

# UW86-100

## With Liquid Hardeners

17.08.2018 Vs 1

UW86-100 is a Urea Formaldehyde resin adhesive. It is a sticky, viscous liquid made by reacting Urea with Formaldehyde in water under closely controlled buffered conditions.

This grade is particularly tolerant to variable conditions of moisture content, pressure, temperature, absorbency of substrate etc, within reasonable limits. It is used in the manufacture of veneered panels, flush doors, partitions, furniture assembly etc, with multidaylight presses, flowline presses, RF curing equipment, LV heaters etc.

### TYPICAL PROPERTIES

Appearance	Translucent white syrup
Solids content (3 h @ 120°C)	67%
Viscosity @ 25°C	1750 cPs
Specific gravity	1.25
pH	8
Diluent (for washing)	Water
Use Within	3 months from date of manufacture
Recommended Storage Temperature	20C
Heat resistance	Excellent

The above figures are given for information only and should not be taken as a sales specification

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## **HEALTH AND SAFETY / HANDLING**

Please read the relevant Material Safety Data Sheet CAREFULLY.

## **LIQUID HARDENERS**

Urea Formaldehyde resins are cured by the addition of a hardener. UW86-100 is a low viscosity resin which can be used with a number of liquid hardeners either by premixing, usually with an automatic mixer, or by a separate application method.

## **MIXED SYSTEMS**

There are several advantages gained by using mixed metering systems. As the components are only mixed on demand as the applicators use the adhesive, a short pot life and fast setting hardener may be used, giving a reduction in the waste of mixed material. The possibility of human error occurring in weighing the resin and hardener is also reduced.

## **UXO-104**

A fast curing, moderate viscosity hardener that is neutral in colour and is used in mix metering systems for veneering, flush door assembly and joinery work. This hardener has a similar viscosity to the resin and considerably reduces the tendency to penetrate the veneer. It is used mainly for veneering, flush door assembly and joinery work with hot or cold curing.

## **FILLERS/EXTENDERS**

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UW86-100 will tolerate the addition of certain fillers / extenders without impairing the strength of the bond. Guidance can be given on the appropriate selection.

It is strongly recommended that they are mixed using a mechanical mixer and thoroughly tested by the user before use in normal production.

## POT LIFE

As soon as the hardener is mixed with the resin, they start to react. The time elapsing after which the mixture is too cured to be useable is the "pot life". This is affected by the mix ratio and the temperature (see Table 1).

**TABLE 1: MIX RATIOS AND POT LIVES**

GRADE	PARTS PER 100 OF RESIN	POT LIFE IN HOURS (Except where marked m - mins)				
		10°C	15°C	20°C	25°C	30°C
UXO104	10	-	-	2¾	1¾	-
UXO104	20	-	-	4	2¼	-
UXO104	30	-	-	5¼	3¼	-

## SPREADER LIFE

If the mixture is applied by mechanical spreader, the "life" in the spreader is normally some two thirds to three quarters shorter than the static pot life, due to frictional heat and evaporation of water from the adhesive.

## BONDING CONDITIONS

For consistent high quality bonding of wood or wood based materials, the following should always be observed:

## MIXING

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Because fillers, extenders & liquids are of varying density, and difficult to measure consistently by volume, it is strongly recommended that all hardener ratios are measured by weight.

Mixing may be done by hand for small batches or by mechanical mixer. In both cases, it is advisable to allow the mixture to stand after mixing to allow entrapped air to escape; bubbles or foam in a glue line can cause a weak bond.

## **SUBSTRATES**

Ensure that the surfaces to be bonded are clean and free of dust. Very oily timber should be wiped with a cloth soaked in detergent or, if necessary, a degreasing solvent (read the safety instructions carefully).

## **MOISTURE CONTENT**

Ideally the moisture content of the substrates should be 6-14% with no more than 3% difference between the two surfaces to be bonded, otherwise stresses are built into the joint which may result in wood or joint fracture.

## **APPLICATION**

The adhesive mix can be applied by brush, roller, hand applicator or mechanical rollers at a spread rate of 100-250 gsm. Mechanical spreaders are more capable of achieving the lower end of this range.

## **TEMPERATURE**

At temperatures below 15°C, the mixture is very thick and the cure rate of UF resins is also extremely slow.

Below 10°C, the reaction virtually stops for all practical purposes, although the viscosity increases to a thick paste within 24 hours. This will cure to the normal glass hard form if the temperature is raised, but this procedure is not recommended.

## **PRESSURE**

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A pressure of 3.5-4.5 kg/cm<sup>2</sup> is required in the glue line. For radio frequency bonding it is sometimes necessary for the pressure to be slightly higher to take account of the stresses in the timber. However, adequate pressure is essential to avoid boiling of the glue in the joint.

## **PRESSING TIMES**

The pressing time is that required to provide a joint of sufficient strength for it to retain its integrity in subsequent operations and conditions. Clearly this will be quite different for a curved "glulam" construction compared to thin veneer bonded on particleboard, with regards to the stress in the joint. Other factors will include the temperature of the glue line, the moisture content of the timber, the thickness of the glue and the age of the mixture.

The following table (Table 2) gives a guide based on laminating 0.6 mm veneer to particleboard where the heat is transferred from the press to the glue line fairly rapidly. Heat transfer through thicker substrates will vary considerably.

For timber, a very rough guide is 1 minute per 5 mm, but other materials may take considerably longer. This should be tested with temperature strips in a dry construction.

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**TABLE 2: PRESSING TIMES**

GRADE	PARTS PER 100 OF RESIN	PRESSING TIMES																
		Hours (m=minutes)					Minutes				Seconds (m = Minutes)							
		10°C	15°C	20°C	25°C	30°C	50°C	60°C	70°C	80°C	90°C	100°C	110°C	120°C	130°C	140°C	150°C	160°C
UXO104	10	-	-	-	-	-	15	9	3½	2	45	40	30	20	-	-	-	-
UXO104	20	-	-	-	-	-	15	9	3½	2	45	40	30	20	-	-	-	-
UXO104	30	-	-	-	-	-	20	10	3½	2	60	50	45	20	-	-	-	-

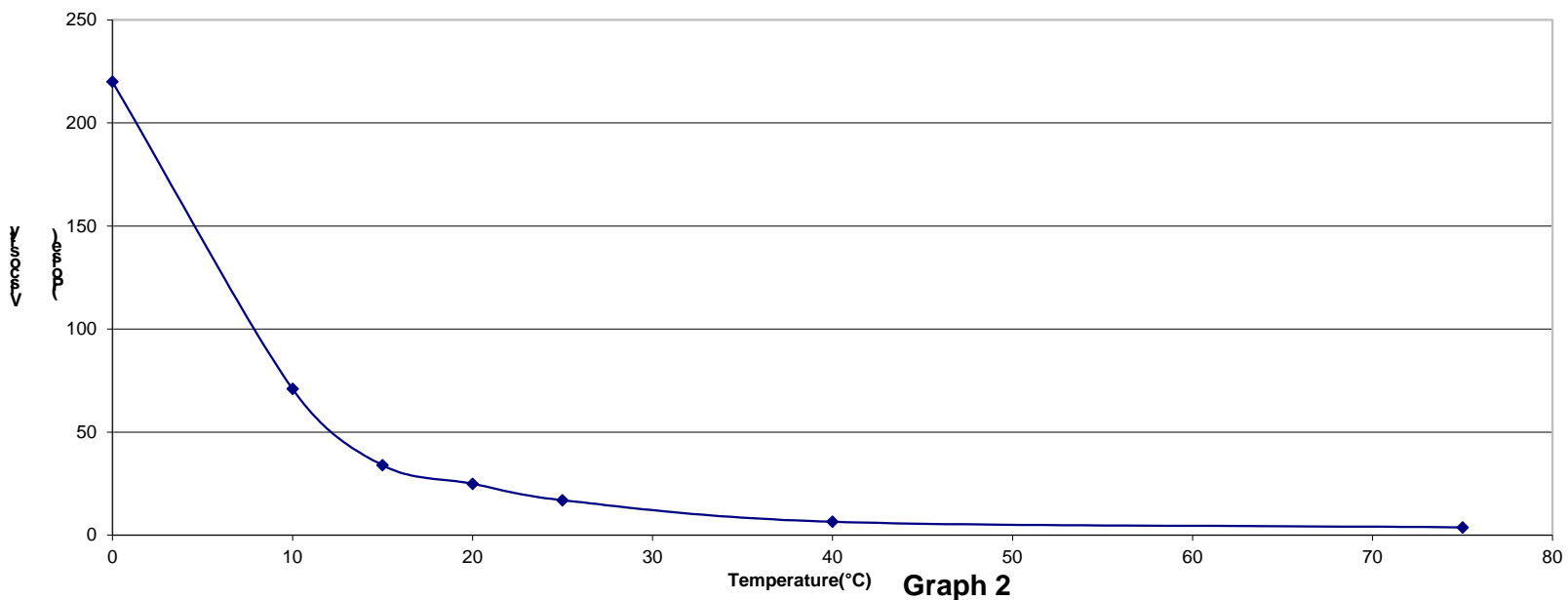
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**Graph 1**

**Viscosity Temperature Curve for UW86-100**

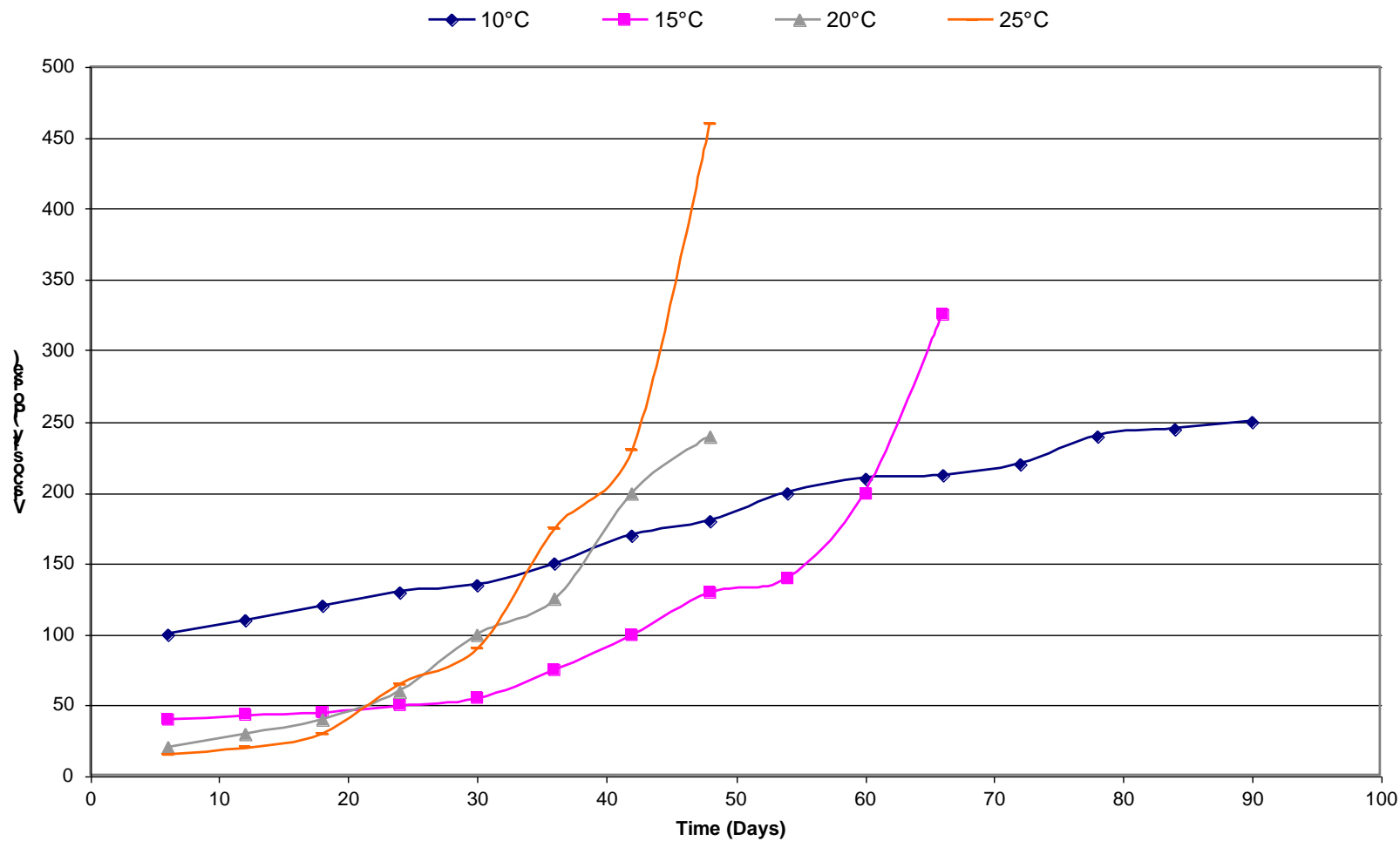


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Graph of Viscosity - Time - Storage Temps



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