



Resorcinol Resin



RS-12A/RXS-22A WOODWORKING ADHESIVE SYSTEM

RESIN RS-12A is a resorcinol phenol formaldehyde resin adhesive used with HARDENER RXS-22A. This system is widely used for timber laminating, door, window and panel making, and general joinery when a high degree of durability is required. It has particularly good water resistance and satisfies the requirements of BS EN 301, Adhesive Type I and BS1203 WBP. It is also capable of bonding components to achieve Class 0 fire resistance. It may be used in conventional hot and cold presses and in the general gluing processes normally encountered in the woodworking industry.

TYPICAL PROPERTIES

RESIN RS-12A

Appearance	Thin reddish brown liquid
Solids contents (3 h @ 120°C)	56%
Viscosity @ 25°C	3.5 P
Specific gravity @ 25°C	1.12
pH	8.5
Diluent for washing	Water
Storage life @ 20°C	1 year

HARDENER RXS-22A

Appearance	Beige powder
Storage life @ 20°C	1 year

QUALITY

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, Wessex Resins and Adhesives Ltd cannot accept responsibility for actions beyond our control.

HEALTH AND SAFETY

Please read the relevant Material Safety Data Sheet CAREFULLY.

HARDENERS

Resorcinol phenol formaldehyde resins are cured by the addition of a hardener. RESIN RS-12A is a fairly low viscosity resin and is easily mixed with powder hardener RXS- 22A.

MIXING INSTRUCTIONS

Resin RS-12A	5 parts by weight
Hardener RXS-22A	1 part by weight

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Carefully mix the powder hardener into the liquid resin until evenly dispersed. Observe the handling procedure described in the Material Safety Data Sheet. Because powders 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.

POT LIVES

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 quantity and temperature (see Table 1).

TABLE 1: POT LIVES

	POT LIFE IN HOURS (60g) (Except where marked m = minutes)				
TEMPERATURE	16°C	18°C	20°C	25°C	30°C
POT LIFE	6.5	5	3	1.5	50 m

SPREADER LIFE

If the mixture is applied by mechanical spreader, the "life" in the spreader is normally some half to two thirds 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.

- **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 6-16% 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 or excessive cracking of the veneer.
- **APPLICATION:** The adhesive mix can be applied by brush, roller, hand applicator or mechanical rollers at a spread rate of 150-500 g/m² depending on the nature of the surface. Mechanical spreaders are more capable of achieving the lower end of this range.
- **TEMPERATURE:** RESIN RS-12A has been found to bond some timbers satisfactorily at temperatures as low as 10°C and, in this respect, is superior to other Resorcinol Resins of this type. High moisture content will make the performance and strength inferior at low temperatures. Below 10°C, the reaction virtually stops for all practical purposes and although the resin may slowly dry out no proper bond is formed.
- **ASSEMBLY TIMES:** The open assembly time is the maximum length of time after the adhesive mixture is applied to the timber surface before it is too cured to form a bond. The closed assembly time is the maximum time after applying the adhesive mixture to the timber and closing the joint before pressure must be applied to form a good bond. (see Table 2).
- **PRESSURE:** A pressure of 3.5-4.5 kg/cm² is required in the glue line.



PRESSURE CALCULATION

The pressure gauge on the press indicates the pressure on the pistons or rams. The pressure exerted on the panels can be determined as follows:

$$\frac{\text{Gauge reading (kg/cm}^2\text{)} \times \text{Total area of press ram(s) (cm}^2\text{)}}{\text{Area of panel(s) (cm}^2\text{)}} = \text{Pressure applied to panel (kg/cm}^2\text{)}$$

The gauge reading required to provide the recommended pressure can be calculated as follows:

$$\frac{\text{Pressure required on panel(s) (kg/cm}^2\text{)} \times \text{Area of panel(s) (cm}^2\text{)}}{\text{Total area of press ram(s) (cm}^2\text{)}} = \text{Gauge reading (kg/cm}^2\text{)}$$

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 construction compared to thin veneer bonded on particle board, with regard 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.

TABLE 2: ASSEMBLY AND PRESSING TIMES

TEMPERATURE (°C) (Glue, wood & shop)	10	15	20	25	30	40	50	60	70	80
OPEN ASSEMBLY PERIOD (minutes)	35	25	15	10	5	-	-	-	-	-
CLOSED ASSEMBLY PERIOD (minutes)	120	60	45	20	10	-	-	-	-	-
PRESSING TIME (hours (h) or minutes (m))	36h	16h	5h	2.5h	1h	30m	20m	15m	10m	5m

STORAGE

In all cases, it is important to store the resin at 15-20°C. At lower temperatures, the resin becomes thicker and difficult to pump and/or apply to surfaces, as well as being much slower setting. At higher temperatures, the resin is thinner and prolonged storage at higher temperatures will significantly shorten the shelf life. Do not attempt to use resin "out of life" without contacting Wessex Resins and Adhesives Ltd.

HARDENER RXS-22A is delivered in sacks. It should be stored in dry conditions and used in strict order according to age.

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

FOR INFORMATION PURPOSES ONLY

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