

## **Adhesives approved by NTI for bonding of structural glued laminated timber (glulam) according to Japanese Agricultural Standard (JAS)**

### **1. PRF adhesives (Phenol Resorcinol Formaldehyde)**

The below listed PRF adhesives can be used in Exposure Condition A (exterior use), B (indoor use with requirements to fire resistance) and C (indoor use).

The below listed PRF adhesives can be used for glulam dimension small, medium and large in both face- and fingerjoint bonding.

The mixing ratios given in the list are valid for face bonding. The mixing ratio for fingerjoint bonding is given by the adhesive producer.

Adhesive producer	Product name	Resin name	Hardener name	Mixing ratio face bonding
Akzo Nobel Adhesives AB		1711	2520	100:15
		1711	2622	100:15
Bakelite Oy	Bakelite	PF 2023 HL	PF 2003 H	100:35
	Bakelite	PF 1993 HL	PF 2003 H	100:35
Dynea AS	Prefere	4040	5835	100:20
	Prefere	4040	5839	100:20
	Prefere	4040	5840	100:20
	Prefere	4041	5839	100:20
	Prefere	4041	5840	100:20
	Prefere	4045	5839	100:20
	Prefere	4070	5870	100:20
	Prefere	4071	5870	100:20
	Prefere	4073	5870	100:20
	Prefere	4074	5870	100:20
	Prefere	4075	5870	100:20
	Prefere	4079	5872	100:20
	Prefere	4094	5827	100:20
	Prefere	4099	5827	100:20
Aerodux	185	HRP 155	100:20	

## 2. EPI adhesives (Emulsion Polymerized Isocyanate)

The below listed EPI adhesives can only be used in Exposure Condition C.

The below listed EPI adhesives can be used for glulam dimension small and medium in both face- and fingerjoint bonding.

Generally, adhesives designated for Exposure Condition C only, cannot be used in large dimension glulam.

The mixing ratios given in the list are valid for face bonding. The mixing ratio for fingerjoint bonding is given by the adhesive producer.

Adhesive producer	Product name	Resin name	Hardener name	Mixing ratio face bonding
Akzo Nobel Adhesives AB		1949	1990	100:15
		1950	1999	100:15
		1973	1993	100:10-15
		1977	1990	100:10-15
		1989	1993	100:15
Dynea AS	Prefere	6150	6650	100:15
	Prefere	6151	6651	100:15
	Prefere	6181	6681	100:15
	Prefere	6184	6682	100:15
Kiilto OY	Kestokol	WR05	WR	100:15
	Kestokol	WR11	WR	100:15

## 3. MF adhesives (Melamine Formaldehyde) for fingerjoint bonding

The below listed MF adhesives can be used for fingerjoint bonding in Exposure Condition A, B and C.

The below listed MF adhesives can be used for glulam dimension small, medium and large.

The mixing ratio for fingerjoint bonding is given by the adhesive producer.

Adhesive producer	Product name	Resin name	Hardener name
Akzo Nobel Adhesives AB		1265	7565
Dynea AS	Prefere	4720	5020

## 4. MUF adhesives (Melamine Urea Formaldehyde) for fingerjoint bonding

The below listed MUF adhesives can be used for fingerjoint bonding in Exposure Condition C.

The below listed MUF adhesives can be used for glulam dimension small and medium.

Generally, adhesives designated for Exposure Condition C only, cannot be used in large dimension glulam.

The mixing ratio for fingerjoint bonding is given by the adhesive producer.

Adhesive producer	Product name	Resin name	Hardener name
Dynea AS	Prefere	4546	5021
	Prefere	4546	5093

### Selected adhesives with approvals given by the Food and Agricultural Materials Inspection Center (FAMIC)

Find the complete lists of adhesives for glulam and Cross Laminated Timber (CLT) at <http://www.famic.go.jp/english/jas.html>

Adhesive producer	Adhesive family	Product name	Resin name	Hardener name	Mixing ratio	Timber product	Exposure condition	Application	Valid until
Akzo Nobel Adhesives AB	EPI	GripPro® Style	A701	H701	100:15	Glulam	B	Face bonding	26.03.2025
	MF	-	1265	7565	100:100	Glulam	B	Face bonding	02.04.2023
Dynea AS	EPI	Prefere	6182	6682	100:15	Glulam	B	Face & fingerjoint bonding	02.04.2024
	MUF	Prefere	4546	5093	100:30	Glulam	B	Face & fingerjoint bonding	20.08.2023
	MUF	Prefere	4546	5093	100:80	Glulam	B	Face & fingerjoint bonding	02.08.2023
Henkel & Cie. AG	PUR	LOCTITE PURBOND	HB S109	-	-	CLT	C	Face bonding	08.09.2024
	PUR	LOCTITE PURBOND	HB S509	-	-	CLT	C	Face bonding	08.09.2024
	PUR	LOCTITE PURBOND	HB S049, HB S059, HB S069, HB S079, HB S089, HB S109, HB S129, HB S139, HB S159, HB S189, HB S209, HB S259, HB S309, HB S359, HB S409, HB S459, HB S509, HB S609, HB S709	-	-	Glulam	C	Face & edge bonding	27.10.2023
	PUR	LOCTITE PURBOND	HB S049, HB S059, HB S069, HB S079, HB S089, HB S109, HB S129, HB S139, HB S159, HB S189, HB S209, HB S259, HB S309, HB S359, HB S409, HB S459, HB S509, HB S609, HB S709	-	-	Glulam & CLT	C	Fingerjoint bonding	26.07.2024
Oshika Corporation	EPI	SHIKAJIRUSHI P.I.BOND	5340S, 5340 W	H-50	100:15	Glulam	B	Face & edge bonding	13.12.2024
	EPI	SHIKAJIRUSHI P.I.BOND	3210	H-50	100:15	CLT	B	Face bonding	18.03.2025
	EPI	SHIKAJIRUSHI P.I.BOND	5340S, 5340 W	H-50	100:15	CLT	B	Face bonding	08.11.2022
	EPI	SHIKAJIRUSHI P.I.BOND	5340S, 5340 W	H-50	100:10	CLT	B	Fingerjoint bonding	08.11.2022