Deutsches Institut für Bautechnik

Public-law institution jointly founded by the federal states and the Federation

European Technical Assessment Body for construction products

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European Technical Assessment ETA-11/0322 of 14 February 2025

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	Prefabricated structural components made of steel grades Q235B, Q235D, Q345B and Q345D
Product family to which the construction product belongs	Prefabricated structural components from hot rolled products made of steel grades Q235B, Q235D, Q345B and Q345D
Manufacturer	ANDRITZ AG Stattegger Straße 18 8045 GRAZ ÖSTERREICH
Manufacturing plant	Plant 1
This European Technical Assessment contains	5 pages including 2 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 200017-00-0302
This version replaces	ETA-11/0322 issued on 23 November 2016

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Specific part

1 Technical description of the product

The construction products are prefabricated structural steel components made of uncoated hot-rolled plates or profiles made of the weldable steel grades Q235B, Q235D, Q345B and Q345D. The maximum thickness for profiles is 80 mm. The maximum thickness for plates made of Q235B and Q235D is 80 mm and for plates made of Q345B and Q345D is 250 mm.

The steel grades are similar to the structural steel grades listed in Table 1.

Table 1 – Comparison of steel grades

Steel grade	Comparable steel grade according to EN 10025-2	
	Designation according to EN 10027-1	Designation according to EN 10027-2
Q235B	S235JR	1.0038
Q235D	S235J2	1.0117
Q345B	S355JR	1.0045
Q345D	S355J2	1.0577

The steel grades deviate from EN 10025-2:2019 as follows:

- The minimum values for yield strength R_{eH} and tensile strength R_m differ from those specified in EN 10025-2.
- The chemical composition differs from the composition specified in EN 10025-2.

The product characteristics must be identified on the basis of the Inspection certificate "type 3.1" according to EN 10204:2004 (to be furnished by the supplier).

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

The prefabricated structural steel components made of the steel grades Q235B, Q235D, Q345B, Q345D are intended for use in welded, bolted or riveted steel or composite structures.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals, notably in accordance with the provisions of EN 1090-2:2008+A1:2011.

The performances given in Section 3 are only valid if the the prefabricated structural components made of steel grades Q235B, Q235D, Q345B and Q345D is used in compliance with the specifications and conditions given in Annex A and B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the prefabricated structural components made of steel grades Q235B, Q235D, Q345B and Q345D of at least 100 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.

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**
Chemical composition	see Annex A, Tables A1 and A2
Yield strength	see Annex B
Tensile strength	see Annex B
Elongation at fracture	see Annex B
Impact toughness value	see Annex B
Weldability	see Annex A, Tables A1 to A3
Improved deformation properties perpendicular to the surface	no performance assessed
Formability	no performance assessed
Suitability for hot-dip zinc-coating	no performance assessed
Surface properties	no performance assessed
Internal soundness	no performance assessed
Dimensions, tolerances on dimensions and shape, mass	no performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	**Performance**
Reaction to fire	Class (A1) according to EN 13501-1:2007+A1:2009

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	**Performance**
Content, emission and/or release of dangerous substances	no performance assessed

3.4 Sustainable use of natural resources (BWR 7)

Essential characteristic	**Performance**
Durability	no performance assessed

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

In accordance with EAD No. 200017-00-0302, the applicable European legal act is: 1998/214/EC amended by 2001/596/EC .

The system to be applied is: **2+**

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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 14 February 2025 by Deutsches Institut für Bautechnik

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Head of Section

beglaubigt:
Jensky

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Table A1 Chemical composition of the products made of Q235B, Q235D, Q345B und Q345D

Steel grade	Percent by weight [%]													
	C ≤	Si ≤	Mn ≤	P ≤	S ≤	Nb ≤	V ≤	Ti ≤	Cr ≤	Ni ≤	Cu ≤	N ≤	Mo ≤	Al ≥
Q235B	0,20	0,35	1,40	0,045	0,045	---	---	---	0,30	0,30	0,30	0,008	---	---
Q235D	0,17			0,035	0,035	---	---	---					---	0,015
Q345B	0,20	0,50	1,70	0,035	0,035	0,07	0,15	0,20	0,30	0,50	0,30	0,012	0,10	---
Q345D	0,18			0,030	0,025									0,015

Table A2 Acceptable tolerances of product analyses compared to ladle analyses

Steel grade	Percent by weight [%]													
	C	Si	Mn	P	S	Nb	V	Ti	Cr	Ni	Cu	N	Mo	Al
Q235B	±0,02	±0,03	≤ 0,8:±0,03 >0,8-1,7:±0,06	-0,005 +0,000	-0,005 +0,000	---	---	---	±0,05	±0,05	±0,05	±0,005	---	---
Q235D						---	---	---					---	±0,003
Q345B		≤ 0,37:±0,03 >0,37-0,50:±0,05				±0,005	-0,02 +0,01	-0,02 +0,01					±0,01	---
Q345D														±0,003

Table A3 Maximum Carbon Equivalent Value (CEV)

Steel grade	Nominal thickness t [mm]	
	t ≤ 63	63 < t ≤ 250
Q235B, Q235D	0,37	0,40
Q345B, Q345D	0,44	0,48

$$CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

Table A4 Characteristic values of the yield strength and the tensile strength

Steel grade	Material thickness **t** [mm]	Yield strength $\mathbf{f_{y,k}}$ [N/mm²]	Tensile strength $\mathbf{f_{u,k}}$ [N/mm²]
Q235B Q235D	t ≤ 40	235	360
	40 < t ≤ 80	215	
Q345B Q345D	t ≤ 40	335	470
	40 < t ≤ 80	315	450
	80 < t ≤ 150	285	430
	150 < t ≤ 250	265	

Prefabricated structural components made of steel grades Q235B, Q235D, Q345B and Q345D	Annex A
Chemical Composition, Weldability (CEV), Charakteristic values of the mechanical properties	

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Table B1 Mechanical properties of the products made of Q235B, Q235D, Q345B, Q345D

Steel grade	Nominal thickness t [mm]	Yield strength R_{eL} [MPa]	Tensile strength R_m [MPa]	Elongation A [%]	Absorbed impact energy KV_2 [J]
Q235B	t ≤ 16	235	370 - 500	26	≥ 27 at +20 °C
	16 < t ≤ 40	225			
	40 < t ≤ 60	215		25	
	60 < t ≤ 80	215		24	
Q235D	t ≤ 16	235	370 - 500	26	≥ 27 at -20 °C
	16 < t ≤ 40	225			
	40 < t ≤ 60	215		25	
	60 < t ≤ 80	215		24	
Q345B	t ≤ 16	345	470 - 630	20	≥ 34 at +20 °C
	16 < t ≤ 40	335			
	40 < t ≤ 63	325		19	
	63 < t ≤ 80	315			
	80 < t ≤ 100	305			
	100 < t ≤ 150	285	450 - 600	18	
	150 < t ≤ 200	275		17	≥ 27 at +20 °C
	200 < t ≤ 250	265			
Q345D	t ≤ 16	345	470 - 630	21	≥ 34 at -20 °C
	16 < t ≤ 40	335			
	40 < t ≤ 63	325		20	
	63 < t ≤ 80	315			
	80 < t ≤ 100	305			
	100 < t ≤ 150	285	450 - 600	19	
	150 < t ≤ 200	275		18	≥ 27 at -20 °C
	200 < t ≤ 250	265			

(Tensile testing at room temperature // $L_0 = 5{,}65 \cdot \sqrt{S_0}$)

Prefabricated structural components made of steel grades Q235B, Q235D, Q345B and Q345D	Annex B
Mechanical Properties	