

LOCTITE HB X102 PURBOND

June 2023

PRODUCT DESCRIPTION

LOCTITE HB X102 PURBOND provides the following product characteristics:

Technology	Polyurethane
Product Type	Assembly Glue
Application	Engineered Wood
Components	One-component
Basis	Isocyanate prepolymer
Condition	Solvent-free, formaldehyde-free
Appearance	Beige, liquid, (after curing: wood tone, solid)
Curing	Under the action of air humidity and moisture in the wood

Application Areas

- Manufacturing of engineered wood products
- Finger joint
- Face gluing



Product Properties

- Flame retardant properties depending on specific testing
- Resistant to weak alkalis, acids and solvents
- Good flow properties
- Free from fibers and abrasive fillers

Technical Data

LOCTITE HB X102 PURBOND:

Solid Content, % 100

Viscosity, Brookfield - 68°F (20°C), mPa.s:
Spindle 6, speed 20 rpm, after 1 min 18,000 to 30,000

Typical Properties

Density, lb/ft³ (g/m³) ~72 (~1.15)

Maximal assembly time, minutes 10
68°F (20°C) with 65% relative air humidity and a wood moisture content of 12%

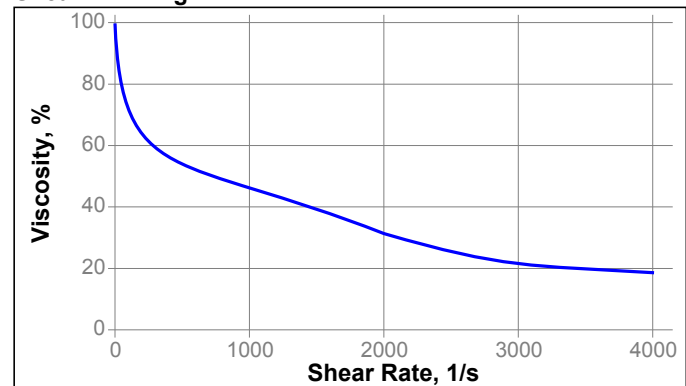
Minimal press time / curing time, minutes 25
68°F (20°C) with 65% relative air humidity and a wood moisture content of 12%

Time to reach final bonding strength at 68°F (20 °C) with 65% RH and a wood moisture content of 12%, hours

Slight foaming of the adhesive during hardening is caused by the curing reaction and is normal.

The adhesive shows shear thinning behaviour. Please see an exemplary viscosity – shear rate – relationship in the graph below.

Shear Thinning:



DIRECTIONS OF USE

Preliminary Statement

Prior to application it is necessary to read the **Safety Data Sheet** for information about precautionary measures and safety recommendations. Also, for chemical products exempt from compulsory labeling, the relevant precautions should always be observed. Please also refer to the local safety instructions and contact Henkel for analytical support.

Application

Processing guideline for finger-joints (end-joints)



Preparation

LOCTITE HB X102 PURBOND is a single-component adhesive and is processed in a closed system directly from the container in which it is supplied.

Automatic finger joint machines must be specially equipped with an appropriate application system to process LOCTITE HB X102 PURBOND adhesives.

All machine parts that come into contact with the adhesive should be treated with a suitable release agent before processing.

Wood surface moisture content

A surface moisture content between 10% and 17% is recommended. 12% moisture content is the optimal condition for this product.

The maximum difference of the average lamella moisture content within one Engineered Wood Product shall not be more than 5%.

Anything outside these values needs to be discussed with Henkel representatives.

Adhesive application

Application of the adhesive takes place via a suitable application system (comb application or contactless application in conjunction with the relevant approvals where necessary).

Application rate for standard finger joint application:

20 to 33 lbs/1,000 ft² (100 to 160 g/m²)
(data may differ in specifically defined cases)

The exact amount within the above defined range is dependent upon the quality of wood and process equipment.

Uniform wetting of the finger profile must be guaranteed.

Depending on the application system, the adhesive is applied to one or both sides.

Proper application rate is evidenced by very slight and even squeeze-out along the entire glue line.

The components are pressed together immediately afterwards.

Assembly time

The components to be glued must be assembled together and the press force applied immediately, but at the latest 10 minutes after the start of adhesive application (maximum assembly time for elements at 68°F (20°C) with 65% relative air humidity and a wood moisture content of 12%).

The maximum assembly time of the moisture-reactive LOCTITE HB X102 PURBOND is influenced by the climate conditions prevailing in the room during processing. Higher temperature and higher air humidity shorten the assembly time.

It is absolutely essential that the adhesive is still capable of adhering when the press force is applied.

Curing time

The curing time of the adhesive is 25 minutes at 68°F (20°C) with 65% relative air humidity and a wood moisture content of 12%.

For lower temperatures, the curing time may be significantly higher.

Press force

The press force applied (depending on the finger length and profile) must guarantee a precisely fitting joint. The specifications in accordance with production standards must be observed in this respect.

Further processing

The components can undergo further processing after the

curing time of the adhesive has elapsed.

Storage time after bonding

The bonded components must be stored at room temperature for at least 2 hours after the press time has elapsed (value determined at 68°F (20°C), 65% air humidity and a wood moisture content of 12%).

For lower temperatures, the required storage time after bonding may be significantly higher.

Additional instructions

The following supplementary instructions must be observed when manufacturing finger joints for load-bearing structural components:

1. The approvals (see the section headed Certifications and Registrations)
2. The temperature in the production facility should be 68°F (20°C).
This applies equally for the wood and the adhesive.
3. A suitable quality control scheme in accordance with production standards is recommended to guarantee a high quality of glued joints.

Application**Processing guideline for face-joints (lamination)****Preparation**

LOCTITE HB X102 PURBOND is a single-component adhesive and is processed in a closed system directly from the container in which it is supplied. Surfaces must be clean and free from adhesive-repellent substances such as oils, greases or release agents. All machine parts that come into contact with the adhesive should be treated with a suitable release agent before processing.

Wood surface moisture content

A surface moisture content between 10% and 17% is recommended. 12% moisture content is the optimal condition for this product.

The maximum difference of the average lamella moisture content within one Engineered Wood Product shall not be more than 5%.

Anything outside these values needs to be discussed with Henkel representatives.

Adhesive application

LOCTITE HB X102 PURBOND is applied automatically using a special application system in a through-feed process.

When face-bonding with LOCTITE HB X102 PURBOND adhesive, it is required to pretreat the planed surfaces of both mating components with LOCTITE PR 3105 PURBOND primer solution. Please refer to the specified Application Instruction for each wood species.

Application rate for glue line thicknesses up to 0.1 mm:

27 to 37 lbs/1,000 ft² (130 to 180 g/m²)
(data may differ in specifically defined cases)

The exact amount within the above defined range is dependent upon the quality of wood and process equipment.

Uniform wetting of the joint component surface must be guaranteed.

The adhesive is applied one-sided.

Proper application rate is evidenced by very slight and even squeeze-out along the entire glue line.

Assembly time

The components to be glued must be assembled together and the press force applied immediately, but at the latest 10 minutes after the start of adhesive application (maximum assembly time for elements at 68°F (20°C) with 65% relative air humidity and a wood moisture content of 12%).

The maximum assembly time of the moisture-reactive LOCTITE HB X102 PURBOND is influenced by the climate conditions prevailing in the room during processing. Higher temperature and higher air humidity shorten the assembly time.

It is absolutely essential that the adhesive is still capable of adhering when the press force is applied.

Press time

The press time depends on the existing climatic conditions of the surrounding and on the present temperature of the material.

The minimum press time at 68°F (20°C) with 65% relative air humidity and a wood moisture content of 12% is 25 minutes for glue line thicknesses up to 0.1 mm. For larger glue line thicknesses or lower temperatures, the press time may be significantly higher.

Press force

The applied press force must guarantee optimum fitting of the joint components with a glue line thickness of 0.1 mm or less. Normally, a press force of 116 to 203 psi (0.8 to 1.4 N/mm²), which is generally customary in glued timber construction, is applied.

For cross laminated timber CLT (production), a press force of 73 to 116 psi (0.5 to 0.8 N/mm²) is common.

In case of CLT production with vacuum presses, the minimum press force is 12 psi (0.08 N/mm²).

Further processing

The components can undergo further processing immediately after the press time has elapsed.

Storage time after bonding

The bonded components must be stored at room temperature for at least 2 hours after the press time has elapsed (value determined at 68°F (20°C), 65% air humidity and a wood moisture content of 12%).

For larger glue line thicknesses or lower temperatures, the required storage time after bonding may be significantly higher.

Additional instructions

The following supplementary instructions must be observed when manufacturing load-bearing structural components:

1. The approvals (see the section headed Certifications and Registrations)
2. The temperature in the production facility should be 68°F (20°C).

This applies equally for the wood and the adhesive.

3. A suitable quality control scheme in accordance with production standards is recommended to guarantee a high quality of glued joints.

Protection and cleaning

SAFETY PRECAUTIONS

The use of protective gloves is highly recommended. Best practice makes gloves and safety glasses mandatory when handling the adhesive or any chemicals associated with the manufacturing process.

CLEANING

Prior to bringing a plant into initial operation, Henkel recommends the use of release agents to prevent adhesive adhering to equipment and tools. Henkel can make recommendations upon request, but all release agents should be appropriate for the adhesive and materials to which they are applied.

Quality Assurance

Henkel guarantees the consistently high quality of this product which is manufactured according to ISO 9001 and 14001; it has been tested and found suitable for the recommended applications under the conditions described herein.

However, material and processing parameters can significantly influence the properties of the product. For this reason, the processor must perform tests prior to actual applications.

For other applications or processing conditions, please contact your Henkel project manager.

CERTIFICATIONS & REGISTRATIONS

LOCTITE HB X102 PURBOND fulfils all requirements of ANSI 405-2018 (Standard for Adhesives for Use in Structural Glued Laminated Timber) and can be used for the production of Glued Laminated Timber according to ANSI A190.1-2017, CSA 0112.9-10, CSA 0177-06 (R2015) and for Cross Laminated Timber (CLT) according to ANSI/APA PRG 320-2019 Canada/USA.

LOCTITE HB X102 PURBOND met fire resistance requirements for Glulam beams as specified under ASTM E119-20.

LOCTITE HB X102 PURBOND is listed under the CCMC Evaluation Listing: 14103-L.

LOCTITE HB X102 PURBOND is approved for I-Joist applications based on Intertek full scale fire testing according to ASTM E119.

Formaldehyde Classification:

JAIA (Japan Adhesive Industry Association) Independent Control Standard against Indoor Air Pollution.

Register Number: JAIA-013007

JAIA F☆☆☆☆

LOCTITE HB X102 PURBOND is certified for low chemical emissions according to UL.com/GG UL 2818 and holds the GreenGuard Gold certificate number 157242-420.

Fulfils the requirements as a Type I adhesive in accordance



with AS/NZS 4364:2010 and is suitable for Service Class 3 applications.

STORAGE

Store in the original tightly closed packaging in a cool, dry place.

Shelf life

Shelf-life (in unopened original packaging), months 6

Classification

Please refer to the corresponding **safety data sheets** for details on:

Hazardous Information
Transport Regulations
Safety Regulations

ADDITIONAL INFORMATION

Disclaimer

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, or Henkel Canada Corporation, the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 2