WELDOX®
HIGH STRENGTH STEEL

DATA SHEET: Version 2010-01-15

Weldox 700

High Strength Steel

Weldox 700 is a general structural steel with a minimum yield strength of 700 MPa (102 ksi). Weldox 700 meets the requirements for the corresponding steel grades and qualities according to EN 10025. Values in brackets are in imperial units for information only.

Applications

Load carrying structures having high demands on low weight.

Designation

Weldox 700D with guaranteed impact toughness at -20° C (-4°F). Corresponds to S690Q

Weldox 700E with guaranteed impact toughness at -40° C (-40°F). Corresponds to S690QL

Weldox 700F with guaranteed impact toughness at -60° C (-76°F). Corresponds to S690QL1

Chemical composition

(ladle analysis)

C*	Si*	Mn*	P	S	B*	Nb*	Cr*	V*	Cu *	Ti	Al * total	Mo*	Ni*	N
max %	max %	max %	max %	max %	max %	max %	max %	max %	max %	max %	min %	max %	max %	max %
0.20	0.60	1.60	0.020	0.010	0.005	0.04	0.70	0.09	0.30	0.04	0.015	0.70	2.0	0.010

* Intentional alloying elements.The steel is grain-refined

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

$$CET = C + \frac{Mn+Mo}{10} + \frac{Cr+Cu}{20} + \frac{Ni}{40}$$

	Plate thickness	CEV Typical values %	CET %
WELDOX 700D, E	8 mm (0.314")	0.43	0.29
	20 mm (0.786")	0.43	0.29
	30 mm (1.179")	0.46	0.31
	60 mm (2.358")	0.57	0.35
WELDOX 700F	8 mm (0.314")	0.55	0.36
	20 mm (0.786")	0.55	0.36
	30 mm (1.179")	0.55	0.36
	60 mm (2.358")	0.55	0.36

Mechanical properties

Plate thickness mm (inch)	Yield strength [1] $R_{p0,2}$, min MPa [2] (ksi)	Tensile strength [1] R_m MPa [2] (ksi)	Elongation [1] A_5 min %	A_{50} min [3]
4.0 - 53.0 (0.157-2.083)	700 (102)	780-930 (113-135)	14	18
53.1 - 100.0 (2.083-3.930)	650 (94)	780-930 (113-135)	14	18
100.1- 130.0 (3.930-5.109)	630 (91)	710-900 (103-131)	14	18

[1] For transverse test pieces
[2] 1 MPa = 1 N/mm²
[3] Only after special agreement.

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Impact properties

Steel grade and quality	Impact energy (J) (ft-lbf) for tests on transverse [1] Charpy V 10 x 10 tests specimens [2] Test temperatures in °C (°F)			
	0 (32)	–20 (–4)	–40 (–40)	–60 (–76)
WELDOX 700 D	30 (22)	27 (20)	–	–
WELDOX 700 E	35 (26)	30 (22)	27 (20)	–
WELDOX 700 F	40 (30)	35 (26)	30 (22)	27 (20)

[1] Unless otherwise agreed, transverse impact testing according to EN 10025-6 option 30 will apply.
[2] For plate thicknesses less than 12 mm, subsize Charpy V-specimens are used. The specified minimum value is then proportional to the cross section of the specimen.

Testing

Testing according to EN 10025.

Delivery condition

Q	Quenched and tempered as per EN 10025-6.

Dimensions

Weldox 700 is supplied in plate thicknesses of 4–130 mm (0.157-5.109").

More detailed information on dimensions is provided in our brochure 41-General Product Information Weldox, Hardox, Armox and Toolox-UK.

Tolerances

- All plates are produced with AccuRollTech™ thickness precision guarantee.

AccuRollTech™ meets the requirements of EN 10 029, but offers more narrow tolerances.

- Tolerances on flatness according to Class N (Normal tolerances).

More detailed information is given in our brochure 41-General Product Information Weldox, Hardox, Armox and Toolox-UK as well as at www.weldox.com

Surface condition

According to EN 10163-2, Class A, Subclass 1 (repair by welding is allowed).

General technical delivery requirements

According to our brochure 41-General Product Information Weldox, Hardox, Armox and Toolox-UK.

Heat treatment and fabrication

Weldox 700 has obtained its mechanical properties by a quenching and tempering process.

Weldox 700 is not suited for applications requiring hot working at temperatures above 580°C (1076°F) since the material may then lose its guaranteed properties.

For information concerning welding and fabrication, see our brochures on www.weldox.com or consult our Technical Customer Service.

Appropriate health and safety precautions must be taken when welding, cutting, grinding or otherwise working on the product. Grinding, especially of primer coated plates, may produce dust with high particle concentration.

SSAB Oxelösund AB, 613 80 Oxelösund, Sweden, +46 155 25 40 00, www.ssab.com

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