shows excellent textile preservation. It shows excellent leach and weather resistance, thus providing superior utility in humid environments.

CORDAGE

As with textiles, HOLDFAST® Metalex® Clear is highly effective in the control of fungi associated with 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 – 1.2% Zinc metal based on weight of the substrate. A typical response with balter twine (1/8: dia.) is shown below.

Soil Burial Evaluation

Sample	%Zn Metal Deposition	%Retained Tensile Strength (1)		
		Unleached	*Leached*	*Weathered*
Control	-	0	0	0
A	0.4	92	85	45
B	0.8	95	97	85
C	1.2	97	100	95

Legend

1) See Soil Burial - **TEXTILES**

WOOD

HOLDFAST® Metalex® Clear is very effective as a preservative for wood and wood products. Effective dilution concentrations range from 0.5 – 2.0% zinc metal depending on the method or treatment of the wood. In surface treatments (brush, dip or spray) and cold soak treatment, the zinc metal concentration in the treating solution should be 1.5 to 2.0%. In open tank, hot and cold soak treatment and pressure treatments, the zinc 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 brushing (recommended for above ground use only), generously coat on all surfaces. For wood in contact with masonry or soil, two applications, 4 to 6 hours apart, are desirable. For fence posts, poles etc, use pressure treatment of 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. Typical responses using a surface treatment (brush) and hot and cold soak treatment are shown below:

Surface Treatment (1)

Sample	**% Zn Metal Treatment**	**Soil Burial (Days)**	**% Retained Weight (2)**							
			Unleached				**Leached (3)**			
			30	**60**	**90**	**120**	**30**	**60**	**90**	**120**
Control	-		73	50	35	12	75	52	30	6
A	0-5		84	70	61	45	79	65	50	25
B	1.0		95	90	79	65	88	73	64	50
C	1.5		100	100	100	90	100	100	100	85
D	2.0		100	100	100	96	100	100	92	90

Hot and Cold Soak Treatment (4)

Control	-	73	50	35	12	75	52	30	6
A	0.25	95	86	70	55	90	79	60	50
B	0.5	100	93	90	85	100	90	83	75
C	1.0	100	100	100	96	100	98	99	93
D	1.5	100	100	100	99	100	100	100	100

Legend

1) HOLDFAST® Metalex® Clear was diluted to 0.5, 1.0, 1.5 and 2.0% with normal mineral 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.
2) After the appropriate incubation period, the strips were removed, external growth and dirt carefully removed and the blocks weighed. Losses were calculated on the basis of original vs. final weight.
3) Samples were suspended in gallon jars and allowed to fully contact running water for 72 hours. Flow rate was 2.2 litres/hour.
4) The wood strips were soaked in hot water (82^0C) for one 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 if a hot water/cold mineral spirits treatment.

The above data clearly demonstrate the utility of HOLDFAST® Metalex® Clear as a wood preservative. This data, as well as the long history of successful usage of HOLDFAST® Metalex® Clear as a wood preservative, corroborate the overall excellent efficacy of HOLDFAST® Metalex® Clear.

The effective concentration on HOLDFAST® Metalex® Clear may vary in individual cases. Manufacturing procedures, raw materials and conditions of application and exposure nay require higher or lower concentrations of optimum protection.

HOLDFAST® Metalex® Clear is suitable for use as a supplementary protection on the cut surfaces of treated timber as referred to in Appendix B5 of NZS 3640:2003 Chemical Preservation of Round and Sawn Timber

Where painting or subsequent gluing operations are specified after the Metalex® preservative treatment, thin only with mineral turpentine and allow minimum drying period of 7 - 10 days before gluing or paint application. We recommend a preliminary adhesion test on all paint systems as results may vary.

Health & Safety Recommendations

Keep out of reach of children. This product is designed for manufacturing use only. While the product has low toxicity, good hygiene practices should be required of those handling this product.

HOLDFAST® Metalex® Clear has a low order of acute oral toxicity-LD_{50}. Avoid eye contact. Prolonged skin contact may cause irritation. Wear goggles and rubber gloves when handling. Do not breathe vapour or spray mist. Wash thoroughly after handling. If spilled on to clothing, remove and wash before re-use. Discard contaminated shoes.

Do not contaminate water sources, food or feed by storage by disposal.

In case of spillage, cover with inert absorbent material and remove completely for disposal according to procedures approved by disposal authorities.

Open burning or dumping is prohibited.

HOLDFAST® Metalex® Clear is a combustible liquid. Keep away from heat and open flame. In case of fire, use water spray, foam $C0^2$ or dry chemical. Wear self-contained breathing apparatus to fight fire.

Do not use drums for other purposes. Empty the drums completely, flush with hydrocarbon solvent, drain completely and return drum to reconditioner or crush and bury I approved landfill.

Limitations

HOLDFAST® Metalex® Clear does not react to galvanising, however to avoid risk of staining it is recommended that HOLDFAST® Metalex® Clear should not be put into contact with galvanised or zinc coated surfaces until surface of material being treated with Metalex is completely dry. Further it is recommended that Metalex is not applied to 'Zincalume' coated surfaces.

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.

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