

## GOST 9941-82 SEAMLESS COLD-AND WARM-FINISHED TUBES OF CORROSION-RESISTANT STEEL

Tubes to this standard have outside diameter 5 to 250 mm and wall thickness 0.2 to 22 mm (Table 1).

Tube length shall be random 0.75 to 5; 6; 7; meters for wall thickness 0.5 mm and lower; 1 to 6; 7 meters for wall thickness 0.5 to 1.0 mm; 1.5 to 9 meters for wall thickness over 1 mm. On agreement tube length shall be over 9 meters;

specified - not over 5; 6 or 7 meters depending on diameter;

multiple within specified plus 5 mm tolerance per cut and maximum tolerance for length + 15 mm. Minimum multiplicity is equal to 300 mm.

Lots of random length tubes may have up to 15 % tubes with the length below 1.5 m, but not shorter than 0.5 m. Each lot of specified length tubes may have up to 10 % tubes of random length; on the buyer's request 100 percent tubes shall be of specified length.

Tube curvature per meter length shall be not over 1mm for tubes of 5 mm diameter and over and wall thickness 0.5 mm and over; for tubes of 15 mm diameter and over and wall thickness 0.5 mm and over curvature per meter length shall be 2 mm.

Tubes with outside diameter over 15 mm and wall thickness below 0.5 mm shall be essentially straight; no curvature limits for them are specified.

Table 1 Size range and maximum tolerances for diameter of tubes of corrosion-resistant steel grades

Outside diameter, mm	Wall thickness, mm	Maximum tolerance for diameter, mm for different levels of accuracy		
		normal	improved	high
1	2	3	4	5
5	0.2; 0.3; 0.4; 0.5; 0.6; 0.8; 1.0	± 0.3	± 0.2	± 0.15
6	0.2-1.0; 1.2; 1.4; 1.5			
7	0.2-1.5			
8	0.2-1.5; 1.8; 2.0			
9	0.2-2.0			
10	0.2-2.0; 2.2; 2.5			

11	0.2-2.5	$\pm 0.45$	$\pm 0.3$	$\pm 0.2$
12	0.2-2.5			
13	0.2-2.5			
14	0.2-2.5; 2.8; 3.0			
15	0.2-3.0			
16	0.2-3.0			
17	0.2-3.0			
18	0.2-3.0			
19	0.2-3.0; 4.0			
20	0.2-3.5			
21	0.3-3.5; 4.0			
22	0.3-4.0			
23	0.3-4.0			
24	0.3-4.0			
25	0.3-4.0			
27	0.3-4.0; 4.5			
28	0.3-4.5			
30	0.3-4.5			
32	0.3-4.5	$\pm 1.2^*$	$\pm 1.0^*$	$\pm 0.8^*$
34	0.3-5.5			
35	0.3-5.5			
36	0.4-5.5			
38	0.4-5.5			
40	0.4-5.5; 6.0			
42	0.4-6.0			
45	0.4-6.0			

Продолжение табл. 1.		Table 1 (contd.)		
1	2	3	4	5
48	0.4-6.0	$\pm 1.2^*$	$\pm 1.0^*$	$\pm 0.8^*$
50	0.4-6.0; 6.5; 7.0; 7.5			
51	0.4-7.5			
53	0.5-7.5			
54	0.5-7.5			
56	0.5-7.5			
57	0.5-7.5			
60	0.5-7.5; 8.0			

63	1.5-8.0; 8.5			
65	1.5-8.5			
68	1.5-8.5			
70	1.5-8.5			
73	1.5-8.5			
75	1.5-8.5			
76	3.0-8.5			
80	3.0-8.5			
83	3.0-8.5			
85	3.0-8.5			
89	3.0-8.5			
90	3.0-8.5			
95	3.0-8.5; 9.0; 9.5; 10			
100	3.0-10			
102	3.0-10			
108	3.5-10			
110	3.5-10; 11; 12			
120	3.5-12			
130	3.5-12; 14; 16; 18; 20			
140	3.5-20			
150	3.5-20			
160	4.0-20; 22			
170	4.0-22			
180	4.0-22			
200	4.0-22			
220	4.0-22			
250	4.5-22			
* - Предельные отклонения в процентах.		* - Tolerance calculated in percent.		

Tube material shall be steel grades 08H17T, 08H13, 12H13, 15H25T, 04H18N10, 08H20N14S2, 10H17N13M2T, 08H18N12B, 10H23N18, 08H18N10, 08H18N10T, 08H18N12T, 08H17N15M3T, 12H18N10T, 12H18N12T, 12H18N9, 17H18N9, 08H22N6T, 12H17, 06HN28MDT.

For wall thickness tolerances for tubes to this standard see Table 2.

Table 2 Limit Tolerance for wall thickness of tubes of corrosion-resistant steel grades

Wall thickness, mm	Maximum tolerance, mm, for different levels of accuracy		
	normal	improved	high
0.2	$\pm 0.05$	$\pm 0.03$	-
0.3-0.4	$\pm 0.07$	$\pm 0.05$	-
0.5-0.6	$\pm 0.10$	$\pm 0.07$	-
0.7-1.0	$\pm 0.15$	$\pm 0.10$	-
1.0-3.0	$\pm 15^*$	$\pm 12.5$	$(+12.5) - (-10)$
3.0-7.0	$\pm 12.5^*$	$(+12.5) - (-10)^*$	$\pm 10^*$
over 7.0	$(+12.5) - (-10)^*$	$\pm 10^*$	-
* - Предельные отклонения в процентах.		* - Tolerance calculated in percent.	

Tubes shall be delivered in heat treated condition.

Mechanical properties of tubes are given in table 3 below.

Tube ends shall be cut square and deburred.

Tube specimens shall undergo tensile, flattening, expansion and intercrystalline corrosion tests.

Tubes shall be hydraulically tested and non-destructively examined; on the buyer's request, mechanical tests at 350°C are carried out.

Table 3 Mechanical properties of tubes of corrosion-resistant steel grades

Steel grade	Tensile strength, MPa, not lower	Elongation, %, not over
08X17T	373	17
08X13	373	22
12X13	392	22
12X17	441	17
15X25T	461	17
04X18H10	491	45
08X20H14C2	510	35
10X17H13M2T	530	35
08X18H12B	530	37
10X23H18	530	35
08X18H10	530	37
08X18H10T	549	37
08X18H12T	549	37
08X17H15M3T	549	35
12X18H10T	549	35
12X18H12T	549	35
12X18H9	549	37
17X18H9	569	35
08X22H6T	589	20