



TECHNICAL DATA SHEET

POLYPROOF PHENOL RESORCINOL ADHESIVE WITH HARDENER

The combination Polyproof Adhesive with hardener is approved by NTI, Norway, Otto-Graf Institut (FMFA), Germany, SKH/KOMO (DHBC No. 32389), Holland for the production of load-bearing timber structures.

The combination can also be used in door production, lamination, finger jointing and other applications in the wood working industry, where there is demand for high water and weather resistance of the joints. The combination has short pressing times even at lower pressing temperatures.

TECHNICAL DATA

Type	Phenol Resorcinol glue	
Delivery form	Adhesive liquid Hardener liquid	
Colour	Adhesive dark brown Hardener greyish brown	
Viscosity	Brookfield LVT, sp. 4, 12 r/min, 25°C:	
	Adhesive	approx. 5000 mPa.s
	Hardener	approx. 8000 mPa.s
Density	Adhesive	approx. 1150 kg/m ³
	Hardener	approx. 1220 kg/m ³
Dry solids	Adhesive	approx. 56%
pH	Adhesive	approx. 8
	Hardener	approx. 5
Flash point	Adhesive	70°C
	Hardener	81°C

OTHER DATA

Properties of the bond-line	Polyproof with hardener fulfils the requirements according to EN 301 (for glue type I and II, service classes 1,2,3), EN 391, EN 392 and DIN 68141.		
Storage life	Adhesive	6 months at 20°C in well closed packaging.	
	Hardener	6 months at 20°C in well closed packaging.	
	If the packaging is left open when not in use the glue is susceptible to skin formation on the surface. To avoid this the packaging should be closed when not in use.		
Temperature sensitivity	Most suitable storage temperature is 15°C. The glue and the hardener are not harmed by freezing. If frozen, the adhesive and the hardener should be slowly thawed, after which the products are ready to use. Do not expose the glue or the hardener to temperatures above +30°C.		
Moisture sensitivity	None.		

DIRECTIONS FOR USE

Application tools	Roller spreader, ribbon spreader etc					
Mixing ratio	Adhesive	100 parts by weight				
	Hardener	15 parts by weight				
	The accuracy in the hardener amount shall be ±1 pbw.					
Pot life	Temperature of glue mix	10°C	15°C	20°C	25°C	30°C
	Pot life in hours	4½	2¼	1¼	2/3	½
When preparing large amounts of glue mixture, it is recommended to cool the glue to 10-15°C and after that add the hardener to extend the pot life.						
Wood temperature	The temperature should not be lower than 20°C.					
Moisture content of the wood	8 - 14%. For the production of laminated beams 10 - 12%.					

Planing of the wood	Newly planed surfaces give the best gluing result. For best result at laminated beam production the timber must be smoothly planed. For optimum bonding strength the planing should take place within 24 hours before gluing.																																																													
Glue spread	For production of laminated beams a minimum glue spread of 400-450 g/m² single-sided is recommended. A reduction of the glue spread , e.g. at very short assembly times, is only allowed to be done together with the Polyvine Products Technical Advisors, depending on the production parameters for the production line in question. This optimization implies that the set parameters are followed and that a continuous control of the adhesion quality is made by means of delamination tests. At HF gluings a glue spread of 250-350 g/m² single-sided is recommended. At other applications: 150-300 g/m². Difficult-to-glue wood or hardwood may require double spreading in amounts of 150-200 g/m² on each side.																																																													
Assembly time	The assembly time is the time from the glue application until the pressure is applied. The assembly time can consist of closed and open assembly time. The assembly time is influenced by the amount of adhesive, temperature and moisture content of the wood. The pressure must be applied while the glue is still tacky.																																																													
Closed assembly time	<u>Closed assembly time in minutes with different glue spreading and temperatures.</u> <table> <tr> <th>Glue spread</th><th colspan="3">350 g/m²</th><th colspan="3">450 g/m²</th></tr> <tr> <th>Temperature</th><th>20°C</th><th>25°C</th><th>30°C</th><th>20°C</th><th>25°C</th><th>30°C</th></tr> <tr> <td colspan="7"><u>Pine</u></td></tr> <tr> <td>Minimum time</td><td>5</td><td>4</td><td>3</td><td>7</td><td>6</td><td>4</td></tr> <tr> <td>Maximum time</td><td>30</td><td>25</td><td>15</td><td>45</td><td>30</td><td>20</td></tr> <tr> <td colspan="7"><u>Spruce</u></td></tr> <tr> <td>Minimum time</td><td>10</td><td>8</td><td>5</td><td>15</td><td>10</td><td>7</td></tr> <tr> <td>Maximum time</td><td>30</td><td>25</td><td>15</td><td>45</td><td>30</td><td>20</td></tr> </table> Double spreading can increase the closed assembly time by 30-40%.						Glue spread	350 g/m ²			450 g/m ²			Temperature	20°C	25°C	30°C	20°C	25°C	30°C	<u>Pine</u>							Minimum time	5	4	3	7	6	4	Maximum time	30	25	15	45	30	20	<u>Spruce</u>							Minimum time	10	8	5	15	10	7	Maximum time	30	25	15	45	30	20
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Open assembly time	The open assembly time is approximately half of the closed assembly time. When gluing hard wood it is favourable with long assembly times.																																																													
Pressing temperature	Soft wood can be glued at a joint temperature of 20°C. To be sure to obtain a good result heating of the glue joint to 30°C is recommended. When gluing hard wood the temperature of the glue joint must be at least 40°C. Constructions with tensions and hard woods requires at least 60°C to obtain adequate strength. Lowest pressing temperature has to be tried out. After the pressure is applied the heating can start.																																																													

Pressure

Minimum 0,5 MPa for soft wood
 Minimum 1,0 MPa for hard wood

In laminated beam production:
 Minimum 0,7 MPa for 33 mm lamellas
 Minimum 0,9 MPa for 45 mm lamellas

According to DIN 1052/1-A1 the maximum allowed thickness of lamellae is 42 mm.

Pressing time

The pressing time depends on the temperature, the distance to the innermost glue joint, the glue spread, etc. The table below may be used as a guideline.

<u>Glue joint temperature</u>	<u>Minimum time for curing at indicated glue joint temperature</u>
20°C	4 hours
30°C	2 hours
40°C	45 min
60°C	12 min
80°C	3 min
100°C	1 min

It is essential that an adequate heating time is added to the above indicated times.

FINGERJOINTING OF CONSTRUCTION TIMBER.

Application equipment Profiled rollers, die.

Moisture content Maximum 23%.

Glue spread

With single-sided application 250-300 g/m² and with application on both ends 125-150 g/m² on each end. The total surface is for a 15 mm profile 8 x the cross-section of the wood, for 20 mm profile 6,5 x the cross-section of the wood and with 28-32 mm profile 10 x the cross-section of the wood.

HF-heating

When fingerjointing lamellae for construction timber the temperature of the wood must be at least 15°C and the timber must be stored inhouse for at least 24 hours after fingerjointing. If HF-heating is used the fingerjointed lamellae can be taken out after 2 hours.

Assembly time Maximum 90 sec.

Mixing proportions Adhesive 100 pbw
Hardener 15 pbw

The accuracy when adding hardener should be ± 1 pbw.

Further processing Planing of finger-jointed wood can be made 7-10 minutes after jointing provided that the planer is not pulling the wood. Full hardening of the finger joint is achieved after 2 hours if the temperature of the wood in the joint zone has been more than 60°C. If pressing is made at 20°C full hardening is achieved after 24 hours.

HEALTH AND SAFETY

Handling and cleaning instructions Information regarding health and safety is found in the Materials Safety Data Sheet. Make sure always to study this information carefully before taking any new product into consideration.
Glue on skin is washed with soap and water. The tools are washed with tepid water before the glue has cured.

The information is based on laboratory tests and a long practical experience. It is introductory and intended to help the user find the most suitable method of working. Since the user's production conditions are beyond our control, we cannot be held responsible for the results of the work which is affected by local circumstances. In each particular case testing and continuous control are recommended.

12/05/2008	PJW	Polyvine Ltd
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