

## Adhesive system 1989/1993

EPI system for Japanese posts, windows and finger jointing

Version: 14 (2023-12-04)

Adhesive 1989 with hardener 1993 is used for the gluing of wood to wood. It gives glue joints with a very high strength in various environments. The bond has a high degree of heat, creep and solvent resistance. The system passes CWS and cycle test on hardwood.

1989 with hardener 1993 can be used in both cold and hot pressing as well as in RF-pressing.

### Product Specification

	Adhesive 1989	Hardener 1993
<b>Product Type</b>	EPI Adhesive	Isocyanate Hardener
<b>Delivery Form</b>	Liquid	Liquid
<b>Color</b>	White	Brown, transparent
<b>Viscosity</b> at time of production	3500 - 12000 mPa·s , Brookfield LVT , sp. 4 , 12 rpm , 25°C/77°F	100 - 500 mPa·s , Brookfield LVT , sp. 2 , 30 rpm , 25°C/77°F
<b>pH</b> at time of production	6.0 - 8.0, 25°C/77°F	
<b>Dry Content</b>	56.5 - 59.0 %	
<b>Density (average)</b>	Appr. 1290 kg/m <sup>3</sup>	Appr. 1240 kg/m <sup>3</sup>

#### Glue Line Properties

Light coloured glue lines. High water and weather resistance.

#### Formaldehyde Info

The system fulfills F\*\*\*\*

#### Approvals Note

Approved by Norsk Treteknisk Institutt (NTI), Norway according to JIS K6806, class 1, grade 1 and glue for exposure condition class C in JAS, standard for structural glued laminated timber.  
Approved by Institut für Fenstertechnik (IFT), Germany according to EN204 class D4 and EN14257 (Watt 91)  
Approved by Norsk Treteknisk Institutt (NTI), Norway according to EN12765 class C4  
Holds KOMO certification number GVT 32557

#### Contact Information

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### Storage Conditions and Storage Life

	Adhesive 1989	Hardener 1993
Storage Life 20°C/68°F, from time of production	12 months	9 months
Storage Life 30°C/86°F, from time of production		4.5 months
Recommended Storage Temperature	Min: 15°C / 59°F Max: 20°C / 68°F	Min: 15°C / 59°F Max: 20°C / 68°F
Short Term Temperature Exposure	Only short time exposure to temperatures below 5°C / 41°F and above 30°C / 86°F is acceptable.	Only short time exposure to temperatures below 5°C / 41°F and above 30°C / 86°F is acceptable.
Storage Conditions Info	The product can form a skin on the surface if the container is not properly closed. The product shall always be stored in closed packaging. Frozen and thawed product cannot be used due to irreversible changes in the product.	The product can form a skin on the surface if the container is not properly closed. The product shall always be stored in closed packaging. Frozen and thawed product cannot be used due to irreversible changes in the product.

### Processing Instructions

Applications	Japanese posts, Window Scantlings
Press Type	Radio Frequency Press, Hot Press, Cold Press

### Mixing Ratio

	Adhesive 1989	Hardener 1993
Mixing ratio per weight	100	15

**Mixing Instructions** 40 s with electrical mixer, 3 minutes by hand. The mixture must be homogenous.

### Pot Life

Mixing Ratio	15°C/59°F	20°C/68°F	30°C/86°F
100:15	70 min	60 min	35 min

### Glue spread

Preferably double-sided application

Min: 150 g/m<sup>2</sup>, Max: 250 g/m<sup>2</sup>

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### Assembly Time

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Pine-pine, 65% RH

<b>Conditions</b>	<b>100:15, 180 g/m<sup>2</sup></b>
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<b>Open, 20°C</b>	7 min
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<b>Closed, 20°C</b>	10 min
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### Pressing

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<b>Glue Line Temperature</b>	Min: 10 °C , 50 °F , Max: 70 °C , 158 °F
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<b>Pressing Time 20°C</b>	30 min , pine-pine, 65% RH, 180 g/m <sup>2</sup> , 18 g/ft <sup>2</sup>
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<b>Pressure</b>	0.1 - 1.0 MPa
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### Preparation of Material

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<b>Moisture Content of Wood</b>	8 - 15%
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<b>Temperature of wood</b>	In order to meet the given press times the temperature of the wood must not be below 20°C / 68°F.
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<b>Gluing of Wood to Aluminium</b>	For the best results when gluing aluminium to wood, the use of Primers is recommended. Tests should be conducted based on specific conditions and requirements.
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<b>Preparation of Material</b>	For best result the wood must be smoothly planed. For optimum bond strength the bonding operation shall take place within 24 hours after preparation.
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### Post Curing

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Can be processed further after 2-6 hours, but best result is achieved if samples are left 24 hours. The full moisture resistance will be reached after approximately 14 days.

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### Handling and Environmental Information

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#### Handling

Avoid direct contact with the products. Always wear protective gloves and protective goggles. Good working hygiene should be observed. The hardener contains isocyanate, which reacts with the moisture of the skin. Use gloves suitable for handling isocyanates (preferably nitrile). Always use goggles when handling the product. Do not allow the hardener to come in contact with water or moisture.

#### Cleaning

For cleaning of equipment and tools, use lukewarm water. Addition of cleaning agent 4450 or 2704 will facilitate the cleaning. Cleaning must start before the system cures. Cured adhesive must be removed mechanically. Only use dry tools for mechanical cleaning of isocyanate containing products.

#### Waste Handling

Adhesive: For waste handling, please refer to section 13 in the SDS.  
Hardener: Contains isocyanates and shall be treated as hazardous waste.  
Adhesive/hardener mixture: Can normally be treated as non-hazardous waste when fully cured. Leave residues to cool down and dry or cure before sending it off for disposal.  
Attention! National and/or regional differences in regulations may prevail. Please contact the responsible authorities.

#### Waste Water Treatment

Waste water treatment can be performed by using different methods such as chemical precipitation, mechanical precipitation and biological treatment. Permissions and requirements for handling waste water and sediment are controlled by the local authorities. Always consult with the responsible authorities and third party companies involved in handling the waste streams.

#### Health And Safety

The Safety Data Sheet provides information regarding health and safety. Study this information carefully.

The information is based on laboratory tests and practical experience. It is a guideline 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.

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