

PRODUCT PROGRAM

HARDOX®
WEAR PLATE

STRENX®
PERFORMANCE STEEL

TOOLOX®
ENGINEERING & TOOL STEEL

STRENX® PERFORMANCE STEEL SHEET

Steel grade	Yield strength ¹ MPa (ksi)		Tensile strength ¹ MPa (ksi)		Elongation A ₅ (%)	Bending radius R/t for 90° bend t=6 mm (0.236")	CEV/CET ² typical for 6 mm (0.236")	Thickness mm (inches)
	min	max	min	max				
Strenx® 100 – 110XF – Thermomechanically rolled steel for stronger and lighter structures.								
Strenx® 100XF	690 (100) ²	760 (110) ²			15 ³	1.2	0.35/0.24	2.0–10.0 mm (0.079"–0.393") ⁴
Strenx® 110XF	760 (110) ²	813 (118) ²			15 ³	1.2	0.39/0.26	2.0–10.0 mm (0.079"–0.393")
Strenx® MC – High-strength structural steel enabling stronger and lighter structures.								
Strenx® 600MC	600 (87)	650 (94)	820 (119)	16		1.1	0.33/0.21	2.0–10.0 mm (0.079"–0.393")
Strenx® 650MC	650 (94)	700 (101)	850 (123)	14		1.2	0.34/0.22	2.0–10.0 mm (0.079"–0.393")
Strenx® 700MC	700 (101) ⁷	750 (109)	950 (138)	12		1.2	0.39/0.25	2.0–10.0 mm (0.079"–0.393")
Strenx® 700MC Plus	700 (101) ⁷	750 (109)	950 (138)	13		1.0	0.38/0.24	3.0–12.0 mm (0.118"–0.472")
Strenx® 900MC	900 (130)	930 (135)	1200 (174)	8		3.0	0.50/0.25	3.0–10.0 mm (0.118"–0.393")
Strenx® 900 Plus	900 (130)	940 (136)	1100 (160)	11		3.0	0.50/0.34	2.0–8.0 mm (0.079"–0.315")
Strenx® 960MC	960 (139)	980 (142)	1250 (181)	7		3.5	0.51/0.28	3.0–10.0 mm (0.118"–0.393")
Strenx® 960 Plus	960 (139)	980 (142)	1150 (167)	10		3.5	0.50/0.34	2.0–8.0 mm (0.079"–0.315")
Strenx® 1100MC	1100 (160)	1250 (181)	1450 (210)	7		4.0	0.56/0.33	3.0–8.0 mm (0.118"–0.315")
Strenx® 1100 Plus	1100 (160)	1130 (164)	1350 (196)	10		3.5	0.45/0.85	4.0–6.0 mm (0.157"–0.236")
Strenx® 1100 Plus	1100 (160)	1130 (164)	1350 (196)	10		4.0	0.45/0.85	6.1–8.0 mm (0.240"–0.315")
Strenx® cold rolled – High-strength structural steel enabling stronger and lighter structures.								
Strenx® 700CR	700 (102)	1000 (145)	1200 (174)	7 ⁵		2.0	0.40/0.29	0.70–2.10 mm (0.028"–0.083")
Strenx® 960CR	960 (139)	1200 (174)	1400 (203)	3 ⁵		3.5	0.39/0.28	0.70–2.10 mm (0.028"–0.083")
Strenx® 1100CR	1100 (160)	1300 (189)	1500 (218)	3 ⁵		3.5	0.41/0.30	0.70–2.10 mm (0.028"–0.083")

All sheet products are produced according to Strenx® Guarantees or closer.

1. Mechanical properties of Strenx® MC, MC Plus and Plus grades are tested in longitudinal direction.

2. Mechanical properties of Strenx® XF grades are tested in transverse direction.

3. Elongation A₅ Min. % for t ≥ 2 mm (0.078").

4. Thickness up to 12.7 mm (½") available upon request

5. Elongation A₅ Min.

6. EV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15, CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

7. Values for thickness 2–8 mm (0.079"–0.315")

STRENX® PERFORMANCE STEEL PLATE

Steel grade	Yield strength ¹ MPa (ksi)	Impact toughness CVL typical 20 mm (¾") J @ -40°C (ft-lb @ -40°F)	Bending properties transverse (R/t) t=8 mm (0.315")	Tensile strength ¹ MPa (ksi)		CEV/CET ² typical for 20 mm (¾")	Thickness range ⁶ mm (inches)
				min	max		
Strenx® – High-strength, high-performance steel, enabling lighter and more innovative structures.							
Strenx® 100 ²	690 (100) ⁴	165 J (122 ft-lb)	1.5	759 (110)	900 (130)	0.43/0.29	4.76–12.7 mm (¾"–5")
Strenx® 700	700 (101) ⁷	165 J (122 ft-lb)	1.5	780 (113)	930 (135)	0.43/0.29	4–160 mm (5/32"–6.3")
Strenx® 900	900 (130) ⁷	88 J (65 ft-lb)	2.5	940 (136)	1100 (160)	0.55/0.36	4–100 mm (5/32"–3.94")
Strenx® 960	960 (139) ⁷	84 J (62 ft-lb)	2.5	980 (142)	1150 (167)	0.55/0.36	4–100 mm (5/32"–3.94")
Strenx® 1100	1100 (160)	67 J (49 ft-lb)	3.0	1250 (181)	1550 (225)	0.55/0.36	4–40 mm (5/32"–1.57")
Strenx® 1300	1300 (189)	32 J (24 ft-lb) ⁵	3.5	1400 (203)	1700 (247)	0.65/0.42	4–10 mm (5/32"–0.393")

All plates are produced according to Strenx® Guarantees or closer.

1. For transverse test piece.

2. Strenx® 100 meets requirements of ASTM A514 Grade 5.

3. CEV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15;

CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

For Strenx® 1300, typical values are for 8 mm (0.315").

4. Values for thickness 4–63 mm (5/32"–2½").

5. For 6 mm (0.236") and half size test specimen.

6. Thicker materials are available upon request.

7. Values for thickness 4–53 mm (5/32"–2.08")

STRENX® PERFORMANCE STEEL TUBE

Steel grade	Yield strength MPa (ksi)	Minimum impact toughness	Tensile strength MPa (ksi)		CEV/CET ¹ typical	Wall thickness mm (inches)
			min	max		
Strenx® tube – Advanced high-strength structural hollow sections.						
Strenx® Tube 700MLH	700 (101)	27 J @ -50°C (20 ft-lb @ -58°F)	750 (109)	950 (138)	0.38/0.24	2.0–10.0 mm (0.079"–0.393")
Strenx® Tube 700MH	700 (101)	40 J @ -20°C (30 ft-lb @ -4°F)	750 (109)	950 (138)	0.38/0.24	2.0–10.0 mm (0.079"–0.393")
Strenx® Tube 700QLH	700 (101)	40 J @ -20°C (30 ft-lb @ -4°F)	780 (113)	930 (135)	0.34/0.78	2.0–6.0 mm (0.079"–0.236")
Strenx® Tube 900MH	900 (130)	40 J @ -20°C (30 ft-lb @ -4°F)	930 (135)	1200 (174)	0.50/0.25	4.0–6.0 mm (5/32"–0.236")
Strenx® Tube 960MH	960 (139)	40 J @ -20°C (30 ft-lb @ -4°F)	980 (142)	1250 (181)	0.51/0.28	4.0–6.0 mm (5/32"–0.236")

1. CEV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15; CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

The values stated in SI units are to be regarded as standard for all products (with the exception of Strenx® 100XF, Strenx® 110XF and Strenx® 100). The values given in parenthesis are approximate mathematical conversions from SI to US conventional units that are provided for information only and are not considered standard.

For the products described with the blue text the following is valid: the values given in parenthesis are to be regarded as standard. The values without parenthesis and stated in SI units are approximate mathematical conversions from US conventional to SI units that are provided for information only and are not considered standard.

STRENX® PERFORMANCE STEEL SECTION

Steel grade	Yield strength MPa (ksi)	Min. impact toughness J @ -40°C (ft-lb @ -40°F)	Tensile strength MPa (ksi)		CEV/CET ¹ typical	Wall thickness mm (inches)
			min	max		
Strenx® Section – Advanced high-strength, cold-formed steel sections.						
Strenx® Section 650	650 (94)	27 J (20 ft-lb)	700 (101)	850 (123)	0.34/0.22	2.50–10.0 mm (0.098"–0.393")
Strenx® Section 700	700 (101)	27 J (20 ft-lb)	750 (109)	950 (138)	0.38/0.24	2.50–10.0 mm (0.098"–0.393")
Strenx® Section 900	900 (130)	27 J (20 ft-lb)	930 (135)	1200 (174)	0.51/0.28	3.0–6.0 mm (0.118"–0.236")

1. CEV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15; CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

HARDOX® WEAR PLATE

Steel grade	Hardness nominal HBW	Impact toughness CVL typical for 20 mm (¾") J @ -40°C (ft-lb @ -40°F)	Bending properties transverse (R/t) t=8 mm (0.315")	Rel. service life interval ¹	CEV/CET ² typical for 20 mm (¾")	Thickness range ⁴ mm (inches)
Hardox® – Workshop-friendly abrasion-resistant wear plates for all purposes, enabling lighter, stronger and more durable applications.						
Hardox® HiTuf	350	95 J (70 ft-lb) ³			0.55/0.36 ³	40–160 mm (1.57"–6.3")
Hardox® 400	400	45 J (33 ft-lb)	2.5	1	0.44/0.28	4–130 mm (5/32"–5.12")
Hardox® 450	450	50 J (37 ft-lb)	3.0	1.1–1.5	0.56/0.38	3.2–130 mm (1/8"–5.12")
Hardox® 500	500	37 J (27 ft-lb)	3.5	1.3–2.1	0.63/0.41	4–103 mm (5/32"–4.06")
Hardox® 500 Tuf	475–505	45 J (33 ft-lb)	3.0	1.3–2.1	0.52/0.36	4–25.4 mm (5/32"–1")
Hardox® 550	550	30 J (22 ft-lb)	3.0	1.5–4.0	0.72/0.48	8–65 mm (0.315"–2.56")
Hardox® 600	600	20 J (15 ft-lb)		1.8–8.0	0.76/0.58	6–65 mm (metric only)
Hardox® Extreme	650–700	<15 J (< 11 ft-lb)		2.0–10.0	0.65/0.54	8–19 mm (metric only)
Hardox® HiTemp	350–400	60 J (44 ft-lb)	3.0		0.59/0.40	5–51 mm (0.197"–2")

All plates are produced with tolerances according to Hardox® guarantees or closer.

1. Max/min sliding wear by SSAB WearCalc (mild steel 0.2–0.8).

2. CEV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15; CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

3. Typical for 70 mm (2 ¾").

4. Thicker material is available upon request.

HARDOX® WEAR SHEET

Steel grade	Hardness nominal HBW	Impact toughness CVL typical J @ -40°C (ft-lb @ -40°F)	Bending properties transverse (R/t) t<6 mm (0.236")	Rel. service life interval ¹	CEV/CET ² typical	Thickness range mm (inches)
Hardox® – Workshop-friendly abrasion-resistant cut-to-length sheet for all purposes, enabling lighter, stronger and more durable applications.						
Hardox® 400	400	45 J (33 ft-lb)	3.0	1	0.48/0.30	2.0–8.0 mm (0.079"–0.315")
Hardox® 450	450	50 J (37 ft-lb)	3.0	1.1–1.5	0.52/0.35	2.0–8.0 mm (0.079"–0.315")
Hardox® 450 CR	450 ³		3.5	0.39/0.31		0.7–2.1 mm (0.028"–0.083")
Hardox® 500	500	37 J (27 ft-lb)	3.5	1.3–2.1	0.55/0.40	2.0–6.5 mm (0.079"–0.256")

All sheets are produced with tolerances according to Strenx® Guarantees or closer.

1. Max/min sliding wear by SSAB WearCalc (mild steel 0.2–0.8).

2. CEV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15; CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

3. Tested according to Vickers hardness test.

HARDOX® ROUND BAR

Steel grade	Hardness nominal HBW	Impact toughness CVL typical for 20 mm (¾") J @ -40°C (ft-lb @ -40°F)	Bending properties transverse (R/t) t<8 mm (0.315")	Rel. service life interval ¹	CEV/CET ² typical for 20 mm (¾")	Bar diameter mm (inches)
Hardox® Roundbar – Versatile, ready-to-use abrasion-resistant roundbars.						
Hardox® 400 Bar	400	45 J (33 ft-lb)			0.58/0.37	40–100 mm (1.57"–3.937")

1. Max/min sliding wear by SSAB WearCalc (mild steel 0.2–0.8).

2. CEV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15; CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

HARDOX® TUBE

Steel grade	Hardness nominal HBW	Typical yield strength MPa (ksi)	External diameter mm (inches)	Wall thickness mm (inches)
Hardox® Tube – Abrasion-resistant tubes for extreme performance and extended service life.				
Hardox® 400	400	1000–1300 (145–188)	76.1–219.1 (3"–8 5/8")	3.0–6.0 mm (0.118"–0.236")
Hardox® 500	500	>1200 (>174)	76.1–133 (3"–5.24")	3.0–6.0 mm (0.118"–0.236")

SSAB

TOOLOX® ENGINEERING AND TOOL STEEL

Temperature °C (°F)	Hardness guaranteed HBW	Impact energy guaranteed Min. J (ft-lb)	Yield strength R _{p0.2} MPa (ksi)*	Tensile strength R _m MPa (ksi)*	Elongation A ₅ (%)*	Yield strength R _{p0.2} MPa (ksi)*	Impact energy J (ft-lb)*	Plate thickness mm (inches)	Bar diameter mm (inches)
Toolox® 33 – A quenched and tempered engineering and tool steel, designed to have low residual stresses – resulting in good dimensional stability.									
-40 °C (-40 °F)									
-20 °C (-4 °F)									
20 °C (68 °F)	275–325	35 J (26 ft-lb)	850 (123)	980 (142)	16	800 (116)	100 J (74 ft-lb)	6–130 mm (0.236”–5.12”)	21–141 mm (0.827”–5.55”)
200 °C (392 °F)			690 (116)	900 (131)	12	750 (108)	170 J (125 ft-lb)		
300 °C (572 °F)			680 (99)			700 (101)	180 J (133 ft-lb)		
400 °C (752 °F)			590 (86)			590 (86)	180 J (133 ft-lb)		
500 °C (932 °F)			560 (81)			560 (81)			

Plates are tested in transverse direction. Bars are tested in longitudinal direction.

* Typical values are for guidance only.

Temperature °C (°F)	Hardness guaranteed HBW	Impact energy guaranteed Min. J (ft-lb)	Yield strength R _{p0.2} MPa (ksi)*	Tensile strength R _m MPa (ksi)*	Elongation A ₅ (%)*	Yield strength R _{p0.2} MPa (ksi)*	Impact energy J (ft-lb)*	Plate thickness mm (inches)
Toolox® 40 – Quenched and tempered engineering and tool steel with very low residual stresses – in combination with a typical hardness around 40 HRC.								
-40 °C (-40 °F)								
-20 °C (-4 °F)								
20 °C (68 °F)	360–420	20 J (15 ft-lb)	1150 (167)	1260 (183)	14		38 J (28 ft-lb)	6–130 mm (0.236”–5.12”)
200 °C (392 °F)			1010 (146)	1170 (170)	14			
300 °C (572 °F)			990 (144)	1160 (168)	14			
400 °C (752 °F)			900 (131)	1060 (154)	15			
500 °C (932 °F)			780 (112)	900 (131)	16			

Plates are tested in transverse direction.

* Typical values are for guidance only.

Temperature °C (°F)	Hardness guaranteed HBW	Impact energy guaranteed Min. J (ft-lb)	Yield strength R _{p0.2} MPa (ksi)*	Tensile strength R _m MPa (ksi)*	Elongation A ₅ (%)*	Yield strength R _{p0.2} MPa (ksi)*	Impact energy J (ft-lb)*	R _{p0.2} after 170 hrs soaking time at actual temperature* MPa (ksi)	Plate thickness mm (inches)	Bar diameter mm (inches)
Toolox 44® – Quenched and tempered engineering and tool steel with very low residual stresses. Despite a typical hardness of 45 HRC, it has very good machinability, unmatched in the market.										
-40 °C (-40 °F)										
-20 °C (-4 °F)										
20 °C (68 °F)	410–475	18 J (13 ft-lb)	1300 (189)	1450 (210)	13	1250 (181)	30 (22)		6–130 mm (0.236”–5.12”)	21–172 mm (0.826”–6.771”)
200 °C (392 °F)			1150 (174)	1380 (200)	10	1120 (162)	60 (44)			
300 °C (572 °F)			1120 (162)			1120 (162)	80 (59)			
400 °C (752 °F)			1060 (168)			1060 (154)	80 (59)	1060 (154)		
500 °C (932 °F)			930 (135)			930 (135)		910 (132)		

Plates are tested in transverse direction. Bars are tested in longitudinal direction. The typical testing temperature for Toolox® is room temperature.

All other values are tested randomly and are for information only. * Typical values are for guidance only.

TECH SUPPORT



Tech Support provides you with technical support over the phone and via e-mail. You will receive an answer straight away or at the latest within 24 hours. We welcome questions in any language and invite you to work closely with our Technical Managers and expert groups. Our aim is to simplify your work in design, materials selection, fatigue, deflection, bending, drilling, machining and welding.

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