

Stainless steel bar

Conditions, surface finishes and tolerances

Stainless and heat resisting bars are produced to various conditions, viz. annealed, hardened (quenched) and tempered, cold drawn, etc. Various surface finishes include hot rolled, pickled, rough machined, peeled, ground and drawn. The tolerances will depend on both the surface finish and the specified range (eg. - only, + and -, + only). The various conditions, surface finishes and tolerances are not applicable to all materials and shapes.

Mass of stainless steel bar in kg1m

Useful formulae:

- Round Bar*:** $n (r)^2 \times 0,00795$ (r = radius in mm)
eg 50mm round bar = $n (25)^2 \times 0,00795 = 15,61$ kg/m
- Square Bar*:** $(d)^2 \times 0,00795$ (d = cross section in mm)
eg 50mm square bar = $(50)^2 \times 0,00795 = 19,88$ kg/m
- Hex Bar*:** 1,1 x mass of equivalent round bar
eg 50mm hexbar = $1,1 \times 15,41 = 17,17$ kg/m
- Flat bar*:** $W \times T \times 0,00795$ (W & T are width and thickness in mm)
eg 80mm x 12mm flat bar = $80 \times 12 \times 0,00795 = 7,64$ kg/m
- Section:** $G \times T \times 0,00795$ (G = nett girth in mm, T = thickness in mm)
eg 150mm x 75mm x 6mm channel = $(150 + 75 + 75 - 6 - 6) \times 6 \times 0,00795 = 13,74$ kg/m *

* For Round, Square and Hex Bar:

Double the size = 4 x the mass eg 100mm round bar = mass of 50mm round x 4 = $15,61 \times 4 = 62,44$ kg/m

ROUND, HEXAGON AND SQUARE BAR

Size	Round	Hex	Square	Size	Round	Hex	Square	Size	Round	Hex	Square
6	0.22	0.24	0.28	35	7.65	8.42	9.74	75	35.1	38.7	44.8
8	0.39	0.44	0.51	40	9.99	10.9	12.72	80	40.00	44.00	50.8
10	0.63	0.69	0.80	45	12.7	13.9	16.1	90	50.5	55.6	64.4
12	0.90	0.99	1.14	50	15.6	17.2	19.9	100	62.5	68.7	79.5
16	1.59	1.76	2.03	55	18.9	20.8	24.1	110	75.6	83.1	96.2
20	2.50	2.74	3.18	60	22.5	24.7	28.7	125	97.5	107.4	124.3
25	3.90	4.29	4.97	65	26.4	29.1	33.6	150	140.5	154.5	178.8
32	6.39	7.03	8.14	70	30.6	33.6	39.0	200	249.7	274.8	318.0

Note: Based on a mean density of 7 950 kg/cubic metre



Stainless steel hollow bar

O.D mm	I.D mm	Dimensions after rough machining				Average weight Kg/m
		Chucked true to the O.D.		Chucked true to the I.D		
		Max O.D mm	Min I.D mm	Max O.D. mm	Min I.D. mm	
32	20	31.0	22.0	30.0	21.0	4.23
	16	31.0	18.0	30.0	17.0	5.11
36	25	35.0	27.0	34.0	26.0	4.58
	20	35.0	22.0	34.0	21.0	5.96
	16	35.0	18.5	33.5	17.0	6.84
40	28	39.0	30.0	38.0	29.0	5.63
	25	39.0	27.0	38.0	26.0	6.51
45	20	39.0	22.5	37.5	21.0	7.89
	32	44.0	34.0	43.0	33.0	6.75
	28	44.0	30.0	42.5	29.0	8.23
	20	44.0	22.5	42.5	21.0	10.6
50	36	49.0	38.0	48.0	37.0	8.08
	32	49.0	34.5	47.5	33.0	9.75
56	25	49.0	27.5	47.5	26.0	12.2
	40	55.0	42.0	54.0	41.0	10.3
	36	55.0	38.5	53.5	37.0	12.1
	28	55.0	30.5	53.5	29.0	15.3
63	50	62.0	52.0	61.0	51.0	10.0
	40	62.0	42.5	60.5	41.0	15.6
71	36	62.0	38.5	60.5	37.0	17.5
	32	62.0	34.5	60.5	33.0	19.1
	56	69.5	58.0	69.0	57.0	13.0
	45	69.5	47.5	68.5	46.0	19.8
	40	69.5	42.5	68.5	41.0	22.4
	36	69.5	38.5	68.5	37.0	24.3
75	40	73.5	42.5	72.0	41.0	26.2
	80	78.5	65.5	77.5	64.0	16.5
	50	78.5	52.5	77.0	51.0	25.5
	45	78.5	47.5	77.0	46.0	28.5
	40	78.5	43.0	77.0	41.0	31.1
85	45	83.5	48.0	82.0	46.0	33.7
	90	88.5	73.5	87.5	72.5	20.8
	63	88.5	65.5	87.0	64.0	27.4
	56	88.5	58.5	87.0	57.0	32.5
	50	88.5	53.0	87.0	51.0	36.4
95	50	93.5	52.0	91.0	51.0	42.3
	100	98.5	82.5	97.0	81.5	24.6
	71	98.5	73.5	97.0	72.5	32.9
	63	98.5	65.5	96.5	54.0	39.5
	56	98.5	59.0	96.5	57.0	44.6
106	80	104.0	82.5	103.0	81.5	32.5
	71	104.0	74.0	102.5	72.5	40.8
	63	104.0	66.0	102.5	64.0	47.4
	56	104.0	59.0	102.5	57.0	52.5



NATAL STAINLESS STEEL

Stainless steel hollow bar

O.D mm	I.D mm	Dimensions after rough machining				Average weight Kg/m	
		Chucked true to the O.D.		Chucked true to the I.D.			
		Max O.D mm	Min I.D mm	Max O.D. mm	Min I.D. mm		
112	90	110.0	93.0	109.0	915.	30.4	
	80	110.0	83.0	108.5	81.5	40.8	
	71	110.0	74.0	108.5	72.5	49.2	
	63	110.0	66.0	108.0	64.0	55.8	
118	90	116.0	93.0	114.5	91.5	39.2	
	80	116.0	83.0	114.5	81.5	49.7	
	71	116.0	74.0	114.0	72.5	57.9	
	63	116.0	66.0	114.0	64.0	64.6	
125	100	123.0	103.0	121.5	101.5	38.4	
	90	123.0	93.0	121.5	91.5	50.1	
	80	123.0	83.0	121.0	81.5	60.5	
	71	123.0	74.5	121.0	72.5	68.9	
132	106	130.0	109.0	128.5	108.0	42.3	
	90	130.0	93.5	128.0	91.5	61.6	
	80	130.0	83.5	128.0	81.5	82.0	
	71	130.0	74.5	127.5	72.5	80.3	
140	112	137.5	115.0	136.5	114.0	48.2	
	100	137.5	103.5	136.0	101.5	63.8	
	90	137.5	93.5	136.0	91.5	75.4	
	80	137.5	83.5	135.5	81.5	85.9	
150	125	147.5	128.5	146.0	127.0	47.8	
	106	147.5	109.5	146.0	108.0	74.7	
	95	147.5	98.5	145.5	96.5	88.3	
	80	147.5	84.0	145.0	81.5	104.4	
160	132	157.5	135.5	156.0	134.0	56.6	
	122	157.5	125.5	156.0	124.0	72.1	
	112	157.5	115.5	155.5	114.0	86.5	
170	140	167.0	143.5	166.0	142.5	64.3	
	130	167.0	134.0	165.5	132.0	80.8	
	118	167.0	122.0	165.5	120.0	99.1	
	150	177.0	154.0	175.5	152.5	68.9	
180	140	177.0	144.0	175.5	142.5	86.6	
	125	177.0	129.0	175.0	127.0	110.0	
190	160	187.0	164.0	185.5	162.5	73.5	
	150	187.0	154.0	185.5	152.5	92.4	
	132	187.0	136.5	185.0	134.0	123.6	
	200	197.0	164.0	195.0	162.5	98.4	
200	150	197.0	154.5	195.0	152.5	117.3	
	140	197.0	144.5	194.5	142.5	135.2	
212	170	208.5	174.5	207.0	173.0	109.7	
	130	208.5	135.0	206.0	132.0	183.3	
224	180	220.5	184.5	218.5	183.0	121.6	
	140	220.5	145.0	217.5	142.5	200.2	
236	190	232.0	195.0	230.5	193.0	134.2	
	150	232.0	155.5	229.5	152.5	217.6	
250	200	246.0	205.0	244.0	203.0	153.7	