USSR STATE STANDARD

ELECTRIC LINE WELDED STEEL TUBES

RANGE OF SIZES

GOST 10704-91

Official Edition

THE USSR COMMITTEE FOR STANDARDIZATION AND METROLOGY
Moscow

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USSR STATE STANDARD

ELECTRIC LINE WELDED STEEL TUBES
Range of Sizes

GOST 10704-91

OKP (All-Union Product Classification Code) 13 7300, 13 8100, 13 8300

Date of Introduction 01.01.93

1. This Standard establishes the range of sizes for electric line welded steel tubes.
2. The tube dimensions shall comply with table 1.
3. The following tube modifications shall be manufactured categorized by length:
   with unsized length:
   with diameter less than 30 mm - no less than 2 m;
   with diameter more than 30 mm and less than 70 mm - no less than 3 m;
   with diameter more than 70 mm and less than 152 mm - no less than 4 m;
   with diameter more than 152 mm - no less than 5 m.

At the customer's request, tubes of groups A and B in compliance with GOST 10705, with diameter more than 152 mm shall be manufactured with the length of no less than 10 m;

tubes of all the groups with diameter less than 70 mm shall be manufactured with the length of no less than 4 m;

sized length:

with diameter less than 70 mm - from 5 m to 9 m;

with diameter more than 70 mm and less than 219 mm - from 6 m to 9 m;

with diameter more than 219 mm and less than 426 mm - from 10 m to 12 m.

Tubes with diameter more than 426 mm shall be manufactured only of the out-of-gauge length. By agreement between manufacturer and customer the tubes with diameter more than 70 mm and less than 219 mm is allowed to be manufactured with the length from 6 m to 12 m;

multiple sized no less than 250 mm, not exceeding the lower limit stipulated for cut-to-length tubes. The 5 mm allowance for each cut shall be stipulated (unless otherwise indicated) and shall be included in each multiplicity.

Table 1

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm										
	1.0	1.2	1.4	(1.5)	1.6	1.8	2.0	2.2	2.5	2.8	3.0
10	0.222	0.260	-	-	-	-	-	-	-	-	-
10.2	0.227	0.266	-	-	-	-	-	-	-	-	-
12	0.271	0.320	0.366	0.388	0.410	-	-	-	-	-	-
13	0.296	0.349	0.401	0.425	0.450	-	-	-	-	-	
14	0.321	0.379	0.435	0.462	0.489	-	-	-	-	-	-
(15)	0.345	0.408	0.470	0.499	0.529	-	-	-	-	-	-
16	0.370	0.438	0.504	0.536	0.568	-	-	-	-	-	-
(17)	0.395	0.468	0.539	0.573	0.608	-	-	-	-	-	-
18	0.419	0.497	0.573	0.610	0.719	0.789	-	-	-	-	-
19	0.444	0.527	0.608	0.647	0.687	0.764	0.838	-	-	-	-
20	0.469	0.556	0.642	0.684	0.726	0.808	0.888	-	-	-	-
21.3	0.501	0.595	0.687	0.732	0.777	0.866	0.952	-	-	-	-
22	0.518	0.616	0.711	0.758	0.805	0.897	0.986	-	-	-	-
(23)	0.543	0.645	0.746	0.795	0.844	0.941	1.04	1.13	1.26	-	-
24	0.567	0.675	0.780	0.832	0.884	0.985	1.09	1.18	1.33	-	-
25	0.592	0.704	0.815	0.869	0.923	1.03	1.13	1.24	1.39	-	-
26	0.617	0.734	0.849	0.906	0.963	1.07	1.18	1.29	1.45	-	
27	0.641	0.764	0.884	0.943	1.00	1.12	1.23	1.35	1.51	-	
28	0.666	0.793	0.918	0.980	1.04	1.16	1.28	1.40	1.57	-	
30	0.715	0.852	0.987	1.05	1.12	1.25	1.38	1.51	1.70		
32	0.765	0.911	1.06	1.13	1.20	1.34	1.48	1.62	1.82	2.02	

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm									
	1.0	1.2	1.4	(1.5)	1.0	1.8	2.0	2.2	2.5	2.8
33	0.789	0.941	1.09	1.17	1.24	1.38	1.53	1.67	1.88	2.09
33.7	-	0.962	1.12	1.12	1.27	1.42	1.56	1.71	1.92	2.13
35	-	1.00	1.16	1.24	1.32	1.47	1.63	1.78	2.00	2.22
36	-	1.03	1.19	1.28	1.36	1.52	1.68	1.83	2.07	2.29
38	-	1.09	1:26	1.35	1.44.	1.61	1.78	1.94	2.19	2.43
40	-	1.15	1.33	1.42	1.52	1.70	1.87	2.05	2.31	2.57
42	-	1.21	1.40	1.50	1.59	1.78	1.97	2.16	2.44	2.71
44.5	-	1.2.8	1.49	1.69	1.69	1.90	2.10	2.29	2.59	2.88
45	-	1.30	1.51	1.61	1.71	1.92	2.12	2.32	2.62	2.91
4-8	-	-	1.61	1.72	1.83	2.06	2.27	2.48	2.81	3.12
48.3	-	-	1.62	1.73	1.84	2.06	2.28	2.50	2.82	3.14
51	-	-	1.71	1.83	1.95	2.18	2.42	2.65	2.99	3.33
53	-	-	1.78	1.91	2.03	2.27	2.52	2.76	3.11	3.47
54	-	-	1.82	1.94	2.07	2.32	2.56	2.81	3.18	3.54
57	-	-	1.92	2.05	2.19	2.45	2.71	2.97	3.36	3.74
60	-	-	2.02	2.16	2.30	2.58	2.86	3.14	3.55	3.95
68.5	-	-	2.14	2.29	2.44	2.74	3.03	3.33	3.76	4.19
70	-	-	2.37	2.53	2.70	3.03	3.36	3.68	4.16	4.64

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm									
	1.0	1.2	1.4	(1.5)	1.6	1.8	2.0	2.2	2.5	2.8
73	-	-	2.47	2.64	2.86	3.16	3.50	3.84	4.35	4.86
76	-	-	2.58	2.76	2.94	3.29	3.65	4.00	4.53	5.05
80	-	-	-	-	3.21	3.60	4.00	4.38	4.96.	5.54
89	-	-	-	-	3.45	3.87	4.29	4.71	5.33	5.95
95	-	-	-	-	-	-	4.59	-	5.70	-
102.	-	-	-	-	-	4.45	4.93	5.41	6.13	6.85
108	-	-	-.	-	-	4.71	5.23	5.74	6.50	7.26
114	-	-	-	-	-	4.98	5.52	6.07	6.87	7.68
127	-	-	-	-	-	5.56	6.17	6.77	7.68	8.58
138	-	-	-.	-	-	5.82	6.46	7.10	8.05	8.99
140	.	-	-	-	-.	6.13	6.81	7.48	8.48	9.47
152	-	-	-	-	-	6.67	7.40	8.13	9.22	10.30
159	-	-	-	-	-	6.98	7.74	8.51	9.65	10.79
168	-	-	-	-	-	7.38	8.19	9.00	10.20	11.41
177.8	-	-	-	-	-	7.81	8.67	9.53	10.81	12.08
180	-	-	-	-.	-	-	-	-	-	-
193.7	-	-	-	-		-	9.46	10.39.	11.79	13.18
219	-	-	-	-	-	-	-	-	13.35	14.93
244.5	-	-	-	-	-	-	-	-	-	-

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm										
	3.0	3.2	3.5	3.8	4.0	4.5	5.0	5.5	6.0	7.0	8.0
26	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-
32	2.15	-	-	-	-	-	-	-	-	-	-
33	2.22	-	-	-	-	-	-	-	-	-	-
33.7	2.27	-	-	-	-	-	-	-	-	-	-
35	2.37	-	-	-	-	-	-	-	-	-	-
36	2.44	-	-	-	-	-	-	-	-	-	-
38	2.59	-	-	-	-	-	-	-	-	-	-
40	2.74	-	-	-	-	-	-	-	-	-	-
42	2.89	-	-	-	-	-	-	-	-	-	-
44.5	3.07	-	-	-	-	-	-	-	-	-	-
46	3.11	-	-	-	-	-	-	-	-	-	-
48	3.33	3.54	3.84	-	-	-	-	-	-	-	-
48.3	3.35	3.56	3.87	-	-	-	-	-	-	-	-
51	3.55	3.77	4.10	-	-	-	-	-	-	-	-
53	3.70	3.93	4.27	-	-	-	-	-	-	-	-
54	3.77	4.01	4.36	-	-	-	-	-	-	-	-

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm											
	3.0	3.2	3.5	3.8	4.0	4.5	5.0	5.5	6.0	7.0	8.0	9.0
57	4.00	4.25	4.62	-	-	-	-	-	-	-	-	-
60	4.22	4.48	4.88	5.27	-	-	-	-	-	-		-
63.5	4.48	4.76	5.18	5.59	-	-	-	-	-	-	-	-
70	4.96	5.27	5.74	6.20	6.51	-	-	-	-	-	-	-
73	5.18	5.51	6.00	6.48	6.81	-	-	-	-	-	-	-
76	5.40	5.75	6.26	6.26	7.10	7.93	8.75	9.56	-	-	-	-
83	5.92	6.30	6.86	7.42	7.79	8.71	9.62	10.51	-	-	-	-
89	6.36	6.77	7.38	7.98	8.38	9.38	10.36	11.33	-	-	-	-
95	-	7.24	-	-	-	-	11.10	-	-	-	-	-
102	7.32	7.80.	8.50	9. 20	9.67	10.82	11.96	13.09	-	-	-	-
108	7.77	8.27	9.02	9.76	10.26	11.49	12.70	13.90	-	-	-	-
114	8.21	8.74	9.54	10.33	10.85	12.15	13.44	14.72.	-	-	-	-
127	9.17	9.77	10.66	11.55	12.13	13.59	15.04	16.48	-	-	-	-
133	9.62	10.24	11. 18	12.11	12.73	14.26	15.78	17.29	-	-	-	-
140	10.14	10.80	11.78	12.76	13.42	15.04	16.65	18.24	-	-	-	-
152	11.02	11.74	12.82	13.89	14.60	16.37	18.13	19.87	-	-	-	-
159	11.54	12.30	13.42	14.52	15.29	17.15	18.99	20.82	22.64	26.24	26.24	-
168	12.21	13.01	14.20	15.39	16.18	18.14	20.10	22.04	23.97	27.79	31.57	--
177.8	12.93	13.78.	15.04	16.31	17.14	19.23	21.31	23.37	25.42	29.49	33.50	-
180	-	-	-	-	17.36	-	21.58	-	-	-	-	-
193.7	14.11	15.03	16.42	17.80	18.71	21.00	23.27	25.53	27.77	32.23	36.64	-
219	15.98	17.03	18.60	20.17	21.21	23.80	26.39	28.96	31.52	36.60	41.63.	46.61
244.5	17.87	19.04	20.80	22.56	23.72	26.63	29.53	32.42	35.42	41.00	46.66	52.27
273		-	23.26	25.23	26.54	29.80	23.05	36.28	39.51.	45.92	52.28	58.60

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm								
	3.5	3.8	4.0	4.5	5.0	5.5	6.0	7.0	8.0	9.0
325	-	-	31.67	35.57	39.46	43.34	47.20	54.90	62.54	70.14
355.6	-	-	34.68	38.96	43.23	47.49	51.73	60.18	68.58	76.93
377	-	-	36.79	41.34	45.87	50.39	54.90	63.87	72.80	81.68
406.4	-	-	39.70	44.60	49.50	54.38	59.25	68.95	78.60	88.20
426	-	-	41.63	46.78	51.91	57.04	62.15	72.33	82.47	92.55
(478)	-	-	-	-	58.32	64.09	69.84	81.31	92.73	104.10
530	-	-	-	-	64.74	71.14	77.54	90.29	102.99	115.64
630	-	-	-	-	-	-	-	107.55	122.72	137.83
720	-	-	-	-	-	-	-	123.09	140.47	157.81
820	-	-	-	-	-	-	-	140.35	160.20	180.00
920	-	-	-	-	-	-	-	157.61	179.93	202.20
1 020	-	-	-	-	-	-	-	-	199.66	224.39
1 120	-	-	-	-	-	-	-	--	219.39	246.59
1 220	-	-	-	-	-	-	-	-	-	268.79
1 420	-	-	-	-	-	-	-	-	-	-

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm										
	10	11	12	13	14	16	(17)	17.5	18	19	20
325	-	-	-	-	-	-	-	-	-	-	-
355.6	85.23	-	-	-	-	-	-	-	-	-	-
377	90.51	-	-	-	-	-	-	-	-	-	-
406.4	97.76	107.26	116.72	-	-	-	-	-	-	-	-
426	102.59	112.58	122.52	-	-	-	-	-	-	-	-
(478)	115.42	126.69	137.91	-	-	-	-	-	-	-	-
530	128.24	140.79	153.30	165.75	178.15	202.82	215.07	221.18	227.28	239.44	251.55
630	152.90	167.92	182.89	197.81	212.68	242.27	257.00	264.34	271.67	286.30	300.87
720	175.10	192.33	209.52	226.66	243.75	277.79	294.73	303.18	311.62	328.47	34á.26
820	199.76	219.46	239.12	258.72	278.28	317.25	336.65	346.34	356.01	375.32	394.58
920	224.42	246.59	268.71	290.78	312.81	356.70	378.58	389.50	400.40	422.18	443.91
1 020	249.08	273.72	298.31	322.84	347.33	396.16	420.50	432.65	444.79	469.04	493.23
1 120	273.74	300.85	327.90	354.90	381.86	435.62	462.43	475.81	481.19	515.89	542.55
1 220	298.40	327.97	357.49	386.96	416.38	475.08	504.35	518.97	533.58	562.75	591.88
1 420	347.73	382.23	416.68	451.08	485.44	554.00	588.20.	605.29	622.36	656.46	690.52

Table 1 (cont.)

External diameter, mm	Theoretical weight of 1m of tube, in kg, for the following wall thickness, mm											
	21	22	23	21	25	26	27	28	29	30	31	32
5.30	263.61	275.62	287.58	299.49	-	-	-	-	-	-	-	-
630	-	-	-	-	-	-	-	-	-	-	-	-
720	362.01	378.70	396.35	411.95	411.95	428.49	444.99	461.44	477.84	510.49	-	-
820	413.79	432.96	452.07	471.43	490.15	509.11	528.03	516.89	565.71	584.48	-	-
920	-	-	-	-	-	-		-	-.	-	-	-
1 020	517.37	541.47	565.51	589.51	613.45	637.35	661.20	685.00	708.75	723.45	756.10	779.710
1 120	-	-	-	-	-	-	-	-	-	-	-	-
1 220	-	-	-	-	-	-	-	-	-	-	-	-
1 420	-	-	-	-	.	-	-	-		-	-	-

Notes:

1. In case of the tube manufacturing in compliance with GOST 1070,6 the theoretical weight shall be increased by 1% due to the weld reinforcement.

2. By agreement between a manufacturer and a customer, tubes with the following dimensions shall be manufactured: 41.5×1.5-3.0, 43×1.0, 1.5-3.0, 43.5×1.5-3.0, 52×2.5, 69.6×1.8, 111.8×2.3, 146.1×5.3, 6.5, 7.0, 7.7, 8.5, 9.5, 10.7, 152.4×1.9, 2.65, 168×2.65, 177.3×1.9, 198×2.8, 203×2.65, 299×4.0, 530×7.5, 720×7.5, 820×8.5, 1020×9.5, 15.5, 1 220×13.5, 14.6 and 15.2 mm, as well as with intermediate wall thickness and diameters within the limits specified in table 1.

3. The tube dimensions in brackets are not recommended to apply for the new design.

3.1 The cut-to-length tubes and multiple length tubes shall be manufactured of two types categorized by length:

I-with cutting of the ends and removing of casting seams;

II-without trimming and removing of casting seams (with cutting in a mill line).

3.2. The length maximum deviations for cut-to-length tubes are specified in table 2.

Table 2

Tube length, in m	Maximum deviations for cut-to-length tubes, in mm, of types	
	I	II
Less than 6 , inclusive	+10	+50
More than 6	+15	+70

3.3. Maximum total length deviations for multiple tubes shall not exceed the following values:

+15 mm - for accuracy class I tubes;

+100 mm - for accuracy class II tubes.

3.4. At the customer's request, cut-to-length and multiple length tubes of accuracy class II shall have trimmed ends from one or both sides.

4. The tube external diameter maximum deviations are specified in table 3.

Table 3

Tube external diameter, in mm	The external diameter maximum deviations for the accuracy of manufacturing:	
	Regular	Increased
10	±0.2 mm	-
More than 10 up to 30, inclusive	±0.3 mm	+0.25
″ 30 ″ 51″	±0.4 mm	±0.35
″ 51 ″ 193.7″	±0.8 %	±0.7 %
″ 193.7 ″ 426 ″	±0.75 %	±0.65 %
″ 426 ″ 1 020″	±0.7 %	±0.65 %
″ 1 020 ″	±0.6 %	±6.0 mm

Note. For the diameters inspected by perimeter measurement, the maximum and minimum limits of the perimeter shall be rounded to millimeters,

5. In compliance with GOST 10705, at the customer's request, tubes shall be manufactured with one-sided or displaced external diameter allowance. The one-sided or displaced allowance shall not exceed the sum of maximum deviations, specified in table 3.

6. Maximum wall thickness deviations shall comply with the following values:

±10 % in case of tube diameter less than 152 mm;

GOST 19903 in case of tube diameter more than 152 mm for the maximum sheet width and standard accuracy.

By agreement between a customer and a manufacturer it is allowed to manufacture tubes with one-sided allowance of wall thickness, moreover, the one-sided allowance shall not exceed the sum of maximum deviations of wall thickness.

7. For the tubes with diameter more than 76 mm wall thickening by 0.15 mm near the burr is allowed.

8. The tubes for the pipelines with diameter of 478 mm and more, manufactured in compliance with GOST 10706, shall be supplied with external diameter maximum deviations of the tube end specified in table 4.

Table 4

mm

Tube external diameter	The tube end external diameter maximum deviations for the accuracy of manufacturing:	
	Increased	Regular
From 478 to 720, inclusive	±1.5	±2.5
More than 720 and less than 1 020 inclusive	±2.0	±2.5
More than 1 020	±3.5	±4.0

9. The ovality and wall uniformity of the tubes with the diameter less than 530 mm, inclusive, manufactured in compliance with GOST 10705, shall not exceed maximum deviations of an external diameter and wall thickness, respectively.

The tubes with the diameter of 478 mm and more, manufactured in compliance with GOST 10706, shall have three ovality accuracy classes. The ovality of the tube ends shall not exceed the following values:

1% of the tube external diameter for the 1st accuracy class;

1.5%of the tube external diameter for 2nd accuracy class;

2% of the tube external diameter for 3rd accuracy class.

The ovality of the tube ends with wall thickness less than 0.01 of the external diameter shall be stipulated by agreement between a manufacturer and a customer.

10. The curvature of the tubes manufactured in compliance with GOST 10705 shall not exceed 1.5 mm for 1 m of the length. At the customer's request the curvature of the tubes with diameter less than 152 mm shall be no more than 1 mm for 1 m of the length.

The total curvature of the tubes manufactured in compliance with GOST 10706, shall not exceed 0.2% of the tube length. The curvature of 1 m of the length for such tubes shall not be stipulated.

11. Technical requirements shall comply with GOST 10705 and GOST 10706.

Examples of identification numbers:

Tube with an external diameter of 76 mm, wall thickness of 3 mm, cut-to-length, of the length accuracy class II, made of grade Ст3сп steel, manufactured in compliance with group В GOST 10705-80:

$$Труба\ \frac{76\times3\times5000\ II\ ГОСТ10704-91}{В-Ст3сп\ ГОСТ\ 10705-80}$$

As above, of increased external diameter accuracy, with the length multiplicity of 2 000 mm, of the length accuracy class I, made of grade 20 steel, manufactured in compliance with group Б GOST 10705-80:

$$Труба\ \frac{76п\times3\times2000\ кр.\ I\ ГОСТ\ 10704-91}{Б-20\ ГОСТ\ 10705-80}$$

Tube with an external diameter of 25 mm, wall thickness of 2 mm, with the length multiplicity of 2 000 mm, of the length accuracy class II, manufactured in compliance with group Д GOST 10705-80;

$$Труба\ \frac{25\times2\times2000кр.\ II\ ГОСТ\ 10704-91}{Д\ ГОСТ\ 10705-80}$$

Tube with an external diameter of 1 020 mm, of increased manufacturing accuracy, with wall thickness of 12 mm, with the increased external diameter accuracy of the tube ends, 2nd ovality accuracy class, with the out-of-gauge length, made of grade Ст3сп steel, manufactured in compliance with group В GOST 10706-76

$$Труба\ \frac{1020п\times12-ПТ-02кл\ ГОСТ\ 10704-91}{В-Ст3сп\ ГОСТ\ 10706-76}$$

Note. The letter Т shall be added after the text “tube” in the identification numbers of tubes subjected to heat treatment of the total tube volume; and in those subjected for the local heat treatment of a weld seam, shall be added the letter character Л.

DETAILS

1. DEVELOPED AND SUBMITTED by the USSR Ministry of Metallurgy

DEVELOPERS

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4. REFERENCE DOCUMENTATION

Number of reference document referred to	Clause number
GOST 10705-80	3, 5, 9, 11
GOST 10706-76	8, 9, 11
GOST 19903-89	6