# GOST 10704-91 LONGITUDINALLY WELDED STEEL TUBES SIZE RANGE GOST 10705-80 LONGITUDINALLY WELDED STEEL TUBES SPECIFICATIONS

Size range for small-diameter carbon steel tubes and maximum dimensional deviations are given in Table 1, and for medium-diameter in Table 2.

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Outside diameter, mm	Wall thickness, mm	Maximum deviations
8; 9; 10;	0.8; 0.9; 1.0; 1.2	± 0.2
11; 12; 13; 14; 15 16; 17 18; 19; 20; 21 22; 23; 24; 25 26; 27; 28 30	0.8-1.2; 1.4; 1.5; 1.6 0.9-1.6 0.9-1.6; 1.8; 2.0 0.9-2.0; 2.2; 2.5; 2.8; 3.0 1.0-3.0 1.0-3.0; 3.2; 3.5	± 0.3
32; 33; 34; 35; 36; 38; 40; 42; 45 48 50	1.0-3.5 1.0-3.5 1.2-3.5 1.2-3.5; 3.8; 4.0	± 0.4
51; 53; 54; 57 60; 63.5; 70; 73 76 83; 89; 95 102; 108; 114; 121; 127; 133; 140; 152	1.2-4.0 1.2-4.0; 4.5 1.2-4.5; 5.0; 5.5 1.6-5.5 1.8-5.5 1.8-5.5	± 0.8 %

Table 1 Size range of small-diameter tubes

Notes:

1. Maximum wall thickness variation shall not exceed  $\pm 10\%$  of nominal wall thickness.

 ¦ Outside diameter, ¦ mm	Wall thickness,	Maximum deviations
+ ¦159; 168; 180 ¦194; 203	1.8-5.5; 6.0; 7.0; 8.0 2.0-8.0	+ 0.8
219 245	2.5-8.0; 9.0 3.0-9.0	+ 1.0
275 299; 325 351; 377	4.0-9.0 4.0-9.0; 10.0	
402; 426  478; 480 T	4.0-10.0; 11.0; 12.0 5.0-12.0	

Table 2 Size range of medium-diameter tubes

#### 2. For tubes over 76 mm OD, 0.15 mm wall thickening near welding upset is permitted.

Notes:

1. Maximum wall thickness variation shall not exceed the requirements to maximum thickness of normal sheet, specified in GOST 19903-74.

2. 0.15 mm wall thickening near welding upset is permitted.

Tubes manufactured include: tubes of random length

диаметр наружный (OD), mm . . . . . . . <30 30-70 70-152 >152 длина (Length) m, не менее (not lover) 2 3 4 5

(if so ordered by the customer, A and V group tubes over 152 mm Ds shall be manufactured in lengths not less than 10 m; tubes of all groups less than 70 mm Ds shall be manufactured in lengths not less than 4 m); tubes of specified length

Tubes of multiple length of any multiplicity not exceeding the lower limit set for specified length tubes shall have overall length not greater than maximum length for specified length tubes. Besides, the allowance for each multiplicity makes 5 mm and is included in the multiplicity ordered. Specifications. According to quality level, the following groups of tubes are produced:

A - mechanical properties meet the requirements stated in Table 3 for heat-treated and in Tables 4, 5 for untreated tubes from killed, semikilled and rimming steels of grades St2, St3 and St4 (categories 1 - 3) to GOST 380-71;

B - from killed, semikilled and rimming steels of grades BSt2, BSt3, BSt4 to GOST 380-71; from killed, semikilled and rimming steels of grades 08, 10, 15 and 20 to GOST 1050-74 and from steel 08U to GOST 9045-70;

V - mechanical properties meet the requirements stated in Tables; from killed, semikilled and rimming steels of grades VSt2, VSt3, VSt4 (categories 1, 2) and from semikilled and killed steel of grade VSt3 (categories 3 - 6) to GOST 380-71; from killed, semikilled and rimming steels of grades 08, 10, 15 and 20 to GOST 1050-88 and from steel 08U to GOST 9045-70 are produced in diameters up to 50 mm;

D - without rating of composition. and mechanical properties, but with rated test hydraulic pressure.

	Γ1	r′	Τ
Steel grade	Tensile strength, MPa	Yield strength, MPa	Elongation, percent
08кп, 08Ю	294	174	27
08, 08пс, 10кп	314	196	25
10, 10пс, 15кп, Ст2сп, Ст2кп, Ст2пс,			
ВСт2сп, ВСт2кп, ВСт2пс	334	206	24
15, 15пс, 20кп, Ст3сп, Ст3пс, Ст3кп,	1		
ВСтЗсп, ВСтЗпс, ВстЗкп	372	225	22
20, 20пс, Ст4сп, Ст4пс, Ст4кп, ВСт4сп,			
BCT4KN, BCT4NC	412	245	21
T			+

#### Table 3 Mechanical properties of heat-treated tubes

## Note.

If the customer agrees, determination of yield strength is not conducted.

Table 4 Mechanical properties of untreated tubes of 8-152 mm in diameter

	ſ′	Г		1	r		
Steel grade	Wall thickness,	Tensile strength, MPa not lower for tubes Ds			Elongation, % not lower for tubes Ds		
		8-20	20-60	63-152	8-20	20-60	63-152
1	2	3	4	5	6	7	8
08, 08nc, 08ĸn	є0.06 Dн >0.06 Dн Все толщины		314 373	- -	-	15 6	- -
i T	All walls	373	-	294	6	-	23
Продолжение	L Продолжение таблицы 4 Table 4 (contd.)						•
1	2	3	4	5	6	7	8
10, 10пс, 10кп, ВСт2сп, ВСт2пс, ВСт2кп, Ст2сп,	є0.06 Dн >0.06 Dн Все толщины	-	334 373	-	-	15 6	-
	; AII Walls +	; 3/3 +					
15, 15пс, 15кп,  20, 20пс, 20кп	є0.06 Dн >0.06 Dн Все толщины	-	373 441	-	-	14 5	-
	All walls	441	-	353	5	-	21
	с0.06 Dн >0.06 Dн Все топшины		392 441	-	-	13 5	- -
lorono, borokii	All walls	441	-	373	5	-	20
Ст4сп, Ст4пс, Ст4кп, ВСт4сп,	с0.06 Dн >0.06 Dн Все толшины		432 491	- -	-	11 4	- -
	All walls	491	-	412	4	-	19

# Note:

When requested by the customer, increase of minimum elongation by 3% compared with the rates specified in table 4 is permitted for tubes of all steel grades Ds=20 $\check{y}$ 60 mm, t  $\epsilon$  0.06 Ds and Ds=20 mm as well as Ds=20 $\check{y}$ 60 mm, t $\epsilon$ 0.06 Ds.

Rate of yield strength is set also as agreed between the parties.

Heat-treated tubes from steels of grades 08, 10, 15, 20 08U and VSt3 with wall thickness over 6 mm shall pass testing for toughness. Toughness rate for tubes from steel of grade VSt3 is given below:

Toughness of tubes from steel of grade VSt3 with t C 6mm shall be equal or over 784 kJ/m at 20°C, equal or over 392 kJ/m at -20°C and equal or over 392 kJ/m after strain ageing.

Steel grade	Wall thick- ness, mm	Tensile strength, MPa	Elongati for 1	lon, %, no tubes Ds 	t lower    +  402-530
	€6 >6	314 314	18 15	20 15	20
Ст2сп, Ст2пс, ВСт2сп, ВСт2пс	€6 >6	333 333	17 14	18 14	20
15пс, 15кп, 20, 20пс, 20кп	€6 >6	353 353	17 14	18 14	20
Ст3сп, Ст3пс, Ст3кп, ВСт3кп, ВСт3сп, ВСт3пс	€6 >6	353 353	17 14	17 14	19 15
Ст4сп, Ст4пс, Ст4кп, ВСт4сп, ВСт4пс, ВСт4кп	€6 >6	402 402	15 11	17 12	18

## Table 5 Mechanical properties of untreated tubes of 159-530 mm in diameter

Ductility of tubes from steels of grades 08, 10, 15, 20 and 08U is not rated, but test results are included in quality record.

Tubes less than 102 mm Ds shall pass 6.0 MPa and over hydraulic test; tubes of 102 mm and over in diameter shall pass 3.0 MPa hydraulic test and tubes 402 mm - 530 mm diameter and 4.0 mm - 5.5 mm wall shall pass 2.0 MPa and over hydraulic test.

On customer's request, the test hydraulic pressure may be increased.

Under 100% weld inspection by means of physical nondestructive techniques, the hydraulic test is an additional requirement for 15% of tubes in a lot.