

## Data Sheet: HARDOX 450

### ABRASION RESISTANT PLATE

HARDOX 450 is an abrasion resistant plate with a hardness of 450 HBW, intended for applications where demands are imposed on abrasion resistance in combination with good cold bending properties. HARDOX 450 offers very good weldability.

**Applications** Dumper bodies, containers, crushers, sievers, feeders, measuring pockets, skips, cutting edges, conveyors, buckets, knives, gears, sprockets, etc.

Chemical Composition (ladle analysis)	Plate	C	Si	Mn	P	S	Cr	Ni	Mo	B	CEV	CET
	thickness mm	max %	max %	max %	max %	max %	max %	max %	max %	max %	typv.	typv.
	3*) - (8)	0,21	0,70	1,60	0,025	0,010	0,25	0,25	0,25	0,004	0,41	0,30
	8 - 20	0,21	0,70	1,60	0,025	0,010	0,50	0,25	0,25	0,004	0,47	0,34
	(20) - 40	0,23	0,70	1,60	0,025	0,010	1,00	0,25	0,25	0,004	0,57	0,37
	(40) - 50	0,23	0,70	1,60	0,025	0,010	1,40	0,25	0,60	0,004	0,59	0,36
	(50) - 80	0,26	0,70	1,60	0,025	0,010	1,40	1,00	0,60	0,004	0,72	0,41

\*) Plate thickness below 4 mm only after special agreement.

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

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

The steel is grain refined.

**Hardness** HBW  
425-475

Mechanical Properties	Yield strength	Tensile strength	Elongation
Typical values for 20 mm plate thickness	R <sub>e</sub> MPa 1200	R <sub>m</sub> MPa 1400	A <sub>5</sub> % 10

Impact Properties	Test temperature	Impact energy
Typical value for 20 mm plate thickness	°C -40 (40 F)	Charpy-V, longitudinal J 40

**Testing** Brinell hardness, HBW according to EN ISO 6506-1, on a milled surface 0,5-2 mm below plate surface per heat and 40 tons. Tests are made for every variation of 15 mm in the thickness of plates from the same heat.

**Delivery Conditions** Q.

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<b>Dimensions</b>	<p>HARDOX 450 is supplied in plate thicknesses of 3<sup>1)</sup>-80 mm. More detailed information on dimensions is provided in our brochure 41-General product information WELDOX, HARDOX, ARMOX and TOOLOX-UK.</p> <p><sup>1)</sup>Plate thickness below 4 mm only after special agreement.</p>
<b>Tolerances</b>	<p>Thickness tolerances according to SSAB Oxelösund thickness precision guarantee AccuRollTech™. - AccuRollTech™ meets then requirements of EN 10 029 Class A, but offers more narrow tolerances. More detailed information is given in our brochure 41-General product information WELDOX, HARDOX, ARMOX and TOOLOX - UK.</p> <p>According to EN 10 029. - Tolerances on shape, length and width. - Tolerances on flatness according to Class N (Normal tolerances).</p>
<b>Surface Properties</b>	<p>According to EN 10 163-2 - Requirements according to Class A. - Repair conditions according to Subclass 1. (Repair welding is allowed).</p>
<b>General Technical Delivery Requirement</b>	<p>According to our brochure 41-General product information WELDOX, HARDOX, ARMOX and TOOLOX - UK.</p>
<b>Heat Treatment and Fabrication</b>	<p>HARDOX 450 has obtained its mechanical properties by quenching and when necessary by means of subsequent tempering. The properties of the delivery condition can not be retained after exposure to service or preheating temperatures in excess of 250°C (480 F). HARDOX 450 is not intended for further heat treatment</p> <p>For information concerning welding and fabrication, see our brochures on <a href="http://www.hardox.com">www.hardox.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. Our Technical Customer Service Department will provide further information on request.</p>