

Preferere 6170

Emulsion polymer / isocyanate for the wood industry (EPI-adhesive)

Use

Preferere 6170 with hardener Preferere 6670, is a two-component adhesive system based on an emulsion polymer and an isocyanate hardener (EPI adhesive). It is used for gluing of wood to wood and wood to aluminium. The adhesive system can be used for a wide range of applications within the wood industry. Preferere 6170 is especially suited for lamination of coniferous wood species.

Preferere 6170 with hardener Preferere 6670 gives bonds with excellent water- and heat-resistance. The adhesive system conforms to Durability class D4 of the European standards EN 204/205 as well as to C4 according to EN 12765 with good margins. In addition it gives very high heat resistance when tested according to EN 14257 (WATT 91).

The adhesive system is fast setting and permits short pressing times. It can be used under both cold and hot pressing conditions and is well suited for high frequency pressing conditions.

Preferere 6170 is completely formaldehyde free and pH-neutral.

Technical data for the adhesive

Appearance	White, viscous liquid
Solids content (2 h at 120°C)	57-60%
Viscosity at 25°C	5000-10000 mPa.s *
pH	6,5-8,5
Density at 25°C/4°C	1,24 ±0,02 g/cm ³

*The viscosity is measured by Brookfield, RVT, spindle 4 at 20 rpm.

Storage of the adhesive

Preferere 6170 can be stored for six months at the recommended temperature of 15–25°C. It must be protected from freezing.

Technical data for the hardener

Appearance	Brown liquid
Solids content (2 h at 120°C)	n.a. **
Viscosity at 25°C	150-300 mPa.s *
Density at 25°C/4°C	1,23 ±0,02 g/cm ³

*The viscosity is measured by Brookfield, RVT, spindle 4 at 20 rpm.

** Preferere 6650 contains 100 % MDI (monomer / oligomer). Before handling see Safety Data Sheet.

Storage of the hardener

Hardener Prefere 6670 has a storage stability of 12 months from production date if stored according to recommended conditions. Prefere 6670 should be stored at 10-35°C in closed containers, drums etc. Storage at lower temperature is not recommended since this may lead to some crystallization. It is necessary to protect the hardener from moisture since it will react and lose efficiency as well as produce CO₂ gas. During storage the container must be sealed and when in production a moisture absorbent filter must be installed.

Glue mix preparation

Prior to use, Prefere 6170 must be thoroughly mixed with hardener Prefere 6670 with mixing ratio as shown in the table below.

Prefere 6170	100 pbw
Prefere 6670	15 pbw

Pot life

At 5-20°C the pot life of the glue mix is 60 minutes. The pot life is not determined by increasing viscosity but by the chemical reactions. It is therefore crucial to use the glue mix within the time limit set by the pot life. If the pot life is exceeded the quality of the glue line will be reduced. The moisture resistance of the bond will especially be affected. Furthermore the maximum assembly time is also influenced by the age of the glue mix.

The wood

The wood to be bonded must be of uniform thickness. The surfaces must be free from oil, fat, dust or other deposits. Prefere 6170 gives the highest bond strength when the moisture content of the wood is 6-15%. Acceptable bond strength can even be obtained at higher moisture content.

The adhesive system is robust and will give good bonding even to high density and difficult to bond wood species.

The temperature in the workshop must be minimum 15°C when using the adhesive system.

Glue application

The glue spread depends on the surface of the adherents. Normal glue spread is in the range of 120-250 g/m² depending on the gluing operation, wood to be bonded, evenness of the wood, assembly time etc.

Assembly time

The assembly time is the time elapsed between glue application and pressure application. It can be subdivided into open (from glue application until assembly of the adherents) and closed assembly time (from assembly until pressure is applied).

Open assembly time should be kept as short as possible. On the other hand, 5 minutes closed assembly time is beneficial, in particular when dense wood is being bonded.

Maximum assembly time depends first of all on the glue spread rate, further on wood species, temperature and moisture content of the wood, temperature, relative humidity and air circulation in the workshop.

The lower the spread rate, the higher the temperature and the drier the air, the shorter will the assembly time be. At a spread rate of 150 g/m² on soft wood and provided the lamellas are assembled immediately after glue application, the maximum closed assembly at 20°C with a relative air humidity of 65 % is approx. 10 - 15 minutes. At 30°C the corresponding assembly time will be 5 - 10 minutes.

The pressure must under all circumstances be applied whilst the glue is still tacky.

Pressure

The pressure is first of all determined by the density, surface evenness and thickness tolerance of the adherents and the assembly time. Glue being squeezed out of the glue line when the pressure is applied, is an indication of sufficient pressure.

Normal pressure is 0,3-1,6 N/mm², depending on the type of bonding operation and the materials to be bonded. For lamination of solid wood lamellas it is important that a pressure of at least 0,7 N/mm² is used.

Pressing time

When gluing of wood with moisture content of 10 - 12% minimum pressing time is 15 minutes at a temperature of 20°C. Curved constructions, high glue spread rate, high moisture content of the adherends and dense wood (hardwood) call for longer pressing times. Full strength is obtained after approximately 2 days at 20°C.

Because so many local conditions affect the pressing times it is recommended to establish the correct pressing time by trials on the spot.

Cleaning

The hardener must not be mixed with water. For cleaning of the hardener special solvents are needed. Dynea's Technical Service Department can give recommendations about suitable cleaning liquids. Crystallized hardener is insoluble and must be scraped off.

The mixing and spreading equipment should be cleaned at the end of each working day. If the glue mix thickens in the application equipment, the equipment must be immediately emptied and cleaned; otherwise, there is a risk that the glue mix will cure. Cured glue is insoluble and must be scraped off. For easier removal of cured glue it is recommended to cover exposed metal parts with self-attaching plastic foil.

Cleaning of glue and glue mix residues is most easily done with warm water (50-60°C) but water down to 25°C can be used. Before cleaning of the equipment is started, the water pipes should be drained of cold water.

Advice on safe handling of glue remainders and wash water can be found in our Technical Information Leaflet No. 2E "Glue waste disposal - Prevention of pollution".

Safety precautions

Reference is made to the Safety Data Sheet for Prefere 6170 and the hardener Prefere 6670.

Mixing of the adhesive and the hardener will start a series of chemical reactions. The isocyanate content in the glue mix will be reduced and polymer chains will be formed.

It is recommended that certain precautions normally taken when handling chemicals are observed when handling Prefere 6170. Skin contact with the uncured glue should be avoided, since people with particularly sensitive skin may be affected.

When handling hardener Prefere 6670 and the glue mixes of the hardener, skin contact with the hardener and uncured glue mixes should be avoided, as isocyanates may cause sensitizing reactions on the skin and in the respiratory system.

It is recommended to wear protective gloves, likewise eye protection where there is a risk of splashes. Hands and forearms should be thoroughly washed with soap and warm water at the end of the working day.

Adequate ventilation of the workshops should be maintained.

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The manufacture of laminated timber structures normally is subject to control procedures implemented by the authorities or other regulatory bodies. To satisfy these requirements, certain guidelines have to be followed in the production. These guidelines vary from country to country. They may, on some points, differ from the instructions given above. In such cases the manufacturer must obey the regulations applicable.

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