



TECHNICAL INFORMATION



BORDEN RESIN UPX-7

POWDER ADHESIVE FOR WOODWORKING

BORDEN RESIN UPX-7 is a powdered urea formaldehyde resin glue for general joinery, cabinet work and shop fitting. It has been specially formulated to give reduced formaldehyde emission during use and from the cured joint. It is used by simply mixing with water as the correct amount of hardener is already blended into the powder. The reconstituted mix is a gap filling, moisture resistant adhesive capable of forming joints which satisfy the requirements of BSEN 302-1 A3 Type II adhesive. Typical examples of the uses of Type II adhesives are for Structural use in a heated, ventilated building, exterior joints protected from the weather, and for short periods exposed to the weather. It is most important that exterior, exposed joints are well protected with paint or varnish and that the standard of this protection is maintained. The glue line is mould resistant and does not stain most varieties of timber (this should be tested on certain varieties of Oak and Cherry which can be particularly sensitive).

TYPICAL PROPERTIES

Appearance	Cream coloured powder
Viscosity of standard mix after 1 min @ 21°C	75 P (Brookfield RVF, Spindle 3,10 rpm)
Bulk density	0.55 g/cm ³ (un-compacted)
Storage life	2 year in dry conditions

QUALITY

Whilst the above figures are typical of this product, they should not be taken as its specification. To ensure consistent bond quality, the product is manufactured to within a strict product specification. However, it is also important for the user to make regular quality checks. Should any changes be made to the materials to be bonded, the equipment or the process, particular care should be taken to check the bond quality. Whilst offering technical help and advice, HEXION cannot accept responsibility for actions beyond our control.

HEALTH AND SAFETY

Please read the relevant Material Safety Data Sheet CAREFULLY.

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MIXING

Because powders are difficult to measure consistently by volume, it is strongly recommended that the ratio is measured by weight. Mixing can 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 for it to attain optimum viscosity and to allow entrapped air to escape; bubbles or foam in a glue line can cause a weak bond.

MIXING INSTRUCTIONS

Use 2 parts of BORDEN RESIN UPX-7 powder to 1 part of cold water by weight (the technical information in this document is based upon this standard mixture). However, the dilution may be varied slightly to modify the viscosity. Over dilution is not recommended. Measurement by volume is also not recommended, except by calibrated equipment, as accuracy and reproducibility are difficult to achieve.

- 1 Select a container, preferably plastic, glass or steel but avoiding copper, brass and ferrous metals.
- 2 Add BORDEN RESIN UPX-7 gently to avoid clouds of dust. The use of goggles is recommended.
- 3 Add the water and stir until smooth.
- 4 Let the mixture stand for 3 - 5 minutes for the adhesive to thicken.
- 5 BORDEN RESIN UPX-7 is now ready for use.

USEABLE LIFE OF MIXTURE

As soon as the powder is mixed with water, it starts to cure. The time elapsing after which the mixture is too thick to be useable is the "Pot Life". This is affected by the temperature (see Table 1).

Table 1: POT LIFE

TEMPERATURE °C	15°C	20°C	25°C	30°C
POT LIFE	8 hours	3 hours	2 hours	1 hour

SPREADER LIFE

If the mixture is applied by mechanical spreader, the "life" in the spreader is normally approximately half 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:

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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). For best results the surfaces of timber should be planed or sanded not more than 48 hours before bonding. Any sign of case hardening (ie a smooth shiny surface) must be removed.

MOISTURE CONTENT Ideally the moisture content of the substrates should be 10-14% 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 g per square metre. Mechanical spreaders are more capable of achieving the lower end of this range. Application to both surfaces is recommended for hardwood and particularly dense timber.

TEMPERATURE It is recommended that the glue mix, substrates and shop temperatures are above 15°C for good bonds to be formed. At lower temperatures, the bond will be weaker and below 10°C it will be very weak. At temperatures below 5°C no bond will be formed. It is also important to note that although the workshop conditions may be above 10°C, wood brought in from unheated storage conditions may be below this temperature and should be allowed to warm to at least 10°C before attempting to bond it.

BONDING PLASTIC LAMINATES

BORDEN RESIN UPX-7 may be used to bond plastic laminates where resistance to high humidity is required, eg bath surrounds, sink units, vanity units, etc. It is essential that adequate pressure is applied as indicated below either with a press or by clamps.

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PRESSING TIMES

The following table (Table 2) gives a guide based on laminating 0.6 mm veneer to particle board 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 1 mm, but other materials may take considerably longer. This should be tested with temperature strips in a dry construction.

Note: If bonded wood is to be turned on a lathe, it is recommended that the bonded wood is seasoned for a minimum of one week before turning

TABLE 2. PRESSING TIMES

TEMPERATURE	TIME
15°C	2 days
20°C	1¼ days
25°C	16 h
50°C	15 mins
60°C	10 mins
70°C	5½ mins
80°C	3¼ mins
90°C	2 mins
100°C	1½ mins
110°C	65 s
120°C	45 s
130°C	35 s
140°C	30 s
150°C	25 s
160°C	20 s

EXTRA SPEED WITH A SEPARATE APPLICATION HARDENER

Shorter pressing times can be achieved with some constructions by the use of a separate application hardener. Two grades of hardener are available and in each case 1 litre should be sufficient for approximately 5 kg of BORDEN RESIN UPX-7

The two hardeners are BORDEN K-10 and BORDEN UXO-23 and separate technical information is available for each product. Both hardeners are acidic and it is important to read and act upon the advice given in their respective Material Safety Data Sheets.

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BORDEN UXO-23 contains a spreading agent and may be more suitable for very porous surfaces. Otherwise both hardeners are used in the same way. Apply the hardener to one surface and allow to dry (approximately 30 minutes). The standard BORDEN RESIN UPX-7 glue mix should then be applied to the other surface and the two surfaces brought into contact while the adhesive is still wet, and pressure applied. **It is essential that pressure is applied immediately after the two surfaces come into contact.**

This procedure is recommended for cold pressing situations. This method is not suitable for "gap" joints since the separately applied hardener cannot penetrate through a thick glue line. We recommend a minimum pressing time of 1 hour at 20°C when using a separate application hardener.

Caution: Acid hardeners may stain the wood. Do not apply on veneers that stain easily.

STORAGE

BORDEN RESIN UPX-7 is supplied in 25 kg polypropylene sacks. They should be kept in a dry place and under these conditions they will have a storage life of 1 year. After this time their condition should be checked with Hexion before using.

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