# Norsk Treteknisk Institutt (Treteknisk) Sveriges Tekniska Forskningsinstitut (SP), Statens Tekniska Forskningscentral (VTT), Dansk Teknologisk Institut (DTI)

Adhesives tested and approved for production of structural glulam and finger jointed structural timber in Norway, Sweden, Finland and Denmark

### Norsk Treteknisk Institutt Blindern, 2011-06-20

Replaces edition dated 2010-11-16

Approval has been given for a period of 5 years. At expiration of each 5 year period, confirmation is needed from the adhesives producer that the composition of the glue has not been changed since the adhesive system was approved the first time. Adhesives approved for hardwood are tested on European Oak (Pedunculate Oak), and will also apply to European Ash. For other hardwood species separate approval is needed.

#### **Footnotes**

- 1) The adhesive can be used in separate string dispersion of glue and hardener for gluing of lamellae (the production line must be approved separately).
- 2) The adhesive is approved for finger jointing with 5 % water additive and/or with 0,005 % of the colorant "Basonyl Red".
- 3) The adhesive is approved for finger jointing of spruce and pine, as well as pine pressure impregnated with CCA-salts, with 5 % water additive.
- 4) The adhesive is approved for finger jointing of spruce and unimpregnated pine with 5 % water additive.
- 5) The adhesive system is approved for finger jointing of Nordic softwood where glue and hardener is applied in mixed form.
- 6) The adhesive system is approved for separate application of glue and hardener when finger jointing of Nordic softwood.

  The equipment for glue application must be approved separately, both regarding coverage, amount and mixture/mixing ratio. The national control organs must through testing make sure that sufficient dry strength is achieved, and that the glue lines' final water durability are as assumed.
- 7) The adhesive is approved for finger jointing with 5 % water additive and/or 2,2 % of colorant (2,0 % Pintosol E-WL 41 + 0,2 % Colanyl Schwarz PR 130).
- 8) The adhesive is suited for "Contactless" application (strings across the finger front). System for application and safety must be approved separately by the national control organs.
- 9) The adhesive is also tested according to EN 392 (shear strength) and EN 302-2 (delamination) with glue line thickness 2 mm. The system is thus suited for certain types of gluing, where a thicker glue line than normal must be expected.

<u>Note 1</u>: The term finger jointing includes both glulam lamellae and finger jointed structural timber.

#### Remarks

Most of the adhesives are accepted as CE approved according to the intention of EN 14080. Such an acceptance is given in a separate column.

#### Adhesives approved only for indoor use

A ..... J C ...

#### Casein

A J1. - - !---

The adhesives are tested according to existing procedures for casein adhesives.

Adnesive	Approved for	Supplier	Last approved
Prefere 9800	Nordic softwood	Dynea AS	2009

Pine impregnated with

# Adhesive of type 1 as defined in EN 301

Unimpregn. hardwood Unimpregn. softwood Birch (Betula pendula) Approved for use in service class 1, 2 and 3 as stated in EN 386 Semwood ACQ 1900 CCA (type Bog C) Celcure AC 800 Nolmanit CX-8 Fanalith E Hardener LastEN 14080 Glue Hardener Supplier approved

Phenol-Res	orcino	l-Formalde	hyde (PRF)														
			· · · · · ·										ı				_
Aerodux	185	HRP 150	Dynea AS	20	2006	•	•	•		•	•	•					Ļ
II .	185	HRP 151	II .	20	2006	•	•	•		•	•	•					
"	185	HRP 155	"	20	2006+2007	•	•	•		•	•	•					L
Casco Adhesives	1711	2520	Casco Adhesives AB	15	2006	•		•		•	•				•	•	Τ
"	1711	2622	п	15	2006	•		•		•							T
II .	1711	2623	II .	25	2006	•		•		•	•						T
п	1712	2520	II	15	2006	•		•		•							T
II .	1714	2520	II	15	2009	•		•									١,
II .	1719	2619	II	20	2009	•		•		•							Г
II .	1774	2520	II	15	2006	•		•		•	•					•	T
11	1774	2574+2674 1)	II	26	2006	•		•		•	•		•	•			Г
II .	1774	2576+2674 1)	II .	26	2006	•		•		•							T
н	1775	2520	II	15	2006	•		•		•							T
II .	1775	2574+2674 1)	II .	26	2006	•		•		•							T
П	1775	2576+2674 1)	II .	26	2006	•		•		•							T
II .	1775	2575 1)	II .	30	2009	•		•									L
Prefere	4014	5833	Dynea AS	20	2006	•		•									Т
"	4014	5834	"	20	2006	•		•									t
п	4015	5803	II	16	2006	•		•		•							H
11	4030	5803	II	15	2006	•		•		•							t
II .	4030-A	5803	II .	15	2006	•		•		•							T
II .	4030-L	5803	II	15	2006	•		•		•							Ħ
11	4040	5835	II	20	2008	•		•									T
11	4040	5839	II .	20	2005	•		•									T
Ш	4040	5840	II .	20	2005	•		•									Γ
"	4043	5839	II .	20	2007	•		•									Γ
II .	4094	5827 9)	II .	20	2009+2010	•		•									
II	4095	5802	II	40	2007	•		•							•		Γ
П	4095	5832	II	40	2007	•		•							•		Γ
II .	4099	5824	II	8-10	2009	•	•	•	•	•							T
II .	4099	5827	II	20	2009	•	•	•	•	•							T
11	4099	5829	п	20	2009	•	•	•	•	•							Т

Casco Adhesives	1240	2540	1)	Casco Adhesives AB	30	2006	•		•	•	•			• •
II .	1240	2540	5)	II	20	2006	•		•	•	•		•	•
II .	1242	2542	4)	II .	20-25	2009	•		•		•			
11	1242	2540	1)	II .	22-30	2005	•		•					
II .	1246	2540	1)	II	22-30	2009	•		•					
II .	1247	2526	1)	II	20-100	2005+2006	•		•				(	•
II .	1247	2526	6)	II	100	2007	•		•				- (	•
II .	1249	2579	1)	II	50	2006	•		•				(	•
н	1251	7551	1)	II	20-100	2009	•		•				(	•
П	1252	2526	1)	II	20-100	2009	•		•				- (	•
II .	1252	7552	1)	II	50-100	2009	•		•					
II .	1252	7553		II	20-100	2009	•		•					
II .	1252	7553	1)	II	50-100	2009	•		•					T
н	1257	7557	1)	II	50-100	2009	•		•					
							· · · · · · · · · · · · · · · · · · ·	-			1			
Prefere	4624	5024		Dynea AS	20	2006	•		•		•			Т
Ш	4525	5025	3)	II	20	2006	•		•		•		(	•
11	4525	5026	3)	II	20	2009	•		•		•		(	•
II .	4535	5035		II	15-35	2006	•		•					T
11	4535	5035	1)	II	20-35	2006	•		•	•			(	•
II .	4535	5035	7)	II	20	2009	•		•		•			
11	4535	5035	6)	II .	50±10	2009	•		•					
П	4535	5046	1)	II	15-60	2008	•		•					$\top$
11	4535	5046	1)	11	20-35	2009	•		•				•	•
II .	4535	5046	6)	II	50±10	2008	•		•					
II .	4546	5020	1)	II	100	2010	•		•					
II	4546	5021		II	10-100	2010	•		•					
II .	4546	5021	1)	II	20-100	2010	•		•					
"	4546	5021	4+6)	II .	100±30	2010	•	- 1	•	1				

# Adhesive of type 1 as defined in EN 301

Approved for use in service class 1, 2 and 3 as stated in EN 386

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Unimpregn. hardwood Unimpregn. softwood	Birch (Betula pendula)	CFK	CCA (type Bog C)	20	CCB	Kemwood ACQ 1900	Celcure AC 800	Fanalith E	Wolmanit CX-8	Scanimp KF

Glue
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Hardener

Supplier

Hardener % Last approved

EN 14080

## Melamine-Urea-Formaldehyde (MUF)

Kauramin	681	686		BASF	15-35	2004
"	681	686	2)	11	20	2006
II .	683	688		"	20-100	2005
II .	683	688	2)	"	20-40	2006
11	683	688	1)	11	30-100	2005

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## Melamine-Formaldehyde (MF)

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Casco Adhesives	1250	2550	1)	Casco Adhesives AB	100	2006	•		•		•			•	
"	1250	2550	5+6)	II .	50-100	2006	•		•						
Prefere	4720	5020	1)	Dynea AS	10-100	2005-2006	•		•					•	•
"	4720	5020	6)	II .	50-100	2008	•	1	•					•	•

## 1 component Polyurethane (PUR)

Kauranat	970	-	BASF	-	2004
Purbond	HB 110	-	Purbond AG	-	2009
"	HB 221	-	II	-	2009
II.	HB 230	-	II	-	2008
11	HB 360	-	II	-	2008
"	HB 440	-	II .	-	2009
"	HB 530	-	II .	-	2009
"	S-line	-	II	-	2009
Prefere	6000	-	Dynea AS	-	2009
"	6001	-	II .	-	2009
Jowapur	686.60	-	Jowat AG	-	2010
	•	•		•	•
Kestopur	1010	-	Kiilto OY	-	2009
"	1030	-	II .	-	2009
"	1050	-	п	-	2009

Note 2: The approval applies for Nordic spruce. Maximum glue line thickness at production is 0,3 mm.

Note 3: The approval for Prefere 6001 also applies for pine.

### **Emulsion Polymerised Isocyanate (EPI)**

							_		_							
Prefere	6151	6651	8)	Dynea AS	15	2007, 2010		-		•	•				•	•

#### *Note 4* :

6151/6651: Maximum glue line thickness at production is 0,2 mm. Variation in lamella thickness shall be within the mean value  $\pm$  0,1 mm. Difference in thickness across the lamella width shall be less than 0,10 % of the width. 6182/6682: Production terms and usage areas as for approved PUR adhesives.

# Adhesive given separate approval for finger jointing of structural timber

For use in service class 1, 2 and 3.

# **Emulsion Polymerised Isocyanate (EPI)**

Casco Adhesives	1989	1993	Casco Adhesives AB	15	2006	-	•
Kestokol	WR11	WR	Kiilto OY	15	2009	-	•
Prefere	6150	6650	Dynea AS	15	2009	-	•

# Melamine-Urea-Formaldehyde (MUF)

Kauramin	683	688	BASF	30 - 100	2006	•		•				

# 1 component Polyurethane (PUR)

Jowapur	686.20	-	Jowat AG	-	2010	-	Ī	•					
"	680.20	-	"	-	2011			•					

<u>Note 5</u>: Approved for Norway Spruce