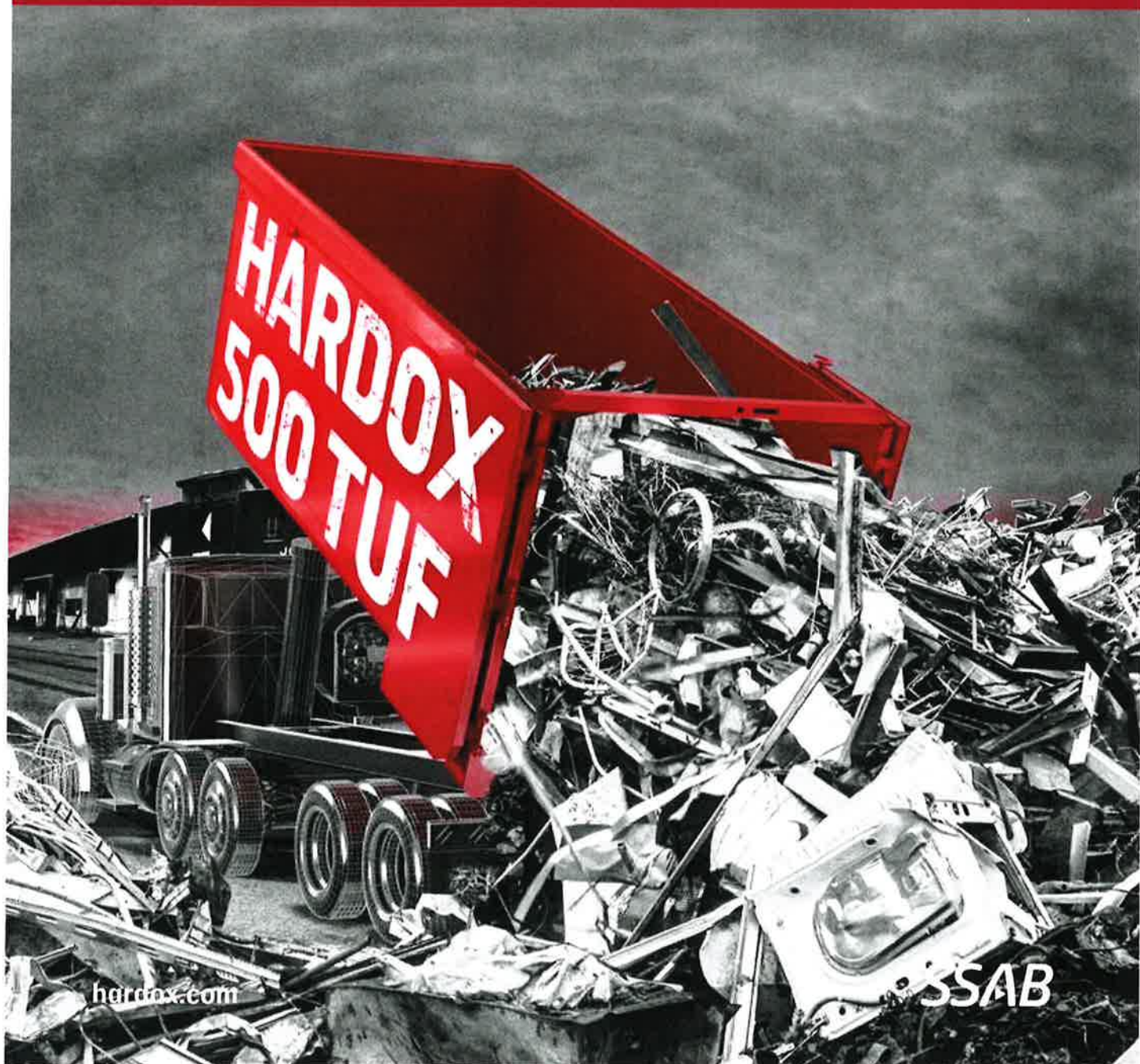


HARDOX®
WEAR PLATE

INTRODUCING THE NEW GENERATION HARDOX® WEAR PLATE



hardox.com

SSAB

THE BEAST HAS DONE IT AGAIN

Hardox® 500 Tuf is the latest upgrade in the Hardox® range. It delivers high strength, extreme hardness and guaranteed toughness in one and the same wear plate.

Hardox® 500 Tuf combines the best properties from the Hardox® 450 and Hardox® 500 grades. The result is a wear plate with no real competition on the market.

It has the toughness necessary to perform as a structural material in recycling containers, tipper bodies, buckets and other heavy-duty products. It also works in freezing conditions as the impact energy values indicate.

Superior wear and dent resistance gives extended service life and the ability to endure heavy impact.

Typical working conditions include loading or dropping heavy and sharp materials into recycling containers or tipper bodies, for example steel scrap or pieces of concrete with rebar from demolition.

Hardox 500® Tuf has a guaranteed impact energy of 27 J at -20°C, and a typical value of 45 J at -40°C. It has an unusually narrow Brinell hardness window of 475-505 HBW. The estimated relative service life for Hardox® 500 Tuf is 85-100% longer than for Hardox 400® according to WearCalc and TippCalc.*

WORKSHOP-FRIENDLY

Hardox® 500 Tuf can be processed by the same kind of machinery used for other Hardox grades. Bendability recommendations are similar to those for Hardox 450®.

Hardox® 500 Tuf																					
Hardness nominal HBW	Impact toughness CVT guaranteed J at -20°C (ft-lb at -4°F)		Impact toughness CVL typical for 20 mm (¾") J at -40°C (ft-lb at -40°F)		Relative service life interval (relative to Hardox® 400)	CEV/CET typical for 20 mm (¾")		Thickness range mm (inches)													
475-505	27 J (20 ft-lb)		45 J (33 ft-lb)		1.3-2.1	0.52/0.36		4-25 mm (5/32"-0.985")													
Width	1000-	1351-	1500-	1601-	1701-	1801-	1901-	2001-	2101-	2201-	2301-	2401-	2501-	2601-	2701-	2801-	2901-	3001-	3101-	3201-	3301-
Thickness	1350	1499	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3350
3.0-3.1	■																				
3.6-4.1	■																				
4.8-5.2	■																				
5.8-6.1	■																				
6.8-7.7	■																				
7.9-9.7	■																				
10.8-10.0	■																				
10.1-24.0	■																				
24.1-25.0	■																				

*The calculations are based on sliding wear with granite.

Some restrictions, contact your local sales representative for information ■ Outside the range of dimensions



Hardox® 500 Tuf

General Product Description

Introducing the new generation Hardox wear plate

Hardox® 500 Tuf wear plate is the latest upgrade in the Hardox range. It delivers high strength, extreme hardness and guaranteed toughness in one and the same wear plate.

Hardox® 500 Tuf combines the best properties from Hardox® 450 and Hardox® 500. The result is a wear plate with no real competition on the market.

Dimension Range

Hardox® 500 Tuf is available in thicknesses of 4.0 – 25.4 mm. Hardox® 500 Tuf is available in widths up to 3350 mm and lengths up to 14630 mm. More detailed information on dimensions is provided in the dimension program.

Mechanical Properties

Thickness (mm)	Hardness ¹⁾ (HBW)	Typical yield strength (MPa), not guaranteed
4.0- 25.4	475- 505	1250- 1400

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.

Hardox® 500 Tuf is through-hardened. Minimum core hardness is 90 % of the guaranteed minimum surface hardness.

Impact Properties

Grade	Transverse test, guaranteed impact energy, Charpy V 10x10 mm test specimen.
Hardox® 500 Tuf ¹⁾	27 J/-20 °C

¹⁾ Impact toughness measured upon agreement. For thicknesses between 6- 11.9 mm, subsize Charpy V-specimens are used. The specified toughness 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. Average of three tests.

Chemical Composition (heat analysis)

C ¹⁾ (max %)	Si ¹⁾ (max %)	Mn ¹⁾ (max %)	P (max %)	S (max %)	Cr ¹⁾ (max %)	Ni ¹⁾ (max %)	Mo ¹⁾ (max %)	B ¹⁾ (max %)
0.30	0.70	1.60	0.020	0.010	1.50	1.50	0.60	0.005

The steel is grain refined. ¹⁾ Intentional alloying elements.

Carbon Equivalent CET(CEV)

Thickness	4.0 - 16.0	16.1 - 25.4
Max CET(CEV)	0.38 (0.54)	0.39 (0.55)
Typ CET(CEV)	0.36 (0.52)	0.37 (0.53)

$$CET = C + \frac{Mn + Mo}{10} + \frac{Cr + Cu}{20} + \frac{Ni}{40}$$

$$CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15}$$

Tolerances

More details are given in SSAB's brochure 41-General Product Information Strenx, Hardox®, Armox and Toolox-UK and Hardox® Guarantees or at www.ssab.com.

Thickness

Tolerances according to Hardox® Thickness Guarantees, Hardox® Guarantees meets the requirements of EN 10 029 Class A.

Length and Width

According to SSAB's dimension program, Tolerances according to SSAB's mill edge standards or tolerances that conform to EN 10 029.

Shape

Tolerances according to EN 10 029.

Flatness

Tolerances according to Hardox® Flatness Guarantees Class D, which are more restrictive than EN 10 029.

Surface Properties

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

Bending

Bendability according to Hardox® Bending Guarantees Class E.

Delivery Conditions

The delivery condition is Q or QT (Quenched or Quenched and Tempered). The plates are delivered with sheared or thermally cut edges. Delivery requirements can be found in SSAB's brochure 41-General product information Strenx, Hardox®, Armox and Toolox-UK or at www.ssab.com.

Fabrication and Other Recommendations

Welding, bending and machining.

Recommendations can be found in SSAB's brochures at www.hardox.com or consult Tech Support, techsupport@ssab.com.

Hardox® 500 Tuf 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 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 Information

www.ssab.com/contact



Toughness, guaranteed

Toughness allows for structural use in heavy-duty [Find out more >](#)



Hardness meets toughness

Hardox® 500 Tuf perfectly suited for hard-working [Find out more >](#)



Tough on scrap!

Recycled steel, scrap or concrete with rebar are no match for Hardox® 500 Tuf. [Find out more >](#)



Download Hardox® Guarantees brochure

[Download >](#)

Dimension Range

Hardox® 500 Tuf is available in thicknesses of 4.0 – 25.4 mm. Hardox® 500 Tuf is available in widths up to 3350 mm and lengths up to 14630 mm. More detailed information on dimensions is provided in the dimension program.

[View Dimension Program >](#)

[Download Dimension Program ↓](#)

Available Standards

EN 10029

[↓](#) English [▶](#)

Download data sheet

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

Hardox® 500 Tuf

USED FOR

Wear Resistant

DIMENSIONS

T: 0.16 - 1 Inches

W: Up to 131.89 Inches

L: Up to 575.98 Inches

STANDARDS

EN 10029

DATA SHEET



English

Mechanical Properties

Mechanical Properties

Thickness (Inches)	0.16 - 1
Hardness ¹⁾ (HBW)	475 - 505
Typical yield strength (MPa), <small>not guaranteed</small>	1250 - 1400

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

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.

Hardox® 500 Tuf is through-hardened. Minimum core hardness is 90 % of the guaranteed minimum surface hardness.

Impact Properties

Grade	Hardox® 500 Tuf ¹⁾
Transverse test, guaranteed impact energy, Charpy V 10x10 mm test specimen.	27 J/ -20 °C

¹⁾ Impact toughness measured upon agreement. For thicknesses between 6 - 11.9 mm, subsize Charpy V-specimens are used. The specified toughness 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. Average of three tests.

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

Chemical Composition

Chemical Composition (heat analysis)

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

C [*] (max %)	0.30
Si [*] (max %)	0.70
Mn [*] (max %)	1.60
P (max %)	0.020
S (max %)	0.010
Cr [*] (max %)	1.50
Ni [*] (max %)	1.50
Mo [*] (max %)	0.60
B [*] (max %)	0.005

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).



Carbon Equivalent CET(CEV)

Thickness	Max CET(CEV)
4.0 - 16.0	0.38 (0.54)
16.1 - 25.4	0.39 (0.55)

Thickness	Typ CET(CEV)
4.0 - 16.0	0.36 (0.52)
16.1 - 25.4	0.37 (0.53)

$$CET = C + \frac{Mn+Mo}{10} + \frac{Cr+Cu}{20} + \frac{Ni}{40}$$

$$CEV = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Cu+Ni}{15}$$

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).





This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

Tolerances

Tolerances

More details are given in SSAB's brochure 41-General Product Information Strenx, Hardox®, Armox and Toolox-JK and Hardox® Guarantees or at www.ssab.com.

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

Thickness

Tolerances according to Hardox® Thickness Guarantees. Hardox® Guarantees meets the requirements of EN 10 029 Class A.

Length and Width

According to SSAB's dimension program. Tolerances according to SSAB's mill edge standards or tolerances that conform to EN 10 029.

Shape

Tolerances according to EN 10 029.

Flatness

Tolerances according to Hardox® Flatness Guarantees Class D, which are more restrictive than EN 10 029.

Surface Properties

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

Bending

Bendability according to Hardox® Bending Guarantees Class E.

This website uses cookies to enhance your experience. By continuing to use this website you are agreeing to our [Cookie Policy](#).

