HOLLOW STRUCTURAL SECTIONS

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Chemical Composition

	STK 400 Max	STK 490 Max
Carbon	0.25	0.18
Silicon	-	0.55
Manganese	-	1.65
Phosphorus	0.04	0.035
Sulphur	0.04	0.035

Mechanical Properties

	STK 400 Min	STK 490 Min
Tensile	400 MPa	490 MPa
Yield	235 MPa	315 MPa
Elongation	12-23%	12-23%

JIS G3444: CARBON STEEL TUBES FOR GENERAL STRUCTURE - ROUND TUBES

Norminal Size (mm)		Outside diameter (mm)			Thickness	Weight	Area	Moment of Inertia	Section Modulus	Radius of Gyration
inch	mm	mean	min	max	mm	kg/m	cm^2	cm^4	cm^3	cm
1/2"	15	21.7	21.2	22.2	2.0	0.972	1.24	0.607	0.56	0.70
3/4"	20	27.2	26.7	27.7	2.0 2.3	1.24 1.41	1.58 1.80	1.26 1.41	0.93 1.03	0.89 0.88
1"	25	34	33.5	34.5	2.3	1.80	2.29	2.89	1.70	1.12
1-1/4"	32	42.7	42.2	43.2	2.3 2.5 2.8	2.29 2.49 2.76	2.92 3.16 3.51	5.97 6.40 7.02	2.80 3.00 3.29	1.43 1.42 1.41
1-1/2"	40	48.6	48.1	49.1	2.3 2.5 2.8 3.2	2.63 2.84 3.16 3.58	3.35 3.62 4.03 4.56	8.99 9.65 10.60 11.80	3.70 3.97 4.36 4.86	1.64 1.63 1.62 1.61
2"	50	60.5	59.9	61.11	2.3 3.2 4.0	3.30 4.52 5.57	4.21 5.76 7.10	17.80 23.70 28.50	5.90 7.84 9.41	2.06 2.03 2.00
2-1/2"	65	76.3	75.54	77.06	2.8 3.2 4.0	5.08 5.77 7.13	6.47 7.35 9.09	43.70 49.20 59.50	11.50 12.90 15.60	2.60 2.59 2.56
3"	80	89.1	88.21	89.99	2.8 3.2 4.0	5.96 6.78 8.39	7.59 8.64 10.69	70.70 79.80 97.00	15.90 17.90 21.80	3.05 3.04 3.01
3-1/2"	90	101.6	100.58	102.62	3.2 4.0 5.0	7.76 9.63 11.90	9.89 12.26 15.17	120 146 177	23.60 28.80 34.90	3.48 3.45 3.42
4"	100	114.3	113.16	115.44	3.2 3.6 4.5 5.6	8.77 9.83 12.20 15.00	11.17 12.52 15.52 19.12	172 192 234 283	30.20 33.60 41.00 49.60	3.93 3.92 3.89 3.85
5"	125	139.8	138.4	141.2	3.6 4.0 4.5 6.0	12.10 13.40 15.00 19.80	15.40 17.07 19.13 25.22	357 394 438 566	51.10 56.30 62.70 80.90	4.82 4.80 4.79 4.74
6"	150	165.2	163.55	166.85	4.5 5.0 6.0 7.1	17.80 19.80 23.60 27.70	22.72 25.16 30.01 35.26	734 808 952 1100	88.90 97.80 115 134	5.68 5.67 5.63 5.60

TOLERANCE

CLASS 1
OD < 50 mm: ± 0.5 mm
OD ≥ 50 mm: ± 1%

CLASS 2
OD < 50 mm: ± 0.25 mm
OD ≥ 50 mm: ± 0.5%

CLASS 1
t < 4.0 mm: - 0.5 mm, +0.6 mm
4.0 mm ≤ t < 12 mm: -12.5% , +15%
t > 12.0 mm: - 1.5 mm, +15%

CLASS 2
t < 3.0 mm: ± 0.3 mm
3.0 mm ≤ t < 12 mm: ±10%
t ≥ 12.0 mm: - 1.2 mm, +10%

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Chemical Composition

	STKR 400	STK 490
	Max	**Max**
Carbon	0.25	0.18
Silicon	-	0.55
Manganese	-	1.65
Phosphorus	0.04	0.04
Sulphur	0.04	0.04

Mechanical Properties

	STKR 400	STK 490
	Min	**Min**
Tensile	400 MPa	490 MPa
Yield	245 MPa	325 MPa
Elongation	23%	23%

JIS G3466 : CARBON STEEL TUBES FOR GENERAL STRUCTURE - SQUARE TUBES

Norminal Size (mm)			Thickness	Unit Mass	Cross Sectional rea	Moment of Inertia	Modulus of Section	Readius of Gyration
A X B	min	max				cm^4	cm^3	cm
mm	mm	mm	mm	kg/m	cm^2	I_x I_y	Z_x Z_y	i_x i_y
40 x 40	38.5 x 38.5	41.5 x 41.5	1.6	1.88	2.392	5.79	2.9	1.56
			2.3	2.62	3.332	7.73	3.86	1.52
50 x 50	48.5 x 48.5	51.5 x 51.5	1.6	2.38	3.032	11.7	4.68	1.96
			2.3	3.34	4.252	15.9	6.34	1.93
			3.2	4.50	5.727	20.4	8.16	1.89
60 x 60	58.5 x 58.5	61.5 x 61.5	1.6	2.88	3.672	20.7	6.89	2.37
			2.3	4.06	5.172	28.3	9.44	2.34
			3.2	5.5	7.007	36.9	12.3	2.3
75 x 75	73.5 x 73.5	76.5 x 76.5	1.6	3.64	4.632	41.3	11	2.99
			2.3	5.14	6.552	57.1	15.2	2.95
			3.2	7.01	8.927	75.5	20.1	2.91
			4.5	9.55	12.17	98.6	26.3	2.85
80 x 80	78.5 x 78.5	81.5 x 81.5	2.3	5.5	7.012	69.9	17.5	3.16
			3.2	7.51	9.567	92.7	23.2	3.11
			4.5	10.3	13.07	122	30.4	3.05
90 x 90	88.5 x 88.5	91.5 x 91.5	2.3	6.23	7.932	101	22.4	3.56
			3.2	8.51	10.85	135	29.9	3.52
100 x 100	98.5 x 98.5	101.5 x 101.5	2.3	6.95	8.852	140	27.9	3.97
			3.2	9.52	12.13	187	37.5	3.93
			4.0	11.7	14.95	226	45.3	3.89
			4.5	13.1	16.67	249	49.9	3.87
			6.0	17.0	21.63	311	62.3	3.79
			9.0	24.1	30.67	408	81.6	3.65
			12.0	30.2	38.53	471	94.3	3.5
125 x 125	123.13 x 123.13	126.88 x 126.88	3.2	12.0	15.33	376	60.1	4.95
			4.5	16.6	21.17	506	80.9	4.89
			5.0	18.3	23.36	553	88.4	4.86
			6.0	21.7	27.63	641	103	4.82
			9.0	31.1	39.67	865	138	4.67
150 x 150	147.75 x 147.75	152.25 x 152.25	4.5	20.1	25.67	896	120	5.91
			5.0	22.3	28.36	982	131	5.89
			6.0	26.4	33.63	1150	153	5.84
			9.0	38.2	48.67	1580	210	5.69

TOLERANCE

OD	A,B ≤ 100 mm:	± 1.5 mm
	A,B > 100 mm:	± 1.5%
WT	t < 3.0 mm	± 0.3 mm
	t ≥ 3.0 mm	± 10%

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	STKR 400	STK 490
	Max	**Max**
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Silicon	-	0.55
Manganese	-	1.65
Phosphorus	0.04	0.04
Sulphur	0.04	0.04

Mechanical Properties

	STKR 400	STK 490
	Min	**Min**
Tensile	400 MPa	490 MPa
Yield	245 MPa	325 MPa
Elongation	23%	23%

JIS G3466: CARBON STEEL TUBES FOR GENERAL STRUCTURE - RECTANGULAR TUBES

Norminal Size (mm)			Thickness	Unit Mass	Cross Sectional rea	Moment of Inertia		Modulus of Section		Readius of Gyration	
A X B	min	max				cm^4		cm^3		cm	
mm	mm	mm	mm	kg/m	cm^2	I_x	I_y	Z_x	Z_y	i_x	i_y
50 x 20	48.5 x 18.5	51.5 x 21.5	1.6	1.63	2.072	6.08	1.42	2.43	1.42	1.71	0.829
			2.3	2.25	2.872	8	1.83	3.2	1.83	1.67	0.798
50 x 30	48.5 x 28.5	51.5 x 31.5	1.6	1.88	2.392	7.96	3.6	3.18	2.4	1.82	1.23
			2.3	2.62	3.332	10.6	4.76	4.25	3.17	1.79	1.2
60 x 30	58.5 x 28.5	61.5 x 31.5	1.6	2.13	2.712	12.5	4.25	4.16	2.83	2.15	1.25
			2.3	2.98	3.792	16.8	5.65	5.61	3.76	2.11	1.22
			3.2	3.99	5.087	21.4	7.08	7.15	4.72	2.05	1.18
75 x 20	73.5 x 18.5	76.5 x 21.5	1.6	2.25	2.872	17.6	2.1	4.69	2.1	2.47	0.855
			2.3	3.16	4.022	23.7	2.73	6.31	2.73	2.43	0.824
100 x 50	98.5 x 48.5	101.5 x 51.5	1.6	3.64	4.632	61.3	21.1	12.3	8.43	3.64	2.13
			2.3	5.14	6.552	84.8	29	17	11.6	3.6	2.1
			3.2	7.01	8.927	112	38	22.5	15.2	3.55	2.06
			4.5	9.55	12.17	147	48.9	29.3	19.5	3.47	2
125 x 75	123.12 x 73.5	126.87 x 76.5	2.3	6.95	8.852	192	87.5	30.6	23.3	4.65	3.14
			3.2	9.52	12.13	257	117	41.1	31.1	4.6	3.1
			4.0	11.7	14.95	311	141	49.7	37.5	4.56	3.07
			4.5	13.1	16.67	342	155	54.8	41.2	4.53	3.04
			6.0	17	21.63	428	192	68.5	51.1	4.45	2.98
150 x 75	147.75 x 73.5	152.25 x 76.5	3.2	10.8	13.73	402	137	53.6	36.6	5.41	3.16
150 x 100	147.75 x 98.5	152.25 x 101.5	3.2	12	15.33	488	262	65.1	52.5	5.64	4.14
			4.5	16.6	21.17	658	352	87.7	70.4	5.58	4.08
			6.0	21.7	27.63	835	444	111	88.8	5.5	4.01
			9.0	31.1	39.67	1130	595	151	119	5.33	3.87
200 x 100	197 x 98.5	203 x 101.5	4.5	20.1	25.67	1130	455	133	90.9	7.2	4.21
			6.0	26.4	33.63	1700	577	170	115	7.12	4.14
			9.0	38.2	48.67	2350	782	235	156	6.94	4.01

TOLERANCE

OD	A,B ≤ 100 mm:	± 1.5 mm
	A,B > 100 mm:	± 1.5%
WT	t < 3.0 mm	± 0.3 mm
Weight	t ≥ 3.0 mm	± 10%