U S S R S T A T E S T A N D A R D

STEEL HOT-ROLLED UNEQUAL ANGLE BARS

ASSORTMENT

GOST 8510-86
(CMEA Standard 255-76)

Official Edition

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GOST 8510-86 (CMEA Standard 255-76)

OKP (All-Union Product Classification Code) 09 3100; 09 3200; 09 3300

Date of Introduction 01.07.87

1. This Standard applies to steel hot-rolled unequal angle bars.

This Standard fully complies with CMEA Standard 255-76.

2. The dimensions, cross-section areas, axis reference values of the angle bars and the mass of 1-m angle bar shall correspond to those specified on the drawing and in table 1.

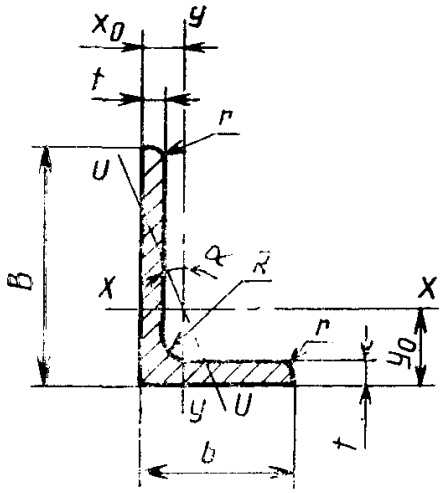

Table 1

Number of an angle bar	mm					Cross-section area, cm^2	Axis reference values			
							x - x			
	B	*b*	*t*	*R*	*r*		*Jx*, cm^4	*Wx*, cm^3	*ix*, cm	*Jy*, cm^4
2.5/1.6	25	16	3	3.5	1.2	1.16	0.70	0.43	0.78	.0.22
3/2*	30	20	3 4			1.43 1.86	1.27 1.61	0.82 0.82	0.94 0.93	0.45 0.56
3.2/2	32	20	3 4			1.49 1.94	1.52 1.93	0.72 0.93	1.01 1.00	0.46 0.57
4/2.5	40	25	3 4 5	4.0	1.3	1.89 2.47 3.03	3.06 3.93 4.73	1.14 1.49 1.82	1.27 1.26 1.25	0.93 1.18 1.41
4/3*	40	30	4 5			2.67 3.28	4.16 5.04	1.54 1.88	1.23 1.24	2.01 2.41
4.5/2.8	45	28	3 4	5.0	1.7	2.14 2.80	4.41 5.68	1?45 1.90	1.48 1.42	1.32 1.69
5/3.2	50	32	3 4	5.5	1.8	2.42 3.17	6.18 7.98	1.62 2.38	1.60 1.59	1.99 2.56
5.6/3.6	56	36	4 5	6.0	2.0	3.58 4.41	11.37 13.82	3.01 3.70	1.78 1.77	3.70 4.48
6.3/4.0	63	40	4 5 6 8	7.0	2.3	4.04 4.98 5.90 7.68	16.33 19.91 23.31 29.60	3.83 4.72 5.58 7.22	2.01 2.00 1.99 1.96	5.16 6.26 7.29 9.15
6.5/5*	65	50	5 6 7 8	6.0	2.0	5.56 6.60 7.62 8.62	23.41 27.46 31.32 35.00	5.20 6.16 7.08 7.99	2.05 2.04 2.03 2.02	12.08 14.12 16.05 18.88
7/4.5	70	45	5	7.5	2.5	5.59	27.76	5.88	2.23	9.05
7.5/5	75	50	5 6 7* 8	8.0	2.7	6.11 7.25 8.37 9.47	34.81 40.92 46.77 52.38	6.81 8.06 9.31 10.52	2.39 2.38 2.36 2.35	12.47 14.60 16.61 18.52

Table 1

Axis reference values					x_o, cm	y_o, cm	J_{xy}, cm^4	Axis inclination, tg α	Mass of 1-m angle bar, kg
y - y		*u - u*							
Wy, cm^3	*iy,* cm	*Ju* min, cm^4	*Wu*, cm^3	*iu* min, cm					
0.19	0.44	0.13	0.16	0.34	0.42	0.86	0.22	0.392	0.91
0.30	0.56	0.26	0.25	0.43	0.51	1.0	0.43	0.427	1.12
0.39	0.55	0.34	0.32	0.43	0.54	1.04	0.54	0.421	1.46
0.30	0.55	0.28	0.25	0.43	0.49	1.08	0.47	0.382	1.17
0.39	0.54	0.35	0.33	0.43	0.53	1.12	0.59	0.374	1.52
0.49	0.70	0.56	0.41	0.54	0.59	1.32	0.96	0.385	1.48
0.63	0.69	01.7	0.52	0.54	0.63	1.37	1.22	0.281	1.94
0.77	0.68	0.86	0.64	0.53	0.66	1.41	1.44	0.374	2.37
0.91	0.87	1.09	0.75	0.64	0.78	1.28	1.68	0.544	2.26
1.11	0.86	1.33	0.91	0.64	0.82	1.32	2.00	0.539	2.46
0.61	0.79	0.72	0.52	0.61	0.64	1.47	1.38	0.382	1.68
0.80	0.78	1.02	0.67	0.60	0.68	1.51	1.77	0.379	2.20
0.81	0.91	1.18	0.88	0.70	0.72	1.60	2.01	0.403	1.9
1.05	0.90	1.52	0.88	0.69	0.76	1.65	2.59	0.401	2.4
1.34	1.02	2.19	1.13	0.78	0.84	1.82	3.74	0.406	2.81
1.65	1.01	2.65	1.37	0.78	0.88	1.87	4.50	0.404	3.46
1.67	1.13	3.07	1.41	0.87	0.91	2.03	5.25	0.397	3.17
2.05	1.12	3.73	1.72	0.86	0.95	2.08	6.41	0.396	3.91
2.42	1.11	4.36	2.08	0.86	0.99	2.12	7.44	0.393	4.63
3.12	1.09	5.58	2.60	0.85	1.07	2.20	9.27	0.386	6.03
3.23	1.47	6.41	2.68	1.07	1.26	2.00	9.77	0.576	4.36
3.82	1.46	7.52	3.15	1.07	1.30	2.04	11.46	0.575	5.18
4.38	1.46	8.60	3.59	1.06	1.34	2.08	12.94	0.571	5.98
4.93	1.44	9.65	4.02	1.06	1.37	2.12	13.61	0.570	6.77
2.62	1.27	51.34	2.20	0.98	1.05	2.28	9.12	0.406	4.39
3.25	1.43	7.24	2.73	1.09	1.17	2.39	12.00	0.436	4.79
3.85	1.42	8.48	3.21	1.08	1.21	2.44	14.10	0.435	5.69
4.43	1.41	9.69	3.69	1.08	1.25	2.48	16.18	0.435	6.57
4.88	1.40	10.87	4.14	1.07	1.29	2.52	17.80	0.430	7.43

Number of an angle bar	mm					Cross section area, cm^2	Axis reference values			
							x - x			
	B	*b*	*t*	*R*	*r*		*Jx*, cm^4	*Wx*, cm^3	*ix*, cm	*Jy*, cm^4
8/5	80	50	5			6.36	41.64	7.71	2.56	12.68
			6			7.55	48.98	9.15	2.55	14.85
			6			8.15	52.06	9.42	2.53	25.18
8/6*	80	60	7	8.0	2.7	9.42	59.61	10.87	2.52	28.74
			8			10.67	66.88	12.38	2.50	32.15
			5.5			7.86	65.28	10.74	2.88	19.67
9/5.6	90	56	6	9.0	3.0	8.54	70.58	11.66	2.88	21.22
			8			11.18	90.87	15.24	2.85	27.08
			6			9.58	98.29	14.52	3.20	30.58
10/6.3	100	63	7			11.09	112.86	16.78	3.19	34.99
			8			12.57	126.96	19.01	3.18	39.21
			10			15.47	153.95	23.32	3.15	47.18
			7	10.0	3.3	11.23	114.05	16.87	3.19	38.32
10/6.5*	100	65	8			12.73	128.31	19.11	3.18	42.96
			10			15.67	155.52	23.45	3.16	51.68
11 /7	110	70	6.5			11.46	142.42	19.11	3.53	45.61
			8			13.93	171.54	23.22	3.51	54.64
			7			14.06	226.53	26.67	4.01	73.73
12.5/8	125	80	8	11.0	3.7	15.98	225.62	30.26	4.00	80.95
			10			19.70	311.61	37.27	3.98	100.47
			12			23.36	364.79	44.07	3.96	116.84
			8			18.00	363.68	38.25	4.49	119.79
14/9	140	90	10	12.0	4.0	22.24	444.45	47.19	4.47	145.54
			9			28.87	605.97	56.04	5.15	186.03
116/10	160	100	10	13.0	4.3	25.28	666.59	61.91	5.13	204.09
			12			30.04	784.22	73.42	5.11	238.75
			14			34.72	897.19	84.65	5.08	271.60
			10			28.33	962.88	78.59	5.80	276.37
18/11	180	110	12			33.69	1122.56	93.33	5.77	324.09
			11			34.87	1449.02	107.31	6.45	446.36
			12	14.0	4 7	37.89	1568.19	116.61	6.43	481.93
20/12.5	200	125	14			43.87	1800.83	134.64	6.43	550.77
			16			49.77	2026.08	152.41	6.38	616.66

N o t e s :

1. The cross-section areas and reference values are calculated using the nominal dimensions. The steel density is accepted as 7.85 g/cm^3 for calculation of 1-m angle bar mass.
2. The track curvature radiuses, the shape and dimensions of inner conjunction site, specified on the drawing and in table 1, are given only for construction of a template and shall not be checked up directly on the angle bar.
3. The angle bars, marked with an asterisk, shall be produced at the customer’s request.

Table 1 (cont.)

Axis reference values					x_o, cm	y_o, cm	J_{xy}, cm^4	Axis inclination, tg α	Mass of 1-m angle bar, kg
y - y		*u - u*							
Wy, cm^3	*iy*, cm	*Ju* min, cm^4	*Wu*, cm^3	*iu* min, cm					
3.28	1.41	7.57	2.75	1.00	1.13	2.60	13.20	0.387	4.49
3.88	1.40	8.88	3.24	1.08	1.17	2.65	15.50	0.386	5.92
5.58	1.76	13.61	4.66	1.29	1.49	2.47	20.98	0.547	6.39
6.43	1.75	15.58	5.34	1.29	1.53	2.52	24.01	0.546	7.39
7.26	1.74	17.49	5.99	1.28	1.57	2.56	26.83	0.544	8.37
4.53	1.58	11.77	3.81	1.22	1.26	2.92	20.54	0.384	6.17
4.91	1.58	12.70	4.12	1.22	1.28	2.95	22.23	0.384	6.70
6.39	1.56	16.29	5.32	1.21	1.36	3.04	28.33	0.380	8.77
6.27	1.79	18.20	5.27	1.38	1.42	3.23	31.50	0.393	7.53
7.23	1.78	20.83	6.06	1.37	1.46	3.28	36.10	0.392	8.70
8.17	1.77	23.38	6.82	1.36	1.50	3.32	40.50	0.391	9.87
9.99	1.75	28.34	8.31	1.35	1.58	3.40	48.60	0.387	12.14
7.70	1.85	22.77	6.43	1.41	1.52	3.24	38.00	0.415	8.81
8.70	1.84	25.24	7.26	1.41	1.56	3.28	42.64	0.414	9.99
10.64	1.82	3.0.60	8.83	1.40	1.64	3.37	51.18	0.410	12.30
8.42	2.00	26.94	7.05	1.53	1.58	3.55	46.80	0.402	8.98
10.20	1.98	32.31	8.50	1.52	1.64	3.61	55.90	0.400	10.93
11.89	2.29	43.40	9.96	1.76	1.80	4.01	74.70	0.407	11.04
13.47	2.28	48.82	11.25	1.75	1.84	4.05	84.10	0.406	12.58
16.52	2.26	59.33	13.74	1.74	1.92	4.14	102.00	0.404	15.47
19.46	2.24	69.47	16.11	1.72	2.00	4.22	118.00	0.400	18.34
17.19	2.58	70.27	14.39	1.58	2.03	4.49	121.00	0.411	14.13
21.14	2.58	85.51	17.58	1.96	2.12	4.58	147.00	0.409	17.46
23.96	2.85	110.40	20.01	2.20	2.24	5.19	194.00	0.391	17.96
26.42	2.84	121.16	22.02	2.19	2.28	5.23	213.00	0.390	19.85
31.23	2.82	142.14	25.93	2.18	2.36	5.32	249.00	0.388	23.58
35.89	2.80	162.49	29.75	2.16	2.43	5.40	282.00	0.385	27.26
32.27	3.12	165.44	26.96	2.42	2.44	5.88	295.00	0.376	22.20
38.20	3.10	194.28	31.83	2.40	2.52	5.97	348.00	0.374	26.40
45.98	3.58	263.84	38.27	2.75	2.79	6.50	465.00	0.392	27.37
49.85	3.67	285.04	41.45	2.74	2.83	6.54	503.00	0.392	29.74
57.43	3.54	326.54	47.57	2.73	2.91	6.62	575.00	0.390	34.43
64.63	3.52	366.99	53.56	2.72	2.99	6.71	643.00	0.388	39.07

Graphical symbols for the drawing and table 1:

B – is the width of greater shelf;

b – is the width of smaller shelf;

t – is the shelf thickness;

R – is the inner curvature radius;

r – is the shelves curvature radius;

J – is the moment of inertia;

i – is the radius of inertia;

x_o, y_o – are the distances from the centroid to outside shelf surfaces;

Jxy - is the centrifugal moment of inertia.

(**Amended Wording, Amendment No. 1).**

3. The angle bars shall be subdivided depending on their rolling accuracy:

A - pinpoint accuracy;

B - ordinary accuracy.

4. The maximum deviations of angle bar dimensions shall not exceed those indicated in table 2.

Table 2

Number of an angle bar	Maximum deviations						
	of a shelf width	of a shelf thickness					
		up to 6 mm inclusive		from 6.5 to 9 mm inclusive		over 9 mm	
		A	*B*	*A*	*B*	*A*	*B*
2.5/1.6-5/3.2	±1.0	+0.2 -0.3	±0.3	-	-	-	-
5.6/3.6-9/5.6	±1.5	+0.2 -0.4	+0.3 - 0.4	+0.2 -0.5	+0.3 0.5	-	-
10/6.3-16/10	±2.0	+0.3 -0.4	±0.4	+0.3 -0.5	+0.4 -0.5	+0.3 -0.6	+0.4 -0.6
18/11-20/12.5	±3.0	-	-	-	-	+0.4 -0.7	+0.5 -0.7

5. The maximum deviations of dimension for the angle bars, manufactured on rolling mills not equipped with rigid stands, shall not exceed those indicated in table 3 until 01.01.93.

Table 3

Number of an angle bar	Maximum deviations						
	of a shelf width	of a shelf thickness					
		up to 6 mm inclusive		from 6.5 to 9 mm inclusive		over 9 mm	
		A	*B*	*A*	*B*	*A*	*B*
2.5/1.6-5/3.2	±1.0	+0.2 -0.3	+0.3 -0.4	-	-	-	-
5.6/3.6-9/5.6	±1.5	+0.2 -0.4	+0.3 -0.5	+0.2 -0.5	+0.3 -0.6	-	-
10/6.3-16/10	±2.0	+0.3 -0.4	+0.4 -0.5	+0.3 -0.5	+0.4 -0.6	+0.3 -0.6	+0.4 -0.7
18/11-20/12.5	±3.0	-	-	-	-	+0.4 -0.7	+0.5 -0.8

(Amended Wording, Amendment No. 1).

6. By agreement between the manufacturer and the customer it shall be allowed to replace the maximum deviations of the shelf thickness with maximum deviations of the shelf mass, equal to +3/-5 %.

7. The right angle deviation at the apex shall not exceed 35′.

8. The blunting of the shelf outer angles (including the apex angle) shall not be controlled.

At the customer's request the blunting of the shelf outer angles (including the apex angle) shall not exceed:

0.3 of the shelf thickness - for angle bars up to 10 mm thick inclusive;

3.0 of the shelf thickness - for angle bars over 10 to 15 mm thick inclusive;

5.0 of the shelf thickness - for angle bars over 16 mm thick.

9. The angle bar shall be fabricated of 4 to 12 m long, including the angle bars of:

sized length;

multiple sized length;

unsized length;

limited length within the limits of unsized length;

sized length with unsized lengths in amount of no more than 5 % of a batch; multiple sized length with unsized lengths in amount of no more than 5 % of a batch.

It shall be allowed to fabricate angle bars over 12 m long.

8 and 9. **(Amended Wording, Amendment No. 1).**

10. The maximum length deviations for sized length angle bars or for multiple sized length angle bars shall not exceed, in millimeters:

+30 – for the length of 4 m;

+50 – for the length over 4 m to 6 m inclusive;

+70 – for the length over 6 m;

+40 – for the length over 4 to 7 m (at the customer's request):

+5 – per each 1 m over 7 m.

11. The angle bar curvature shall not exceed 0.4 % of its length. At the customer's request there may be fabricated the angle bars, whose curvature does not exceed 0.2 % of their length.

For the angle bars Nos. 2.5/1.6 to 5.6/3.6 inclusive the curvature shall be checked up on the length of 1 m.

12. The angle bar twisting around its longitudinal axis shall not be allowed.

13. The cross-section dimensions of an angle bar shall be checked up at a distance of no less than 500 mm from the bar edge.

DETAILS

1. DEVELOPED AND SUBMITTED by Ministry of Ferrous Metallurgy of the USSR and by State Committee on Architecture and Construction of the USSR

DEVELOPERS
S.I. RudYuk, Cand. Sci. (Tech.); **V.F. Kovalenko,** Cand. Sci. (Tech.); **N.F. Gritsuk,** Cand. Sci. (Tech.); **K.F.Peretyat'ko; G.I. Snimshchikova; E.I. Bulgakov;. Zh.M. Royeva,** Cand. Sci. (Econ.); **V.I. Krasnova; B.G. Pavlov,** Cand. Sci. (Tech.); **V.F. Belyaev,** Cand. Sci. (Tech.); **V.V. Berezin,** Cand. Sci. (Tech.); **S.I. Bochkova**

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3. IN PLACE OF GOST 8510-72

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Editor *L.V. Afanasenko*
Technical Editor *V.N. Mal'kova*
Proof-reader *L.Ya. Mitrofanova*