

SSAB Form Tube 220 Plus

General Product Description

SSAB Form Tube 220 Plus is a precision steel tube that has over 20% higher elongation and 30% narrower tolerances compared to standard EN 10305-3/5 E220 precision tube. Additionally it has a very smooth surface, guaranteed Ra value below 0,3 µm, so it is suitable for high quality coatings, like chromium plating or high gloss painting. When selecting the optional internal trimming of the weld a lower bead, maximum 0,15 mm, can be specified.

Available in circular, rectangular, square and special shapes, the SSAB Form Tube 220 Plus is always delivered with a cold rolled (S3), scratch free surface. It is typically used in applications where formability, uniform quality and demanding tolerances are important, for example in furniture industry or when automated manufacturing processes are used.

SSAB Form Tube 220 Plus is manufactured by cold forming and high-frequency welding from clean, high-quality, environmentally friendly steel using modern and efficient tube lines.

Dimension Range

SSAB Form Tube 220 Plus is available at circular, square and rectangular shapes.

Circular	28 - 63.5 mm
Square	22x22 - 50x50 mm
Rectangular	35x15 - 80x20 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)
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

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)
22 x 22 mm	0.658	0.812	0.962	1.25	1.52	
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

Rectangular

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)
35 x 15 mm	0.752	0.93	1.1	1.44	1.76	
35 x 20 mm	0.83	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

Mechanical Properties

Yield Strength $R_{p0.2}$ (min MPa)	Tensile Strength R_m (min MPa)	Elongation A (min %)
220	310	28

Mechanical properties meet or **exceed** the requirements of EN 10305 (+CR2)

Chemical Composition

C (max %)	Si (max %)	Mn (max %)	P ¹⁾ (max %)	S ¹⁾ (max %)	Al _{tot} ²⁾ (min %)
0.10	0.05	0.70	0.020	0.020	0.015

Chemical composition meets or **exceeds** the requirements of EN 10305.

If other chemical elements such as Ti, Nb or V are used, the content of these elements are reported in the inspection document.

1) Low level of impurities ensure excellent formability and weldability

2) This requirement is not applicable provided the steel contains a sufficient amount of other nitrogen binding elements, such as Ti, Nb or V.

Tolerances

Characteristic	Circular precision tubes Tolerances meet or exceed the requirements of EN 10305-3
Outside diameter (D) ¹⁾	
28 ≤ D < 32 32 ≤ D < 44 44 ≤ D < 55 55 ≤ D < 70	±0.10 mm ±0.14 mm ±0.17 mm ±0.21 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 ≤ 0.15 mm g < 0.6 mm, when T ≤ 1.5 mm g < 0.4 x T, when 1.5 mm < T ≤ 3.0 mm
Mill length	0/+50 mm, standard length 6000 mm

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 25 ≤ H < 40 mm 40 ≤ H < 60 mm	±0.14 mm ±0.17 mm ±0.21 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 center line	On narrow side for square and rectangular, optionally on wide side. ± 10% of side length or ± 3 mm, whichever is greater.
Height of internal weld bead (g)	
Bead removed Bead not removed	g ≤ 0.3 mm 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

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⁾	
25 ≤ H < 40 mm 40 ≤ H < 60 mm 60 ≤ H < 70 mm 70 ≤ H < 80 mm 80 ≤ H < 90 mm	±0.17 mm ±0.21 mm ±0.24 mm ±0.28 mm ±0.35 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. ± 10% of side length or ± 3 mm, whichever is greater.
Height of internal weld bead (g)	
Bead removed Bead not removed	g ≤ 0.15 mm 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

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

Coatings and Surfaces

Surface designation and general usability		
C	Cold rolled	Paintability or chromium plating are required

Surface is lightly oiled to protect it from corrosion during transportation and short-term storing. By request, tubes can be delivered dry, however in that case SSAB will not be responsible for any possible rust.

Surface roughness, Ra	
C	< 0,3 µm

Contact Information

www.ssab.com/contact