Technical Delivery Conditions

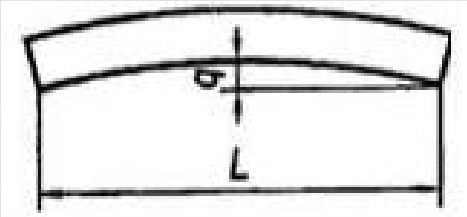
Preferred sizes, masses, and size tolerance of hot rolled round bars for general and precision purpose				
Size (d)	Deviation Limit Normal (P)	Deviation Limit Precision (P)	Mass	Cross Sectional Area
mm	mm	mm	kg/m	cm2
10			0.617	0.785
12		± 0.15	0.888	1.13
13	± 0.4		1.04	1.33
14			1.21	1.54
15			1.39	1.77
16			1.58	2.01
18		± 0.20	2.00	2.54
19			2.23	2.84
20	± 0.5		2.47	3.14
22			2.98	3.80
24			3.55	4.52
25			3.85	4.91
26			4.17	5.31
27		± 0.25	4.49	5.73
28			4.83	6.16
30	± 0.6		5.55	7.07
32			6.31	8.04
35			7.55	9.62
36		± 0.30	7.99	10.2
38			8.90	11.3
40			9.86	12.6
42	± 0.8		10.9	13.9
45			12.5	15.9
48		± 0.40	14.2	18.1
50			15.4	19.6
52			16.7	21.2
55			18.7	23.8
60			22.2	28.3
63			24.5	31.2
65	± 1	± 0.50	26.0	33.2
70			30.2	38.5
73			32.9	41.9
75			34.7	44.2
80			39.5	50.3
85			44.5	56.7
90	± 1.3		49.9	63.6
95			55.6	70.9
100			61.7	78.5
105			68.0	86.6
110			74.6	95.0
115	± 1.5		81.5	104
120			88.8	113

125			96.3	123
130			104	133
135			112	143
140		Not Applicable	121	154
145	± 2		130	165
150			139	177
155			148	189
160			158	201
165			168	214
170			178	227
175	± 2.5		189	241
180			200	254
190			223	284
200			247	314

Sizes, masses, and size tolerance of hot rolled round bars for precision purpose			
Size (d) **mm**	**Deviation Limit Precision (P)** **mm**	**Mass**	**Cross Sectional Area**
9.75	± 0.15	0.586	0.75
11.75		0.851	1.08
13.75		1.17	1.48
15.70		1.52	1.94
17.70	± 0.25	1.93	2.46
19.70		2.39	3.05
21.70		2.90	3.70
23.65		3.45	4.39
26.65	± 0.25	4.38	5.58
29.60		5.40	6.88
32.55		6.53	8.32
35.55	± 0.30	7.79	9.93
38.55		9.16	11.67
41.50		10.62	13.53
44.50	± 0.40	12.21	15.55
47.50		13.91	17.72
51.50		16.35	20.83

Straightness tolerance of hot rolled round bars

Straightness (q)



Nominal Size	Tolerance
d <= 25	na
25 <d <=80	q <= %0.4 L
80 <d <= 250	q <= %0.25 L

Preferred sizes and masses of hot rolled flat bars for general purpose														
Width mm	Thickness (t) mm													
	5	6	8	10	12	15	20	25	30	35	40	50	50	80
	Mass (kg/m)													
10	0.393													
12	0.471	0.565												
15	0.589	0.707	0.942	1.18										
16	0.628	0.754	1.00	1.26										
20	0.785	0.942	1.26	1.57	1.88	2.36								
25	0.981	1.18	1.57	1.96	2.36	2.94								
30	1.18	1.41	1.88	2.36	2.83	3.53	4.71							
35	1.37	1.65	2.20	2.75	3.30	4.12	5.50							
40	1.57	1.88	2.51	3.14	3.77	4.71	6.28	7.85	9.42					
45	1.77	2.12	2.83	3.53	4.24	5.30	7.07	8.83	10.6					
50	1.96	2.36	3.14	3.93	4.71	5.89	7.85	9.81	11.8					
60	2.36	2.83	3.77	4.71	5.65	7.07	9.42	11.8	14.1	16.5	18.8			
70	2.75	3.30	4.40	5.50	6.59	8.24	11.0	13.7	16.5	19.2	22.0			
80	3.14	3.77	5.02	6.28	7.54	9.42	12.6	15.7	18.8	22.0	25.1	31.4	37.7	
90	3.53	4.24	5.65	7.07	8.48	10.6	14.1	17.7	21.2	24.7	28.3	35.3	42.4	
100	3.93	4.71	6.28	7.85	9.42	11.8	15.7	19.6	23.6	28.3	31.4	39.3	47.1	
120		5.65	7.54	9.42	11.3	14.1	18.8	23.6	28.3	33.0	37.7	47.1	56.5	
150		7.06	9.42	11.8	14.1	17.7	23.6	29.4	35.3	41.2	47.1	58.9	70.7	94.2

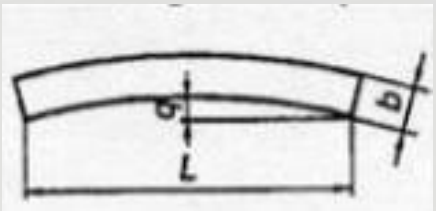
Size tolerance of hot rolled flat bars

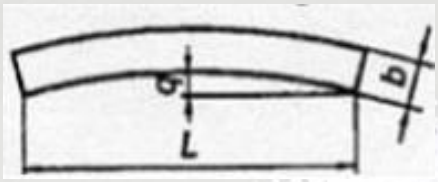
Width (b)

Nominal width	Deviation
10 <= b <=40	+/-0.75
40 < b <= 80	+/- 1
80 < b <=100	+/- 1.5
100 < b <=120	+/- 2
120 < b <=150	+/- 2.5

Thickness (t)

Nominal Thickness	Deviation Limits
t <= 20	+/- 0.5
20 < t <= 40	+/- 1
40 < t <= 80	+/- 1.5

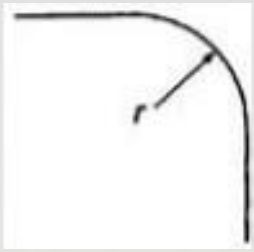
Straightness (q)	Nominal Size	Tolerance of Surface
	< 1000 m^2	q <= % 4 L
	<= 1000 m^2	q <= % 0.25 L

Deviation from straightness (u)	Nominal Thickness	Tolerance
	10 <= t <= 25	0.5
	25 < t <= 40	1
	40 < t <= 80	1.5

Preferred sizes, masses & size tolerance of hot rolled square bars			
Size (d) mm	Deviation Limit mm	Mass kg/m	Cross Sectional Area cm2
8		0.502	0.64
10		0.785	1.00
12	± 0.4	1.13	1.44
13		1.33	1.69
14		1.54	1.96
15		1.77	2.25
16		2.01	2.56
18		2.54	3.24
20	± 0.5	3.14	4.00
22		3.80	4.84
24		4.52	5.76
25		4.91	6.25
26		5.31	6.76
28		6.15	7.84
30	± 0.6	7.07	9.00
32		8.04	10.2
35		9.62	12.3
40		12.6	16.0
45	± 0.8	15.9	20.3
50		19.6	25.0
55		23.7	30.3
60		28.3	36.0
65		33.2	42.3
70	± 1.0	38.5	49.0
75		44.2	56.3
80		50.2	64.0
90		63.6	81.0
100	± 1.3	78.5	100
110		95.5	121
120	± 1.5	113	144
130		133	169
140		154	196
150	± 1.8	177	225

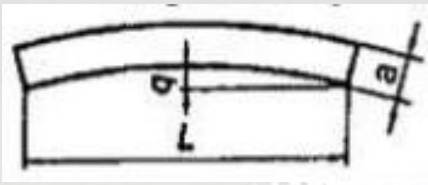
Size tolerance and form of hot rolled square bars

Corner Radius (r)



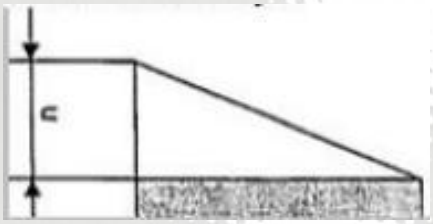
Nominal Size	R
8 <= a <= 12	r <= 1
12 < a <= 20	r <= 1.5
20 < a <= 30	r <= 2
30 < a <= 50	r <= 2.5
50 < a <= 100	r <= 3
100 < a <= 150	r <= 4.5

Straightness (q)



Nominal Size	Tolerance
a <= 25	na
25 < a <= 80	q <= % 4 L
80 < a	q <= % 0.25 L

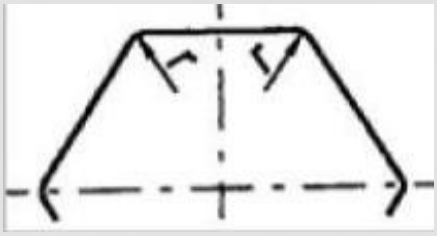
Deviation from verticality (u)



Nominal Size	Tolerance
a <= 50	1.5
50 < a <= 75	2.25
75 < a <= 100	3
100 < a <= 150	4.5

Preferred sizes and masses of hot rolled hexagonal bars			
Distance between counter surfaces (s) mm	Deviation Limit mm	Mass kg/m	Cross Sectional Area cm2
13	± 0.4	1.55	1.46
14		1.33	1.70
15		1.53	1.95
16		1.74	2.22
17		1.96	2.50
18		2.20	2.81
19	± 0.5	2.46	3.13
20.5		2.86	3.64
22.5		3.44	4.38
23.5		3.75	4.78
25.5		4.42	5.63
28.5	± 0.6	5.52	7.03
31.5		6.75	8.59
33.5		7.63	9.72
35.5	± 0.8	8.56	10.9
37.5		9.56	12.2
39.5	± 0.8	10.6	13.5
42.5		12.3	15.6
47.5		15.3	19.5
52		18.4	23.4
57		22.1	28.1
62	± 1.0	26.1	33.3
67		30.5	38.9
72		35.2	44.9
78		41.4	52.7
83		46.8	59.7
88	± 1.3	52.6	67.1
93		58.8	74.9
98		65.3	83.2
103	± 1.5	72.1	91.9

Accuracy and radius tolerance of hot rolled hexagonal bars

Radius (r)	Nominal Range	r max
	s <= 20	1.5
	20 < s <= 28.5	2
	28.5 < s <= 48	2.5
	48 < s <= 83	3
	83 < s <= 103	3.5

Straightness (q)	Nominal Range	q max
	s <= 39.5	na
	39.5 < s <= 83	0.0040 x L
	83 < s <= 103	0.0025 x L

BRIGHT BARS

Size tolerance according to applied processes							
Final condition	h6	h7	h8	h9	h10	h11	h12
Drawn	-	-	-	R	R	R,S,H	R,S,H
Peeled	-	-	-	R	R	R	R
Grinded	R	R	R	R	R	R	R
Polished	R	R	R	R	R	R	R

R=Round, S=Square, H=Hexagon

Tolerance for flat products						
Width	Deviation mm	mm	ISO 286-2 Class	Thickness	Deviation mm	ISO 286-2 Class
≤ 18	+0	-0.11	h11	> 3 ≤ 6	-0.075	h11
> 18 ≤ 30	+0	-0.13	h11	> 6 ≤ 10	-0.09	h11
> 30 ≤ 50	+0	-0.16	h11	> 10 ≤ 18	-0.11	h11
> 50 ≤ 80	+0	-0.19	h11	> 18 ≤ 30	-0.13	h11
> 80 ≤ 100	+0	-0.22	h11	> 30 ≤ 50	-0.16	h11
> 100 ≤ 150	+0.50	-0.5		> 50 ≤ 60	-0.19	h11
> 150 ≤ 200	+1.00	-1		> 60 ≤ 80	-0.3	h12
> 200 ≤ 300	+2.00	-2		> 80 ≤ 100	-0.35	h12
> 300 ≤ 400	+2.50	-2.5				

Size tolerance classes for round products							
Nominal Sizes mm	According to ISO 286 - 2 Tolerance Classes						
	h6	h7	h8	h9	h10	h11	h12
> 1 ≤ 3	0.006	0.010	0.014	0.025	0.040	0.060	0.100
> 3 ≤ 6	0.008	0.012	0.018	0.030	0.048	0.075	0.120
> 6 ≤ 10	0.009	0.015	0.022	0.036	0.058	0.090	0.150
> 10 ≤ 18	0.011	0.018	0.027	0.043	0.070	0.110	0.180
> 18 ≤ 30	0.013	0.021	0.033	0.052	0.084	0.130	0.210
> 30 ≤ 50	0.016	0.025	0.039	0.062	0.100	0.160	0.250
> 50 ≤ 80	0.019	0.030	0.046	0.074	0.120	0.190	0.300
> 80 ≤ 120	0.022	0.035	0.054	0.087	0.140	0.220	0.350
> 120 ≤ 180	0.025	0.040	0.063	1.000	0.160	0.250	0.400
> 180 ≤ 200	0.029	0.046	0.072	0.115	0.185	0.290	0.460
Deviations should be taken negative direction according to nominal sizes.							