Code	Description	Size	Colour
44004	Metalex Concentrated Timber Preservative	500 ml	Clear
44005	Metalex Concentrated Timber Preservative	1 Litre	Clear
44006	Metalex Concentrated Timber Preservative	4 Litre	Clear
44010	Metalex Concentrated Timber Preservative	20 Litre	Clear

1. Description

Metalex Concentrated Timber Preservative is a preparation for the envelope and remedial treatment of fibrous products including timber.

2. Characteristics

- Preserves the wood treatment envelope
- Protects treated materials against insect attack and fungal decay
- Reduces moisture uptake of timbers, UV Degradation, limiting warping of timbers, weathering effects, cupping swelling and grain rising.

3. Technical Data

Appearance:	Amber, slightly viscous liquid
Active Ingredient:	Liquid Zinc Naphthenate 60%, (Zinc as metal 8%)
Odour:	Mild, mineral turps
Specific Gravity: *(20°C)*	Ca. 0.83 → 0.86
Coverage: *(Timber)***	6 – 8m^2 / litre (mixed product)
Mix Ratio: *Construction timbers*	2 parts Metalex Concentrate ; 3 parts Solvent
Bee Hives	1 parts Metalex Concentrate ; 5 parts Solvent

** Coverage is dependent on timber density, timber moisture content and surface finish.

4. Applications

- Can be used as a preventative treatment from timber degradation over time.
- Remedial treatment of timber species for the preservation of the treatment envelope.
- Envelope Preservation Treatment of H3.1, H3.2, H4, H5 timbers in accordance with the New Zealand Building Code
- Prevention of decay & mildew protection of canvas goods, tarpaulins, burlap, sandbags,

5. Packaging

500ml, 1 l, 4l, 20l

6. Shelf Life

12 months in unopened packaging, when stored in a cool and dry place at a temperature between +5°C and +25°.

7. Application Instructions

Surfaces

Type: All usual building surfaces such as construction timbers, canvas goods, and cordage based items

State: Surfaces should be clean and free of dust and grease etc.

Preparation: If timber to be treated has "rot", then this should be cut out and rectified in accordance with good building practice. If mould exists then the area should be affected timber should be cleaned with a Wood Cleaner. It should be noted that adhesive glue lines in both Plywood products and LVL/CLV timbers can impair the penetration of the Metalex Timber Preservative.

Method: Dipping, paint on or spray application. Process all timbers to be coated in a well-ventilated area

Coverage: Timber: 6 -8 m^2 per litre of mixed product (Timber dependant on density, moisture content and surface finish of the timber)

Recommended Mixing:

Construction Timbers: Dilute two parts Metalex Timber Preservative Concentrate with three parts Solvent (ie: Mineral Turpentine)
(for every 500ml of Metalex Timber Preservative Concentrate add in 750ml of solvent)

Bee Hives: Dilute one part Metalex Timber Preservative Concentrate with five parts Solvent (ie: Mineral Turpentine)
(for every 500ml of Metalex Timber Preservative Concentrate add in 3 litres of solvent). It is recommended that the thinned Metalex Timber Preservative is only applied to the external parts of the bee hive.

Do not use "straight" as the Metalex Timber Preservative will not be absorbed into the timber and will not improve the treatment.

Coats: Holdfast NZ Ltd recommends a minimum of two coats

Drying: Dependant on ambient temperature, humidity and moisture along with density and moisture content of the timber.

- Between coats: Timber should feel dry before applying a subsequent coating. At 20°C 65% R.H. – Holdfast would expect this to be approx.. 4 hours.
- Full Drying: (Based on 20°C 65% R.H)
  Thinned with Kerosene – 10 → 12 weeks
  Thinned with Solvent (mineral turpentine) – 7 → 10 days (Bee Hives, Holdfast recommends 8 → 10 weeks)

Soudal Ltd recommends that the user read the limitations to ensure that the product meets their requirements.

8. Limitations

Soudal Metalex Timber Preservative will not provide an H-Class treatment to timbers as per the requirements of the NZ Building Code. It will only provide a supplementary envelope treatment to the applied timber.

While Soudal Metalex Timber Preservative will protect against the "Rotting" of timbers it is not a rot converter of degraded timber substrates.

Painting over Metalex Timber Preservative: If using a solvent thinned (mineral turpentine) base then you will need to wait a minimum 7 → 10 days between application of the Metalex and an acrylic coating. If using an oil based paint/stain coating then Holdfast recommends a period of 2 → 3 days between application of the Metalex and a coating. It is recommended that a preliminary test be carried out to ensure that the desired result is achieved.

Metalex Timber Preservative will protect timbers against insect ingress, however it will not kill insects in the timber that the tinned solution does not absorb to. It will only protect to the depth that it can be absorbed in the timber.

Metalex Timber Preservative will protect timbers against fungal attack, however it will kill any fungal spores to the depth that the thinned product can be absorbed into the timber.

Metalex Timber Preservative is not a registered animal husbandry product.

WARNING: This product is designed for outdoor use. Indoor application may cause odour.

Metalex® Clear does not react to galvanising, however to avoid risk of staining it is recommended that 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.

9. Evaluations

Agar Plate Evaluation

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 30ºC 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

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) 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^{0}C) 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 Metalex® Clear as a wood preservative. This data, as well as the long history of successful usage of Metalex® Clear as a wood preservative, corroborate the overall excellent efficacy of Metalex® Clear.
The effective concentration on 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.
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

10. Health and Safety Recommendation

- Apply usual industrial hygiene practises.
- 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.
- 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.
- 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.
- Please refer to the MSDS for more detailed information.

Remark
The directives and data contained in this documentation is provided in good faith and accurately reflect Soudal's knowledge when its products are properly stored, handled and applied under normal conditions in accordance with Soudal's recommendations. In practice, the diversity of the materials, substrates, environments, site conditions, product storage, handling and application are such that no warranty can be given in respect to the merchantability or fit for purpose, of any product. All users must determine the product suitability for their purposes through testing. This technical data sheet and product properties may change without notice so users, suppliers and retailers of Soudal products should always check that the data sheets they have are the latest. To the maximum extent permitted by law, Soudal disclaims all warranties in relation to either the manufacture, storage and end use of the product. All orders are accepted subject to our current terms of trade. ***If any clarification is required, please contact Soudal Technical Services or email info@soudal.co.nz.***

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