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**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-26/0335
of 10 August 2026**

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Chemofast Injection System EP 1000

Product family
to which the construction product belongs

Glued-in rods for timber connections

Manufacturer

CHEMOFAST Anchoring GmbH
Hanns-Martin-Schleyer-Straße 23
47877 Willich
GERMANY

Manufacturing plant

Plant 1

This European Technical Assessment
contains

17 pages including 3 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Article 95(4) of
Regulation (EU) 2024/3110, on the basis of

EAD 130006-00-0304

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Specific Part

1 Technical description of the product

The Chemofast Injection System EP 1000 is an adhesive system consisting of an adhesive cartridge with injection system Chemofast EP 1000 and a steel rod.

The steel rod is inserted into a borehole, whereby the adhesive is either injected into the borehole before the steel rod is inserted (Direct Injection) or the annular gap is then filled with adhesive (By-Pass Injection) in accordance with Annexes A1 and A2. Once the adhesive has hardened, the steel rod is permanently anchored by the bond between the steel, adhesive and wood.

The load bearing timber connections with glued-in steel rods consist of

- the 2-component epoxy resin adhesive EP 1000 in accordance with the specifications deposited at DIBt,
- steel rods,
 - ribbed reinforcing steel rods in accordance with EN 10080¹ and a nominal diameter d of $6 \text{ mm} \leq d \leq 32 \text{ mm}$ or
 - metallic threaded rods with metric thread made of carbon steel with strength classes 4.8 to 12.9 in accordance with EN ISO 898-1² or made of stainless steel with strength classes 50 to 80 in accordance with EN ISO 3506-1³ with a nominal diameter d of $6 \text{ mm} \leq d \leq 30 \text{ mm}$.
- and timber members made from the following timber materials
 - glued laminated timber and glued solid timber in accordance with EN 14080⁴ or
 - edge-glued cross laminated timber without relieving grooves in accordance with European Technical Assessment (ETA).

The steel rods are glued into timber structures of the wood species spruce (*Picea abies*), fir (*Abies alba*) or pine (*Pinus sylvestris*).

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the adhesive system is used in compliance with the specifications and conditions given in Annex A and Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the adhesive system of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

¹	EN 10080:2005-08	Steel for the reinforcement of concrete - Weldable reinforcing steel - General
²	EN ISO 898-1:2013-05	Mechanical properties of fasteners made of carbon steel and alloy steel - Part 1: Bolts, screws and studs with specified property classes - Coarse thread and fine pitch thread
³	EN ISO 3506-1:2020-08	Fasteners - Mechanical properties of corrosion-resistant stainless steel fasteners - Part 1: Bolts, screws and studs with specified grades and property classes
⁴	EN 14080:2013-09	Timber structures - Glued laminated timber and glued solid timber - Requirements

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Bond strength in longitudinal tensile shear strength	See Annex C1
Resistance to delamination	See Annex C1
Effect of wood shrinkage on the shear strength	See Annex C1
Effect of compression shear and climatic changes	See Annex C1
Bond shear strength of glued-in steel rods	See Annex C1
Duration of load	See Annex C1
Bond creep rupture test at very high and low moisture content	See Annex C1
Bond temperature resistance	See Annex C1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	See Annex C1

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Formaldehyde	Adhesive contains no added formaldehyde

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

For the products covered by this EAD the applicable European legal act is Commission Decision 97/176/EC, as amended by Commission Decision 2001/596/EC.

The system is 3.

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

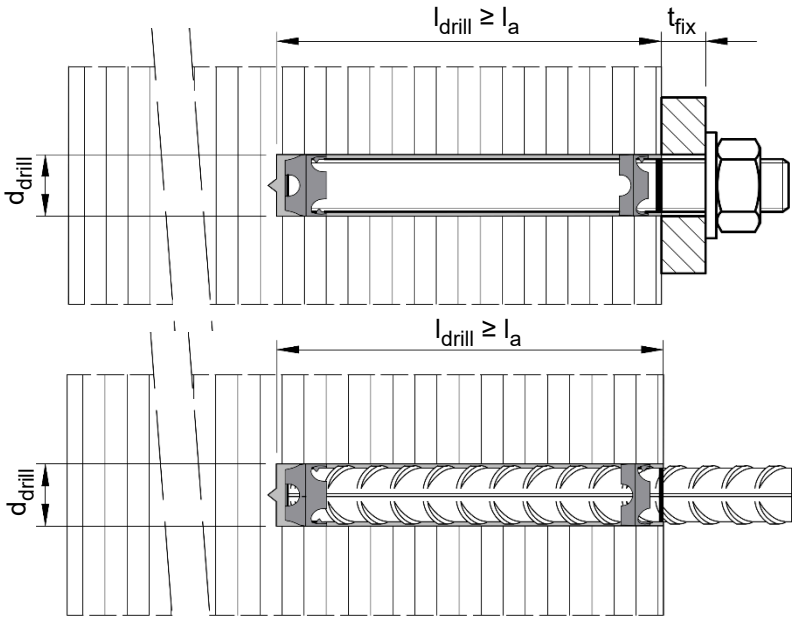
Issued in Berlin on 10 August 2026 by Deutsches Institut für Bautechnik

Anja Dewitt
Head of Section

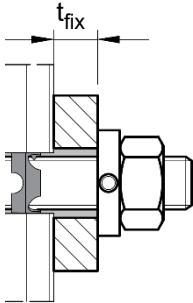
beglaubigt:
Vössing

Direct-Injection (DI)

Pre-positioned

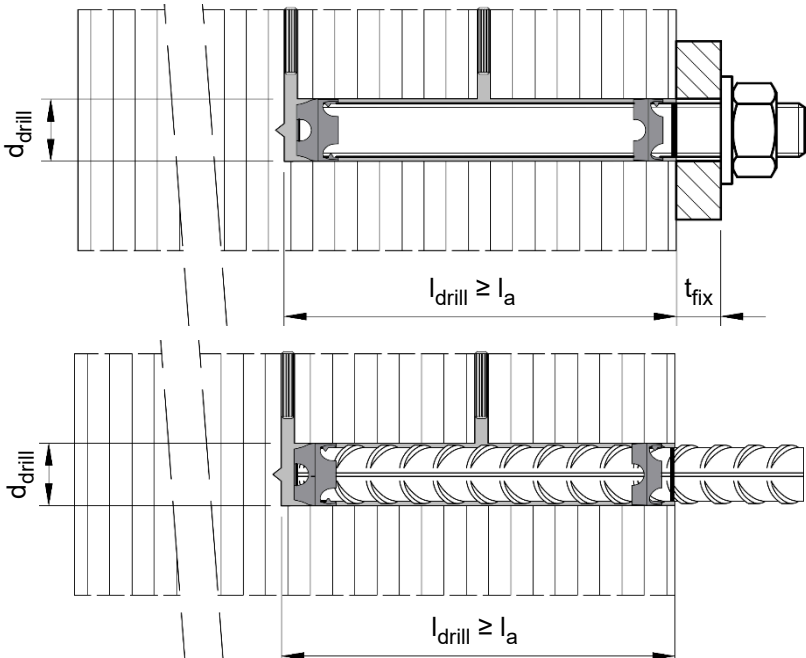


Push-through installation
(ring gap filled with adhesive)

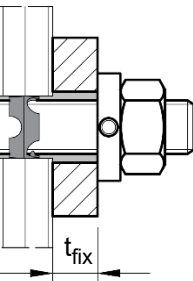


By-Pass-Injection (BPI)

Pre-positioned



Push-through installation
(ring gap filled with adhesive)



l_{drill} = Borehole depth
 d_{drill} = Borehole diameter

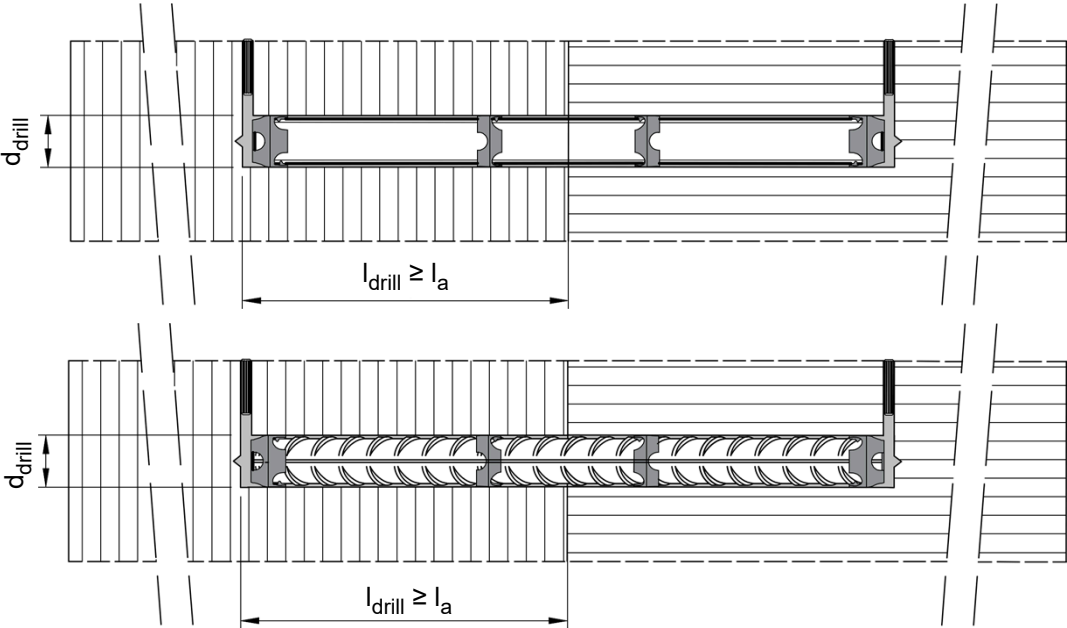
l_a = Nominal bonding length
 t_{fix} = Thickness of the attachment

Chemofast Injection system EP 1000

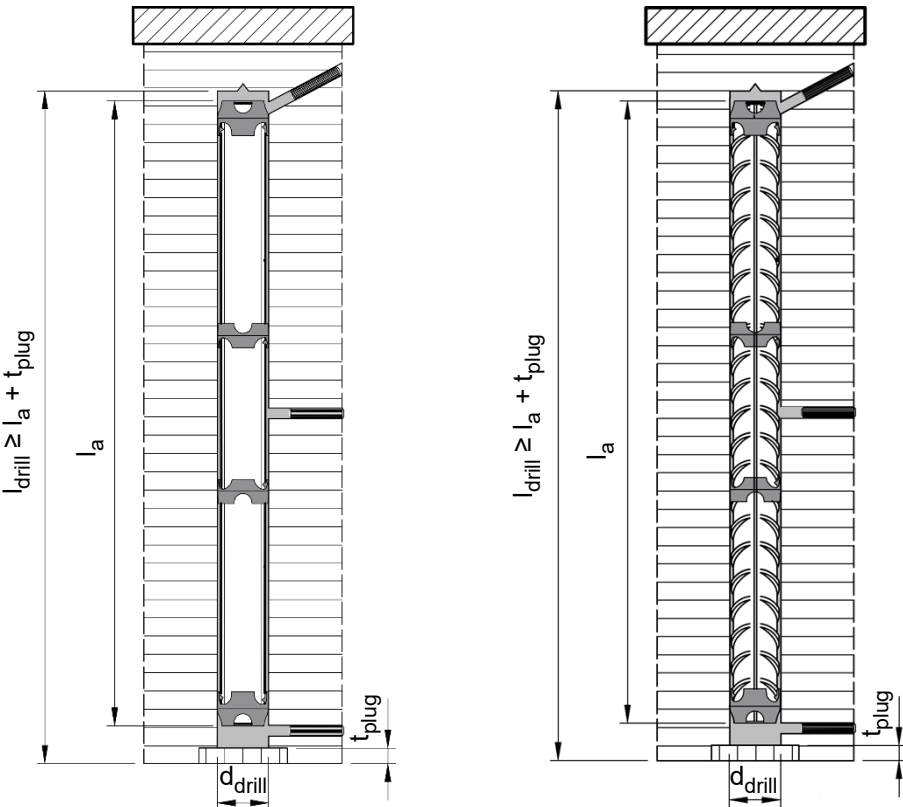
Product description
Installed condition

Annex A1

By-Pass-Injection (BPI), joint timber connection



By-Pass-Injection (BPI), Reinforcement of timber components



l_{drill} = borehole depth
 d_{drill} = Borehole diameter

l_a = Nominal bonding length
 t_{plug} = Thickness wooden dowel

Chemofast Injection system EP 1000

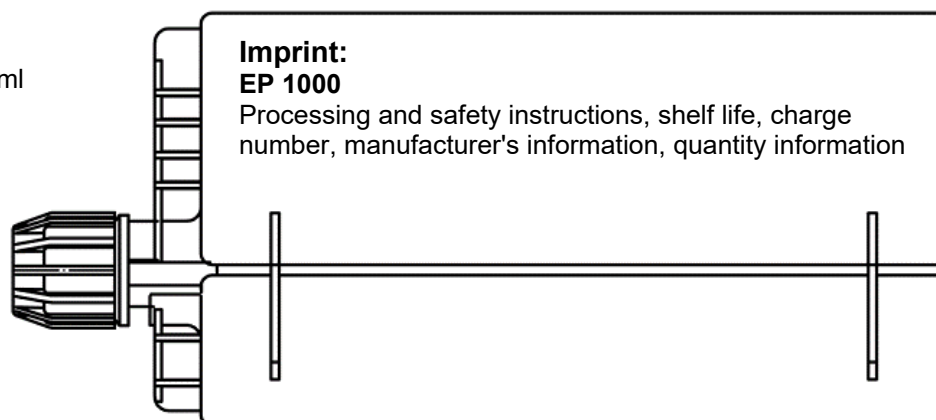
Product description
Installed condition

Annex A2

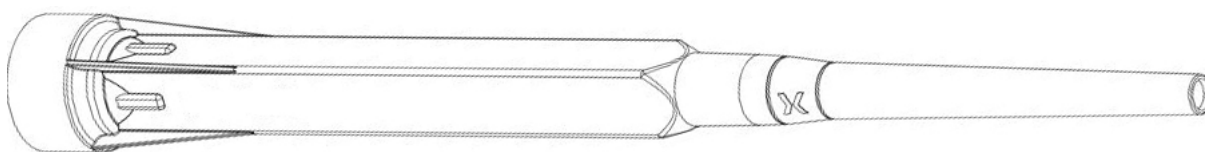
Cartridge system

Side-by-Side Cartridge:

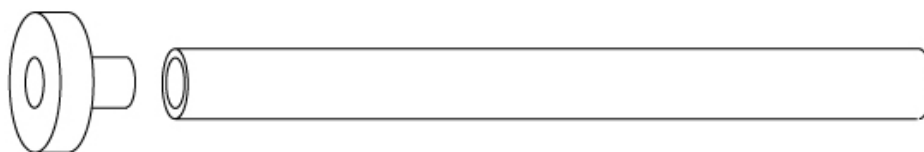
440 ml, 500 ml up to 540 ml, 585 ml
and 1400 ml



Static mixer PM-19E



Piston plug VS and mixer extension VL

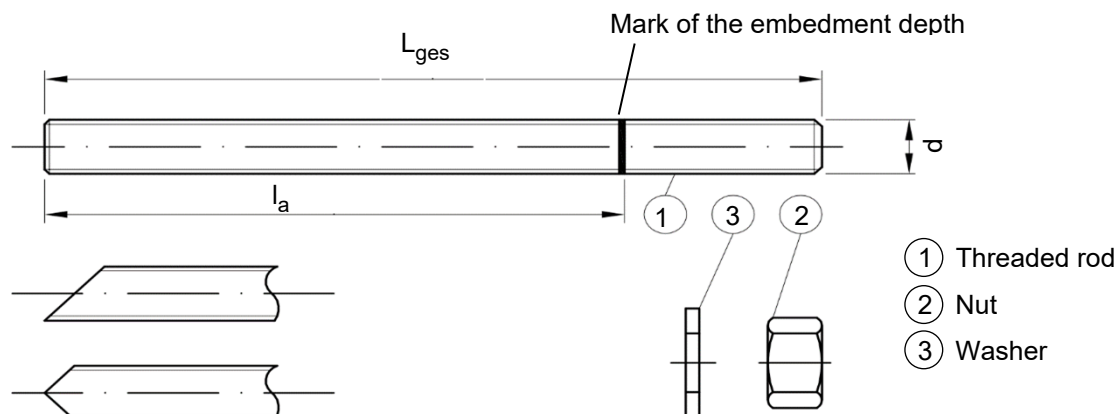


Chemofast Injection system EP 1000

Product description
Injection system

Annex A3

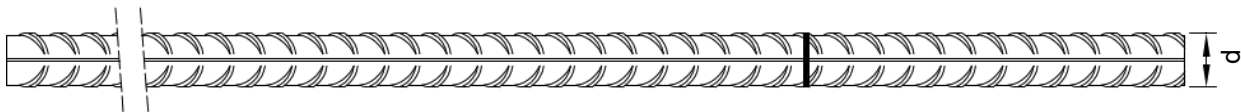
Threaded rod M6 up to M30 with washer and hexagon nut



Commercial standard threaded rod:

- made of carbon steel according to EN ISO 898-1:2013/AC:2013 or stainless steel according to EN ISO 3506-1:2020
- with Inspection certificate 3.1 acc. to EN 10204:2004. The document shall be stored.
- Marking of embedment depth

Reinforcing bar: $\varnothing 6$ up to $\varnothing 32$



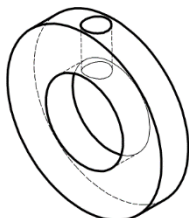
Weldable reinforcing steel bars in accordance with EN 10080:2005.

Minimum value of related rip area $f_{R,min}$ according to EN 1992-1-1:2004 + AC:2010

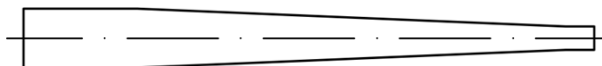
Rib height of the bar shall be in the range $0,05d \leq h_{rib} \leq 0,07d$

(d: Nominal diameter of the bar; h_{rib} : Rib height of the bar)

Filling washer VFS



Mixer reduction nozzle MR

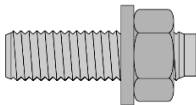
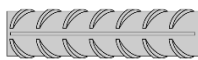


Chemofast Injection system EP 1000

Product description
Threaded rod; Internal threaded rod
Filling washer; Mixer reduction nozzle

Annex A4

Table B1: Installation parameter and installation tools

								
d Threaded rod	d ₀ Drill bit - Ø	max. installation torque T _{inst}	d reinforcing bars	d ₀ Drill bit - Ø	Piston plug	Installation direction and use of piston plug		
[mm]	[mm]	[Nm]	[mm]	[mm]				
M6	8 ≤ d ₀ < 10	3	D6	8 ≤ d ₀ < 10	No plug required			
M8	10 ≤ d ₀ < 12	5	D8	10,5 ≤ d ₀ < 12				
M10	12 ≤ d ₀ < 14	8	D10	12,5 ≤ d ₀ < 14				
M12	14 ≤ d ₀ < 18	15	D12	14,5 ≤ d ₀ < 18				
M16	18 ≤ d ₀ < 20	30	D16	18,5 ≤ d ₀ < 20	VS18	Required for l _a > 250 mm	Required for l _a > 250 mm	required
M20	22 ≤ d ₀ < 24	60	D20	23 ≤ d ₀ < 24	VS22			
M24	26 ≤ d ₀ < 28	100	D22	26 ≤ d ₀ < 28	VS25			
M27	29 ≤ d ₀ < 31	120	D25	29 ≤ d ₀ < 30	VS28			
M30	32 ≤ d ₀ < 34	150	D28	33 ≤ d ₀ < 34	VS32			
-	-	-	D32	37 ≤ d ₀ < 38	VS35			

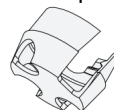
Minimum bonding length l_{a,min}: max(100mm, 10d)

Cleaning and installation tools

Compressed air tool
(min 6 bar)



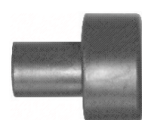
Centring aid
CA-Cap



CA-Ring



Piston Plug VS



Compressed air extension hose



Table B2: Working and curing time

Room temperature and temperature of timber members			Maximum working time ¹⁾	Minimum curing time ²⁾	Full curing time ³⁾
T			t _{work}	T _{cure,min}	T _{cure,full}
+ 17 °C	to	+ 20 °C	40 min	10 h	36 h
+ 20 °C	to	+ 30 °C	30 min	6 h 15 min	24 h
+ 30 °C	to	+ 35 °C	12 min	5 h	24 h
Cartridge temperature			+17°C to +35°C		
1) Maximum period of time for introducing the steel rod into the borehole filled with adhesive and aligning it after filling of the borehole has been started.					
2) Period of time during which the members with the glued-in steel rods must not be moved.					
3) Period of time until the adhesive has reached its final joint strength at T ≤ 60 °C.					

Chemofast Injection system EP 1000

Intended use
Installation parameter and installation tools
Working time and curing time

Annex B1

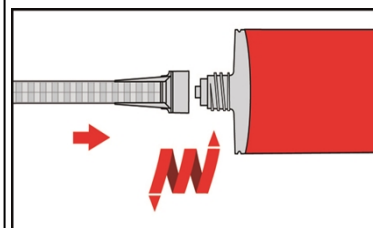


Wear personal protective equipment!
Refer to the safety data sheet for further details.

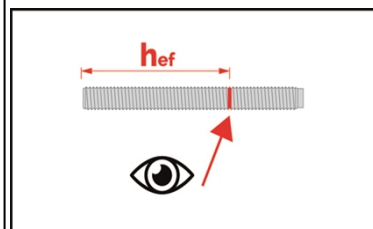
Installation instructions: General information and preparation



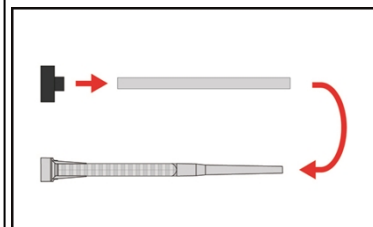
1. The moisture content of timber must be between 6% and 18%.



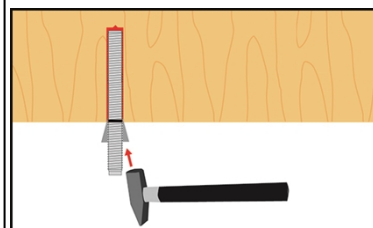
2. Screw on static-mixing nozzle PM-19E and load the cartridge into an appropriate dispensing tool.
For every working interruption longer than the maximum working time t_{work} (Annex B1) as well as for new cartridges, a new static-mixer shall be used.



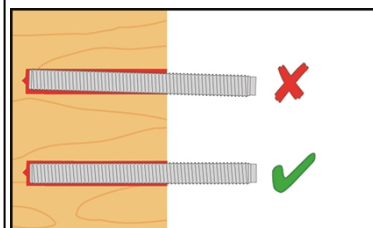
3. Mark embedment depth on the steel rod.
The steel rod shall be free of dirt, grease, oil or other foreign material.



4. Piston plugs VS and mixer nozzle extensions VL shall be used for applications with drill bit- $\varnothing d_0 \geq 18$ mm bonding length $l_a > 250$ mm, as well as in vertical upwards direction.
Assemble mixing nozzle, mixer extension and piston plug before injecting mortar.



5. For application in vertical upwards direction the steel rod shall be fixed (e.g. wedges).



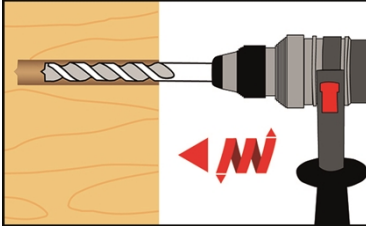
6. Steel rods must not be misaligned. Use centering rings (Annex B1) if necessary.

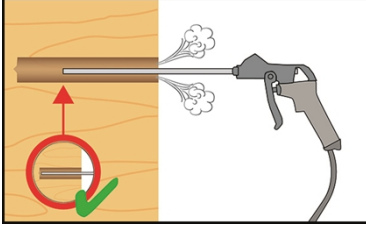
Chemofast Injection system EP 1000

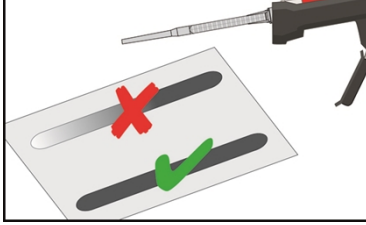
Intended use
Installation instructions

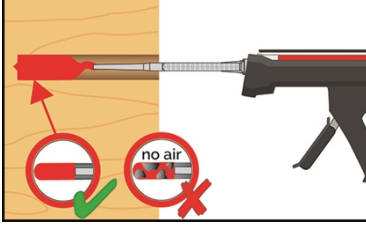
Annex B2

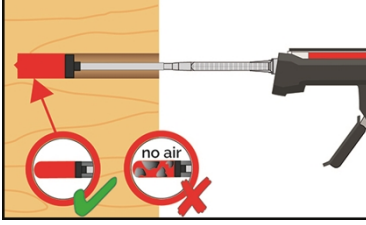
Installation instructions: Direct injection (DI), pre-positioned and push-through installation

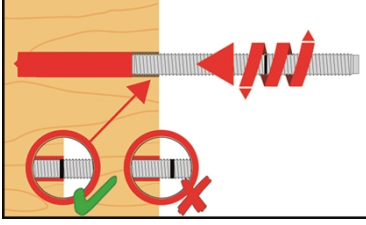
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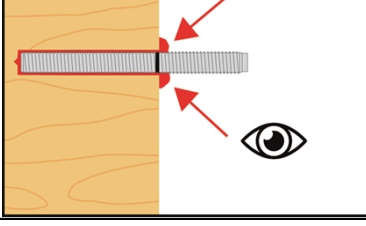
7. Drill a hole to the required embedment depth required.
Installation parameters according to Table B1.
- 

8. Blow the bore hole clean with compressed air (min. 6 bar, oil-free) (Annex B1) over the entire embedment depth until return air stream is free of noticeable dust. (If necessary, an extension hose shall be used.).
- 

9. Not proper mixed adhesive is not sufficient for bonding.
Dispense and discard adhesive until an uniform grey or red colour is shown (at least 3 full strokes).
- 

10a. **Injecting mortar without piston plug VS:**
Starting at bottom of the hole and fill the hole up to approximately two-thirds with adhesive. (If necessary, a mixer nozzle extension shall be used).
Slowly withdraw of the static mixing nozzle avoid creating air pockets
Observe the temperature related working time t_{work} (Annex B1).
- 

10b. **Injecting mortar with piston plug VS:**
Starting at bottom of the hole and fill the hole up to approximately two-thirds with adhesive. (If necessary, a mixer nozzle extension shall be used).
During injection the piston plug is pushed out of the bore hole by the back pressure of the mortar.
Observe the temperature related working time t_{work} (Annex B1).
- 

11. Insert the steel rod while turning slightly up to the embedment mark
- 

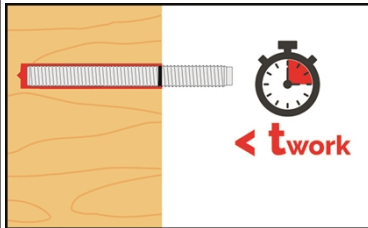
12. Annular gap between steel rod and timber member must be completely filled with adhesive. In case of push through installation the annular gap in the fixture must be filled with mortar also.
Otherwise, remove the steel rod before the maximum working time t_{work} is reached and repeat from step 10.

Chemofast Injection system EP 1000

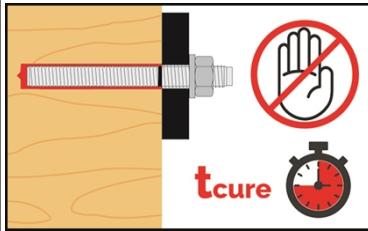
Intended use
Installation instructions: Direct injection (DI), pre-positioned and push-through installation

Annex B3

Installation instructions (continuation): Direct injection (DI), pre-positioned and push-through installation

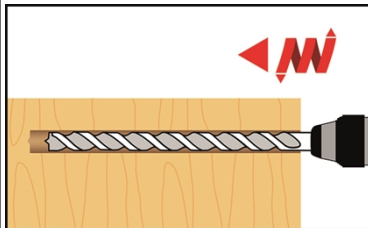


13. Maximum period of time t_{work} (working time acc. to Annex B1) for introducing the steel rod into the borehole filled with adhesive and aligning it after filling of the borehole has been started.

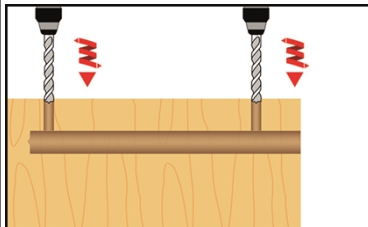


14. Temperature related curing time must be observed!
Required period of time $t_{cure,min}$ (minimum curing time acc. to Annex B1) during which the members with the glued-in steel rods must not be moved.
Required period of time $t_{cure,full}$ (full curing time acc. to Annex B1) until the adhesive has reached its final joint strength at $T \leq 60^\circ\text{C}$. For push-through installation, fill the annular gap in the fixture part using the VFS filling washer and the MR reduction nozzle.

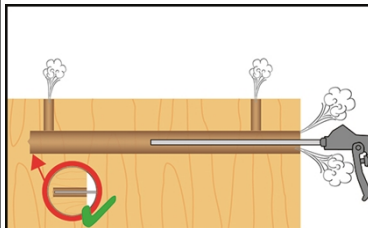
Installation instructions: By-pass injection (BPI), pre-positioned and push-through installation



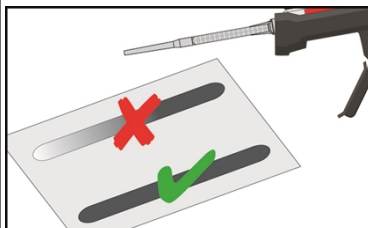
7. Drill a hole to the required embedment depth required.
Installation parameters according to Table B1.



8. Drill bypass holes. The diameter should be chosen so that the static mixer can seal the bypass hole whilst the adhesive is being injected.



9. Blow the bore hole clean with compressed air (min. 6 bar, oil-free) (Annex B1) over the entire embedment depth until return air stream is free of noticeable dust. (If necessary, an extension hose shall be used.).



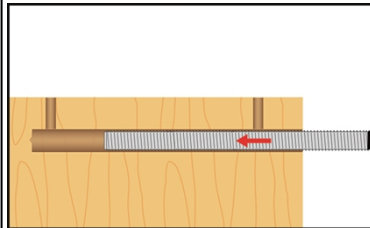
10. Not proper mixed adhesive is not sufficient for bonding.
Dispense and discard adhesive until an uniform grey or red colour is shown (at least 3 full strokes).

Chemofast Injection system EP 1000

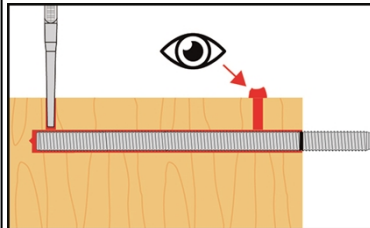
Annex B4

Intended use
Installation instructions: Direct injection (DI) and by-pass injection (BPI), pre-positioned and push-through installation

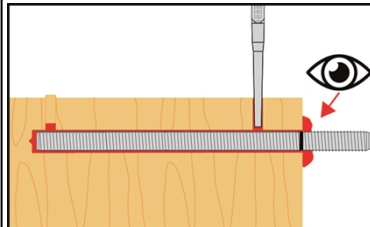
Installation instructions (continuation): By-pass injection (BPI), pre-positioned and push-through installation



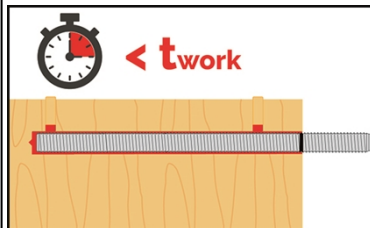
11. Insert the steel component up to the mark and brace the timber components together.



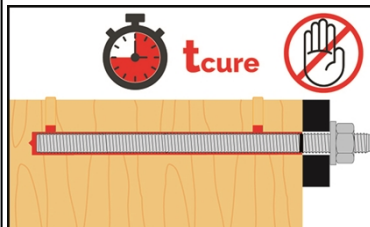
12. Press the static mixer firmly into a bypass opening (trimming the mixer tip if necessary) to prevent any adhesive from escaping. Continue injecting adhesive until it emerges from the other bypass opening.



13. Seal the last bypass opening used securely (e.g., with a wooden plug) and inject adhesive through the remaining bypass opening until the adhesive emerges from the drill hole or, in the case of a push-through installation, from the annular gap of the attachment part.

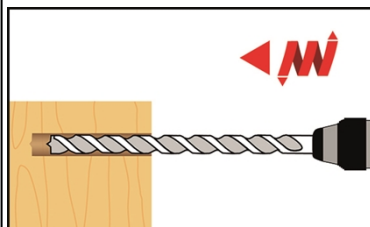


14. Maximum duration t_{work} (working time as per Annex B1) for injecting the adhesive into the borehole.



15. Temperature-related curing times must be observed!
Required period of time $t_{cure,min}$ (minimum curing time in accordance with Annex B1), during which the components must not be moved using steel rods.
Required period of time $t_{cure,full}$ (full curing time in accordance with Annex B1) until the final adhesive joint strength is achieved at $T \leq 60^\circ\text{C}$ and from which point the components may be loaded.

Installation instructions: By-pass injection (BPI), joint-timer connection



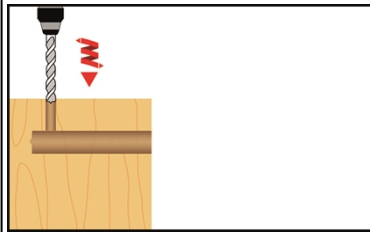
7. Drill a hole to the required embedment depth required.
Installation parameters according to Table B1.

Chemofast Injection system EP 1000

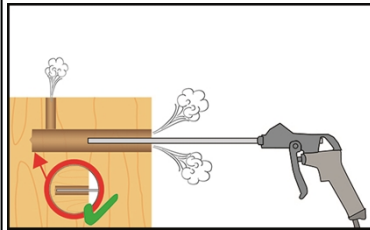
Intended use
Installation instructions: By-pass injection (BPI), pre-positioned and push-through installation; joint-timber connection

Annex B5

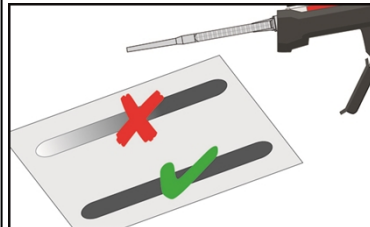
Installation instructions (continuation) By-Pass-Injection (BPI), Joining of timber structures



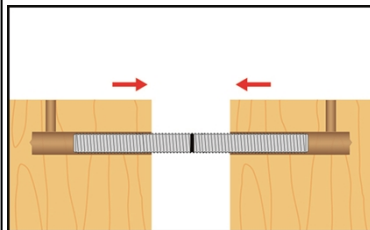
8. Drill bypass holes. The diameter should be chosen so that the static mixer can seal the bypass hole whilst the adhesive is being injected. Repeat the process for the second piece of timber member.



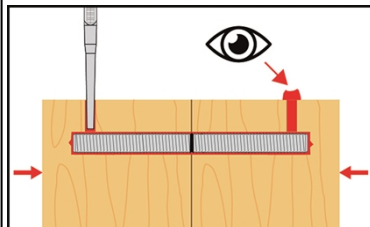
9. Blow the bore hole clean with compressed air (min. 6 bar, oil-free) (Annex B1) over the entire embedment depth until return air stream is free of noticeable dust. (If necessary, an extension hose shall be used). Repeat the procedure for the second timber member.



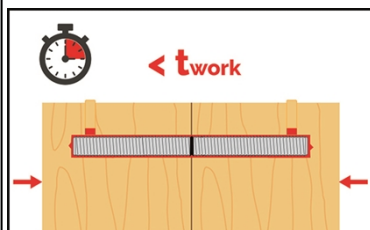
10. Not proper mixed adhesive is not sufficient for bonding. Dispense and discard adhesive until an uniform grey or red colour is shown (at least 3 full strokes).



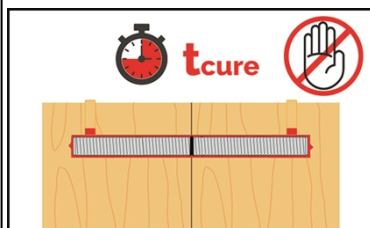
11. Insert the steel component up to the mark and brace the timber components together.



12. Press the static mixer firmly into a bypass opening (trimming the mixer tip if necessary) to prevent any adhesive from escaping. Continue injecting adhesive until it emerges from the other bypass opening.



13. Maximum duration t_{work} (working time as per Annex B1) for injecting the adhesive into the borehole.



14. Temperature-related curing times must be observed! Required period of time $t_{cure,min}$ (minimum curing time in accordance with Annex B1), during which the components must not be moved using steel rods. Required period of time $t_{cure,full}$ (full curing time in accordance with Annex B1) until the final adhesive joint strength is achieved at $T \leq 60^{\circ}C$ and from which point the components may be loaded.

Chemofast Injection system EP 1000

Intended use
Installation instructions By-Pass-Injection (BPI), Joining of timber structures

Annex B6

Annex B7 Specifications of intended use

B7.1 General

Use of Chemofast Injection System EP 1000 only for:

- non-fatigue static and quasi-static loads.

B7.2 Installation provisions

EN 1995-1-1¹ applies for the installation.

Load-bearing timber connections with glued-in steel rods produced using the adhesive Chemofast EP 1000 shall only be used inside buildings and for roofed members where a relative humidity of 85 % is only exceeded for a few weeks per year (service classes 1 and 2 in accordance with DIN EN 1995-1-1). The fitness for application of the connections produced with the adhesive has been verified up to a member temperature of 60 °C.

Gluing steel rods into load-bearing timber structures which have been treated or are treated with chemical wood preservatives or fire retardants is not the subject of this ETA.

For metallic threaded rods, the diameter of the borehole shall be at least 2.0 mm but no more than 4.0 mm larger than the nominal diameter of the steel rods.

For ribbed reinforcing steel rods, the diameter of the borehole shall correspond to the values in Table B7.1.

Table B7.1: Borehole diameter for ribbed reinforcing steel rods

Nominal diameter d of ribbed reinforcing steels rods in mm	Borehole diameter in mm
$6 \leq d \leq 10$	$d + 2.5 \pm 0.5$
$10 < d \leq 20$	$d + 4.0 \pm 1.0$
$20 < d \leq 32$	$d + 5.5 \pm 0.5$

By using suitable structural measures, it shall be ensured that the steel rods are centrically glued into the borehole. The drill hole is cleaned by blowing out with compressed air before the steel rods are glued in.

The installation instructions in accordance with Annex B shall be followed to avoid air inclusions.

The total glue-in length of the steel rods l_{glue} shall not exceed 3,000 mm; the rod slimmess shall be $l_{\text{glue}}/d < 110$.

Where:

d Nominal diameter of steel rods in mm

l_{glue} Total glued-in length of the steel rods.

The steel rods shall only be glued into timber members that have a moisture content of 6 % to 18 % taking into account the equilibrium moisture content expected in the installed state. During the gluing process, the temperature of the timber members, the steel rods and the adhesive shall be at least 17 °C. The fitness for use of the adhesive has been verified up to a temperature of 35 °C of the timber members into which the steel rods are to be inserted using the adhesive. The room temperature during gluing and curing shall be at least 17 °C.

To avoid condensation, adequate air conditioning shall be provided for all components, explicitly for the steel rods to be installed.

¹ EN 1995-1-1:2004+A1:2008+A2:2014 Eurocode 5: Design of timber structures - Part 1-1: General - Common rules and rules for buildings

Chemofast Injection System EP 1000	Annex B7
Specifications of intended use	

Annex B8 Specifications of intended use Part 2

B8.1 Working properties

During the installation process, the respective period of time for introducing and aligning the steel rod as well as the period of time during which the members with glued-in steel rods must not be moved shall be observed in accordance with Table B8.1.

Table B8.1: Period of time for introducing and aligning the steel rod as well as period of time during which the members with glued-in steel rods must not be moved, depending on the room temperature and the temperature of the timber members

Room temperature and temperature of the timber members with glued-in steel rods during installation	17 bis < 20 °C	20 bis < 30 °C	30 bis ≤ 35 °C
Maximum period of time for introducing the steel rod into the borehole filled with adhesive and aligning it after filling of the borehole has been started	40 min	30 min	12 min
Period of time during which the members with the glued-in steel rods must not be moved	10 h	6 h 15 min	5 h

The requirements of Table B8.2 for the earliest point in time at which mechanical stress may occur and period of time until the adhesive has reached its final joint strength shall be complied with.

Table B8.2: Earliest point in time at which mechanical stress may occur and period of time until the adhesive has reached its final joint strength depending on the room temperature and the temperature of the timber members

Room temperature and temperature of the timber members with glued-in steel rods during curing	17 bis < 20 °C	20 bis < 30 °C	30 bis ≤ 35 °C
Period of time until the adhesive has reached its final joint strength at $T \leq 60\text{ °C}$ ¹	36 h	24 h	24 h

¹ After this period of time, the maximum member temperature to which the load-bearing connections with glued-in steel rods may be exposed is 60 °C.

The Period of time to fully cured state on solid monolithic adhesive specimens in accordance with EN 17334, Section 11.5.7 is for 17 °C 150 hours, for 20 °C 100 hours and for 30 °C 75 hours.

B8.2 Design regulations (informative)

EOTA Technical Report TR 070² may be applied for the design of glued-in steel rods for timber connections.

² EOTA Technical Report TR 070:2019 "Design of glued-in Rods for Timber Connections"

Chemofast Injection System EP 1000	Annex B8
Specifications of intended use	

Annex C1 Essential characteristics

C1.1 Mechanical resistance and stability (BWR 1)

Table C1.1: Essential characteristics of Chemofast Injection System EP 1000

Essential characteristic	Performance	Assessment method
Bond strength in longitudinal tensile shear strength	Passed $f_{v,lts,Ax,mean} \geq f_{v,lts,Ax,mean,min}$	EN 17334, Clause 7.3.1
Resistance to delamination	Passed $D \leq 5 \%$	EN 17334, Clause 7.3.2
Effect of wood shrinkage on the shear strength	Passed $f_{v,ws,mean} \geq 1.5 \text{ N/mm}^2$	EN 17334, Clause 7.3.3
Effect of compression shear and climatic changes	Passed $w_{cr,mean} \leq 0.05 \text{ mm}$	EN 17334, Clause 7.3.4
Bond shear strength of glued-in steel rods	$l_a \leq 250 \text{ mm}$: $f_{vr,k} = 4.0 \text{ N/mm}^2$ $250 \text{ mm} < l_a \leq 500 \text{ mm}$: $f_{vr,k} = 5.25 - 0.005 \cdot l_a \text{ N/mm}^2$ $500 \text{ mm} < l_a \leq 1000 \text{ mm}$: $f_{vr,k} = 3.5 - 0.0015 \cdot l_a \text{ N/mm}^2$	EN 17334, Clause 8, and Clause 2.2.1 of EAD
Duration of load	k_{def} and k_{mod} according to EN 1995-1-1	
Bond creep rupture test at very high and low moisture content	Passed $n_{unbrok} = 4$, no increased creep behaviour	EN 17334, Clause 10, and Clause 2.2.1 of EAD
Bond temperature resistance	Passed $f_{vr,res,k} \geq f_{vr,k}$	EN 17334, Clause 9, and Clause 2.2.1 of EAD

C1.2 Safety in case of fire (BWR 2)

Fire performance

The performance of the metallic threaded rods made of steel and the weldable reinforcing steel rods is class A1.

The adhesive (thickness $t_b \leq 3 \text{ mm}$) is located between the rod and the timber element and embedded in the timber element (minimum edge distance of at least $2.5 \cdot d$) in the end use. Therefore, it shall be assumed in the context of the intended use that the contribution of the adhesive in connection with the glued-in rods in the end use application is very small and does not affect the reaction to fire performance of the timber in which the rods are glued-in. Therefore, reaction to fire performance of the adhesive shall be considered as negligible and does not need to be tested.

Chemofast Injection System EP 1000	Annex C1
Essential characteristics	