HARDOX®
WEAR PLATE

Hardox 500

General Product Description

Hardox 500 is an abrasion resistant steel with a nominal hardness of 500 HBW. Typical applications are components and structures subject to wear. For more information on applications see www.ssab.com

Available dimensions

Hardox 500 is available in thicknesses of 4.0 – 80 mm. Hardox 500 Tuf is available in thicknesses of 4 – 65 mm.
Both grades are available in widths up to 3350 mm and lengths up to 14630 mm. More detailed information on dimensions is provided in the dimension program at www.ssab.com.

Mechanical Properties

Thickness mm	Hardness HBW min - max [1)]	Typical yield strength MPa, not guaranteed
4 - 32	470 – 530	1250
(32) - 80	450 - 540	1250

[1)] Brinell hardness, HBW, according to EN ISO 6506-1, on a milled surface 0.5 – 3 mm below surface. At least one test specimen per heat and 40 tons. The nominal material thickness will not deviate more than ±15 mm from that of the test specimen.

The plates are through-hardened to a minimum of 90 % of the guaranteed minimum surface hardness.

Impact properties	Hardox 500	Hardox 500 Tuf Transverse test, guaranteed	Longitudinal test, typical
Minimum impact energy (J) for transverse tests Charpy V 10x10 mm test specimen [2)]	–	27 J/0 °C	37 J/-40 °C

[2)] For thicknesses between 6 - 11.9 mm, subsize Charpy V-specimens are used. The specified minimum value is then proportional to the cross-sectional area of the test specimen, compared to a full-size specimen (10 x 10 mm). Impact testing according to ISO EN 148 per heat and thickness group. Average of three tests. Single value minimum 70% of specified average. Impact test is performed from 6 mm.

Ultrasonic testing

Plates in thickness of 80 mm are delivered in Class E_2S_2 in accordance with EN 10 160, other thicknesses are delivered in Class E_1S_1.

Chemical Composition (heat analysis)

C *) Max %	Si *) Max %	Mn *) Max %	P Max %	S Max %	Cr *) Max %	Ni *) Max %	Mo *) Max %	B *) Max %
0.30	0.70	1.60	0.020	0.010	1.50	1.5	0.60	0.005

The steel is grain refined. *) Intentional alloying elements.

Maximum carbon equivalent CET (CEV)

Thickness mm	- (5)	5 - (10)	10 - (20)	20 - (40)	40 - 80
CET (CEV)	0.34 (0.49)	0.36 (0.52)	0.43 (0.64)	0.45 (0.66)	0.47 (0.75)

$$CET = C + \frac{Mn + Mo}{10} + \frac{Cr + Cu}{20} + \frac{Ni}{40} \qquad CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15}$$

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Tolerances

More details are given in SSAB's brochure 41-General product information Weldox, Hardox, Armox and Toolox-UK or on www.ssab.com.

Thickness
Tolerances according to SSAB's thickness precision guarantee AccuRollTech.
- AccuRollTech meets the requirements of EN 10 029 Class A, but offers narrower tolerances.

Length and width
According to SSAB's dimension program.
- Tolerances conform to EN 10 029.

Shape
Tolerances according to EN 10 029

Flatness
Tolerances according to SSAB's flatness tolerances which are more restrictive than EN 10 029 Class N (steel type L).

Surface Properties
According to EN 10 163-2, Class A Subclass 1.

Delivery Condition

The delivery condition is Quenched. The plates are delivered with sheared or thermally cut edges. Untrimmed mill edges available by agreement.

Delivery requirements can be found in SSAB's brochure 41-General product information Weldox, Hardox, Armox and Toolox-UK or www.ssab.com.

Fabrication and Other Recommendations

Welding, bending and machining
Recommendations can be found in SSAB's brochures on www.hardox.com or consult Tech Support, help@ssab.com.

Hardox 500 and Hardox 500 Tuf are not intended for further heat treatment. It has obtained its mechanical properties by quenching and when necessary by means of subsequent tempering. The properties of the delivery condition cannot be retained after exposure to temperatures in excess of 250°C .

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

Contact and Information

For information, see SSAB's brochures on www.ssab.com or consult Tech Support, help@ssab.com.