

GOST 8733-74 COLD-FINISHED GENERAL-PURPOSE STEEL TUBES
GOST 8734-75 COLD-FINISHED GENERAL-PURPOSE STEEL TUBES

Tubes to these standards are delivered with diameters 5 to 250 mm and wall thickness 0.3 to 24 mm.

Size range and dimensional tolerances for tubes are given in Table 1.

Depending to D/t ratio, tubes to these standards shall be extra thin wall ($D/t > 40$), thin wall ($D/t=12.5$ to 40), thick wall ($D/t=6$ to 12.5), extra heavy wall ($D/t < 6$).

Limit wall thickness tolerances are given below.

| Толщина стенки (Wall thickness) | Отклонение Tolerance |
|--|-------------------------|
| до 1 мм (under 1 mm) | ± 0.12 mm |
| от 1 до 5 мм (1 to 5 mm) | ± 10 % |
| от 1 до 2,5 мм при Dн 110 мм и более (1 to 2.5 mm for OD over 110 mm) | ± 12.5 % |
| свыше 5 мм (over 5 mm) | ± 8 % |

Tubes shall be delivered in random (1.5 to 11.5 m) specified (4.5 to 9 m) and multiple (1.5 to 9 m) lengths.

For random length no tolerance is specified; for specified length, tolerance shall be +10 mm; for specified length, 5 mm allowance per cut.

A lot of tubes of multiple length shall have not more than 5% of tubes of random length not shorter than 2.5 meters.

Table 1 Size range of cold-finished tubes

| Out- side dia- me- ter, mm | Wall thickness, mm | Limit tole- rances for di- ameter, mm | Out- side dia- me- ter, mm | Wall thickness, mm | Limit tole- rances for di- ameter, % |
|---|---|--|---|-----------------------|---|
| 5 | 0.3; 0.4; 0.5; 0.6; 1.0; 1.2; 1.4; 1.5 | ±0.15 | 51 | 1.0-12 | ±0.8 |
| 6 | 0.3-1.5; 1.6; 1.8; 2.0 | | 53 | 1.0-12 | |
| 7 | 0.3-2.0; 2.2; 2.5 | | 54 | 1.0-12 | |
| 8 | 0.3-2.5 | | 56 | 1.0-12 | |
| 9 | 0.3-2.5 | | 57 | 1.0-12 | |
| 10 | 0.3-2.5; 2.8; 3.0; 3.2; 3.5 | | 60 | 1.0-12 | |
| 11 | 0.3-3.5 | | 63 | 1.0-12 | |
| 12 | 0.3-3.5 | | 65 | 1.0-12 | |
| 13 | 0.3-3.5; 4.0 | | 68 | 1.0-12 | |
| 14 | 0.3-4.0 | | 70 | 1.0-12 | |
| 15 | 0.3-4.0 | 73 | 1.0-12 | | |
| 16 | 0.3-4.0; 4.5; 5.0 | 75 | 1.0-12 | | |
| | | 76 | 1.0-12 | | |
| | | 80 | 1.2-12 | | |
| | | 83 | 1.2-12 | | |
| | | 85 | 1.2-12 | | |

| | | | | | |
|-------|-------------------|-------|-----|--------------------|--|
| 17 | 0.3-5.0 | | 89 | 1.2-12 | |
| 18 | 0.3-5.0 | | 90 | 1.2-12 | |
| 19 | 0.3-5.0 | | 95 | 1.2-12 | |
| 20 | 0.3-5.0; 5.5; 6.0 | | 100 | 1.5-12; 14; 16; 18 | |
| 21 | 0.4-6.0 | | 102 | 1.5-18 | |
| 22 | 0.4-6.0 | | 108 | 1.5-18 | |
| 23 | 0.4-6.0 | | 110 | 1.5-18; 20; 22 | |
| 24 | 0.4-6.0; 6.5 | | 120 | 1.5-22 | |
| 25 | 0.4-6.5; 7.0 | | 130 | 1.5-22 | |
| 26 | 0.4-7.0 | | 140 | 1.6-22 | |
| 27 | 0.4-7.0 | | 150 | 1.8-22 | |
| 28 | 0.4-7.0 | | 160 | 2.0-22 | |
| 30 | 0.4-7.0; 7.5; 8.0 | | 170 | 2.0-22; 24 | |
| ----- | | | 180 | 2.0-24 | |
| 32 | 0.4-8.0 | ±0.40 | 190 | 2.8-24 | |
| 34 | 0.4-8.0 | | 200 | 3.0-24 | |
| 35 | 0.4-8.0 | | 210 | 3.0-24 | |
| 36 | 0.4-8.0 | | 220 | 3.0-24 | |
| 38 | 0.4-8.0; 8.5; 9.0 | | 240 | 4.5-24 | |
| 40 | 0.4-9.0 | | 250 | 4.5-24 | |
| 42 | 1.0-9.0 | | | | |
| 45 | 1.0-9.0; 9.5; 10 | | | | |
| 48 | 1.0-10 | | | | |
| 50 | 1.0-10; 11; 12 | | | | |
| ----- | | | | | |

Tube curvature per meter length is given below.

| | | | |
|---|--------|---------|---------|
| Наружный диаметр, мм (Outside diameter, mm) | 5 to 8 | 8 to 10 | over 10 |
| Кривизна на 1 м, мм (Curvature per metre, mm) | 3 | 1.5 | 1.5 |

On the buyer's request tubes with diameters 20 to 90 mm shall have the curvature under 1 mm per meter length.

Steel grades. Depending on the quality level required, tubes shall be delivered in the following grades:

- grade B: with chemical composition specified: killed steel grades to GOST 1050-74 (10; 15; 20; 35; 45; 15G; 20G; 25G; 40G;) to GOST 4543-71 (15G; 20G; 30G; 40G; 10G2; 30G2; 40G2; 18HG; 25HGT; 25HGM; 15HA; 15H; 30HRA; 30HMA; 38HM; 40HMFA; 33HS; 38HS; 40HS; 20HN; 40HN; 12H2N4A; 15HF; 40HF; 20HGSA; 30HGSA; 38H2lu; 38H2MIuA; 14H2N3MA; 40H2N2MA; 38HN3MA;) to GOST 19282-73 (14HGS; 14G2; 09G2; 17GS; 17G1S; 15GF; 14G2AF; 16G2AF; 15HSND;).
- grade V: with mechanical properties and chemical composition specified (see Table 2) of steel grades to GOST 1050-74, 4543-71 and 19282-73.
- grade G: without mechanical properties and chemical composition specified, but with hydraulic test pressure indication;
- grade D: without requirements to chemical composition;
- grade E: heat treated; steel grades and other properties on agreement.

Table 2 Mechanical properties of tubes of different steel grades

| Steel grades | Tensile strength, MPa | Yield limit, MPa | Elongation, % | Brinell hardness (for walls over 10 mm) | |
|--------------|-----------------------|------------------|---------------|---|--------------|
| | | | | indentation diameter, mm, not lower | HB, not over |
| 10 | 343 | 206 | 24 | 5.1 | 137 |
| 20 | 412 | 245 | 21 | 4.8 | 156 |
| 35 | 510 | 294 | 17 | 4.4 | 187 |
| 45 | 589 | 324 | 14 | 4.2 | 207 |
| 10Г2 | 422 | 245 | 22 | 4.4 | 197 |
| 15X | 412 | - | 19 | 4.5 | 179 |
| 20X | 432 | - | 17 | 4.5 | 179 |
| 40X | 618 | - | 14 | 4.1 | 217 |
| 30ХГСА | 491 | - | 18 | 4.0 | 229 |
| 15XM | 432 | 226 | 21 | - | - |

Note: Mechanical properties of tubes of other steel grades are subject to agreement.

Other requirements. Tubes shall be delivered heat treated, except sizes with D/t ratios over 50.

Tube surface shall be free of cracks, cavities and laps. Tube ends shall be cut square and deburred.

Tubes for pressure uses shall withstand hydraulic test pressures guaranteed by the manufacturer.

Tubes with diameters under 160 mm and wall thickness under 8 mm shall withstand expansion test with a mandrel with 1:10 taper. Tubes with diameters over 22 mm and wall thickness under 10 mm shall undergo a flattening test.

Tubes of all sizes shall withstand bending and flanging test. The width of the flange measured from the inside surface of the tube shall be not less than 12 % of the inside tube diameter and not less than 1.5 t.

Hydraulic tests may be substituted by non-destructive examination of each tube length.