Hardox® 600

General Product Description

The extra hard and tough steel for extreme wear.

At a nominal hardness of 600 HBW, Hardox® 600 has a uniquely high impact toughness.

Especially suited for extreme wear conditions, it can still be cut and welded, making it an excellent choice for high-performance applications.

Dimension Range

Hardox® 600 is available as plate in thicknesses of 6.0 – 65.0 mm and as sheet in thicknesses of 3.0 - 6.0 mm. Hardox® 600 is available in widths up to 2000 mm and lengths up to 14630 mm. Preferred dimensions for the plates are 2000 x 4000 mm. For sheets in thicknesses of 3.0 - 4.5 mm the preferred dimensions are 1250 x 3000, and for sheets in thicknesses between 4.5 - 6.0 mm the preferred dimensions are 1500 x 3000 mm. Other dimensions on request. More detailed information on dimensions is provided in the dimension program.

Mechanical Properties

Product	Thickness (mm)	Hardness [1] (HBW)
Hardox® 600 sheet	3.0 - 6.0	570 - 640
Hardox® 600 plate	6.0 - 51.0	570 - 640
Hardox® 600 plate	51.1 - 65.0	550 - 640

[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 thickness of supplied plates will not deviate more than +/- 15 mm from the thickness of the test specimen used for hardness testing. For sheet the Brinell hardness test is according to EN ISO 6506-1 on each heat treatment individual/coil. Hardness is measured on a milled surface 0.3 - 2 mm below surface.

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

Chemical Composition (heat analysis)

Product type	C *) (max %)	Si *) (max %)	Mn*) (max %)	P (max %)	S (max %)	Cr*) (max %)	Ni*) (max %)	Mo*) (max %)	B*) (max %)
Sheet	0.40	0.50	1.0	0.015	0.010	1.20	1.50	0.60	–
Plate	0.47	0.70	1.50	0.015	0.010	1.20	2.50	0.70	0.005

The steel is grain refined. *)Intentional alloying elements, additionally can be used micro alloying elements (like Nb, Ti, V or B).

Carbon Equivalent CET(CEV)

Product type	Sheet	Plate	Plate
Thickness (mm)	3.0 - 6.0	6.0 - 35.0	35.1 - 65.0
Max CET(CEV)	0.52 (0.72)	0.57 (0.69)	0.61 (0.87)
Typ CET(CEV)	0.48 (0.64)	0.55 (0.66)	0.59 (0.85)

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

Tolerances

More details are given in SSAB's brochure Hardox® Guarantees or at www.ssab.com.

Thickness

Tolerances according to Hardox® Thickness Guarantee.
Hardox® Guarantees meet the requirements of EN 10029 Class A for plate, but offer more narrow tolerances. For sheets the guarantees meets the requirements of 1/2 EN 10051.

Length and Width

According to SSAB's dimensions program. Tolerances conforms to EN 10029 or to SSAB's standard after agreement. For sheet the tolerances are according to EN 10051 or to SSAB´s standard after agreement.

Shape

Tolerances according to EN 10029 for plate and according to EN 10051 for sheet.

Flatness

Tolerances according to Hardox® Flatness Guarantee class D, which are more restrictive than EN 10029 Class N. For sheet, the tolerances are according to Hardox® Flatness Guarantees Class B, which are more restrictive than EN 10051.

Surface Properties

According to EN 10163-2 Class A, Subclass 1.

Delivery Conditions

The delivery condition is Quenched or Quenched and Tempered. Plates are delivered with sheared or thermally cut edges and thicknesses over 80 mm are delivered with mill edge as standard. Sheets are delivered with an as-rolled surface and mill edge as standard.

Delivery requirements can be found in SSAB's brochure Hardox® Guarantees or 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® 600 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 for plate and 150ºC for sheets.

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

The English version of this document shall prevail in case of discrepancy. Minor changes and updates to the document may occur, please download the latest version of this document at www.ssab.com

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