

## GOST 11249-80 BRAZED DOUBLE-LAYER TUBES

Size range and dimensional tolerances are given in Table 1.

Table 1 Size range and limit tolerances, mm.

Outside diameter	Wall thickness	Limit tolerances			
		for diameter for different accuracy of end parts		for wall for different accuracy of end parts	
		normal	improved	normal	improved
3	0.7	+0.10	+0.05	±0.13	±0.10
4; 5	0.7; 0.8	-0.12	-0.07		
6	0.7; 0.8	+0.10	+0.05	±0.10	+0.07
8	0.7; 0.8; 0.9	-0.12	-0.07		
10	0.7; 0.8; 0.9	+0.12	±0.08	±0.10	±0.07
12; 13; 14	0.9	-0.14			

Tubes shall be supplied in random lengths 1 to 6 meters; up to 10 % by mass of tubes in a lot may have the length not shorter than 0.5 m. Tubes longer than 6 m shall be supplied on agreement. Specified lengths shall be 3 to 6 m. Multiple lengths shall be within random plus 5 mm allowance per cut. Limit tolerance for specified and multiple lengths shall be +10 mm.

Tube curvature per meter length shall be under 6 mm; tubes of improved accuracy shall have the curvature of 5 mm per meter length. Wall thickness variations shall have the wall within specified limits.

Technical requirements.

Tubes of this standard shall be manufactured of strip steel grades 08 kp and 10 with the chemical composition to GOST 1050-88. Mechanical properties of tube metal are given below.

Марка стали (steel grade) . . . . .	08кп	10
Наружный диаметр (outside diameter), мм . . .	<6; >6	<6; >6
Временное сопротивление разрыву, МПа		
Tensile strength, МПа . . . . .	294	294
Предел текучести для категории качества, % :		
Elongation for different quality levels, % :		
первой (normal ) . . . . .	29; 26	26; 25
высшей (improved) . . . . .	30	30

Tubes with outside diameter 6 mm and lower shall be supplied with elongation over 30 %.

Limit tolerances for outside diameter and wall thickness for tubes of improved quality with OD under 6 mm shall not be over than ( +0.05)-(-0.07) mm. Tube ends shall be cut square and deburred. On special agreement tubes shall be zinc-coated on the outside surface with the coating thickness over 12 micrometers.

Tubes shall withstand hydraulic test pressures 18 to 35 MPa. On special agreement tubes shall be tested hydraulically to rupture.

Tubes shall withstand double flanging test without cracking or layer separation at the outside bending radius equal to  $1.0 \pm 0.1$  mm.

Flange dimensions are given below.

Дн трубы									
Outside diameter									
of tubes. . . . .	3	4	5	6	8	10	12	14	15
Дн фланца									
Outside diameter									
of flange . . . . .	4.2	5.6	7.0	8.5	10.8	13.5	15.5	16.7	17.8

Tubes shall withstand a flattening test; the distance between the plates H shall be equal to 4t; tubes with elongation over 30 % shall be tested with distance H between the plates equal to 3t.

Depending on the conditions specified in the order. Tubes shall withstand the following tests:

- hydraulic;
- flattening;
- double flanging at 90 degrees;
- bending;
- expansion by using a conical mandrel (taper 1:10).

Quality of brazing is tested by non- destructive methods.