

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 thickness mm	C	Si	Mn	P	S	Cr	Ni	Mo	B	CEV	CET
		max %	max %	max %	max %	max %	max %	max %	max %	max %	typv.	typv.
Width=1600 mm	3 - 6	0,21	0,70	1,60	0,025	0,010	0,50	0,25	0,25	0,004	0,45	0,32
	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

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

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

The steel is grain refined.

Hardness HBW
425-475

Mechanical Properties Typical values for	Yield strength	Tensile strength	Elongation
	R _e MPa	R _m MPa	A ₅ %
20 mm plate thickness transverse	1200	1400	10
Width \geq 1600 and thickness 3 - 6 mm longitudinal	1250	1450	8

Impact Properties Typical value for	Test temperature	Impact energy Charpy-V, longitudinal	Impact energy halfsize test specimen Charpy-V, Transverse
	°C	J	J
20 mm plate thickness	-40 (-40° F)	40	-
Width \geq 1600 and thickness 3 - 6 mm	- 40	-	25

Testing Brinell hardness, HBW according to EN ISO 6506-1, on a milled surface 0,5-3 mm below surface per heat and 40 tons or three times on each coil. The nominal thickness will not deviate more than \pm 15 mm from that of the tested plate.
The impact test shall be carried out in accordance with EN ISO 148-1 on V-notch specimen using 2 mm striker. Impact test shall not be required for nominal thickness < 6 mm.

Delivery Conditions	Q.
Surface Conditions	Hardox 450 can be delivered in shot blasted and primer coated condition.
Dimensions	<p>Hardox 450 is supplied in thicknesses of 3 -80 mm.</p> <p>For dimensions with width \leq 1600 mm and thickness 3-6 mm preferred widths are 1500 or 1600 mm, delivered as cut-to-length in as rolled surface condition with mill edge as standard. Cut edges is on option. Widths up to 3300 mm are available.</p> <p>More detailed information on dimensions is provided in the dimension program. (www.hardox.com)</p>
Tolerances	<p>Thickness tolerances according to SSAB thickness precision guarantee AccuRollTech™.</p> <p>- AccuRollTech™ meets the requirements of EN 10 029. Class A, but offers more narrow tolerances. For shape, length, width and flatness the tolerances conform to EN 10 029 (Flatness, Class N).</p> <p>Width \leq 1600 mm and thickness 3-6 mm the shape, length, width and flatness conform to EN 10 051, tighter tolerances on request.</p> <p>More detailed information can be found at www.hardox.com.</p>
Surface Properties	<p>According to EN 10 163-2</p> <ul style="list-style-type: none">- Requirements according to Class A.- Repair conditions according to Subclass 1. <p>(Repair welding is allowed).</p>
General Technical Delivery Requirement	You find further information on the website www.hardox.com
Heat Treatment and Fabrication	<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 www.hardox.com or consult our TechSupport.</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>