Deutsches Institut für Bautechnik

DIBt

Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt
Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts
Mitglied der EOTA, der UEAtc und der WFTAO

National technical approval / General construction technique permit

Date:	Reference:
31.03.2020	I 88-1.14.4-19/19

Number:
Z-14.4-851

Validity
vom: **31. March 2020**
bis: **31. March 2025**

Applicant:
PURICELLI S.R.L.
Via Nuova Valassina 3
23845 COSTA MASNAGA-LC
ITALIEN

Subject of decision:
Fixing of Puricelli HPL façade panels with EJOT self-drilling screw "JT4-LT-3-5,5x25 KD16" and blind rivet "ECORIV AL/E 5,0x16 K16" on aluminium substructures and with EJOT self-drilling screw "JT4-LT-2/6-6,0x50 KD16" on timber substructures.

The above-mentioned subject of regulation is hereby generally approved/ approved by the building authorities.
This decision comprises eight pages and six annexes.

I GENERAL PROVISIONS

1 The national technical approval is considered proof of the fitness for use or application of the object of approval for the purpose of the regional building regulations.

2 This decision does not replace any other permits, approvals or certificates prescribed by law for the execution of construction projects.

3 This decision is issued without prejudice to the rights of third parties, in particular private industrial property rights.

4 Manufacturers and distributors of the object of approval shall make available, notwithstanding any further regulations stipulated in the "Special provisions", copies of this ruling to the user of the approved object and shall point out that this ruling must be available wherever the approval object is applied or used. Copies shall also be provided to the authorities involved upon request.

5 This decision is allowed to be reproduced only in its entirety. Publication in the form of extracts is subject to the consent of the Deutsche Institut für Bautechnik (German Institute for Building Technology). Texts and drawings in brochures must not stand contradictory to this decision, translations must contain the note "Translation of the German original version not verified by the Deutschen Institut für Bautechnik".

6 This decision can be revoked. The provisions can be supplemented and changed at a later date, especially if this is required by new technical developments.

7 This decision relates to the information and documents presented by the applicant. Any modification to these basic principles is not covered by this decision and must be disclosed to the Deutschen Institut für Bautechnik without delay.

8 The general type approval covered by this decision is at the same time a general technical approval for the type of construction.

II SPECIAL PROVISIONS

1 Object of approval and area of application

Subject of approval are blind rivets ECORIV AL/E 5,0x16 K16 according to Annex 1 for the planned force-transmitting connection of facade components. Subject of permit is the structural fastening of Puricelli HPL façade panels with EJOT self-drilling screws "JT4-LT-3-5.5x25 KD16" and blind rivets "ECORIV AL/E 5.0x16 K16" on aluminium substructures as well as with EJOT self-drilling screws "JT4-LT-2/6-6.0x50 KD16" on timber substructures. The drilling screws JT4-LT-3-5.5x25 KD16 and JT4-LT-2/6-6.0x50 KD16 are manufactured according to ETA-10/0200[1] (annex 131, 137 and 138).The Puricelli HPL façade panels with the designation "Puricelli Wunderplatte" are used for ventilated exterior wall claddings according to DIN 18516-1[2]. The proof of stability of the substructure and its anchoring to the building is not subject of this notification.

2 Provisions relating to construction products

2.1 Characteristics and composition

2.1.1 Dimensions

The main dimensions are given in the annexes. Further details are deposited at Deutsches Institut für Bautechnik.

2.1.2 Materials

The blind rivets ECORIV AL/E 5,0x16 K16 are manufactured from the following materials:

Rivet body: Aluminium: EN AW-5754 according to DIN EN 755-2[3],

Mandrel: stainless steel A2 according to DIN EN 10088-5[4],

Further details on the materials are deposited with Deutsches Institut für Bautechnik.

2.2 Marking

The packaging of the blind rivets ECORIV AL/E 5,0x16 K16 or the delivery note must be marked by the manufacturer with the conformity mark (Ü mark) according to the conformity mark regulations of the countries. The marking may only be carried out if the requirements according to section 2.3 are fulfilled.
Each packaging must also be provided with a label containing information on the manufacturing plant (works identification mark), the designation, the geometry and the material.

1	ETA-10/0200	EJOT Befestigungsschrauben JA, JB, JT, JZ und JF; DIBt 23. März 2018
2	DIN 18516-1:2010-06	Außenwandbekleidungen, hinterlüftet - Teil 1: Anforderungen, Prüfgrundsätze
3	DIN EN 755-2:2016-10	Aluminium und Aluminiumlegierungen - Stranggepresste Stangen, Rohre und Profile - Teil 2: Mechanische Eigenschaften
4	DIN EN 10088-5:2009-07	Nichtrostende Stähle - Teil 5: Technische Lieferbedingungen für Halbzeug, Stäbe, Walzdraht, gezogener Draht, Profile und Blankstahlerzeugnisse aus korrosionsbeständigen Stählen für das Bauwesen

2.3 Confirmation of Compliance

2.3.1 General information

The attestation of conformity of the construction products referred to in section 2.1 with the provisions of the general building approval covered by the decision shall be provided for each manufacturing plant by a declaration of conformity issued by the manufacturer on the basis of initial assessment by the manufacturer and factory production control. The declaration of conformity shall be issued by the manufacturer by marking the construction products with the mark of conformity (Ü mark) indicating the intended use.

2.3.2 In-plant production control

A factory production control system shall be established and implemented in each manufacturing plant. Factory production control means the continuous surveillance of production undertaken by the manufacturer in order to ensure that the construction products manufactured by him comply with the provisions of the general building approval covered by the notification.
For the construction products referred to in Section 2.1, factory production control shall include at least the measures listed below.

- The dimensions required in paragraph 2.1 shall be checked regularly.
- Proof of the material properties required in Section 2.1 shall be furnished by an acceptance test certificate 3.1 to DIN EN 10204[5]. The conformity of the data in the acceptance test certificate with the data in Section 2.1 shall be verified.
- The scope, type and frequency of the factory production control and external monitoring shall be governed by the approval principles of the German Institute for Construction Technology for the "Certificate of Conformity for bolts and screws in lightweight metal construction" (see issue 6/1999 of "DIBt Mitteilungen").

The results of factory production control shall be recorded and evaluated. The records shall contain at least the following information:

- Designation of the construction product or the starting material and constituents
- Nature of the control or audit
- date of manufacture and testing of the construction product or the starting material or constituents
- Result of checks and tests and comparison with the requirements
- Signature of the person responsible for factory production control.

The records shall be kept for at least five years. They must be presented to Deutsches Institut für Bautechnik and the responsible supreme building supervisory authority on request.
If the test results are unsatisfactory, the manufacturer shall immediately take the necessary measures to remedy the defect. Construction products which do not meet the requirements are to be handled in such a way that confusion with corresponding products is excluded. After the defect has been remedied, the test in question shall be repeated immediately, if technically possible and necessary to prove that the defect has been remedied.

5 DIN EN 10204:2005-01 Metallische Erzeugnisse - Arten von Prüfbescheinigungen

3 Provisions for planning, dimensioning and execution

3.1 General information

The object of the regulation and the construction products must comply with the special provisions and the annexes of the general design approval as well as the information deposited with Deutsches Institut für Bautechnik.

3.1.1 Facade panels

The façade panels must be decorative high-pressure laminates in accordance with DIN EN 438-7[6] and comply with the specifications in Appendix 1. The façade panels must meet the requirements for compact panels for exterior wall cladding of type EDF according to DIN EN 438-6[7].
The façade panels shall have the following physical values according to the declaration of performance:

- - Flexural strength (DIN EN 438-6[7], Table 3) tested according to DIN EN ISO 178[8]: ≥ 120 MPa, this must be verified by an acceptance test certificate 3.1 according to DIN EN 10204[9].
- - Modulus of elasticity, tested according to DIN EN ISO 178[8] (mean value): ≥ 9,000 MPa
- - Bulk density (average value): 1.35 g/cm³
- Fire behaviour:
  - - for façade panels with a thickness of d ≥ 6 mm: class B-s1,d0 according to DIN EN 13501-1[10]

3.1.2 Fastening elements

3.1.2.1 Mounting screws for aluminium substructures

CE-marked mounting screws of type EJOT JT4-LT-3-5.5xL KD16 according to Annexes 137 and 138 of the European Technical Assessment ETA-10/0200[1] must be used for fixing the facade panels to aluminium support profiles.

3.1.2.2 Blind rivets for aluminium substructures

For fastening the façade panels on aluminium support profiles, Ü marked blind rivets of the type EJOT ECORIV AL/E 5,0x16 K16 (see Annex 1) must be used according to the regulations of this notice. The shank length L has to be chosen according to the clamping length.

3.1.2.3 Mounting screws for timber substructures

For fixing the façade panels on timber supporting laths CE-marked mounting screws type: EJOT JT4-LT-2/6-6,0xL KD16 according to Annex 131 of the European Technical Assessment ETA-10/0200[1] must be used.

6	DIN EN 438-7:2005-04	Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 7: Kompaktplatten und HPL-Mehrschicht-Verbundplatten für Wand- und Deckenbekleidungen für Innen- und Außen-anwendung
7	DIN EN 438-6:2016-06	Dekorative Hochdruck-Schichtpressstoffplatten (HPL) - Platten auf Basis härtbarer Harze (Schichtpressstoffe) - Teil 6: Klassifizierung und Spezifikationen für Kompakt-Schichtpressstoffe für die Anwendung im Freien mit einer Dicke von 2 mm und größer
8	DIN EN ISO 178:2013-09	Kunststoffe - Bestimmung der Biegeeigenschaften
9	DIN EN 10204:2005-01	Metallische Erzeugnisse - Arten von Prüfbescheinigungen
10	DIN EN 13501-1:2010-01	Klassifizierung von Bauprodukten und Bauarten zu ihrem Brandverhalten – Teil 1: Klassifizierung aus den Prüfungen zum Brandverhalten von Bauprodukten; Deutsche Fassung EN 13501-1:2007+A1:2009

3.2 Dimensioning

3.2.1 Load carrying capacity and serviceability

Unless otherwise specified in the following sections, all necessary structural analyses must be carried out on the basis of the Technical Building Regulations.

The proof of stability for the façade panels and their attachment to the substructure must be verified by means of a structural analysis in accordance with the provisions in Section 3.2.4.

The proof of stability of the substructure and its anchoring in the substructure as well as the load-bearing capacity of the wood screw in the timber substructure must be carried out in accordance with the Technical Building Regulations.

The supporting profiles of the substructure must be made of aluminium according to DIN EN 755-2[3] and DIN EN 573-3[11] and have a minimum profile thickness of 1.5 mm and a tensile strength Rm ≥ 165 N/mm².

The supporting laths made of softwood according to DIN EN 14081-1[12] in connection with DIN 20000-5[13] must at least correspond to the sorting class C24 according to DIN EN 338[14] and have a minimum thickness of 30 mm.

3.2.2 Design values of the actions E_d

The design values of the actions Ed from wind loads and dead weight are to be determined according to the technical building regulations.

The stresses on the façade panels and the fasteners must be determined taking into account the yielding of the substructure[15] , the pointwise support of the façade panels and possible changes in storage conditions due to temperature, swelling and shrinkage (when absorbing the dead weight).

Additional loads from eccentricities in the case of asymmetrical substructures must be taken into account.

3.2.3 Rated value of the component resistance R_d

The characteristic values ($N_{R,k}$ and $V_{R,k}$) of the component resistance are given in Annexes 4 to 6. The following applies to the calculation of the design values of the load-bearing capacity from the characteristic values:

$$F_{Z,Rd} = \frac{N_{R,k}}{\gamma_M}$$

$$F_{Q,Rd} = \frac{V_{R,k}}{\gamma_M}$$

mit γ_M = 1,8.

11 DIN EN 573-3:2019-10 Aluminium und Aluminiumlegierungen – Chemische Zusammensetzung und Form von Halbzeug - Teil 3: Chemische Zusammensetzung und Erzeugnisformen

12 DIN EN 14081-1:2016-06 Holzbauwerke - Nach Festigkeit sortiertes Bauholz für tragende Zwecke mit rechteckigem Querschnitt - Teil 1: Allgemeine Anforderungen

13 DIN 20000-5:2016-06 Anwendung von Bauprodukten in Bauwerken - Teil 5: Nach Festigkeit sortiertes Bauholz für tragende Zwecke mit rechteckigem Querschnitt

14 DIN EN 338:2010-02 Bauholz für tragende Zwecke - Festigkeitsklassen

15 Z. B. nach E. Zuber: Einfluss nachgiebiger Fassadenunterkonstruktionen auf Bekleidungen und Befestigungen in den "Mitteilungen" des Instituts für Bautechnik 1979, Heft 2, S. 45-50

3.2.4 Verification

The stability for the façade panels and the fixings is for the ultimate limit state with

$$E_d \leq R_d$$

E_d: Design value of the action (σ_{Ed}; $F_{Z,Ed}$; $F_{Q,Ed}$)

R_d: Design value of component resistance (σ_{Rd}; $F_{Z,Rd}$; $F_{Q,Rd}$)

can be proven. In case of simultaneously occurring tensile and shear forces (from wind suction [FZ] and dead weight [FQ]) the following should be noted:

$$\frac{F_{Z,Ed}}{F_{Z,Rd}} + \frac{F_{Q,Ed}}{F_{Q,Rd}} \leq 1{,}0$$

The verification of the absorption of the transverse and normal force in the facade panels is not required

3.3 Provisions for the execution

3.3.1 General information

To confirm the conformity of the type of construction with the type approval covered by this notice, the company carrying out the construction work must submit a declaration of conformity in accordance with Sections §§ 16 a (5), 21 (2) MBO.

The fixing of the façade panels to the substructure must be carried out without constraint using fixed and sliding points.

The fasteners must be placed centrally in the panel holes. The requirements for the axial and edge distances of the fasteners according to Annex 3 must be observed.

The joints between the façade panels may be open or closed by joint profiles in a constraint-free design (Section 2.3 must be observed).

Damaged panels must not be installed.

3.3.2 Mounting with mounting screws on aluminium substructures

Mounting with mounting screws on aluminium substructure

The diameter of the holes in the facade panels must be 11 mm. The differentiation of fixed and sliding points is made by EJOT centring sleeves according to Annex 2.

The tightening of the mounting screw must be stopped immediately after the head rest and loosened a quarter turn for the sliding points. The aluminium substructure is not pre-drilled.

3.3.3 Fastening with blind rivets on aluminium substructure

The holes for the blind rivets in the façade panels and in the profiles of the substructure may be drilled on the building using step drills. Otherwise, the holes in the supporting profiles of the substructure may be drilled using the already pre-drilled facade panels as a gauge. The diameter of the drill holes in the supporting profiles must be ∅5.1 mm according to the manufacturer's specifications.

The diameter of the holes in the facade panels must be ≤ ∅10 mm for sliding points and ∅5.1 mm for fixed points. Alternatively, all plate holes may be drilled with ∅10 mm, if the blind rivet is set at each fixed point with a fixed point sleeve made of aluminium or stainless steel with an inner diameter of ∅5.1 mm.

The blind rivets must be tightened at the fixed and sliding points using a rivet setting gauge so that a distance of ≥ 0.3 mm remains between the underside of the rivet head and the surface of the facade panel.

3.3.4 Mounting with mounting screws on timber substructure

The diameter of the holes in the façade panels for fixing with mounting screws on the timber substructure must be ∅1 1 mm. The differentiation between fixed and sliding points is made by means of EJOT centring sleeves according to Annex 2. The tightening of the mounting screw must be stopped immediately at the head support and loosened a quarter turn at the gliding points. The support laths are not predrilled.

4 Provisions for use, maintenance and servicing

Screws in scheduled force-transmitting connections which have already been loaded must not be reused once they have been dismantled.

Dr.-Ing. Ronald Schwuchow
Referatsleiter

Beglaubigt

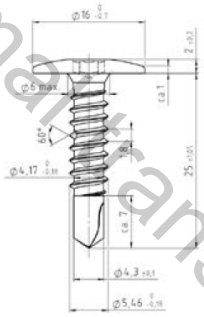
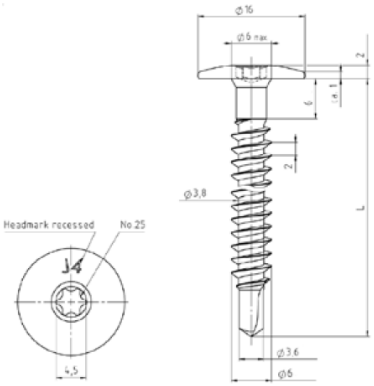
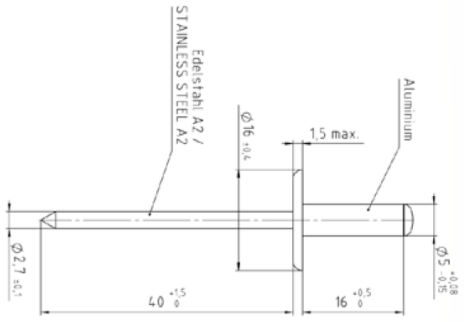
Deutsches Institut für Bautechnik DIBt

Components of the kit

Façade panel

The façade panels are HPL-panels according to EN 438-7:2005 manufactured by Puricelli srl. The minimum nominal thickness is 6.0 mm. The minimum bending strength is $\sigma_{f,min}$ = 120 N/mm².

Fasteners

Fastener	Substructure
 JT4-LT-3-5,5xL KD16	Aluminum alloy according EN 573 with $R_m \geq 165$ N/mm² or $R_m \geq 215$ N/mm² 1,5 mm ≤ t ≤ 3,0 mm
 JT4-LT-2/6-6,0 KD16	Timber with ≥ C24 according EN 14081 and $l_{eff} \geq 30,0$ mm
 Blindrivet ECORIV AL/E 5,0x16 K16	Aluminum alloy according EN 573 with $R_m \geq 165$ N/mm² or $R_m \geq 215$ N/mm² 1,5 mm ≤ t ≤ 3,0 mm

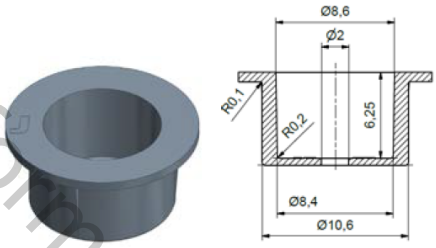
Components	Annex 1
Fasteners for Puricelli Wunderplatte	

Deutsches Institut für Bautechnik DIBt

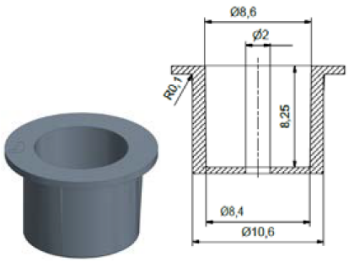
Components of the kit

Centering grommets (for JT4 only)

centering grommet S (sliding point):

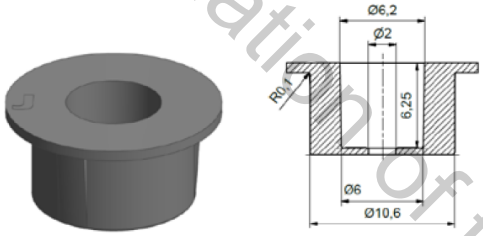


for HPL panels with t = 6.0 mm

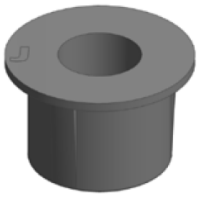


for HPL panels with t = 8.0 mm

centering grommet F (fix point):



for HPL panels with t = 6.0 mm



for HPL panels with t = 8.0 mm

Components	Annex 2
Fasteners for Puricelli Wunderplatte	

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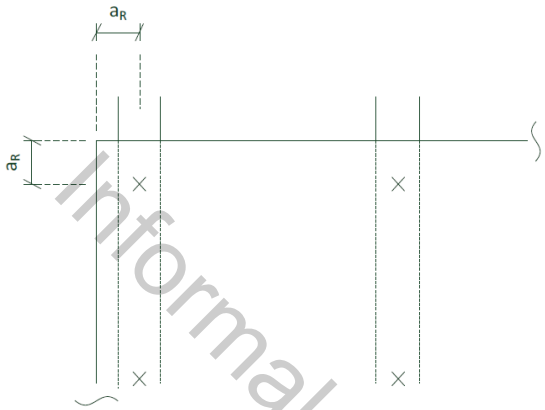
Installation requirements

The minimum edge distance a_R is $a_R \geq 20{,}0$ mm.



The following applies:

- The facade panels are fixed technically strain free via sliding points (centering grommet S) and one fixed point (centering grommet F).
- The substructure is made of
  - Aluminum according to EN 573 with $R_m \geq 165$ N/mm² or
  - Timber, minimum C24 according to EN 14081
- All mounting points for fixing with JT4 have to be pre-drilled with Ø 11,0 mm. Fixed and sliding points are determined by EJOT centering grommets.
- If the blind rivet is used, the pre-drill diameter for sliding points in component I (façade panel) is ≤ 10,0mm.
- If the blind rivet is used, the pre-drill diameter for fixing points in component I (façade panel) as well as for component II (substructure) is 5,1mm.
- If the blind rivet is used, the pre-drill diameter for component II (substructure) is 5,1 mm.
- The drillings are done at the factory or on site. The drillings are executed by skilled personnel.
- The façade panels, their fixings as well as the substructure including its connection to the construction works are designed for the respective case of application under the responsibility of an engineer skilled in the field of façade construction.
- The panels are installed by skilled specialists and the laying instructions of the manufacturers of the panels and the fasteners shall be paid attention to.
- For aluminum substructures with JT4-LT-3-5,5xL KD16 the screwing has to be stopped immediately before the head touches the centering grommet (sliding point). Alternatively the screws of the sliding-points are loosened by 45 degrees after the head touches the centering grommet.
- For aluminum substructures with the Blindrivet ECORIV AL/E 5,0x16 K16: For sliding-points, a special mouth piece has to be used, which secures a space of 0,3mm between the substructure and the panel to allow for expansion.
- For timber substructures: The screwing has to be stopped immediately before the head touches the centering grommet (sliding point). Alternatively the screws of the sliding-points are loosened by 90 degrees after the head touches the centering grommet.

Components	Annex 3
Fasteners for Puricelli Wunderplatte	

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Characteristic resistance values

JT4-LT-3-5,5x30 KD16								
Component II (substructure)	Aluminum alloy EN 1999-1-1:2014-03 with $R_m \geq 165$ N/mm²							
Component I (facade)	Puricelli HPL-Panel according to EN 438-7:2014 with t ≥ 6,0 mm, $\sigma_{f,min}$ = 120 N/mm²							
	center				edge/corner			
Thickness of component II [mm]	1,50	2,00	2,50	3,00	1,50	2,00	2,50	3,00
N_{Rk} [kN]	**0,69**	**1,07**	**1,61**	**1,74**	**0,69**	**0,83**	**0,83**	**0,83**
V_{Rk} [kN]	**1,44**	**1,44**	**1,83**	**2,21**	**1,44**	**1,44**	**1,83**	**2,21**

JT4-LT-3-5,5x30 KD16								
Component II (substructure)	Aluminum alloy EN 1999-1-1:2014-03 with $R_m \geq 215$ N/mm²							
Component I (facade)	Puricelli HPL-Panel according to EN 438-7:2014 with t ≥ 6,0 mm, $\sigma_{f,min}$ = 120 N/mm²							
	center				edge/corner			
Thickness of component II [mm]	1,50	2,00	2,50	3,00	1,50	2,00	2,50	3,00
N_{Rk} [kN]	**0,90**	**1,40**	**1,74**	**1,74**	**0,83**	**0,83**	**0,83**	**0,83**
V_{Rk} [kN]	**1,86**	**1,86**	**2,39**	**2,91**	**1,86**	**1,86**	**2,39**	**2,91**

For intermediate values linear interpolation is possible.

Characteristic values JT4-LT-3-5,5x30 KD16	**Annex 4**
Fasteners for Puricelli Wunderplatte	

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Characteristic resistance values

ECORIV AL/E 5,0x16 K16								
Component II (substructure)	Aluminum alloy EN 1999-1-1:2014-03 with $R_m \geq 165$ N/mm²							
Component I (facade)	Puricelli HPL-Panel according to EN 438-7:2014 with t ≥ 6,0 mm, $\sigma_{f,min}$ = 120 N/mm²							
	center				edge/corner			
Thickness of component II [mm]	1,50	2,00	2,50	3,00	1,50	2,00	2,50	3,00
N_{Rk} [kN]	**0,93**	**1,35**	**1,35**	**1,55**	**0,83**	**0,83**	**0,83**	**0,83**
V_{Rk} [kN]	**1,25**	**1,25**	**1,25**	**1,25**	**1,25**	**1,25**	**1,25**	**1,25**

ECORIV AL/E 5,0x16 K16								
Component II (substructure)	Aluminum alloy EN 1999-1-1:2014-03 with $R_m \geq 215$ N/mm²							
Component I (facade)	Puricelli HPL-Panel according to EN 438-7:2014 with t ≥ 6,0 mm, $\sigma_{f,min}$ = 120 N/mm²							
	center				edge/corner			
Thickness of component II [mm]	1,50	2,00	2,50	3,00	1,50	2,00	2,50	3,00
N_{Rk} [kN]	**1,22**	**1,55**	**1,55**	**1,55**	**0,83**	**0,83**	**0,83**	**0,83**
V_{Rk} [kN]	**1,64**	**1,64**	**1,64**	**1,64**	**1,64**	**1,64**	**1,64**	**1,64**

For intermediate values linear interpolation is possible.

Characteristic values ECORIV AL/E 5,0x16 K16	**Annex 5**
Fasteners for Puricelli Wunderplatte	

Deutsches Institut für Bautechnik DIBt

Characteristic resistance values

JT4-LT-2/6-6,0 KD16		
Component II (substructure)	Timber according EN 14081 with minimum C24 and $l_{eff} \geq 30,0$ mm	
Component I (facade)	Puricelli HPL-Panel according to EN 438-7:2014 with $t \geq 6,0$ mm, $\sigma_{f,min} = 120$ N/mm²	
	center	edge/corner
Thickness of component II [mm]	$l_{eff} \geq 30,0$ mm	
N_{Rk} [kN]	**1,74**	**0,83**
V_{Rk} [kN]	**0,50**	**0,50**

Characteristic values JT4-LT-2/6-6,0x50 KD16	**Annex 6**
Fasteners for Puricelli Wunderplatte	