Ultravar 2000

Polyurethane Varnish

Product Data Sheet

- **Excellent ultra-violet resistance**
- **High build properties**
- **Good moisture resistance**

Introduction

Ultravar 2000 is a high quality two-pack polyurethane varnish which has been designed to give wood and epoxy-coated wood the maximum protection from the damaging and yellowing effects of ultra-violet radiation. In addition, surfaces coated with Ultravar 2000 have high resistance to wear, water and a range of chemicals.

Ultravar 2000 is a very high solids varnish which means that fewer coats need to be applied in order to achieve a thick coating with a high depth of gloss. This leads to savings in both materials and labour. Used in conjunction with the appropriate solvent, Ultravar 2000 can be applied by brush, roller or spray.

Ultravar is designed to be used as both a stand-alone varnish for wood, or as a final coating to protect a clear epoxy. In this role it is frequently used to overcoat products such SP 106, SP 320, SP 115 or Eposeal 300. When used in this way, the UV filtering properties of the varnish will slow down the characteristic yellowing that occurs with most epoxies on exposure to UV light.

Instructions for Use

Workshop Conditions

Ultravar 2000 should be used in warm, dry, dust-free conditions indoors or outdoors. High quality surfaces over large areas will be achieved more easily at 10 - 15°C, and out of direct sunlight. It should be cured at a minimum temperature of 15°C in dry conditions and with good ventilation.

Surface Preparation

All surfaces to be coated should be dry, clean and dust-free. Wood or epoxy coated wood should be prepared by abrading with 120 - 320 grade paper.

Metering Resin and Hardener in the Correct Ratio

The Ultravar resin component with Ultravar hardener component should be combined in the ratio:-

Resin : Hardener
2 : 1 (by volume)

Use SP's 0.5 litre plastic graduated mixing cups. For volumes of less than 150ml use plastic syringes, one for each component.

Mixing Resin and Hardener

The resin and hardener should be mixed thoroughly for at least one minute. The mixture should then be allowed to stand for 10 to 30 minutes before use to allow any air bubbles to disperse. If necessary Ultravar 2000 can be thinned with Ultravar Brushing Solvent (SP Solvent E) or SP Ultravar Spraying Solvent (SP Solvent H) (see Application notes).

Once resin and hardener are mixed the chemical reaction between them commences. However, being a solvent-based system, the reaction is slowed in the pot by the presence of the solvent, giving a relatively long pot life of many hours.

Once the coating has been applied to the surface to be covered, the solvent evaporates and the resin-hardener reaction can proceed more quickly.

Application

Ultravar 2000 can be applied by roller, brush or spray. For roller or brush use SP Solvent E (Ultravar Brushing Solvent), 20% dilution for first coat on bare wood and up to 10% for other coats if required. Ultravar 2000 is not suitable for application over conventional oil-based coatings but may be applied over two-part polyurethane or epoxy coatings which have been suitably prepared.

Application Tips for Brushing

Apply out of direct sunlight, indoors or outdoors. To achieve the best flow properties and in order to eliminate brush marks when applying by brush to large areas, apply at 10-15°C. At higher temperatures mixed product may require thinning to maintain a wet edge and give good flow.

Apply relatively thickly on flat surfaces, but thinly on sloping or curved surfaces. Ultravar 2000 can be applied more thickly than a single component conventional varnish since it will still cure to a hard finish.

Cover evenly with long, slow brush strokes in line with wood grain. Once the coating has become touch dry, the temperature may be increased to help speed the cure.

Overcoating

Allow each coat to cure hard then sand with wet or dry abrasive paper (280-320 grit) used wet in order to obtain a good key for the next coat. Avoid using a finer grit grade. Wipe with SP Ultravar Brushing Solvent (SP Solvent E) or SP Ultravar Spraying solvent (SP Solvent H) after removing sanding dust and ensuring that no traces of 'slurry' remain.

Successive coats can also be applied without sanding if applied after the "tack-off time" and up to the latest overcoating time shown in the 'Working Properties' table. However, to avoid solvent entrapment ensure solvents have evaporated from first coat before overcoating onto the tacky surface.

Solvents and Thinners

App. by	Solvent/Thinner	Dilution
Brush and roller	SP Ultravar Brushing Solvent (SP Solvent E)	Add up to 20% first coat on bare wood; up to 10% other coats
Spray	SP Ultravar Spraying Solvent (SP Solvent H)	As required

Properties

Component Properties		
	Resin	**Hardener**
Mix Ratio (by weight)	100	50
Mix Ratio (by volume)	100	50
Viscosity @ 15°C (cP)	291	192
Viscosity @ 20°C (cP)	204	131
Viscosity @ 25°C (cP)	143	87
Viscosity @ 30°C (cP)	100	58
Shelf Life (months)	12	12
Colour (Gardner)	1	1
Mixed Colour (Gardner)	-	1
Component Density (g/cm^3)	1.035	1.036
Mixed Liquid Density (g/cm^3)	-	1.035
Solids Content (% by weight)	45	47
Hazard Category	F	Xn

Working Properties vs Temperature				
	Resin / Hardener			
	15°C	**20°C**	**25°C**	**30°C**
Initial Mixed Viscosity (cP)	225	160	114	81
†Pot Life - 150g Mix* in Water (hrs)	24	24	24	24
†Pot Life - 500g Mix* in Air (hrs)	30	30	30	30
†Tack Off Time (hrs:mins)	5:00	4:00	3:10	2:30
†Latest Overcoating Time (hrs)	28	24	20$^1/_2$	18
†Earliest Sanding Time (hrs)	28	24	20$^1/_2$	18

*If lid kept on mix pot to prevent solvent evaporation.

Notes: For an explanation of test methods used see 'SP Systems' Formulated Products Technical Characteristics'.

All figures quoted are indicative of the properties of the product concerned. Some batch to batch variation may occur.

† All times are measured from when resin and hardener are first mixed together.

Properties (cont'd)

Cured System Properties	
	Cured (28 days @ 21°C)
Cured Density (g/cm^3)	1.143
Total Linear Shrinkage (%)	2.11
Minimum Application Temperature	10°C
Minimum Cure Temperature	5°C
Typical Wet Film Thickness	70µm
Typical Dry Film Thickness	35 µm
Solids Content (% by weight)	46%
Rec. No. of Coats - bare wood **- epoxy coated wood**	4-8 2-3
Approx. Coverage (@70µm wet film thickness) (sqm/litre)	14
Recommended Solvents - first coat on wood **- spraying** **- brushing** **- cleaning**	SP Ultravar Brushing Solvent (SP Solvent E) - 20% by volume SP Ultravar Brushing Solvent (SP Solvent E) up to 10% by volume SP Ultravar Spraying Solvent (SP Solvent H) as required SP Ultravar Brushing Solvent (SP Solvent E)

Notes: For an explanation of test methods used see 'SP Systems' Formulated Products Technical Characteristics'.
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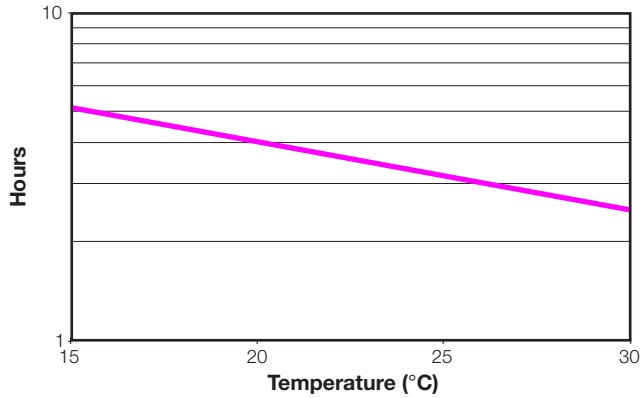
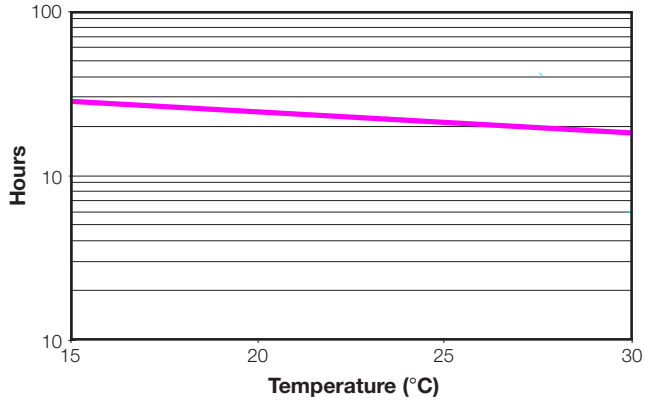
Properties (cont'd)

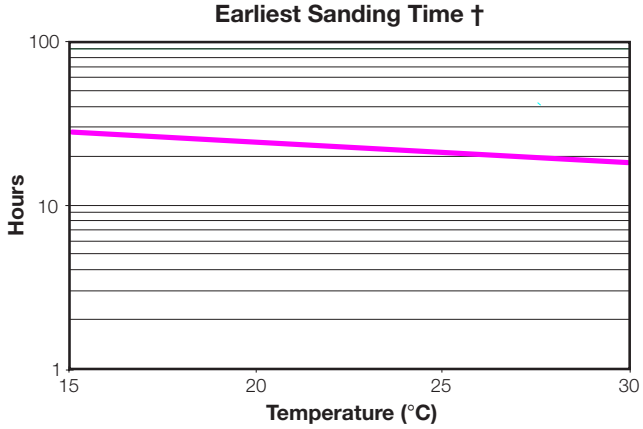
Tack-off Time †



Latest Overcoating Time †



Earliest Sanding Time †



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Health and Safety

The following points must be considered:

1. Skin contact must be avoided by wearing protective gloves. SP recommends the use of disposable nitrile gloves for most applications. The use of barrier creams is not recommended, but to preserve skin condition a moisturising cream should be used after washing.

2. Overalls or other protective clothing should be worn when mixing, laminating or sanding. Contaminated work clothes should be thoroughly cleaned before re-use.

3. Eye protection should be worn if there is a risk of resin, hardener, solvent or dust entering the eyes. If this occurs flush the eye with water for 15 minutes, holding the eyelid open, and seek medical attention.

4. Ensure adequate ventilation in work areas. Respiratory protection should be worn if there is insufficient ventilation. Solvent vapours should not be inhaled as they can cause dizziness, headaches, loss of consciousness and can have long term health effects.

5. If the skin becomes contaminated, then the area must be immediately cleansed. The use of resin-removing cleansers is recommended. To finish, wash with soap and warm water. The use of solvents on the skin to remove resins etc must be avoided.

   Washing should be part of routine practice:
   - before eating or drinking
   - before smoking
   - before using the lavatory
   - after finishing work

6. The inhalation of sanding dust should be avoided and if it settles on the skin then it should be washed off. After more extensive sanding operations a shower/bath and hair wash is advised.

SP produces a separate full Material Safety Data Sheet for all hazardous products. Please ensure that you have the correct MSDS to hand for the materials you are using before commencing work. A more detailed guide for the safe use of SP resin systems is also available from SP, and can be found on our website at www.spsystems.com

Applicable Risk and Safety Phrases

Resin	**Hardener**
R 10	R 10, 20/21, 38
S 2, 16, 46, 51	S 2, 23, 36/37, 46, 51, 62

Transport & Storage

Keep containers closed securely and stored out of direct sunlight. Any accidental spillage should be soaked up with sand, sawdust, cotton waste or any other absorbent materials. The area should be washed clean (see appropriate Safety Data Sheet). Products have a shelf life of at least 1 year unopened. The hardener in particular will deteriorate and degrade if left exposed to air resulting in a poor cure of the mixed system.

Although the components of this system are designed to react with each other please note that they will also react with the moisture in the air. Cleaning the inside of the screw cap and outside the neck of the container after use, preferably with a little acetone or Ultravar Solvent, will prevent the excess material hardening and will allow the caps to be unscrewed more easily at a later date.

Notice

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SP data sheets are being continuously reviewed and updated. Please ensure that you have the current version before using the product, by contacting SP Marketing Communications and quoting the revision number in the bottom left-hand corner of this page. Alternatively, the latest version can be downloaded from our web site: www.spsystems.com

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