



Technical Data Sheet

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Prefere 6190

Emulsion polymer/isocyanate for the wood industry (EPI Adhesive)

Use

Prefere 6190, with hardener Prefere 6670 or 6671, 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. It is especially suitable for the production of parquet flooring.

Prefere 6190 with hardener Prefere 6670 or 6671 gives glue lines with excellent water- and heat-resistance. The adhesive systems conform to durability class D4 according to the European standards EN 204/205, with very good margin. It also gives very high heat resistance when tested according to EN 14257 (Watt 91).

Prefere 6190 with hardener Prefere 6670 or 6671 will also give glue lines of durability class C4 according to EN 12765/205, provided that high hardener dosages (15 – 100pbw adhesive) are used, and that the instructions in this technical data sheet are followed.

Parquet flooring glued with Prefere 6190 with hardener Prefere 6670 or 6671 will also pass the requirements for performance class F****, as well as the requirements for water resistance according to the Japanese Agricultural Standard (JAS) for flooring. Parquet flooring glued with these adhesive systems also fulfils the requirements for adhesives of Type II according to the Japanese Agricultural Standard for Plywood.

The adhesive systems can be used under both hot and cold pressing conditions, as well as under radio-frequency curing conditions. It is fast curing and permits short pressing times.

Prefere 6190 is completely formaldehyde free, and pH neutral.



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Technical Data for the Adhesive

	Prefere 6190
Appearance	White, viscous liquid
Solids Content (%)	53.0 – 57.0
Viscosity at 25°C (mPas) *	4000 – 7000
pH	5.5 – 7.5
Density at 25°C	1.340 – 1.380

* Viscosity is measured by Brookfield, RVT, spindle 4 at 20rpm

Storage of the Adhesive

The recommended storage temperature for Prefere 6190 is between 15 – 25°C. In this temperature range, Prefere 6190 can be stored for 4 months. At higher temperatures the shelf life will be reduced. Prefere 6190 must be protected from freezing, and from direct sunlight.

Technical Data for the Hardeners

	Prefere 6670	Prefere 6671
Appearance	Brown liquid	Brown liquid
Viscosity at 25°C (mPas) *	150 - 300	250 – 400
Solids Content (%)	n/a**	n/a**
Density at 25°C	1.210 – 1.250	1.220 – 1.260

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

** Prefere 6670 and 6671 contain 100% MDI (monomer/oligomer). Before handling, see Safety Data Sheet.

Storage of the Hardeners

The hardeners Prefere 6670 and Prefere 6671 have a storage stability of 12 months from the date of production, if stored in closed containers at temperatures between 10 – 35°C. Storage at lower temperatures is not recommended, as crystallisation can occur.

It is necessary to protect the hardeners from moisture, since it will react with atmospheric moisture and will lose efficiency and release CO₂ gas. During storage the containers must be sealed, and during production a moisture absorbent filter must be installed.

Glue Mix Preparation



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Prior to use, Prefere 6190 should be thoroughly mixed with hardener Prefere 6670 or 6671, using the mixing ratios given in the table below.

Glue Mixture	A	B
Prefere 6190	100 pbw	100 pbw
Prefere 6670	10 pbw	-
Prefere 6671	-	10 pbw

The hardener dosage can be increased to 15 pbw if very water resistant (eg class C4) adhesive bonds are required. Lower hardener dosage (down to 7.5 pbw) can be used in cases where water resistance is less important.

The hardener should be added to the adhesive with effective mixing, preferably by using automatic mixing equipment.

Note that foaming can occur.

Pot Life

At temperatures between 20 – 25°C, the pot life of Prefere 6190 with Prefere 6671, with 10 pbw hardener addition, is approximately 45 minutes. Older glue mixes will have too high viscosity to be used. By using a lower hardener dosage (7.5 pbw) the pot life can be increased up to 1 hour. In contrast, using a higher hardener dosage (15 pbw) will reduce the pot life somewhat.

Glue mixes of Prefere 6190 with hardener Prefere 6670 have lower initial viscosity, and the subsequent viscosity increase is less than when using hardener Prefere 6671. Therefore, this adhesive system will be usable for a longer period of time.

It is important to note that the quality of the glue line, and especially the water resistance of the bond, will be reduced with increasing age of the glue mix. The allowed pot life should not exceed 1 hour if high water resistance is required. Conversely, if water resistance is less important, then pot lives of up to 2 hours can be used.

The Wood

The surfaces to be bonded must be free from oil, fat, dust or other deposits. Prefere 6190 and associated hardeners gives the highest bond strength when the moisture content of the wood is between 4 – 10%.

Glue Application



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The optimum glue spread depends on the surface quality of the adherends. Normal glue spread is 160 – 200g/m². On very smooth surfaces, lower glue spreads may be used. Good bond quality can be obtained with glue spreads lower than 160g/m², but using a glue spread that is too low will reduce the water resistance of the glue line.

Assembly Time

The maximum closed assembly time depends on the glue spread, the air temperature, the temperature of the materials to be bonded, the wood moisture content and the velocity of the air flow (ventilation/draught) in the workshop. Therefore, exact figures cannot be given.

Under all circumstances, the glue must still be tacky when the pressure is applied.

Pressure

The pressure used is determined by the density, surface evenness and thickness tolerance of the adherends. Glue being squeezed out of the glue line when the pressure is applied is a good indication of sufficient pressure.

Normal pressure is between 0.3 – 1.6 N/mm², depending on the type of bonding operation and the materials to be bonded.

Pressing Time

The pressing time is dependent both on the speed of the water transport from the glue line, and on the chemical reactions occurring in the glue line. As a consequence, factors such as glue spread, assembly time, moisture content of the adherends, wood density, wood temperature and glue line temperature will all influence the required pressing time.

Since so many local conditions influence the pressing time, exact pressing times cannot be given. The following information can be used as a guide for determining the correct pressing time.

Pressing Temperature	20°C	60°C	100°C
Press Time	30 – 45 mins	10 – 15 mins	0.5 – 3 mins



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The pressing time gives sufficient bonding strength to allow further processing. Full strength and water resistance is obtained 2 – 3 days after pressing, depending on storage conditions.

Prefere 6190 is well suited for curing under radio frequency heating conditions. The necessary pressing time depends on a number of factors. The exact pressing time needed should be established by conducting trials.

Cleaning

The hardener must not be mixed with water. For cleaning of the hardener special solvents are needed. TS Resins' Technical Service department can give recommendations about suitable cleaning solvents. Crystallised hardener is insoluble, and must be scraped off.

The glue 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 emptied immediately, and cleaned. Otherwise, there is a risk that the glue mix will cure in the equipment. Cured glue is insoluble and must be scraped off manually. For easier removal of cured glue it is recommended to cover exposed metal parts with self-attaching plastic foils.

Cleaning of the glue and glue mix residues is easily done with warm water (50 – 60°C), but water at temperatures down to 25°C can also be used. Before cleaning is started, 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 6190 and hardeners Prefere 6670 and Prefere 6671.

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 6190. Skin contact with the uncured glue should be avoided, since people with particularly sensitive skin may be affected.

Skin contact with the hardeners Prefere 6670 and 6671, and the uncured glue mixes should be avoided as isocyanates may cause sensitising reactions on the skin and in the respiratory system.



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It is recommended to wear protective gloves. Likewise, eye protection should be worn 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.

Notice

The manufacture of laminated timber structures is normally 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 instruction given in this Data Sheet. In such cases the manufacturer must obey the applicable regulations.



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Caution

TS Resins adhesives and hardeners are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming into contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper – non cloth – towels should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in Material Safety Data sheets for the individual product. These are available on request and should be referred to for fuller information.

The suggestions given in these notes are based on data gained from experience and tests. However, since operating conditions in the user's plant is beyond our control, we cannot assume responsibility for any risks or liabilities, which may result from the use of our products. The information provided were believed by TS Resins Ltd. to be accurate at the time of preparation, or obtained from sources believed to be generally reliable. TS Resins Ltd. makes no warranty concerning their accuracy, and TS Resins Ltd. will not be liable for claims relating to any party's use of or reliance on information or recommendations contained herein, regardless of whether it is claimed that the information or recommendations are inaccurate, incomplete or otherwise misleading. Further, TS Resins Ltd. makes no warranty concerning any product, except that the product shall conform to contracted specifications.

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