



Zentrum für Konstruktionswerkstoffe
Staatliche Materialprüfungsanstalt Darmstadt
Fachgebiet und Institut für Werkstoffkunde
Prof. Dr.-Ing. Matthias Oechsner



TECHNISCHE
UNIVERSITÄT
DARMSTADT

National Test Certificate

P – S 18 0447 E

replaces edition of August 5th, 2020

Client: EJOT SE & Co. KG
In der Stockwiese 35
57334 Bad Laasphe

Subject of order: Self-drilling screw:
EJOT JT4-LT-XT-3H/6-5,5x25 KD 16
EJOT®LT-System:
EJOT centering Ø 11/4 F –XT
EJOT centering Ø 11/4 S –XT

Area of application: Threaded fastener-type connections for regulated cladding to be used on external walls in accordance with “DIN 18516-1:2010-06”, “Muster-Verwaltungsvorschrift Technische Baubestimmungen (MV V TB) B 2, Serial no. B 2.2.1.1, Edition 2, status 17. April 2023”.

Date of issue: 01. November 2023

Validity: 01. November 2028

Number of pages: This National Test Certificate spans 6 pages (including appendix).

Provisions clause: German is the official language of this report and is the legally binding language to the exclusion of all others in case of questions or contradictions.

Based on this National Test Certificate, the aforementioned item may be used in the aforementioned area of application in accordance with the building codes of the federal states.

Staatliche Materialprüfungsanstalt Darmstadt
(State Materials Testing Institute)
Component Strength
Grafenstraße 2, 64283 Darmstadt, Germany

Darmstadt, 31. October 2023

Head of notified body acc. to HBO (LBO)

Dipl.-Ing. (FH) Fabrizio Persichella



Technical responsibility

Dipl.-Ing. Helge Labudda

Anerkennungen:
PÜZ-Stelle nach LBO: HES02
Notified Body 1343

Die in diesem Prüfzeugnis mitgeteilten Ergebnisse und Ausführungen beziehen sich ausschließlich auf den angegebenen Gegenstand. Die auszugsweise Wiedergabe dieses Berichtes oder seine Verwendung für Werbezwecke bedarf der schriftlichen Genehmigung durch die Staatliche Materialprüfungsanstalt Darmstadt.

A General legal provisions

- (1) The National Test Certificate does not replace required statutory authorisations, agreements or certificates necessary for the execution of construction projects.
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- (3) Manufacturers and distributors of the construction product, notwithstanding more extensive regulations in the “Special Provisions”, are obliged to provide the user of the construction product with copies of the National Test Certificate and to point out that the National Test Certificate must be on hand at the site where the product is being used. Copies of the National Test Certificate must be made available on demand to the relevant authorities.
- (4) The National Test Certificate may be reproduced only in its entirety. Publication of excerpts requires the consent of the *Staatliche Materialprüfungsanstalt Darmstadt* (State Materials Testing Institute Darmstadt). Texts and drawings of advertising material are not permitted to contradict the National Test Certificate. Translations of the National Test Certificate must include the notice “Translation of the German original version has not been verified by the *Staatliche Materialprüfungsanstalt Darmstadt* (State Materials Testing Institute Darmstadt).”
- (5) The National Test Certificate may be revoked after issue. The applicable provisions may be supplemented and amended retroactively, in particular when new information or insights require this.

B Special legal provisions

1 Subject and area of application

1.1 Subject

The subject of the National Test Certificate is the self-drilling screw EJOT JT4-LT-XT-3H/6-5,5x25 KD 16 manufactured and sold by the company EJOT SE & Co. KG to be used in conjunction with the EJOT®LT-System.

1.2 Scope and intent of use

The above-mentioned item is designated for use in exclusively pull- and transverse-loaded connections of aluminium composite panels (panel thickness 4 mm) and profiles of aluminium with a minimum thickness of 2 mm for rear-ventilated external wall cladding in accordance with “DIN 18516-1:2010-06 Cladding for external walls, ventilated at rear - Part 1: Requirements, principles of testing”, “Muster-Verwaltungsvorschrift Technische Baubestimmungen (MV VTB) B 2 Technical regulations for special constructions and components in accordance with § 85a Para. 2 MBO¹, Serial no. B 2.2.1.1, Edition 2, status 17. April 2023”.

2 Specifications to be met for the construction product

2.1 Properties and constituents

Dimensions, materials and data on corrosion protection are contained in Appendix 1 and in Test Report S 18 0447.1 of the Staatliche Materialprüfungsanstalt Darmstadt (State Materials Testing Institute Darmstadt).

2.2 Legal provisions for design value and dimensioning

2.2.1 Foreword

The component on which the head of the fastener abuts is referred to as Component I (aluminium composite panel); the component nearest the threaded side is referred to as Component II.

2.2.2 Load-bearing capacity (resistance)

For the dimensioning, the verification concept provided in “DIN 18516:2010-06” applies, wherein the tension resistance or tractive/tensile load-bearing capacity (load direction parallel to the lengthwise axis of the threaded fastener), as well as the shear resistance or transverse load-bearing capacity (load direction at right angles to the lengthwise axis of the threaded fastener), must be verified.

The design values of the tension resistance $F_{Z,Rd}$ arise from the characteristic values of the shear resistance $F_{Z,Rk}$ with a partial safety factor M of 2.0.

$F_{Z,Rk}$ Characteristic value of the tension resistance in accordance with **Appendix 1**

$F_{Z,Rd}$ Design value of the tension resistance

$F_{Z,Ed}$ Design value of the acting tensile/tractive forces

Likewise, the design values of the shear resistance $F_{Q,Rd}$ arise from the characteristic values of the shear resistance $F_{Q,Rk}$ with a partial safety factor M of 2.0.

$F_{Q,Rk}$ characteristic value of the shear resistance in accordance with **Appendix 1**

$F_{Q,Rd}$ Design value of the shear resistance

$F_{Q,Ed}$ Design value of the acting transverse forces

For certification of load-bearing capacity, the design values of the acting tensile/tractive forces $F_{Z,Ed}$ and the transverse forces $F_{Q,Ed}$ must not exceed the design values of the tension resistance $F_{Z,Rd}$ and shear resistance $F_{Q,Rd}$. The specification of characteristic values of load-bearing capacity shown in **Appendix 1** bases on test results documented in Test Report S 18 0447.1 of the Staatliche Materialprüfungsanstalt Darmstadt (State Materials Testing Institute Darmstadt).

The specified characteristic values of load-bearing capacity apply to substructures (Components II) made from the aluminium alloys listed in “DIN 18516-1:2010-06” in accordance with “DIN EN 755-2:2016-10 Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties” or “DIN EN 485-2:2018-12 Aluminium and aluminium alloys - Sheet, strip and plate - Part 2: Mechanical properties” with a minimum tensile strength R_m of 245 MPa and a minimum thickness of 2.0_{-0.15} mm and a maximum thickness of 3.0^{+0.2} mm.

For Component I, regulated aluminium composite panels with a thickness of 4 mm in accordance with “DIN 18516-1:2010-06” may be used.

The minimum tensile strength R_m of the aluminium cover sheets is 130 MPa; the minimum thickness is 0.5_{-0.04} mm. The surfaces of the aluminium composite panels may be bright, anodized or coated.

The sum of the sheet thicknesses $t_I + t_{II}$ may not exceed the clamping length of the threaded fastener.

The aluminium composite panels (Component I) may be pre-drilled at a diameter of 11 mm.

The permissible minimum edge distances of the fasteners are 15 mm, both for Component I and for Component II.

2.2.3 Temperature-dependent constraining stress

The use of fasteners for connections not free of constraint is only permitted in the presence of confirmation of temperature-dependent constraining stress (transverse stress); c.f. “DIN 18516-1:2010-06, Section 5.2.2”.

2.3 Specifications for implementation

Fasteners in accordance with Section 1 may only be manufactured by companies having the necessary experience to do so, unless the assembly staff have been briefed by experts from companies, which have the requisite experience in this field.

In systematic transverse loading, the components to be connected must lie directly against one another, and the shear plane must be located at the contact point of Component I and Component II so that the fastener is not subjected to additional bending.

The fasteners are to be mounted at right angles to the component surface. The threaded fastener is to be fully screwed in to its cylindrical threaded part, and the head of the threaded fastener must abut on Component I. The data on drilling performance and clamping thickness as well as the type of fastening anchor in the appendices must be observed.

3 Declaration of conformity

3.1 General information

Confirmation of the conformity of construction products with the provisions of this National Test Certificate must be performed for each production facility with a declaration of conformity from the manufacturer based on an in-house factory production control conducted in accordance with the following provisions.

3.2 Factory production control

Each production facility must establish an factory production control system and conduct it in accordance with the tenets of the Deutsches Institut für Bautechnik (German institute for building technology) (DiBt), for the “Übereinstimmungsnachweis für Verbindungselemente im Metallbau“ (proof of conformity for fasteners in metal construction). (See DIBt-Mitteilungen, Heft (Issue) 6/1999.) Factory production control equates to the establishment of continuous monitoring of production carried out by the manufacturer, who must ensure that the construction products he manufactures comply with the provisions of this National Test Certificate.

Factory production control includes surveillance of the following:

- shape and dimensions of the fasteners,
- their mechanical characteristics, and
- the source materials used

The results of the factory production control shall be recorded and assessed. The records must include the following information as a minimum:

- Identification of the construction products, and of the source materials and the components
- Type of monitoring or testing
- Production date and date of monitoring / testing of the construction products, and of source materials or components
- Results of monitoring and testing and comparison with the requirements
- Signature of the person responsible for the in-house factory production control

The records shall be maintained for at least five years. Upon request, they shall be submitted to the Deutsches Institut für Bautechnik (German institute for building technology) (DiBt), the responsible supreme building authority and the issuing inspection point.

For test results that do not meet the requirements of the relevant technical specifications, the manufacturer must immediately take the necessary measures to remedy the defect. After the defect has been removed, the relevant test must be repeated to prove the elimination of the defect. Non-compliant products shall be separated and marked accordingly. The measures adopted shall be documented.



4 Mark of conformity (Ü Mark)

The construction product must be labelled with the mark of conformity (Ü Mark) by the manufacturer in accordance with the mark of conformity regulations (ÜZVO) of the federal states.

The Ü mark shall be affixed to the construction product, on an instruction leaflet or on its packaging in accordance with the Landesbauordnung, which are the national building regulations of the Länder, or federal states, with the prescribed information or, if this causes difficulties, on the delivery receipt or on attachments to the delivery receipt.

The labelling with the mark taking into account the number of this National Test Certificate issued by the building supervisory authority may be carried out only if the conditions set out in Section 3 are met.

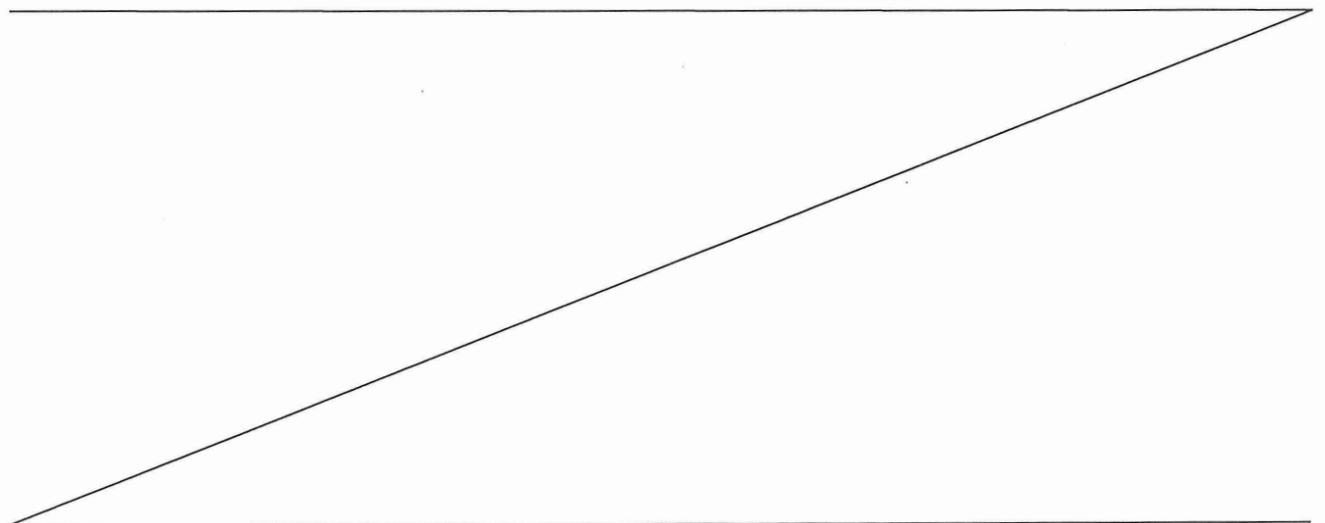
5 Legal basis

This National Test Certificate is issued in accordance with §22 and §24 of the “*Hessische Bauordnung (HBO)* (Building Code of the State of Hessen), *issue dated 28. May 2018*”, in conjunction with “*Muster-Verwaltungsvorschrift Technische Baubestimmungen (MV V TB) B 2 Technical regulations for special constructions and components in accordance with § 85a Para. 2 MBO¹, Serial no. B 2.2.1.1, Edition 2, status 17. April 2023*”.

In accordance with §19, Art. 2 in conjunction with §18, Art. 7 of the “*Musterbauordnung (Model Building Code) (MBO), Edition November 2002*” and the corresponding provisions of the respective state building codes of the other federal states, a National Test Certificate which has been issued in one state is valid in all federal states of the Federal Republic of Germany.

6 Instructions on legal remedies

An appeal against this decision is permissible. The appeal must be filed within one month after the receipt of this decision, either in writing or directly at the Staatliche Materialprüfungsanstalt Darmstadt, (State Material Testing Institute) Grafenstraße 2, 64283 Darmstadt. The date of receipt of the appeal at the Staatliche Materialprüfungsanstalt Darmstadt (State Materials Testing Institute) shall determine whether the appeal was received within the stated time limit.



Fastening component: EJOT self-drilling screw JT4-LT-XT-3H/6-5,5x25 KD 16		Component I Aluminium composite panel Panel thickness 4 mm	Component II: Aluminium supporting profile Tensile strength $R_m \geq 245$ MPa
EJOT®LT-System: EJOT centering $\varnothing 11/4$ F –XT EJOT centering $\varnothing 11/4$ S –XT			
Type of threaded-fastener connection: Systematic abutting threaded-fastener connection ¹⁾			
Max drilling capacity: 3 mm			
Component I Thickness t_I	Component II Thickness t_{II}	Characteristic value of the	Sketch
Cover sheet 0.5mm (Composite panel 4.0 mm)	2.0 mm	Shear resistance $F_{Q,Rk}$ in N 2147	
Cover sheet 0.5mm (Composite panel 4.0 mm)	---	Tension resistance $F_{Z,Rk}$ in N 1963	
---	2.0 mm	Tension resistance $F_{Z,Rk}$ in N 1973	
Further definitions: <ul style="list-style-type: none"> • Systematic loading of connections via longitudinal tensile forces is not permissible. • The cover sheets of the aluminium composite panels (Component I) feature a thickness of 0.5 mm and a minimum tensile strength of 130 MPa. • Edge distance of the fastener element: ≥ 15.0 mm (for Component I and Component II) • Distance of the fastener elements between one another: min. 30.0 mm ¹⁾ During placement, the threaded fastener must be allowed to overwind. The head of the threaded fastener must abut on Component I. Component I and Component II must lie flat against one another.			