HARDOX®
WEAR PLATE

Hardox® Tubes & Pipes

General Product Description

Abrasion-resistant tubes for extreme performance and extended service life.

Hardox® Tubes and Pipes, as hard and tough as our wear plates, offer outstanding performance when you need both high wear resistance and a lighter product. Despite its hardness,

Hardox® Tubes and Pipes can be weld, cut, milled and drilled using standard workshop practices. It can replace costly wear products like hard-faced overlay plates and high chrome white iron.

Dimension Range

Hardox® Tubes are available in circular shape.

Product	Hardox® 400	Hardox® 500
Outer diameter (mm)	76.1 - 219.1	76.1 - 133.0
Wall thickness (mm)	3.0 - 6.0	3.0 - 6.0
Mill length (mm)	6000	6000

Other lengths are available upon request.

Circular Dimensions

Outer diameter (mm)	3.0 mm (kg/m)	4.0 mm (kg/m)	5.0 mm (kg/m)	6.0 mm (kg/m)
76.1	5.41	7.11	8.77	10.4
88.9	6.36	8.38	10.4	12.3
101.6	7.29	9.63	11.9	14.2
108.0	7.77	10.3	12.7	15.1
114.3	8.23	10.9	13.5	16.0
121.0	8.73	11.5	14.3	17.0
133.0	9.62	12.7	15.8	18.8
139.7	–	13.4	16.6	19.8
168.3	–	–	20.1	24.0
219.1	–	–	–	31.5

Mechanical Properties

Product	Wall Thickness (mm)	Hardness (HBW)
Hardox® 400	3.0 - 6.0	360 - 440
Hardox® 500	3.0 - 6.0	470 - 530

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	1.50	0.60	0.005

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

Carbon Equivalent CET(CEV)

Product	Hardox® 400	Hardox® 500
Wall Thickness (mm)	3.0 - 6.0	3.0 - 6.0
Typ CET(CEV)	0.33 (0.52)	0.41 (0.62)

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

SSAB

Tolerances

Characteristic	Circular wear tube Tolerances based on the requirements of EN 10210
Outside diameter (D) (1	±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm
Out-of-roundness	2%, when D/T ≤ 100
Thickness (T)	±10% when T ≤ 5 mm and ±0.5 mm when T > 5 mm
Straightness	0.20% of total length and 3 mm over any 1 m length
Mass per unit length	Individual tube: ±6%
Standard length	≥ 6000 mm: 0/+50 mm
Exact length	Agreed at the time of enquiry and order

1) All external dimensions are measured with a minimum distance from the end of the section. The distance must be a minimum of 100 mm.

Delivery Conditions

Hardox® Tubes and pipes are delivered in quenched condition except for diameters above 133 mm, which are delivered in as-rolled condition.

Fabrication and Other Recommendations

Welding, bending and machining

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

Hardox® 500 Tube and pipes has obtained its mechanical properties by quenching and after roll forming and plasma welding. The properties of the delivery condition cannot be retained after exposure to service or preheating temperatures in excess of 250ºC. Hardox® 500 Tube and pipes is not intended for further heat treatment.

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

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