

## High Strength Steel

Weldox 960 is a general structural steel with a minimum yield strength of 960 MPa (139 ksi). Weldox 960 meets the requirements on the corresponding steel grades and qualities according to EN 10 025. Values in brackets are in imperial units for information only.

Applications	Load carrying structures having very high demands on low weight.														
Designation	Weldox 960D with guaranteed impact toughness at -20° C (-4°F). Corresponds to S960Q Weldox 960E with guaranteed impact toughness at -40° C (-40°F). Corresponds to S960QL														
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	0.50	1.60	0.020	0.010	0.005	0.04	0.70	0.06	0.15	0.04	0.018	0.70	1.5	0.010
*Intentional alloying elements. The steel is grain-refined															
	Plate thickness		CEV		CET										
			Typical values												
			%		%										
	8 mm (0.314")		0.55		0.37										
	20 mm (0.786")		0.55		0.37										
	40 mm (1.572")		0.64		0.39										
Mechanical properties	Plate thickness		Yield strength <sup>1)</sup>		Tensile strength <sup>1)</sup>		Elongation <sup>1)</sup>								
	mm		R <sub>p0.2</sub> min MPa <sup>2)</sup>		R <sub>m</sub> MPa <sup>2)</sup>		A <sub>5</sub> min %		A <sub>50</sub> min <sup>3)</sup> %						
	4.0 - 50.0 (0.157-1.965)		960 (139)		980-1150 (142-167)		12		16						
	<sup>1)</sup> For transverse test pieces				<sup>2)</sup> 1 MPa = 1 N/mm <sup>2</sup>		<sup>3)</sup> Only after special agreement								
Impact properties	Steel grade and quality		Impact energy (J) (ft-lbf) for tests on transverse <sup>1)</sup> Charpy V 10 x 10 tests specimens <sup>2)</sup> Test temperatures in °C (°F)												
					0 (32)		-20 (-4)		-40 (-40)						
	Weldox 960 D		30 (22)		27 (20)		—								
	Weldox 960 E		35 (26)		30 (22)		27 (20)								
<sup>1)</sup> Unless otherwise agreed, transverse impact testing according to EN 10025-6 option 30 will apply.															
<sup>2)</sup> 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.															

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## Testing

Testing according to EN 10025.

<b>Delivery condition</b>	Q	Quenched and tempered as per EN 10025-6.
<b>Dimensions</b>	<p>Weldox 960 is supplied in plate thicknesses of 4-50 mm *) (0.157-1.965).</p> <p>More detailed information on dimensions is provided in our brochure 41-General Product Information Weldox, Hardox, ArmoX and Toolox-UK.</p> <p>*) Other thicknesses after special agreement.</p>	
<b>Tolerances</b>	<p>- All plates are produced with AccuRollTech™ thickness precision guarantee.</p> <p>AccuRollTech™ meets the requirements of EN 10 029, but offers more narrow tolerances.</p> <p>- Tolerances on flatness according to Class N (Normal tolerances).</p> <p>More detailed information is given in our brochure 41-General Product Information Weldox, Hardox, ArmoX and Toolox-UK as well as at <a href="http://www.weldox.com">www.weldox.com</a></p>	
<b>Surface condition</b>	According to EN 10163-2, Class A, Subclass 1 (repair by welding is allowed).	
<b>General technical delivery requirements</b>	According to our brochure 41-General Product Information Weldox, Hardox, ArmoX and Toolox-UK.	
<b>Heat treatment and fabrication</b>	<p>Weldox 960 has obtained its mechanical properties by a quenching and tempering process.</p> <p>Weldox 960 is not suited for applications requiring hot working at temperatures above 550°C (1020°F)</p> <p>since the material may then lose its guaranteed properties.</p> <p>For information concerning welding and fabrication, see our brochures on <a href="http://www.weldox.com">www.weldox.com</a> or consult our Technical Customer Service.</p> <p>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.</p>	