



TECHNICAL INFORMATION



BORDEN ONE-SHOT HOME POWDER ADHESIVE FOR WOODWORKING

BORDEN ONE-SHOT H is a powdered urea formaldehyde resin glue designed for use in the temperate climates of the UK and Northern Europe, and is suitable for general joinery, cabinet work and shop fitting. It is used by simply mixing with water; 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 BS EN 302-1 A3 type II adhesive. The glue line is mould resistant and does not stain most varieties of timber. BORDEN ONE-SHOT H is supplied in 25 kg polypropylene sacks.

A slower version, BORDEN ONE-SHOT E is available and this is suitable for use in hotter climates; please refer to the separate Technical Information Bulletin for details.

TYPICAL PROPERTIES

Appearance	Cream coloured powder
Viscosity of standard mix (after 1 min @ 21°C)	70 P (Brookfield RVF, Spindle 3, 10 rpm)
Storage life @ 21°C	3 years under cool and dry conditions stored in an air tight container.

(After this time the condition should be checked with Hexion's Laboratories before using.)

QUALITY

To ensure consistent bond quality, the product is manufactured to 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.

Note:

During hot pressing, it is likely for Formaldehyde to be emitted. The use of adequate local exhaust ventilation (LEV) should be used to comply with occupational exposure standards.

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MIXING INSTRUCTIONS

Use 2 parts of BORDEN ONE-SHOT H 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, though 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. Put half the water in a container - avoid copper, brass and ferrous metals.
2. Add BORDEN ONE SHOT H powder to the water, stirring rapidly until the powder dissolves.
3. Add the remainder of the water, stirring until smooth.
4. Let the mixture stand for 3-5 minutes for the adhesive to thicken.
5. BORDEN ONE SHOT H is now ready for use.

POT LIVES

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

TABLE 1: POT LIFE

TEMPERATURE	10°C	15°C	20°C	25°C
POT LIFE	3-5 h	2-2½ h	40-60 min	20-30 min

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

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 it to attain optimum viscosity and to allow entrapped air to escape; bubbles or foam in a glue line can cause a weak bond.

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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). 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 grams 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 At temperatures below 15°C, the mixture is very thick and the cure rate of UF Resins is 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. It is also important to note that although the workshop conditions may be above 10°C, wood brought in from unheated storage conditions may well be below this temperature and should be allowed to warm to above 10°C before attempting to bond it.

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 5 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

Hours					Minutes					Seconds					
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
18	8	3	2	1	4½	3½	2½	2¼	2	95	80	70	65	60	-

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BONDING PLASTIC LAMINATES

BORDEN ONE-SHOT H 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 above either with a press or by clamps.

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 ONE SHOT H . 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.

BORDEN UXO-23 contains a spreading agent and may be more suitable on 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 ONE-SHOT H 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 are in contact.** This procedure is recommended for cold pressing situations. Pressing times for using separate application hardeners are found in the following table (Table 3).

TABLE 3: PRESSURE TIMES WITH SEPARATE APPLICATION HARDENER

TEMPERATURE	10°C	15°C	20°C
PRESSING TIME (h)	1.00-2.00	0.50-1.00	0.25-0.50

The above figures are typical of this product but should not be taken as an agreed specification

04/09/09

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