

KLEIBERIT 510.3.05

1C PUR adhesive

Fields of application

- surface bonding of load-bearing wood components

Properties of the bond

- Tested by the Materials Testing Institute University of Stuttgart (MPA) according to EN 15425:2017 for the adhesives class EN 15425:2017-I-70-GP-0.3-w for the production of:
 - glue laminated timber and laminated beams according to EN 14080, and
 - cross laminated timber according to EN 16351
 - from spruce, pine, and fir.
- Tested according to SANS 10183-4:2009 for Service Class S3 according to SANS 10183-2.
- The glue line is inconspicuous (light in color), highly resistant to heat and achieves very high strength values.
- Gluing quality D4 according to DIN/EN 204 (Aidimme test certificate n. 221.Z.2311.1267.DE.01 from November 27th, 2023)
- Tested according to DIN EN 14257 (Watt 91) (Aidimme test certificate n. 221.Z.2311.1267.DE.01 from November 27th, 2023)

Properties of the adhesive

Base: polyurethane
Specific gravity: approximately 1.13 g/cm³
Color: white to yellowish
Viscosity at 20°C: approx. 18,500 mPa·s (Brookfield RVT, Sp. 6/ 20 rpm)

Identification: see our safety data sheet

Application techniques

General processing conditions:

The room and material temperature should be 20 °C, but must not fall below 18 °C. This must be documented in a traceable manner.

Wood

The wood surfaces must be prepared by planing or similar at least 24 hours before bonding.

In general, the following applies: the surfaces to be bonded must be free from release agents that hinder adhesion.

Wood moisture requirements for glue laminated timber and laminated beams according to DIN EN 14080: For untreated wood it must be between 8% and 15% and for pre-treated wood between 11% and 18%.

The difference in wood moisture content between the individual lamellas must not exceed 5%.

Adhesive application:

The adhesive is processed directly from the original packaging in automated form by means of a processing system that is suitable for this application and continuously moisture-proof.

The adhesive is applied to one side of the wood surface in the form of a bead. The amount of adhesive applied must ensure full-surface and uniform wetting. It depends on the actual surface condition of the wood and the tolerances of the wood components, which depend on the individual case. It is from 140 g/m² for a 0.1 mm joint ("thin joint") and up to 350 g/m² for a 0.3 mm joint. The maximum joint thickness must not exceed 0.3 mm. The adhesive application must be monitored and ensured via a corresponding control loop. Visual observation of adhesive continuously being pressed out of the glue joints after applying full pressure is necessary but not sufficient.

Maximum waiting time:

It must be ensured that the adhesive is still fully capable of bonding when pressure is applied.

In a room climate of 20°C and 65% rel. humidity, the full pressure must be applied to the wood components to be bonded no later than 5 minutes after the start of adhesive application. A higher room temperature, a higher rel. air humidity and a higher wood moisture content shorten this time period.

Pressure:

Note: Before processing, all press elements that come into contact with the adhesive must be treated with release agent KLEIBERIT 885.0.

The crosslinking process of the adhesive must take place at a pressure that ensures sufficient contact of the bonding surfaces. The pressure must be at least 0.6 N/mm² and must not exceed 1.0 N/mm². Care must be taken to ensure a good adhesive joint fit and the thinnest possible adhesive joint (max. 0.3 mm).

Pressing time:

Due to the influence of moisture (from the room air or the wood), the adhesive hardens, foaming slightly, to form a waterproof, tough adhesive film. The pressing times depend on the temperature, the moisture content and the adhesive joint thickness.

For straight wood components with a wood moisture content of 12% that are pressed in a room climate of 20°C and 65% relative humidity, the minimum pressing time is 17 minutes if a thin glue joint (max. 0.1 mm) is ensured. For thicker glue joints (max. 0.3 mm), the minimum pressing time is 100 minutes.

If the wood moisture content is 9% for straight wood components, the minimum pressing time in a room climate of 20°C and 65% relative humidity is 20 minutes

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if a thin glue joint (max. 0.1 mm) is ensured and 180 minutes for thicker glue joints (max. 0.3 mm). Exact times for the respective application must be determined according to the actual room climatic conditions.

Storage time of bonded wood components

After pressing, at a wood moisture content of 12% and a glue joint thickness of 0.1 mm, a post-storage time of 70 minutes is required in a room climate of 20 °C and 65% relative humidity. With a thicker glue joint (max. 0.3 mm) and under otherwise identical conditions, this is 180 minutes.

If the wood moisture content is 9% and post-curing takes place in the same room climate as above, the post-curing time is 70 minutes for an adhesive joint thickness of 0.1 mm and 300 minutes for a thicker adhesive joint (max. 0.3 mm).

For conditions other than those described above, the post-curing time must be adjusted accordingly.

Further processing of glued wooden components

The wooden components can be further processed during the storage period. It must be ensured that no damaging forces act on the glued joint until the above-mentioned post-storage period has elapsed. This must be checked and documented by in-house tests.

Achieving final strength

At a wood moisture content of 12% and a storage climate of 20°C and 65% relative humidity, this is reached after 24 hours.

Note:

In order to ensure a high bonding quality, we recommend setting up a suitable self-monitoring system. The relevant standard specifications must be complied with.

Cleaning

PUR adhesive that has not yet cured can be removed with KLEIBERIT 820.0.

Already cured PUR adhesive, e.g. on tools or machine parts, can only be removed mechanically.

Packaging

KLEIBERIT 510.3.05:

Carton with 6 dosing bottles at 0.8 kg net each

Metal pail, 20.0 kg net

Metal drum, 210.0 kg net

Cleaner

KLEIBERIT 820.0:

Metal can, 22.0 kg net

Release agent

KLEIBERIT 885.0:

Plastic pail, 5.0 kg net

Additional packaging sizes available upon request.

Storage

KLEIBERIT 510.3.05 can be stored in closed air-tight containers at 20 °C for approx. 12 months.

Keep in a cool and dry place and carefully protect from humidity.

This product is not frost sensitive at temperatures above -20°C.

KLEIBERIT 510.3.05 must be brought to room temperature before processing.

Contents of opened containers should be used as soon as possible.

Version 15/01/2024 xi; replaces previous versions

Adhesives and Waste Disposal

Waste Code 080501

Disposal of contents and/or containers should comply with all applicable federal, state and local regulations.
Our containers are made of recyclable material.

Service

Our application department may be consulted at any time without obligation. The statements made herein are based on our experience gained to date. They are to be considered as information without obligation. Please test and establish for yourself the suitability of our products for your particular purposes. No liability exceeding the value of our product can be derived from the foregoing statements. This also applies to the technical consultancy service which is rendered free of charge and without obligation.