

EXTRA HIGH STRENGTH STRUCTURAL PLATE

WELDOX 500 is a micro alloyed structural plate with min yield strength 500 N/mm².

APPLICATIONS	Storage tanks, silos, steel buildings, turbines, cranes, lifting equipment, dolphins, penstocks, pipes, water towers, offshore structures etc.											
DESIGNATION	WELDOX 500 D with guaranteed impact properties at -20°C (-4°F) WELDOX 500 E with guaranteed impact properties at -40°C (-40°F)											
CHEMICAL COMPOSITION (ladle analysis)	C ¹⁾	Si	Mn	P	S	Nb	V	Ti	Al tot	N	CE	Pcm
	max %	max %	max %	max %	max %	max %	max %	max %	min %	max %	typical value %	typical value %
	0,17	0,55	1,70	0,020	0,020	0,050	0,12	0,020	0,015	0,015	¹⁾	¹⁾
	¹⁾ For plate thicknesses					CE	Pcm					
	- 50 mm					0,39	0,21					
	> 50 mm					0,42	0,25					
	$CE = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$ $Pcm = C + \frac{Si}{30} + \frac{Mn + Cu + Cr}{20} + \frac{Ni}{60} + \frac{Mo}{15} + \frac{V}{10} + 5B$											
MECHANICAL PROPERTIES	Plate thickness mm		Yield strength R _{p0,2} min N/mm ²			Tensile strength R _m N/mm ²			Elongation ¹⁾ A ₅ min %			
	8–16		500			570–720			16			
	(16)–40		480			570–720			16			
	(40)–80		460			550–720			16			
	¹⁾ For transverse specimen. Values for longitudinal specimen are 2 units higher.											
IMPACT PROPERTIES	Grade		Test temperature °C			Impact energy ¹⁾ Charpy V longitudinal min, J 10 [∞] 10 specimen ²⁾						
	WELDOX 500 D		-20 (-4°F)			40						
	WELDOX 500 E		-40 (-40°F)			40						
	¹⁾ Average of three tests. Single value min 70% of specified average.											
	²⁾ For plate thicknesses under 12 subsize Charpy V-specimens are used. The specified minimum value is then proportional to the specimen cross-section.											
SUPPLY CONDITION	Thermomechanically rolled alternatively quenched and tempered at our own option.											
DIMENSIONS	WELDOX 500 is supplied in plate thicknesses of 8–80 mm. More detailed information on dimensions is provided in our brochure E-40 General Product Information.											
TESTING	Tensile testing according to SS 11 01 20 and SS-EN 10 002 -1, per as-rolled plate. Impact testing according to SS 11 01 51 and SS-EN 10 045 -1, per as-rolled plate.											
GENERAL TECHNICAL DELIVERY REQUIREMENTS	According to our brochure E-40, General product information.											
WELDING	<p>WELDOX 500 possesses very good weldability due to its lean chemical composition especially its low carbon content. WELDOX 500 can be welded by conventional welding methods as manual metal arc, gas metal arc and submerged arc welding. WELDOX 500 can be welded to other weldable structural steels.</p> <p>We recommend filler material with low hydrogen potential, max 10 ml/100 g weld deposit according to the Hg-method ISO 3690. Only basic electrodes are to be used for manual metal arc welding.</p> <p>WELDOX 500 can normally be welded without preheating for a combined plate thicknesses up to 100 mm if the hydrogen potential is max 10 ml/100 g weld deposit. This corresponds to 50 mm plate thickness for a butt weld. These plate thicknesses are valid for a heat input up to 1.7 kJ/mm.</p> <p>Under difficult restraint conditions, damp environment or for combined thicknesses above 100 mm welding should be carried out with a preheat temperature of 75–125°C (170–260°F). This temperature shall be maintained throughout the welding operation.</p> <p>For further information please refer to our Welding brochure E-11 or contact our Technical Customer Service.</p>											

STRESS RELIEVING

If stress relieving is required, please contact our Technical Customer Service for temperature and time recommendations.

FABRICATION

In normal workshop conditions, following data apply for a 90° bending angle.

Bending direction	Recommended minimum inside bending radius	Recommended minimum die opening
Perpendicular to rolling direction	$1,0 \infty t$	$6,0 \infty t$
Parallel to rolling direction	$1,5 \infty t$	$7,5 \infty t$

t = plate thickness

WELDOX 500 can be gas cut and machined with cutting tools.

For further information please contact our Technical Customer Service.