Hardox® Round bar

General Product Description

The all-round abrasion-resistant steel as round bar.

Hardox® Round bars are versatile, ready-to-use, abrasion-resistant steels that combine high toughness and good weldability.

Hardox® Round bars come in diameters between 40 and 160 mm and lengths up to 5000 mm, and feature the same guaranteed properties as the wear plate. Delivered quenched to high tensile strength and hardness levels.

Hardox® round bars represent entirely new possibilities for stronger and lighter product design. They also help optimize workshop procedures such as machining and welding.

Mechanical Properties

Product	Diameter (mm)	Hardness [1] (HBW)	Typical yield strength (MPa), not guaranteed
Hardox® 400	40.0 - 100.0	370 - 430	1000 - 1100
Hardox® 500	40.0 - 160.0	450 - 540	–

[1] Hardness [HBW] according to ISO 6506-1. Testing is performed for one heat treatment batch.

Hardox® wear products is through-hardened. Minimum core hardness is 90 % of the guaranteed minimum hardness.

Impact Properties

Product	Longitudinal test, typical impact energy, Charpy V 10x10 mm test specimen [1]	Min. impact energy for longitudinal testing, Charpy V 10x10 mm test specimen [1]
Hardox® 400	45 J / -40 °C	27 J / -40 °C

[1] Test specimen position according to EN 10083.

Chemical Composition (heat analysis)

Product	C *) (max %)	Si *) (max %)	Mn*) (max %)	P (max %)	S (max %)	Cr*) (max %)	Ni*) (max %)	Mo*) (max %)	B*) (max %)
Hardox® 400	0.32	0.70	1.60	0.025	0.010	1.40	1.50	0.60	0.004
Hardox® 500	0.29	0.40	1.10	0.014	0.005	2.80	1.70	0.35	0.003

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

Carbon Equivalent CET(CEV)

Product	Hardox® 400	Hardox® 500	Hardox® 500
Diameter (mm)	40.0 - 100.0	40.0 - 100.0	100.1 - 160.0
Max CET(CEV)	0.39 (0.60)	0.51 (0.82)	0.56 (1.12)
Typ CET(CEV)	0.37 (0.58)	0.46 (0.73)	0.48 (0.95)

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

Tolerances

More details are given in EN 10060.

Bar Diameter and Length

Tolerances according to EN 10060.

Bar Straightness

Straightness according to EN 10060.

Bar Surface

Black condition.

Delivery Conditions

The delivery condition is Q (Quenched). QT (Quenched and Tempered) are available upon request.

Delivery requirements can be found at www.ssab.com.

Fabrication and Other Recommendations

Welding, bending and machining

Recommendations can be found in SSABs brochures at www.hardox.com or consult Tech Support.

Hardox® Round bar is 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 250ºC.

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 Information

www.ssab.com/contact