GOST 20295-85 ELECTRIC WELDED LINEPIPE

Tubes to this standard are produced by longitudinal and spiral welding methods and have the outside diameters from 159 to 820 mm.
Tube size range and limit size tolerances are given in Table 1.

Table 1 Size range of tubes, mm

Диаметр наружный	Толщина стенки	Предельные отклонения наружного диаметра
Outside diameter	Wall thickness	Limit tolerance for outside diameter
159	3.0; 3.5; 4.0; 4.5; 5.0; 5.5; 6.0	±1.5
168	3.0; 5.5; 6.0; 7.0	±1.5
219	3.5; 7.0; 8.0	±2.0
245; 273	4.0-8.0	±2.0
325	4.0-8.0; 9,0	±2.0
351	4.0-9.0; 10	±2.2
377	4.5-10	±2.2
426	5.0-10	±2.2
530; 630	5.0-10; 11; 12	±3.0
720	6.0-12; 13; 14	±4.0
820	6.0-12; 13; 14	±4.0

Note. Limit tolerances for wall thickness shall be those permissible for strip metal to GOST 19903-74.
Tube length shall be 10 to 11.6 m.

Limit tolerance for the diameter of end parts of tubes OD 530 mm shall be under ± 2 mm; for smaller diameters see table above.

Out-of-roundness tolerance for tubes with OD 426 mm shall be not higher than 1% OD; tube curvature shall not exceed 1.5 mm per meter length. Total curvature of tubes shall not exceed 0.2% of tube length.

Reinforcing bead height for outside longitudinal, spiral and circular seams shall be 0.5 to 2.5 mm for wall thicknesses 10 mm; 0.5 to 3.0 mm for wall thicknesses 10 to 14 mm. Reinforcing bead height for inside seams measured on its centreline shall not be lower than 0.5 mm and not over 0.5 mm at the end parts (150 mm) of expanded tubes. For tubes

with outside diameters 159 to 530 mm the remaining weld bead height after scarfing shall be under 1.0 mm. Inner weld bead is not scarfed.
Tube ends shall be cut square. Deviations of the end cut from the right angle are given below.

Outside diameter, mm	159-325	351-426	530-820
Deviation from the right angle, mm	1.0	1.5	2.0

Ends of tubes with wall thickness 5 to 10 mm shall be bevelled at 25 to 30 degrees; those with wall thickness over 10 mm shall be bevelled at 30 to 35 degrees. The width of the remaining flat tube end surface shall be 1 to 3 mm.

Technical requirements.
Tubes shall be manufactured of killed and semikilled quality carbon and low alloy strip steel in hot rolled or heat treated condition.

Steel grade is chosen by the manufacturer or by agreement with regard to mechanical properties required.

Table 2 Chemical composition of steel.

Сталь Steel grage	Содержание элементов, % не более Elements content, % not more								
	C	Mn	Si	S	P	Cr	Ni	Cu	V
Углеродистая Carbon	0.22	0.65	0.37	0.040	0.035	0.25	0.30	0.30	-
Низколегированная Low alloy	0.20	1.65	0.60	0.035	0.033	0.80	0.30	0.30	0.10

Note. Sulfur and phosphorus contents shall not exceed 0.03% on request.
Carbon equivalent CE for each heat of low alloy steel shall not exceed 0.46. It is calculated from the formula:

$$Э = C + \frac{Mn}{6} + \frac{V + Cr}{5},$$

where C, Mn, V and Cr are the contents of respective elements in tube metal, %.
Tubes with diameters equal or smaller than 430 mm shall be delivered in heat treated condition. Local heat treatment of the weld seam is permissible.

Tubes to this standard are produced in grades K34, K38, K42, K50, K52 and K55.

Mechanical properties of tubes of different grades are given below.

Table 3 Mechanical properties of tube metal.

Класс прочности	Временное сопротивление разрыву, МПа	Предел текучести, МПа	Относительное удлинение, %
Grade	Tensile strength, MPa	Yield limit, MPa	Elongation, %
K34	334	206	24
K38	373	235	22
K42	412	245	21
K50	491	343	20
K52	510	353	20
K55	540	373	20

Impact strength of low alloy base metal of tubes shall be not lower than 294 kJ sq.m at - 40°C for tubes without heat treatment and not lower than 392 kJ/sq.m for heat treated tubes; for weld metal these values may be lower by about 9.8 kJ/sq.m.

Tensile strength of the weld metal shall be equal to that of the base metal for all types of seams.

Hydraulic test pressure for tubes is calculated according to the requirements of GOST 3845-75 with calculated stress in tube metal equal to 0.9 of the yield limit given above.