

Hot Rolled Flat(Steel GB 704-88)

1 Application:Suitable for thickness 3mm-6mm, width 10mm-150mm, rectangularcross-section general purpose hot rolled flat steel 。

2 、 Specifications

2.1 Cross-sectional dimensions and allowable deviations of flat steel

Width b			Thickness f		
Dimension	Allowable Deviations		Dimension	Allowable Deviations	
	Standard Grade	Higher Grade		Standard Grade	Higher Grade
10-50	+0.5 -1.0	+0.3 -0.9	3-16	+0.3 -0.5	+0.2 -0.4
>50-75	+0.6 -1.3	+0.4 -1.2			
>75-100	+0.9 -1.8	+0.7 -1.7	>16-60	+1.5% -3.0%	+1.0% -2.5%
>100-200	+2.0 -2.0%	+0.8 -1.8%			

Note: The thickness difference measured between any two points on the same cross-section shall not exceed 1/2 of the thickness tolerance

2.2 Length allowable deviations

Length (m)	≤4	>4-6	>6
Length Allowable Deviation (mm)	+30 0	+50 0	+70 0

Knowledge Related to Metal Materials Oxidation Resistance

The ability of metal materials to resist oxidation by air, steam, coal gas, and other oxidizing media under high-temperature conditions is called oxidation resistance. It is relevant to petrochemical equipment. 。

Many parts, such as gas boilers, steam turbines, gas turbines, jet engines, hot processing machinery, rockets, and missiles, operate under high-temperature conditions while directly contacting various gaseous media. Therefore, the materials used for these parts must have good oxidation resistance; otherwise, their surfaces will rapidly oxidize, peel off, and become damaged.

The oxidation rate of metal materials depends on their composition, external temperature, the composition of the gas medium, pressure, gas flow velocity, the composition of the formed oxide film, and its physical properties. 。

Width (mm)	Thickness Degree (mm)											
	3	4	5	6	7	8	9	10	11	12	14	16
	Theoretical Weight (kg/m)											
10		0.31	0.39	0.47	0.55	0.63						
12	0.24	0.38	0.47	0.57	0.66	0.75						
14	0.28	0.44	0.55	0.66	0.77	0.88						
16	0.33	0.50	0.63	0.75	0.88	1.00	1.15	1.26				
18	0.38	0.57	0.71	0.85	0.99	1.13	1.27	1.41				
20	0.42	0.63	0.78	0.94	1.10	1.26	1.41	1.57	1.73	1.88		
22	0.47	0.69	0.86	1.04	1.21	1.38	1.55	1.73	1.90	2.07		
25	0.52	0.78	0.98	1.18	1.37	1.57	1.77	1.96	2.16	2.36	2.75	3.14
28	0.59	0.88	1.10	1.32	1.54	1.76	1.98	2.20	2.42	2.64	3.08	3.53
30	0.66	0.94	1.18	1.41	1.65	1.88	2.12	2.36	2.59	2.83	3.30	3.77
32	0.71	1.00	1.26	1.51	1.76	2.01	2.26	2.55	2.76	3.01	3.52	4.02
35	0.75	1.10	1.37	1.65	1.92	2.20	2.47	2.75	3.02	3.30	3.85	4.40
40	0.82	1.26	1.57	1.88	2.20	2.51	2.83	3.14	3.45	3.77	4.40	5.02
45	0.94	1.41	1.77	2.12	2.47	2.83	3.18	3.53	3.89	4.24	4.95	5.65
50	1.06	1.57	1.96	2.36	2.75	3.14	3.53	3.93	4.32	4.71	5.50	6.28
55	1.18	1.73	2.16	2.59	3.02	3.45	3.89	4.32	4.75	5.18	6.04	6.91
60		1.88	2.36	2.83	3.30	3.77	4.24	4.71	5.18	5.65	6.59	7.54
65		2.04	2.55	3.06	3.57	4.08	4.59	5.10	5.61	6.12	7.14	8.16
70		2.22	2.75	3.30	3.85	4.40	4.95	5.50	6.04	6.59	7.69	8.79

Width (mm)	Thickness Degree (mm)												
	18	20	22	25	28	30	32	36	40	45	50	56	60
	Theoretical Weight (kg/m)												
10													
12													
14													
16													
18													
20													
22													
25													
28													
30	4.24	4.71											
32	4.52	5.02											
35	4.95	5.50	6.04	6.87	7.69								
40	5.65	6.28	6.91	7.85	8.79								
45	6.36	7.07	7.77	8.83	9.89	10.60	11.30	12.72					
50	7.06	7.85	8.64	9.81	10.99	11.78	12.56	14.13					
55	7.77	8.64	9.50	10.79	12.09	12.95	13.82	15.54					
60	8.48	9.42	10.36	11.78	13.19	14.13	15.07	16.96	18.84	21.20			
65	9.18	10.20	11.23	12.76	14.29	15.31	16.33	18.37	20.41	22.96			
70	9.89	10.99	12.09	13.74	15.89	16.49	17.58	19.78	21.98	24.73			

Note: Specifications in bold within the table are not recommended for use. The same applies below. o

Theoretical Weight ②

Width (mm)	Thickness Degree (mm)											
	3	4	5	6	7	8	9	10	11	12	14	16
	Theoretical Weight (kg/m)											
75							5.30	5.89	6.48	7.07	8.24	9.42
80					4.12	4.71	5.65	6.28	6.91	7.54	8.79	10.05
85					4.40	5.02	6.01	6.67	7.34	8.01	9.34	10.68
90					4.67	5.34	6.36	7.07	7.77	8.48	9.89	11.30
95				3.53	4.95	5.65	6.71	7.46	8.20	8.95	10.44	11.93
100			3.14	3.77	5.22	5.97	7.06	7.85	8.64	9.42	10.99	12.56
105			3.34	4.24	5.50	6.28	7.47	8.24	9.07	9.89	11.54	13.19
110			3.53	4.47	5.77	6.59	7.77	8.64	9.50	10.36	12.09	13.82
120		2.36	3.73	4.71	6.04	6.91	8.48	9.42	10.36	11.30	13.19	15.07
125		2.51	3.92	4.95	6.59	7.54	8.83	9.81	10.79	11.78	13.74	15.70
130			4.12	5.18	6.87	7.85	9.18	10.20	11.23	12.25	14.29	16.33
140			4.32	5.65	7.14	8.16	9.98	10.99	12.09	13.19	15.39	17.58
150			4.71	5.89	7.69	8.79	10.60	11.78	12.95	14.13	16.48	18.84
(160)				6.12	8.24	9.42	11.30	12.56	13.82	15.07	17.58	20.10
(170)					8.79	10.05	12.01	13.34	14.68	16.01	18.68	21.35
(180)					9.34	10.68	12.72	14.13	15.54	16.96	19.78	22.61
(190)					9.98	11.30	13.42	14.92	16.41	17.90	20.88	23.86
(200)							14.13	15.70	17.27	18.84	21.98	25.12

Width (mm)	Thickness Degree (mm)												
	18	20	22	25	28	30	32	36	40	45	50	56	60
	Theoretical Weight (kg/m)												
75	10.60	11.78	12.95	14.72	16.48	17.66	18.84	21.20	23.55	26.49			
80	11.30	12.56	13.82	15.70	17.58	18.84	20.10	22.61	25.12	28.26	31.40	35.17	
85	12.01	13.34	14.68	16.68	18.68	20.02	21.35	24.02	26.69	30.03	33.36	37.37	40.04
90	12.72	14.13	15.54	17.66	19.78	21.20	22.61	25.43	28.26	31.79	35.32	39.56	42.39
95	13.42	14.92	16.41	18.64	20.88	22.37	23.81	26.85	29.83	33.56	37.29	41.76	44.74
100	14.13	15.70	17.27	19.62	21.98	23.55	25.12	28.26	31.40	35.32	39.25	43.96	47.10
105	14.84	16.48	18.13	20.61	23.08	24.73	26.38	29.61	32.97	37.09	41.21	46.16	49.46
110	15.54	17.27	19.00	21.59	24.18	25.90	27.63	31.09	34.54	38.86	43.18	48.36	51.81
120	16.96	18.84	20.72	23.55	26.38	28.26	30.14	33.91	37.68	42.39	47.10	52.75	56.52
125	17.66	19.62	21.58	24.53	27.48	29.44	31.40	35.32	39.25	44.16	49.06	54.95	58.88
130	18.37	20.41	22.45	25.51	28.57	30.62	32.66	36.74	40.82	45.92	51.02	57.15	61.23
140	19.78	21.98	24.18	27.48	30.77	32.97	35.17	39.56	43.96	49.46	54.95	61.54	65.94
150	21.20	23.55	25.90	29.44	32.97	35.32	37.68	42.39	47.10	52.99	58.88	65.94	70.65
(160)	22.61	25.12	27.63	31.40	35.17	37.68	40.19	45.22	50.24	56.52	62.80	70.34	75.36
(170)	24.02	26.64	29.36	33.36	37.37	40.04	42.70	48.04	53.38	60.05	66.72	74.73	80.07
(180)	25.43	28.26	31.09	35.32	39.56	42.39	45.22	50.87	56.52	63.58	70.65	79.13	84.78
(190)	26.85	29.83	32.81	37.29	41.76	44.74	47.73	53.69	59.66	67.12	74.58	83.52	89.49
(200)	28.26	31.40	34.54	39.25	43.96	47.10	50.24	56.52	62.80	70.65	78.50	87.92	94.20

Note ① Two font styles in the table are used to classify flat steel groups: Group One Theoretical Weight $\leq 19 \text{ kg/m}$; Group Two Theoretical Weight $> 19 \text{ kg/m}$; Group Three Theoretical Weight $> 60 \text{ kg/m}$. Values in parentheses ② are not recommended for use. The theoretical weights in the table are calculated based on a steel relative density of 7.85.

3 Technical Requirements

3.1 Bendability

Unit mm

Accuracy Level	Bend per Meter $\leq$	Total Bend
Standard Grade	4	0.4% of Delivery Length
Higher Grade	2.5	0.25% of Delivery Length

3.2 Weight

3.2.1 Flat steel is usually delivered based on actual weight. By agreement between supplier and buyer, delivery by theoretical weight is also acceptable but must be specified in the contract.

3.2.2 Flat steel is delivered according to theoretical weight based on fixed and multiple lengths. By agreement between supplier and buyer, delivery by actual weight is also acceptable but must be specified in the contract.

3.3 The sickle bend and waviness per meter of flat steel at arbitrary lengths shall comply with the specifications in the following table.

Unit mm

Grade	Sickle Bend $\leq$	Waviness $\leq$
Standard Grade	5	5
Higher Grade	3	4

3.3.1 The total sickle bend of the flat steel shall not exceed the product of the sickle bend per meter and the total (delivery length), measured in m.

3.3.2 The flat steel shall not exhibit obvious twisting.