

GOST 550-75 SEAMLESS STEEL TUBES FOR OIL INDUSTRY

This standard specifies the size range and technical requirements to cold- and hot-finished steel tubes for high pressure, high temperature uses under oil production and processing conditions.

Table 1 Size range and limit tolerances for seamless steel tubes for oil production and processing

Outside diameter, mm	Wall thickness, mm	Limit tolerances		
		of outside diameter for different steel grades		of wall thickness, %
		10 and 20	alloy steels	
19.0	1.5; 2.5	±0.10	±0.2 mm	±8.0
20.0	2.0; 2.5			
25.0	2.0; 2.5; 3.0			
38.0	2.0; 2.5; 3.0; 3.5	±0.15	±0.3 mm	
48.0	4.0; 5.0	±0.20		

According to the use, tubes to GOST 550-75 shall be delivered in two grades:

- grade A for heavy duty conditions;
- grade B for normal operation.

The two grades differ mainly in size range and tolerances. Technical requirements are very similar.

Size range and limit tolerances for tubes grade B shall be to GOST 8734-75 (cold-finished tubes).

Tubes grade A shall have outside diameter 19 to 48 mm and wall thickness 1.5 to 5 mm (see Table above).

Tubes grade A shall be supplied only as specified length: diameters 19 to 48 mm shall have 9 meters length.

Limit tolerances for diameter and wall thickness for grade A shall conform to those given in Table 1.

Curvature for tubes grade A is given below: local for any meter length shall be not over 1.5 mm; total curvature for a tube length shall be not over 8 mm.

Technical requirements to this standard refer to steel grades, mechanical properties and testing procedures.

Tubes grade A and B shall be delivered in steel grades 10 and 20 to GOST 1050-88, 15H5M to GOST 20072-74 and steel grade H8 of the chemical composition given below:

C	Mn	Si	Cr	S	P	Ni	Cu
0.12*	0.3-0.6	0.17-0.37	7.5-9.0	0.03	0.035*	0.4*	0.25*
* - не более				* - not over			

Tubes grades A and B shall be delivered in heat treated normalized condition. Their mechanical properties are given in Table 2.

Other requirements. All tubes shall undergo hydraulic and flattening tests. Tubes grade A with the diameter 159 mm and less and wall thickness below 8 mm shall undergo expansion test.

Table 2 Mechanical properties of seamless tubes for oil production and processing industries

Steel grade	Tensile strength, MPa	Yield strength, MPa	Elongation, %	Reduction in area, %	Impact energy kJ/m ²	BHN, not over
	not lower					
10	333	206	26	-	-	137
20	412	245	23	-	-	156
15X5M*	392	216	22	-	-	170
X8	392	216	22	-	-	170
* - Трубы из стали 15X5M марки высшей категории качества должны иметь временное сопротивление разрыву - 412 МПа.			* - Tubes of steel grade 15H5M of premium quality shall have tensile strength of 412 MPa.			

Hydraulic test is carried out at specified pressures, but not exceeding 294 MPa.

Flattening tests are carried out on customer's request stated in the order.

Expansion test shall result in tube OD increase given in Table 3.

Surface defects such as cracks, laps, tears and hairlines are not permissible; minor imperfections such as scratches, indentations and grinding marks are permissible if the tube

wall thickness within specified limits. Scratch depth shall not exceed 1 mm; for tubes grade A at distances of 400 mm from tube ends scratch depth shall be under 0.5 mm.

Table 3 Expansion test requirements for seamless oil industry tubes

Steel grade	Tube OD increase (%) during the expansion test for w.t. specified (mm)	
	≤ 4	> 4
10	10	6
20	8	5
Остальные (Others)	6	—

Non-destructive testing can be substituted for by hydraulic testing.

Other tests include:

- chemical composition;
- Brinell hardness;
- impact toughness;
- macrostructure;
- surface quality.