



# TECHNICAL DATA SHEET

## **AQUA 2000 JOINERY PRESERVATIVE (concentrate)** **HIGH PERFORMANCE WATER BASED MICRO-EMULSION** **CLEAR : STRAW (DC) : BROWN : RED CEDAR :**

### **THE PRODUCT**

Enviro-Safe Aqua 2000 Joinery Preservative is an innovative micro-emulsion containing two fungicides active fungicides IPBC and propiconazole. Which give broad spectrum action against most wood rotting and staining fungi. The formulation provides high active loading, rapid rates of absorption combined with excellent penetration and is available in a range of colours making it an ideal product for use for the protection of internal and external woodwork and joinery against wood rotting fungi and wood staining fungi.

### **PRODUCT DESCRIPTION**

Enviro-Safe Aqua 2000 Joinery Preservative is a new novel micro-emulsion system using advanced surfactant chemistry to achieve the desired effect in a purely water based system. Its battery of active ingredients is designed to give the maximum spectrum of biological activity against fungi. It is a 10 to 1 concentrate (supplied in a 2.5 litre pack which is diluted to make 25 litres of working product), it is almost odourless and can be applied either by brush, low pressure spray or by dipping [minimum of 3 minutes] to give long lasting protection against attack by wood rotting and staining fungi.

The combination of surfactants and pigments affords even and smooth application with excellent light and weather fastness.

Enviro-Safe Aqua 2000 Joinery Preservative is supplied as a concentrate in a 2.5 litre plastic container. It has a Health and Safety Executive statutory 1-hour re-entry time, or until surfaces are dry.

Construction Chemicals formulations are all cleared under the Governments Pesticide Safety Precaution scheme and under the Control of Pesticide Regulations 1986, for use as directed and carries the HSE Approval No .7357

### **FEATURES**

1. Highly concentrated active package
2. Synergised fungicide blend
3. No solvents or associated odours
4. Rapid, complete and deep penetration
5. Fast drying
6. Can be over painted when dry
7. Can be applied to wet timbers without loss of performance
8. A range of colours

### **BENEFITS**

- Less packaging to dispose of and easier to transport
- With two fungicides blue staining is prevented
- Safer for operatives and workshops. No fire risk
- Confidence in treatment
- Grain is not raised and timber Can be safely handled quickly after treatment.
- No likelihood of excess solvents effecting priming or painting
- No requirement to check moisture content prior to treating
- A colour to suit all joinery applications.

*The special formulation of Aqua 2000 joinery preservative means this product eliminates problems of raised grain normally associated with water based products. High quality pigments mean colour treatments last far longer and give better protection when storing finished products on site.*



*Aqua 2000 is safer to use in the workshop by brush application or dip tank immersion.*

### **APPLICATION**

Enviro-Safe Aqua 2000 Joinery Preservative is designed primarily for the protection of general joinery timbers against wood rotting fungi. French polishes or other surface finishes can be applied to surfaces that have been treated when dry. Any paint, varnish or other surface coating should be removed.

### **FORMULATION**

3-Iodo-2-propynyl-n-butyl carbamate	2.25 %w/w
Propiconazole	2.25 %w/w in a fully water based micro emulsion

### **COVERAGE**

**Dip or immerse** for at least 3 minutes or longer if necessary.  
**Brush or Spray:** Apply at the rate of 1 litre per 2 - 8 square metres of timber surface to refusal

### **PACKAGING**

Supplied in 2.5 ltr concentrate make 25ltr ready to use.



## **AQUA 2000**

### **A New Generation of Timber Treatments**

**STAY AHEAD OF YOUR TREATMENTS  
WITH CONSTRUCTION CHEMICALS**

**WE RAISE THE STANDARD,  
NOT THE GRAIN.**

**FOR FURTHER DATA SEE OUR AQUA 2000 PERFORMANCE REPORT AT  
[www.constructionchemicals.co.uk](http://www.constructionchemicals.co.uk)**

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## AQUA 2000 JOINERY PRESERVATIVE (concentrate) HIGH PERFORMANCE WATER BASED MICRO-EMULSION

### INTRODUCTION

The Aqua 2000 timber treatment products are based on microemulsion technology which gives fully water based products high levels of performance with minimal environmental impact and operator exposure.

The products are available in a 2.5L concentrate plastic container for application by brush, coarse spray, or for use in dip applications.

The products can combine a range of pesticidal active ingredients in systems which can also contain pigments and water repellents to give a very versatile range of liquid products for use in both amateur and professional applications.

### PERFORMANCE CHARACTERISTICS

#### *Penetration Profiles following Surface Application.*

In these tests a range of product types were applied topically to timber surfaces at a rate of 250 ml per square metre. After being allowed to dry for 7 days at UK ambient temperature the timber samples were sectioned by microtome and the active ingredient extracted and analysed to allow us to build up a profile of pesticide deposition through the wood.

The results in Figure 1 below compare results obtained with micro emulsion, solvent solution and a conventional emulsion and clearly demonstrate that the water based micro emulsions used in the Aqua 2000 range give penetration results that are very similar to those achieved with conventional solvent solutions and much better (ie deeper penetration) than those achieved with a conventional emulsion product.

Depth (mm)	LOADING (g/m <sup>3</sup> )		
	Aqua 2000	Solvent	Emulsion
0 - 1	350	320	440
1 - 2	80	80	85
2 - 3	40	55	10
3 . 4	30	35	2
4 . 5	15	15	0
5 . 6	5	5	0
6 - 7	2	2	0

**AQUA 2000 JOINERY PRESERVATIVE (concentrate)**  
**HIGH PERFORMANCE WATER BASED MICRO-EMULSION**

**PERFORMANCE CHARACTERISTICS**

***Biological Efficacy following Surface Application.***

A range of EN (European Standard Tests) were carried out at the Building Research Establishment (BRE) to assess the effectiveness of micro emulsion formulations of synthetic pyrethroid insecticides and some of these are given in Figures 2-4 below. The results clearly demonstrate the efficacy of these systems even when used at levels much below the normal level of application (300 mg active per square metre).

**Figure 2**

Loading (mg/m <sup>2</sup> )	EN118 TERMITES (R. SANTONENSIS)		
	Live Termites	% Mortality	Grade of Attack
0	164	36	4
100	0	100	1
200	0	100	0
300	0	100	0

**Figure 3**

Active Loading (mg/m <sup>2</sup> )	EN46 HOUSE LONGHORN BEETLE (H. BAJULUS)			
	Larvae Retrieved			% Mortality
	Dead		Live	
	No Tunnel	Tunnel		
0	2.5	0	7.5	25
100	10	0	0	100
200	10	0	0	100
300	10	0	0	100

**Figure 4**

Active Loading (mg/m <sup>2</sup> )	POST-TREATMENT EMERGENCE COMMON FURNITURE BEETLE (A. PUNCTATUM)		
	Emergence of Beetles		
	Exit Holes	Beetles Emerged	% Population
0	3.6	3.8	38
200	0	0	0
300	0	0	0

## AQUA 2000 JOINERY PRESERVATIVE (concentrate) HIGH PERFORMANCE WATER BASED MICRO-EMULSION

### PERFORMANCE CHARACTERISTICS

#### *Fluid Uptake following a 3 minute immersion (dip) test.*

In these tests weighed blocks of timber measuring ca 25 x 3 x 1.5 cm, with the ends of the block sealed with wax (for water based fluids) or water based resins (for solvent based fluids) to prevent any uptake via the end grain, were immersed fully in the fluid for a period of 3 minutes. At the end of this period the blocks were removed and any excess fluid removed, the blocks were weighed and the uptake of fluid determined.

The weight uptake for a range of water based products in both smooth (planed) timber and rough (unplaned) timber are compared against a commercially available solvent based product in Figures 5 . 6 below. In the case of the planed timbers these were also examined for any signs of grain raising after treatment.

Figure 5

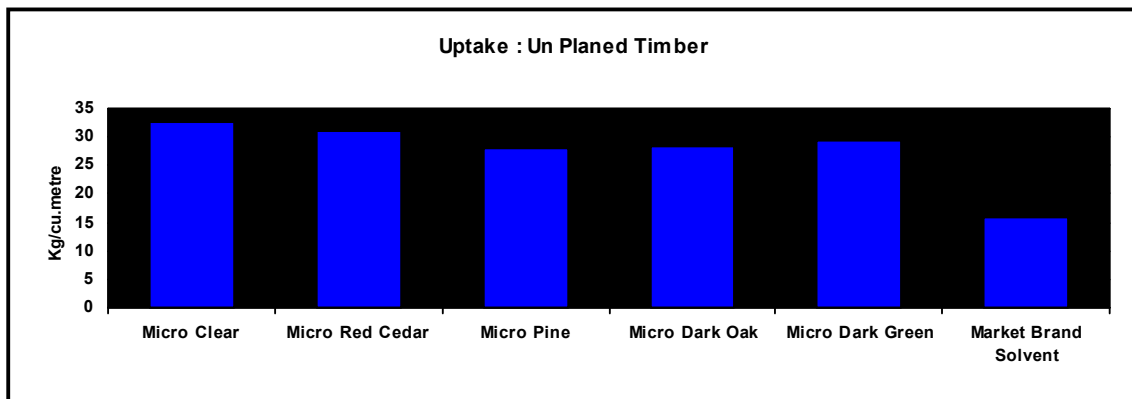
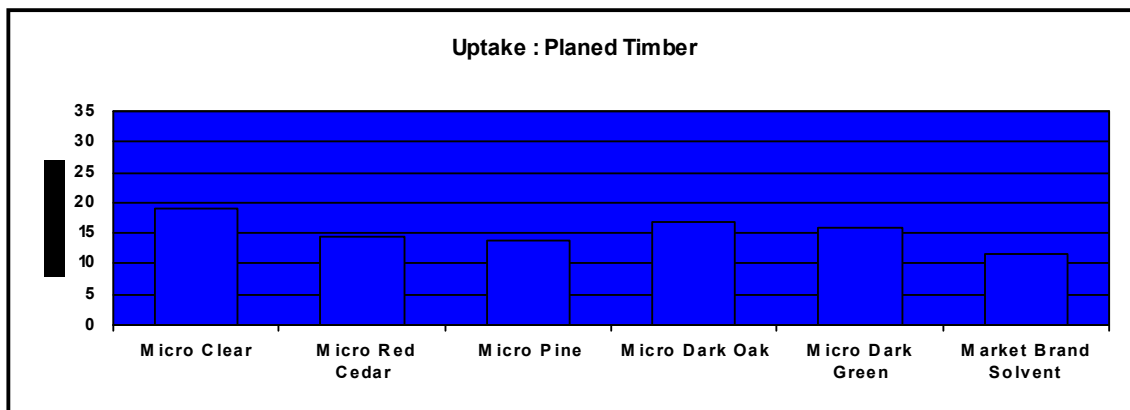


Figure 6



# AQUA 2000 JOINERY PRESERVATIVE (concentrate) HIGH PERFORMANCE WATER BASED MICRO-EMULSION

## PERFORMANCE CHARACTERISTICS

### *Drying Characteristics following 3 minute immersion.*

Following determination of initial uptake as described in 2.3 above the individual blocks were periodically re-weighed over a period of 2 hours to determine the rate at which the absorbed fluid evaporated (dried) and the results for these tests are shown in Figures 7 . 8 below.

Figure 7

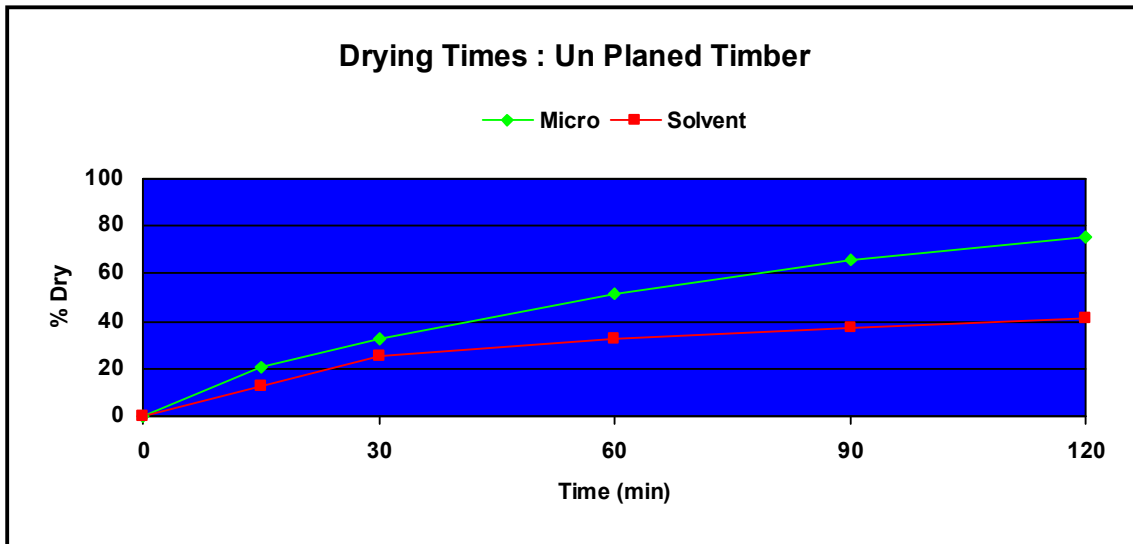
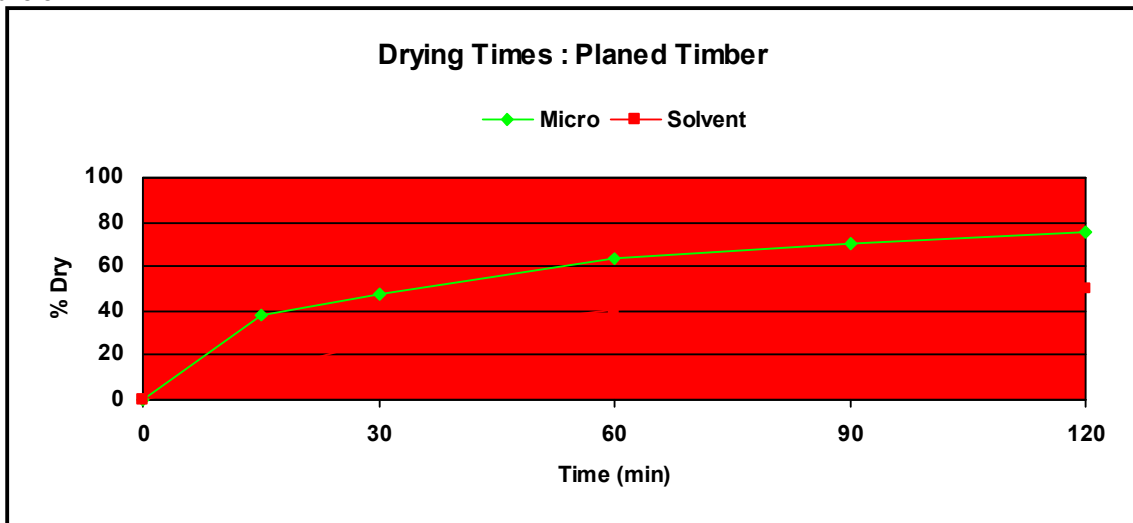


Figure 8



**AQUA 2000 JOINERY PRESERVATIVE (concentrate)**  
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**PERFORMANCE CHARACTERISTICS**

***Emissions of Volatile Organic Compounds (VOC's) during the drying process.***

As treated timbers are allowed to dry out naturally following treatment either by a surface application (brush or spray) or by an immersion (dipping) process the carrier fluid evaporates into the atmosphere. In the case of micro emulsions this carrier fluid is water whilst in the case of commercially available solvent based products this fluid is comprised mainly of VOCs.

In Figure 9 below we compare the level of VOC emissions following surface treatment of 100,000 square metres of timber, at a rate of 250 ml product per square metre, for the Micro-Care micro emulsions and a commercially available solvent based product.

**Figure 9**

V.O.C Emissions following Surface Treatment of 100,000m <sup>2</sup> of timber at 250ml/m <sup>2</sup> .		
	<b>Commercial Product</b>	<b>Aqua 2000</b>
<b>Product Type</b>	<b>Solvent Based RTU</b>	<b>Water Based Micro-emulsion RTU</b>
VOC Rating	Very High	Minimal
VOC Content	>50%	0%
VOC Emission	20,000Kg	Zero
HSE Re-entry time	48 Hours	1 Hour
<b>Classification</b>		

## **AQUA 2000 JOINERY PRESERVATIVE (concentrate)** **HIGH PERFORMANCE WATER BASED MICRO-EMULSION**

### **PERFORMANCE CHARACTERISTICS**

#### **CONCLUSIONS**

The data presented above clearly demonstrates that microemulsions can deliver all of the benefits of solvent based products without the inherent environmental & operator exposure issues associated with the latter type of product.

Indeed in some aspects of performance such as the rate of drying and rate of uptake following immersion treatments the microemulsions can produce clear improvements.

#### **SUMMARY**

The use of water based microemulsions as an alternative to the conventional solvent based products offers many significant benefits:

- **High levels of insect and fungal control**
- **Even and consistent treatment levels**
- **Lower levels of fluid irritancy and toxicity**
- **Improved levels of pigment dispersion giving enhanced surface finish**
- **Complete removal of VOC emissions to the environment before, during and after treatment**
- **Reduction in operator exposure to VOC emissions and the associated active ingredient volatilisation before, during and after treatment**
- **Lower re-entry times following treatment**
- **Improved levels of fluid (and active ingredient) uptake during immersion treatments**
- **Significant reductions in drying times following treatment resulting in much shorter “down times” for subsequent processing of timbers**
- **No Odours**
- **No grain raising associated with conventional water based products**