

SSAB Boron Tube 22

General Product Description

SSAB Boron Tube 22 is a precision tube for hardening. It offers good workshop properties in delivery condition. The degree of hardness and toughness that can be achieved after heat-treatment will provide the final products with wear- and shock resistance properties that assure longer lifetime.

Dimension Range

SSAB Boron Tube 22 is available at circular, square, rectangular, flat oval and oval shapes.

Circular	16 - 88.9 mm
Square	19x19 - 70x70 mm
Rectangular	20x15 - 100x40 mm
Wall thickness	1.0 - 3.0 mm
Mill length	6000 mm

Other shapes, sizes and lengths are available upon request.

Dimensions

Circular

Diameter	0.9 mm (kg/m)	1.0 mm (kg/m)	1.25 mm (kg/m)	1.5 mm (kg/m)	2.0 mm (kg/m)	2.5 mm (kg/m)	3.0 mm (kg/m)
16 mm	0.335	0.370	0.455	0.536	0.691		
18 mm	0.380	0.419	0.516	0.610	0.789		
19 mm	0.402	0.444	0.547	0.647	0.838		
20 mm	0.424	0.469	0.578	0.684	0.888	1.08*	
22 mm	0.468	0.518	0.640	0.758	0.986	1.20*	
25 mm	0.535	0.592	0.732	0.869	1.13	1.39	1.63*
25.4 mm	0.544	0.602	0.744	0.884	1.15	1.41	1.66*
28 mm	0.601	0.666	0.825	0.980	1.28	1.57	1.85
30 mm	0.646	0.715	0.886	1.05	1.38	1.70	2.00
32 mm		0.765	0.948	1.13	1.48	1.82	2.15
34 mm		0.814	1.01	1.20	1.58	1.94	2.29
35 mm		0.838	1.04	1.24	1.63	2.00	2.37
38 mm		0.912	1.13	1.35	1.78	2.19	2.59
40 mm		0.962	1.20	1.42	1.87	2.31	2.74
41 mm		0.990	1.22	1.46	1.92	2.37	2.81
41.5 mm		0.999	1.24	1.48	1.95	2.40	2.85
44.5 mm		1.07	1.33	1.59	2.10	2.59	3.07
48 mm			1.44	1.72	2.27	2.81	3.33
50 mm			1.50	1.79	2.37	2.93	3.48
50.8 mm			1.53	1.82	2.41	2.98	3.54
55 mm			1.66	1.98	2.61	3.24	3.85
57 mm			1.72	2.05	2.71	3.36	4.00
60 mm			1.81	2.16	2.86	3.55	4.22
63.5 mm			1.92	2.29	3.03	3.76	4.48
70 mm				2.53	3.35	4.16	4.96
76.1 mm				2.76	3.65	4.54	5.41
88.9 mm					4.29	5.33	6.36

Square

Height x Width	1.0 mm (kg/m)	1.25 mm (kg/m)	1.5 mm (kg/m)	2.0 mm (kg/m)	2.5 mm (kg/m)	3.0 mm (kg/m)
19 x 19 mm	0.564	0.694	0.820	1.06		
20 x 20 mm	0.595	0.733	0.868	1.12		
22 x 22 mm	0.658	0.812	0.962	1.25		
25 x 25 mm	0.752	0.930	1.10	1.44	1.76	
25.4 x 25.4 mm	0.764	0.945	1.12	1.46	1.79	
30 x 30 mm	0.909	1.13	1.34	1.75	2.15	2.39
32 x 32 mm	0.972	1.20	1.43	1.88	2.31	2.58
35 x 35 mm	1.07	1.32	1.57	2.07	2.54	2.86
40 x 40 mm		1.52	1.81	2.38	2.93	3.33
50 x 50 mm		1.91	2.28	3.01	3.72	4.28
55 x 55 mm			2.52	3.32	4.11	4.47
60 x 60 mm			2.75	3.64	4.50	5.22
70 x 70 mm				4.26	5.29	6.16

Rectangular

Height x Width	0.9 mm (kg/m)	1.0 mm (kg/m)	1.25 mm (kg/m)	1.5 mm (kg/m)	2.0 mm (kg/m)	2.5 mm (kg/m)	3.0 mm (kg/m)
20 x 15 mm	0.468	0.516	0.635	0.750	0.976		
25 x 15 mm		0.595	0.733	0.868	1.12		
30 x 10 mm		0.595	0.733	0.868	1.12		
30 x 15 mm		0.673	0.831	0.985	1.28		
30 x 20 mm		0.752	0.930	1.10	1.44	1.76	
30 x 25 mm		0.830	1.03	1.22	1.59	1.95	
35 x 15 mm		0.752	0.930	1.10	1.44	1.76	
35 x 20 mm		0.830	1.03	1.22	1.59	1.95	2.16
40 x 20 mm		0.909	1.13	1.34	1.75	2.15	2.39
40 x 25 mm		0.987	1.22	1.46	1.91	2.34	2.63
40 x 30 mm		1.07	1.32	1.57	2.07	2.54	2.86
50 x 20 mm		1.07	1.32	1.57	2.07	2.54	2.86
50 x 25 mm			1.42	1.69	2.22	2.74	3.10
50 x 30 mm			1.52	1.81	2.38	2.93	3.33
50 x 40 mm			1.71	2.05	2.69	3.33	3.80
50.8 x 25.4 mm			1.44	1.72	2.26	2.78	3.15
60 x 20 mm			1.52	1.81	2.38	2.93	3.33
60 x 30 mm			1.71	2.05	2.69	3.33	3.80
60 x 40 mm			1.91	2.28	3.01	3.72	4.28
70 x 25 mm				2.16	2.85	3.52	4.04
70 x 30 mm				2.28	3.01	3.72	4.28
70 x 40 mm				2.52	3.32	4.11	4.74
70 x 50 mm				2.75	3.64	4.50	5.22
80 x 20 mm				2.28	3.01	3.72	4.28
80 x 30 mm				2.52	3.32	4.11	4.74
80 x 40 mm				2.75	3.64	4.50	5.22
80 x 60 mm					4.26	5.29	6.16
100 x 40 mm					4.26	5.29	6.16

Mechanical Properties

Product Type	Yield strength $R_{p0.2}$ (min MPa)	Tensile Strength R_m (min MPa)	Elongation A (min %)
As delivered	430	450	12

Typical mechanical properties when quenched to water:

$R_{p0.2} \sim 1100$ MPa; $R_m \sim 1400$ MPa; $A \sim 8\%$

Chemical Composition

C (max %)	Si (max %)	Mn (max %)	S (max %)	Cr (max %)	B (max %)
0.25	0.40	1.40	0.010	0.40	0.0050

Tolerances

Characteristic	Circular precision tubes Tolerances meet or exceed the requirements of EN 10305-3
Outside diameter (D) ¹⁾	
D < 20	±0.12 mm
20 ≤ D < 32	±0.15 mm
32 ≤ D < 44	±0.20 mm
44 ≤ D < 55	±0.25 mm
55 ≤ D < 70	±0.30 mm
70 ≤ D < 80	±0.35 mm
80 ≤ D < 100	±0.40 mm
Out-of-roundness	The diameter tolerances include the out-of-roundness
Thickness (T)	T ≤ 1.5 mm: ±0.15 mm T > 1.5 mm: ±10% of nominal thickness or ±0.35 mm whichever is the smaller
Straightness	Maximum 0.15% of measured length
Height of internal weld bead, g;	
Bead removed Bead not removed	$g \leq 0.3$ mm $g < 0.6$ mm, when $T \leq 1.5$ mm $g < 0.4 \times T$, when $1.5 \text{ mm} < T \leq 3.0$ mm
Mill length	0/+50 mm, standard length 6000 mm
Exact length, single cutting	Agreed at the time of enquiry and order
Exact length, bundle cutting	Agreed at the time of enquiry and order

1) For a maximum distance of 100 mm, the ends may, due to the cutting method, have diameters outside the tolerances

Characteristic	Square precision tubes Tolerances meet or exceed the requirements of EN 10305-5
Outside dimensions (H) and (B), longer side ¹⁾	
H < 25 mm	±0.20 mm
25 ≤ H < 40 mm	±0.25 mm
40 ≤ H < 60 mm	±0.30 mm
60 ≤ H < 70 mm	±0.35 mm
70 ≤ H < 80 mm	±0.40 mm
Side concavity and convexity	Included in outside dimension tolerance
Thickness (T)	T ≤ 1.5 mm: ±0.15 mm T > 1.5 mm: ±10% of nominal thickness or ±0.35 mm whichever is the smaller
Straightness	Maximum 0.15% of measured tube length when shorter side length > 30 mm Maximum 0.25% of measured tube length when the shorter side length ≤ 30 mm
Location of weld seam from the centre line	On narrow side for square and rectangular, optionally on wide side. On wide side for flat oval and ellipse. ± 10% of side length or ± 3 mm, whichever is greater.
Height of internal weld bead (g)	
Bead removed	g ≤ 0.3 mm
Bead not removed	g < 0.6 mm, when T ≤ 1.5 mm g < 0.4 x T, when 1.5 mm < T ≤ 3.0 mm
Squareness of sides	90° ± 1°
Corner profile	R < 1.5 x T, when T ≤ 2.5 mm R < 2.2 x T, when T > 2.5 mm
Twist (V)	V ≤ 3 mm for B and H ≤ 30 mm V ≤ B/10 or ≤ H/10 for B or H > 30 mm
Mill length	0/+50 mm, standard length 6000 mm
Exact length, single cutting	Agreed at the time of enquiry and order
Exact length, bundle cutting	Agreed at the time of enquiry and order

1) For a maximum distance of 100 mm, the ends may, due to the cutting method, have diameters outside the tolerances

Characteristic	Rectangular precision tubes Tolerances meet or exceed the requirements of EN 10305-5
Outside dimensions (H) and (B), longer side ¹⁾	
H < 25 mm	±0.20 mm
25 ≤ H < 40 mm	±0.25 mm
40 ≤ H < 60 mm	±0.30 mm
60 ≤ H < 70 mm	±0.35 mm
70 ≤ H < 80 mm	±0.40 mm
80 ≤ H < 90 mm	±0.50 mm
90 ≤ H < 100 mm	±0.60 mm
100 ≤ H < 120 mm	±0.65 mm
Side concavity and convexity	Included in outside dimension tolerance
Thickness (T)	T ≤ 1.5 mm: ±0.15 mm T > 1.5 mm: ±10% of nominal thickness or ±0.35 mm whichever is the smaller
Straightness	Maximum 0.15% of measured tube length when shorter side length > 30 mm Maximum 0.25% of measured tube length when the shorter side length ≤ 30 mm
Location of weld seam from the centre line	On narrow side for square and rectangular, optionally on wide side. On wide side for flat oval and ellipse. ± 10% of side length or ± 3 mm, whichever is greater.
Height of internal weld bead (g)	
Bead removed	g ≤ 0.3 mm
Bead not removed	g < 0.6 mm, when T ≤ 1.5 mm g < 0.4 x T, when 1.5 mm < T ≤ 3.0 mm
Squareness of sides	90° ± 1°
Corner profile	R < 1.5 x T, when T ≤ 2.5 mm R < 2.2 x T, when T > 2.5 mm
Twist (V)	V ≤ 3 mm for B and H ≤ 30 mm V ≤ B/10 or ≤ H/10 for B or H > 30 mm
Mill length	0/+50 mm, standard length 6000 mm
Exact length, single cutting	Agreed at the time of enquiry and order
Exact length, bundle cutting	Agreed at the time of enquiry and order

1) For a maximum distance of 100 mm, the ends may, due to the cutting method, have diameters outside the tolerances

Contact Information

www.ssab.com/contact