STRENX® PERFORMANCE STEEL SHEET

Steel grade	Yield strength[1] MPa	Tensile strength[1] MPa		Elongation A_5 (%)	Bending radius R/t for 90° bend t=6 mm	CEV/CET[3] typical for 6 mm	Thickness mm
	min	min	max	min	min		
Strenx® MC – High-strength structural steel enabling stronger and lighter structures.							
Strenx® 600MC D/E	600	650	820	16	1.1	0.33/0.21	2.0 – 10.0 mm
Strenx® 650MC D/E	650	700	850	14	1.2	0.34/0.22	2.0 – 10.0 mm
Strenx® 700MC D/E	700	750	950	12	1.2	0.39/0.25	2.0 – 10.0 mm
Strenx® 700MC Plus	700	750	950	13	1.0	0.38/0.24	3.0 – 12.0 mm
Strenx® 900MC	900	930	1200	8	3.0	0.50/0.25	3.0 – 10.0 mm
Strenx® 900 Plus	900	940	1100	11	3.0	0.50/0.34	2.0 – 8.0 mm
Strenx® 960MC	960	980	1250	7	3.5	0.51/0.28	3.0 – 10.0 mm
Strenx® 960 Plus	960	980	1150	10	3.5	0.50/0.34	2.0 – 8.0 mm
Strenx® 1100MC	1100	1250	1450	7	4.0	0.56/0.33	3.0 – 8.0 mm
Strenx® cold rolled – High-strength structural steel enabling stronger and lighter structures.							
Strenx® 700 CR	700	1000	1200	7[2]	2.0	0.40/0.29	0.70 – 2.10 mm
Strenx® 960 CR	960	1100	1300	3[2]	3.5	0.38/0.26	0.80 – 2.10 mm
Strenx® 1100 CR	1100	1300	1500	3[2]	3.5	0.41/0.30	0.80 – 2.10 mm

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. Elongation A_{80} Min.
3. EV=C+Mn/6+(Cr+Mo+V)/5+(Cu+Ni)/15, CET=C+(Mn+Mo)/10+(Cr+Cu)/20+Ni/40.

STRENX® PERFORMANCE STEEL PLATE

Steel grade	Yield strength[1] MPa	Min. impact toughness CVT [J/°C]	Bending properties transverse (R/t) t<8 mm	Tensile strength[1] MPa		CEV/CET[2] typical for 20 mm	Thickness range[4] mm
	min			min	max		
Strenx® – High-strength, high-performance steel, enabling lighter and more innovative structures.							
Strenx® 700 E/F	700[5]	69 J/-40	1.5	780	930	0.43/0.29	4.0 – 160.0 mm
Strenx® 700 OME	700	69 J/-40	1.5	780	930	0.57/0.38	4.0 – 130.0 mm
Strenx® P700	700	69 J/-40	1.5	770	940	0.57/0.38	4.0 – 100.0 mm
Strenx® 900 E/F	900[5]	27 J/-40	2.5	940	1100	0.55/0.36	4.0 – 120.0 mm
Strenx® 960 E/F	960[5]	40 J/-40	2.5	980	1150	0.55/0.36	4.0 – 120.0 mm
Strenx® 1100 E/F	1100	27 J/-40	3.0	1250	1550	0.55/0.36	4.0 – 40.0 mm
Strenx® 1300 E/F	1300	27 J/-40	3.5	1400	1700	0.65/0.42	4.0 – 15.0 mm

All plates are produced according to Strenx® Guarantees or closer.
1. For transverse test piece.
2. 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.
3. For 6 mm and half size test specimen.
4. Thicker materials are available upon request.
5. Values for thickness 4 – 53 mm.

STRENX® PERFORMANCE STEEL TUBE

Steel grade	Yield strength MPa	Minimum impact toughness [J/°C]	Tensile strength MPa		CEV/CET[1] typical	Wall thickness mm
	min		min	max		
Strenx® tube – Advanced high-strength structural hollow sections.						
Strenx® Tube 700MLH	700	27 J / -50	750	950	0.38/0.24	2.0 – 10.0 mm
Strenx® Tube 900MH	900	40 J / -20	930	1200	0.50/0.25	4.0 – 6.0 mm
Strenx® Tube 960MH	960	40 J / -20	980	1250	0.51/0.28	4.0 – 6.0 mm
Strenx® Tube 700QLH	700	40 J / -40	780	930	0.34/0.48	3.0 – 6.0 mm
Strenx® Tube 960QLH	960	40 J/-40	980	1150	0.54/0.36	3.0 – 6.0 mm

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

STRENX® PERFORMANCE STEEL SECTION

Steel grade	Yield strength MPa	Min. Impact toughness J @ -40 °C	Tensile strength MPa		CEV/CET[1] typical	Wall thickness mm
	Min		min	max		
Strenx® Section – Advanced high-strength, cold-formed steel sections.						
Strenx® Section 650	650	27 J	700	850	0.34/0.22	2.50 – 8.00 mm
Strenx® Section 700	700	27 J	750	950	0.38/0.24	2.50 – 8.00 mm
Strenx® Section 900	900	27 J	930	1200	0.51/0.28	3.0 – 6.0 mm

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 J @ -40°C	Bending properties transverse (R/t) t<8 mm	Rel. service life interval[1]	CEV/CET[2] typical for 20 mm	Thickness range[4] mm
Hardox® – Workshop-friendly abrasion-resistant wear plates for all purposes, enabling lighter, stronger and more durable applications.						
Hardox® HiTuf	350	95 J[3]			0.55/ 0.36[3]	40 – 160 mm
Hardox® 400	400	45 J	2.5	1	0.44/ 0.28	4 – 130 mm
Hardox® 450	450	50 J	3.0	1.1 – 1.5	0.56/0.38	3.2 – 130 mm
Hardox® 500	500	37 J	3.5	1.3 – 2.1	0.63/0.41	4 – 103 mm
Hardox® 500 Tuf	475 – 505	45 J	3.0	1.3 – 2.1	0.53/0.37	4 – 25.4 mm
Hardox® 550	550	30 J		1.5 – 4.0	0.67/0.46	8 – 65 mm
Hardox® 600	600	20 J		1.8 – 8.0	0.66/0.55	6 – 65 mm
Hardox® Extreme	650–700	<15 J		2.0 – 10.0	0.66/0.55	8 – 19 mm
Hardox® HiTemp	350 – 400	60 J	3.0		0.59/0.40	4.7 – 51.0 mm

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.
4. Thicker material is available upon request.

HARDOX® WEAR SHEET

Steel grade	Hardness nominal HBW	Impact toughness CVL typical J @ -40°C	Bending properties transverse (R/t) t<6 mm	Rel. service life interval[1]	CEV/CET[2] typical	Thickness range mm
Hardox® – Workshop-friendly abrasion-resistant cut-to-length sheet for all purposes, enabling lighter, stronger and more durable applications.						
Hardox® 400	400	45 J	3.0	1	0.39/0.26	2.0 – 8.0 mm
Hardox® 450	450	50 J	3.0	1.1 – 1.5	0.39/0.26	2.0 – 8.0 mm
Hardox® 450 CR	450[3]		3.5		0.41/0.32	0.8 – 2.1 mm
Hardox® 500	500	37 J	3.5	1.3 – 2.1	0.45/0.33	2.0 – 7.0 mm

All sheets 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. Tested according to Vickers hardness test.

HARDOX® ROUNDBAR

Steel grade	Hardness nominal HBW	Impact toughness CVL typical J @ -40°C	Bending properties transverse (R/t) t<8 mm	Rel. service life interval[1]	CEV/CET[2] typical	Bar diameter mm
Hardox® Roundbar – Versatile, ready-to-use abrasion-resistant roundbars.						
Hardox® 400	400	45 J			0.58/0.37	40.0 – 100.0 mm
Hardox® 500	500	-	-	-	0.73/0.46[3]	40.0 – 160.0 mm

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. Values for diameter 40 – 100 mm.

HARDOX® TUBE

Steel grade	Hardness nominal HBW	Typical yield strength MPa	External diameter mm	Wall thickness mm
Hardox® Tube – Abrasion-resistant tubes for extreme performance and extended service life.				
Hardox® 400	400	1000 – 1300	76.1 – 219.1	3.0 – 6.0 mm
Hardox® 500	500	>1200	76.1 – 133	3.0 – 6.0 mm

813en-SSAB Product program Hardox ,Strenx, Toolox-Metric- V9-2022, Confetti, Österbergs.

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 close-ly 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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HARDOX® WEAR PLATE
Wear plate for maximum payload & longer service life.

STRENX® PERFORMANCE STEEL
High-strength, high-performance structural steel.

TOOLOX® ENGINEERING & TOOL STEEL
Ready-to-use engineering & tool steel for saving time to market.

TOOLOX® ENGINEERING AND TOOL STEEL

Temperature °C	Hardness guaranteed HBW	Impact energy guaranteed Min. J	Yield strength $R_{p0.2}$ MPa*	Tensile strength R_m MPa*	Elongation A_5 (%)*	Yield strength $R_{p0.2}$ MPa*	Impact energy J*	Plate thickness mm
Toolox® 33 – A quenched and tempered engineering and tool steel, designed to have low residual stresses – resulting in good dimensional stability.								
-40 °C								6 – 130 mm
-20°C								
20°C	275–325	35 J	850	980	16	800	100 J	
200°C			690	900	12	750	170 J	
300°C			680			700	180 J	
400°C			590			590	180 J	
500°C			560			560		

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

* Typical values are for guidance only.

Temperature °C	Hardness guaranteed HBW	Impact energy guaranteed Min. J	Yield strength $R_{p0.2}$ MPa*	Tensile strength R_m MPa*	Elongation A_5 (%)*	Yield strength $R_{p0.2}$ MPa*	Impact energy J*	Plate thickness mm
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								6 – 130 mm
-20°C								
20°C	360 – 420	20 J	1150	1260	14		38 J	
200°C			1010	1170	14			
300°C			990	1160	14			
400°C			900	1060	15			
500°C			780	900	16			

Plates are tested in transverse direction.

* Typical values are for guidance only.

Temperature °C	Hardness guaranteed HBW	Impact energy guaranteed Min. J	Yield strength $R_{p0.2}$ MPa*	Tensile strength R_m MPa*	Elongation A_5 (%)*	Yield strength $R_{p0.2}$ MPa*	Impact energy J*	$R_{c0.2}$ after 170 hrs soaking time at actual temperature* MPa	Plate thickness mm	Bar diameter mm
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									6 – 130 mm	21 – 282 mm
-20°C										
20°C	410 – 475	18 J	1300	1450	13	1250	30			
200°C			1150	1380	10	1120	60			
300°C			1120			1120	80			
400°C			1060			1060	80	1060		
500°C			930			930		910		

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.

SALES CONTACTS

Find your local sales contact at **www.ssab.com**

Certain restrictions apply to the product program.

This is an extract from the product data sheets and recommendations.

Consult www.ssab.com for complete recommendations and properties.