

Technical information

Welded square tube according to EN 10305-5 (DIN 2395)

Delivery condition

	Designation according to EN 10305-5	Designation according to DIN 2395	Description
Welded and cold sized	+ CR1	BKM	Not normally heat treated, but intended for final annealing
Welded and cold sized	+ CR2	BKM	Not intended for heat treatment
Annealed	+ A	GBK	Annealed in a controlled atmosphere
Normalised	+ N	NBK	Normalised in a controlled atmosphere

We mainly stock tubes in accordance with +CR2.
Tubes in accordance with +CR 1 may occur in certain dimensions.
Tubes in accordance with +A and +N can be offered on request.

Surface characteristic

	Designation	Surface fineness Ra value*	Use
Unpickled hot strip	S1	-	
Pickled hot strip	S2	2.0 my	Painting, electro-galvanizing, suitable for hot galvanizing
Cold-rolled strip	S3	0.6 my	Painting, electro-galvanizing, suitable for hot galvanizing
Surface treated strip	S4	-	For demanding corrosion conditions

* The Ra values given in the table do not apply to the weld seam area.

Galvanized tubes

Designation	Surface pattern	Zinc coating mass	Zinc coating thickness
Z275	M	275g/m ²	20 my

Galvanized tubes can be delivered in other thicknesses depending on your needs, 100-350 g/m²

Mechanical characteristics

Material	Delivery condition	Strength		Extension A ₅ %	Former designation DIN 2395
		R _{eH} MPa	R _m MPa		
E220 ¹⁾	+CR2	220	310	23	Fe P01
E235	+CR1	-	390	7	R St 37-2
E370	+CR2	370	450	15	St 44
E355	+CR1	-	540	5	St 52-3

The mechanical values apply to completed tubes. The designation of the steel states the nominal minimum yield strength in completed tubes.

1) Standard material

Tolerances

For tube of type +CR1 and +CR2, the diametrical deviation in the table applies. Permitted diametrical deviation includes any ovality.
Heléns comment: For heat treated tube, e.g. annealed (+A) or normalised (+N), the diametrical tolerance dependant on the dimension can be larger.

Tolerances, wall thickness according to EN 10305-5

Tolerance for wall thickness (T) is at T less than or equal to 1.5 mm +/- 0,15 mm and with T greater than 1.5 mm +/- 10% of nominal size – but at the most, 0.35 mm. The stated size deviations do not apply to the weld zone.
Heléns comment: Inner diameter not given.

Tolerance for height of weld seam according to Heléns' standard specification

The tolerance for the height of the weld seam for material with wall thickness (T) up to 1.5 mm, is max. 0.6 mm. For material with T between 1.5 mm to 4.0 mm, the maximum height of the weld seam is 0.4 x T.

Curvature

Within the permitted height and width, the side surfaces may be dished inwards or outwards.

Right-angularity

Right-angle deviation may be 1°/meter.

Twisting

Twisting may be 1°/meter.

Straightness

Straightness deviation may be 0.25% of the total length for tubes with sides less than or equal to 30 mm and 0.15% on tubes with sides* larger than 30 mm. The straightness tolerance shall never exceed 3 mm per meter. This tolerance is measured between the tube and a straight line that connects any two points at a distance of 1000 mm. With fixed lengths up to max. 1000 mm, the straightness deviation may be up to 0.3% of any tube length.

* The shortest side if it is a question of a rectangular tube.

Heléns comment: Demands in excess of the above measuring method, straightness tolerance, etc. shall be the subject of an agreement.

Tube ends

Tubes are cut wherever possible at right angles to the axis of the tube. Tubes can be delivered with the ends produced by the cutting method usually used. This may cause diametrical changes outside the normal tolerances to occur. For fixed lengths, the characteristics of the ends shall be the subject of agreement.

Tolerance of delivered quantities

With fixed lengths, delivery of quantities less than ordered is not allowed. Delivery of excess quantities is permitted in accordance with the ordered quantity as below:

Up to 500 m,	permitted deviation +20%
500-2000 m,	permitted deviation +15%
greater than 2000 m,	permitted deviation +10%

Tolerances, OD according to EN 10305-5		
Outer diameter H Nom. measurement mm.	Outer diameter W Nom. measurement mm.	Permitted deviation
15-20	15-20	+/- 0.20 mm
25-35	15-35	+/- 0.25 mm
40-50	20-50	+/- 0.30 mm
60	20-60	+/- 0.35 mm
70	40-70	+/- 0.40 mm
80	20-80	+/- 0.50 mm
90	90	+/- 0.60 mm
100	40-100	+/- 0.65 mm
120	40-60	+/- 0.70 mm