



# **HARDOX TUBE 500**

PRODUCTION RANGES AND STANDARD DIMENSIONS



## PRODUCT INFORMATION

### GENERAL

Hardox is the global reference in wear-resistant steel. Hardox provides a unique combination of hardness and toughness and the extreme resistance to wear is a strategic business factor. Using Hardox Tube 500 can increase the competitiveness of certain products by extending their service life by two, five, ten times or more.

SSAB has developed a range of wear resistant steel tubes that are suitable for transporting all types of abrasive materials.

Hardox Tube 500 are roll formed and plasma welded, and quenching takes place after rollforming and welding which give the product very consistent properties and narrow tolerances.

### MECHANICAL PROPERTIES

Hardox Tube 500 has typically yield strength of 1250 MPa and tensile strength of 1600 MPa.

The final properties of Hardox Tube 500 are set after tube forming and welding, which guarantees consistency in mechanical properties also in the weld, as well as toughness and hardness throughout the tube. The hardness is tested on the inside of the tube, where the wear resistance is most important.

	Wall Thickness, mm	Hardness HBW, Min–Max <sup>1</sup>
Hardox Tube 500	2.5–6.0	470–530

1. Brinell hardness test, HBW, according to EN ISO 6506-1.

### BENEFITS WITH WEAR RESISTANT TUBES

- ▶ More durable products and longer life cycle
- ▶ Higher payload
- ▶ More light weight constructions
- ▶ Cost efficient throughout entire life cycle



## ADDITIONAL SERVICES

### CUSTOMIZED PRODUCTION

If the tubes in stock do not match the specific needs, Hardox Tube 500 can be produced in a number of customized alternatives.

**Dimensions:** More options available

**Other Tolerances:** Handled upon request

**Other Steel Grades:** Handled upon request  
lower grades of Hardox

### FURTHER PROCESSING

Upon request, the tubes can be processed further, such as cutting, laser cutting, drilling, etc.

Contact SSAB or Tibnor for further information.

### OTHER TUBES AND PROTOTYPES

SSAB can also offer tubes from other steel grades, both as branded tube products or as development/prototype products.

### SSAB TUBES FOR UNIQUE PRODUCT POSSIBILITIES

SSAB can produce tubes made from Docol, Domex, Hardox and Weldox in a great variety of dimensions and qualities. We can develop tubes to meet your specific needs, or we can produce short series of tubes for trials or prototypes.

**Steel Grades:** Most SSAB high strength steel grades

**Dimensions:** Only circular,  $\varnothing$  14 – 133 mm

**Thickness:** 0.5 – 6.3 mm

With a great variety of tools and strong machines to handle extreme steels.

# CIRCULAR PRODUCTION RANGE

## DIMENSION PROGRAM

With a wide range of tools, SSAB can offer a large variation of dimensions, both in Metric and Imperial units. Some dimensions can be obtained from stock as standard products, for short lead times and small quantity deliveries.

Also thicknesses 0.5–2.0 is possible, as well as certain dimensions below diameter 60 mm.

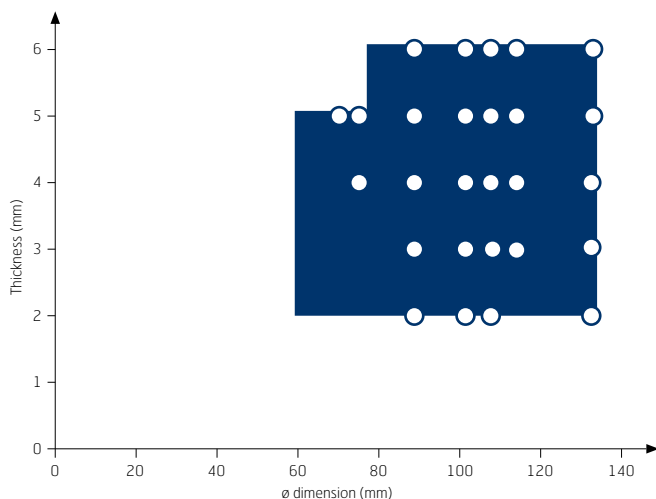
Contact SSAB for further information.

## WHAT DIMENSIONS ARE POSSIBLE

Existing tools within the production range are listed in the table below.

For customized production (not specified as standard dimensions) special requirements regarding order quantities may apply.

Additional tools can be also be produced.



Diam, mm	Tol.
ø 60.0	+/- 0.6
ø 60.3	+/- 0.6
ø 63.5	+/- 0.6
ø 68	+/- 0.7
ø 70	+/- 0.7
ø 73	+/- 0.7
ø 76.1	+/- 0.8
ø 76.2	+/- 0.8
ø 79.4	+/- 0.8
ø 85	+/- 0.9
ø 88.9	+/- 0.9
ø 101.6	+/- 1.0
ø 102	+/- 1.0
ø 104	+/- 1.0
ø 104.8	+/- 1.1
ø 105	+/- 1.1
ø 106	+/- 1.1
ø 108	+/- 1.1
ø 114.3	+/- 1.2
ø 133	+/- 1.4

Hardox Tube 500 can only be produced by SSAB in Borlänge. Some products outside the standard range can also be provided. Contact SSAB for further information.

## DELIVERY CONDITIONS ACCORDING TO EN 10219-1

**Steel Grade:** Chemical composition in data sheet

Hardox Tube 500 is quenched after forming and welding.

Can be delivered lightly oiled



## **CIRCULAR** FABRICATION

### **MACHINING**

Hardox Tube 500 can be machined further. For bending and flanging it's recommended to contact SSAB for further information.

### **WELDING**

The extreme wear resistance of Hardox Tube 500 is combined with exceptional weldability. Any conventional welding method can be used for welding these steels to any type of weldable steel.

Unalloyed, low-alloyed and/or stainless steel consumables can be used for the welding. Hardox should be welded with low strength consumables

Hard facing with special consumables increases the wear resistance of welded joints. It is beneficial to weld a buffer layer with extra high toughness between the ordinary welded joint or plate and the hard facing. The choice of consumables for the buffer layer should follow the welding recommendations for Hardox steels. Stainless steel consumables in accordance with AWS 307 and AWS 309 should preferably be used for the buffer layer

# TUBE STOCK

## DIMENSIONS IN STOCK

A selected assortment of tube dimensions are available from stock in Borlänge, Sweden.

Dimension, mm	Weight, kg/m
88.9 x 2.0	4.91
101.6 x 2.0	5.23
108.0 x 2.0	5.52
133.0 x 2.0	6.46
88.9 x 3.0	6.35
101.6 x 3.0	7.29
108.0 x 3.0	7.76
114.0 x 3.0	8.21
133.0 x 3.0	9.61
76.2 x 4.0	7.12
88.9 x 4.0	8.37
101.6 x 4.0	9.62
108.0 x 4.0	10.25
114.0 x 4.0	10.85
133.0 x 4.0	12.72
70.0 x 5.0	8.01
76.2 x 5.0	8.79
88.9 x 5.0	10.34
101.6 x 5.0	11.91
108.0 x 5.0	12.69
114.0 x 5.0	13.43
133.0 x 5.0	15.78
88.9 x 6.0	12.26
101.6 x 6.0	14.14
108.0 x 6.0	15.09
114.0 x 6.0	15.97
133.0 x 6.0	19.70

## TOLERANCES ACCORDING TO EN 10219-2

<b>Diameter:</b>	+/- 1%, +/- 10 mm
<b>Thickness:</b>	T +/- 5% (SSAB tolerance)
<b>Out of roundness :</b>	∅ < 100 mm 2 % ∅ > 100 mm upon agreement
<b>Straightness:</b>	0.20 %, or max 3 mm/m length

## DELIVERY CONDITIONS ACCORDING TO EN 10219-1

<b>Steel Grade:</b>	Chemical composition in data sheet Quenched condition
<b>Delivery Condition:</b>	Not intended for heat treatment
<b>Appearance:</b>	Optional ink marking and oiling
<b>Packing:</b>	Depending on mean of transport and transport range different packing alternatives can be offered

## FREIGHT COST

The best possible option for freight will be obtained before hand and communicated to the buyer before order.



SSAB is a global leader in value added, high strength steel. SSAB offers products developed in close cooperation with its customers to reach a stronger, lighter and more sustainable world.

SSAB has employees in over 45 countries and operates production facilities in Sweden and the US. SSAB is listed on the NASDAQ OMX Nordic Exchange, Stockholm.

For more information, contact us or visit [www.ssab.com](http://www.ssab.com)

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