GOST 24030-80 SEAMLESS CORROSION-RESISTANT TUBES FOR POWER PLANTS

Size range of cold and warm finished tubes is given in Table 1.

Table 1 Size range of cold- and warm finished tubes, mm

Outside diameter	Wall tickness	Outside diameter	Wall tickness
6; 7	1.0; 1.2; 1.4; 1.5	95; 100; 102; 108	3.0-8.5; 9.0; 9.5;
8; 9	1.0-1.5; 1.8; 2.0		10
10; 11; 12; 13	1.0-2.0; 2.2; 2.5	110	3.5-10; 11
14; 15; 16; 17	1.0-2.5; 2.8; 3.0	114	6.0-11
18; 19	1.0-3.0; 3.2; 3.5	120	3,5-11; 12
20; 21; 22; 23;	1.0-3.5; 4.0	121; 127	5.0-8.0
24		130	3.5-12
25; 27; 28	1.0-4.0; 4.5	133	5.0-8.0
30; 32; 34; 35;	1.0-4.5; 5.0; 5.5	140	3.5-12
36		146	5.0-8.0
38	1.0-5.5; 6.0	150	3.5-12; 14; 16; 18
40; 42; 45	1.2-6.0	152	6.0-18
48; 50; 51; 53;	1.4-6.0; 6.5; 7.0;	159	5.0-8.0
	7.5	160	4.0-18
54	1.4-6.0; 6.5; 7.0;	170	4.0-18
	7.5	180	4.0-18
56	1.5-7.5	194	6.0-14
57	1.5-7.5; 8.0	200	4.0-14
60; 63; 65; 68;	1.8-8.0; 8.5	220	4.0-14
70; 73; 75	1.8-8.0; 8.5	250	4.0-10
76; 80; 83; 85;	3.0-8.5	273	6.0-12
89; 90	3.0-8.5		

Cold and warm finished tubes shall have the length of 4 to 7 meters (on special agreement not over 12.5 m), multiple within specified with 5 mm allowance per cut and total length allowance +15 mm; specified with not over 10 % of random length tubes in a lot, random 1.5 to 8 meters. On special agreement tubes may have the length up to 12.5 m; diameters up to 25 mm - up to 16 m.

If delivered in random length, a lot of tubes may have not over 15 % of tubes with the length under 1.5 m but over 0.5 m for cold and warm finished tubes.

Limit tolerances for outside diameter are given in Table 2 and those for wall thickness in Table 3.

Table 2.

Диаметр наружный, мм Outside diameter, mm	Предельные отклонения, не более Limit tolerances, not over
6-15	±0.20 mm
16-30	±0.25 mm
31-50	±0.40 mm
51-68	±0.80 %
70-325	±1.25 %

Table 3.

Толщина стенки, мм Wall thickness, mm	Предельные отклонения, %, не более Limit tolerances, %, not over
От 1.0 до 1.8 включительно 1.0-1.8	±15
От 2.0 до 5.0 включительно - для диаметра до 50 мм включительно 2.0-5.0 for diameter under 50 mm	+12.5 -10.0
Свыше 2.0 до 5.0 включительно - для диаметра свыше 50 мм 2.0-5.0 for diameter more than 50 mm	±12.5
Свыше 5.0 More than 5 mm	±12.5

On the buyer's request tubes can be manufactured in sizes and tolerances given in Table 4.

Table 4.

Outside diameter, mm	Limit tolerances, not over	Wall thickness, mm	Limit tolerances, % not over
13	±0.2 mm	1.5	±12.5
14	±0.2 mm	1.8	+12.5 -10.0
18	±0.2 mm	2.5	±12.5
19	±0.2 mm	1.5	±12.5
40	±1.0 %	3.0	±12.5
76	±1.25 %	12.0	±10.0
89	±1.25 %	4.5	±12.5
96	±1.25 %	5.0	±12.5
108	±1.25 %	11.0	+12.5 -10.0
108	±1.25 %	13.0	±10.0
121	±1.25 %	5.5	±10.0
127	±1.0 %	14.0	±10.0
140	±1.0 %	15.0	+12.5 -10.0
180	±1.0 %	17.0	±12.5
219	±1.0 %	24.5	±20.0

Tube curvature shall not be over 1 mm per meter length.

Technical requirements.

Tubes shall be manufactured of steel grade 08H18N10T with sulphur, phosphorus and nitrogen contents not over 0.02, 0.035 and 0.05 % respectively.

Tube metal shall not be succeptible to intererystalline corrosion. Tube specimens shall not have cracks and tears after the flattening and expansion tests. Tubes undergo hydraulic pressure test.

Note. Residual elements in tube metal shall be in accordance with GOST 5632-72.

Grain size of the metal of finished tubes shall not be over:

- 5 units for tubes with OD under 76 mm;
- 4 units for tubes with OD over 76 mm.

Tube metal shall not be succeptible to intercrystalline corrosiion.

Flattening and expansion tests of tubes shall not result in cracks or tears.

Tubes shall withstand hydraulic pressure test. The method of tube manufacture shall guarantee tube resistance to specified pressures.

Tube ends shall be cut square and deburred.

Tubes shall be heat treated and straightened.

Tube surface shall be machined, grind, pickled or bright annealed.

Electric polished on request.

Mechanical properties of tube metal are given in Table 5.

Electric polishing of inside tube surface is specified for tubes with inside diameters over 10 mm.

Inside and outside tube surfaces shall be free of cracks, laps, tears and pickling marks or indetations are permissible if they leave the wall thickness within the limits specified.

Table 5.

Диаметр наружный, мм	Предел текучести после термообработки, МПа (кгс/мм²)	Временное сопротивление разрыву, МПа (кгс/мм²)	Относительное удлинение, %	Предел текучести, МПа (кгс/мм²)
	при 623 К (350° С)	при 293 К (20° С)		при 623 К (350° С)
	не менее			
Outside diameter, mm	Yield limit after heat treatment, MPa	Tensile strength, MPa	Elongation, %	Yield limit, MPa
	at 623 K	at 293 K		at 623 K
	not lower			
	Группа А (grade A)			
≤ 76	176-323 (18-33)	549 (56)	37	176-343 (18-35)
> 76	-	549 (56)	37	176-333 (18-34)
	Группа Б (grade B)			
≤ 76	146 (15)	549 (56)	37	176-343 (18-35)
> 76	-	549 (56)	37	176-343 (18-35)

Notes.

1. Finished tubes grade A and B with wall thickness over 15 mm shall have tensile strength not lower than 490 MPa.
2. For tube specimens with the diameter under 18 mm (grades A and B) elongation shall not be lower than 35 %.

Tubes are accepted in lots. A tube lot shall consist of tubes of the same size, heat treated under the same conditions.
Chemical composition, heat number, content of non-metallic inclusions are indicated on agreement.

A lot shall withstand flattening, expansion, tensile and hydraulic pressure test as wall as non-destructive examination. If the results of at least of one the tests are not satisfactory, twice the number of specimens shall be taken from the same lot. The results of this second test shall be final for the particular tube lot.