

## STRENX® PERFORMANCE STEEL SHEET

Steel grade	Yield strength <sup>1</sup> MPa	Tensile strength <sup>1</sup> MPa		Elongation A <sub>5</sub> (%)	Bending radius R/t for 90° bend t=6 mm	CEV/CET <sup>3</sup> typical for 6 mm	Thickness mm
	min	min	max				
<b>Strenx® MC – High-strength structural steel enabling stronger and lighter structures.</b>							
Strenx® 600MC	600	650	820	16	1.1	0.33/0.21	2.0–10.0 mm
Strenx® 650MC	650	700	850	14	1.2	0.34/0.22	2.0–10.0 mm
Strenx® 700MC	700 <sup>4</sup>	750	950	12	1.2	0.39/0.25	2.0–10.0 mm
Strenx® 700MC Plus	700 <sup>4</sup>	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® 1100 Plus	1100	1130	1350	10	3.5	0.45/0.85	4.0–6.0 mm
Strenx® 1100 Plus	1100	1130	1350	10	4.0	0.45/0.85	6.1–8.0 mm
<b>Strenx® cold rolled – High-strength structural steel enabling stronger and lighter structures.</b>							
Strenx® 700CR	700	1000	1200	7 <sup>2</sup>	2.0	0.40/0.29	0.70–2.10 mm
Strenx® 960CR	960	1200	1400	3 <sup>2</sup>	3.5	0.39/0.28	0.70–2.10 mm
Strenx® 1100CR	1100	1300	1500	3 <sup>2</sup>	3.5	0.41/0.30	0.70–2.10 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<sub>50</sub> Min.

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

4. Values for thickness 2-8 mm.

## STRENX® PERFORMANCE STEEL PLATE

Steel grade	Yield strength <sup>1</sup> MPa	Impact toughness CVL typical 20 mm J @ -40°C	Bending properties transverse (R/t) t<8 mm	Tensile strength <sup>1</sup> MPa		CEV/CET <sup>2</sup> typical for 20 mm	Thickness range <sup>4</sup> mm
	min			min	max		
<b>Strenx® – High-strength, high-performance steel, enabling lighter and more innovative structures.</b>							
Strenx® 700	700 <sup>5</sup>	165 J	1.5	780	930	0.43/0.29	4–160 mm
Strenx® 900	900 <sup>5</sup>	88 J	2.5	940	1100	0.55/0.36	4–100 mm
Strenx® 960	960 <sup>5</sup>	84 J	2.5	980	1150	0.55/0.36	4–100 mm
Strenx® 1100	1100	67 J	3.0	1250	1550	0.55/0.36	4–40 mm
Strenx® 1300	1300	32 J <sup>3</sup>	3.5	1400	1700	0.65/0.42	4–10 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	Tensile strength MPa		CEV/CET <sup>1</sup> typical	Wall thickness mm
	min		min	max		
<b>Strenx® tube – Advanced high-strength structural hollow sections.</b>						
Strenx® Tube 700MLH	700	27 J @ -50°C	750	950	0.38/0.24	2.0–10.0 mm
Strenx® Tube 700MH	700	40 J @ -20°C	750	950	0.38/0.24	2.0–10.0 mm
Strenx® Tube 700QLH	700	40 J @ -20°C	780	930	0.34/0.28	2.0–6.0 mm
Strenx® Tube 900MH	900	40 J @ -20°C	930	1200	0.50/0.25	4.0–6.0 mm
Strenx® Tube 960MH	960	40 J @ -20°C	980	1250	0.51/0.28	4.0–6.0 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 <sup>1</sup> typical	Wall thickness mm
	Min		min	max		
<b>Strenx® Section – Advanced high-strength, cold-formed steel sections.</b>						
Strenx® Section 650	650	27 J	700	850	0.34/0.22	2.50–10.0 mm
Strenx® Section 700	700	27 J	750	950	0.38/0.24	2.50–10.0 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 <sup>1</sup>	CEV/CET <sup>2</sup> typical for 20 mm	Thickness range <sup>4</sup> mm
<b>Hardox® – Workshop-friendly abrasion-resistant wear plates for all purposes, enabling lighter, stronger and more durable applications.</b>						
Hardox® HiTuf	350	95 J <sup>3</sup>			0.55/0.36 <sup>3</sup>	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	0.52/0.36	4–25.4 mm
Hardox® 550	550	30 J		1.5–4.0	0.72/0.48	8–65 mm
Hardox® 600	600	20 J		1.8–8.0	0.76/0.58	6–65 mm
Hardox® Extreme	650–700	<15 J		2.0–10.0	0.65/0.54	8–19 mm
Hardox® HiTemp	350–400	60 J	3.0		0.59/0.40	5–51 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 <sup>1</sup>	CEV/CET <sup>2</sup> typical	Thickness range mm
<b>Hardox® – Workshop-friendly abrasion-resistant cut-to-length sheet for all purposes, enabling lighter, stronger and more durable applications.</b>						
Hardox® 400	400	45 J	3.0	1	0.48/0.30	2.0–8.0 mm
Hardox® 450	450	50 J	3.0	1.1–1.5	0.52/0.35	2.0–8.0 mm
Hardox® 450 CR	450 <sup>3</sup>		3.5		0.39/0.31	0.7–2.1 mm
Hardox® 500	500	37 J	3.5	1.3–2.1	0.55/0.40	2.0–6.5 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® ROUND BAR

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 <sup>1</sup>	CEV/CET <sup>2</sup> typical for 20 mm	Bar diameter mm
<b>Hardox® Roundbar – Versatile, ready-to-use abrasion-resistant roundbars.</b>						
Hardox® 400 Bar	400	45 J			0.58/0.37	40–100 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.

## HARDOX® TUBE

Steel grade	Hardness nominal HBW	Typical yield strength MPa	External diameter mm	Wall thickness mm
<b>Hardox® Tube – Abrasion-resistant tubes for extreme performance and extended service life.</b>				
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

# 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.

# CONTACT

**SSAB**  
 Tech Support  
 SE-781 84 Borlänge  
 Sweden  
 +46 243 70 000  
 techsupport@ssab.com  
 www.ssab.com



Wear plate for maximum payload & longer service life.



High-strength, high-performance structural 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 <sub>p0.2</sub> MPa*	Tensile strength R <sub>m</sub> MPa*	Elongation A <sub>5</sub> (%)*	Yield strength R <sub>p0.2</sub> MPa*	Impact energy J*	Plate thickness mm	Bar diameter mm
<b>Toolox® 33</b> – A quenched and tempered engineering and tool steel, designed to have low residual stresses – resulting in good dimensional stability.									
-40 °C								6 – 130 mm	21 – 141 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 <sub>p0.2</sub> MPa*	Tensile strength R <sub>m</sub> MPa*	Elongation A <sub>5</sub> (%)*	Yield strength R <sub>p0.2</sub> MPa*	Impact energy J*	Plate thickness mm
<b>Toolox® 40</b> – 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 <sub>p0.2</sub> MPa*	Tensile strength R <sub>m</sub> MPa*	Elongation A <sub>5</sub> (%)*	Yield strength R <sub>p0.2</sub> MPa*	Impact energy J*	R <sub>cd,2</sub> after 170 hrs soaking time at actual temperature* MPa	Plate thickness mm	Bar diameter mm
<b>Toolox 44®</b> – 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 – 172 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. All other values are tested randomly and are for information only. The typical testing temperature for Toolox® is room temperature. \* Typical values are for guidance only.

# SALES CONTACTS



Find your local sales contact at [www.ssab.com](http://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](http://www.ssab.com) for complete recommendations and properties.