JIS G3444

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●Production Standard of JIS G3444

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The Japanese Industrial Standard JIS G3444 is the standard for Carbon steel pipes used in general structural and low-pressure applications such as engineering, architecture, piles, construction, and other general purpose applications. Carbon steel pipes are also known as black steel pipes.

The JIS G3444 standard covers the dimensions, tolerances, test methods, and materials for Carbon steel pipes used in general structural and low-pressure applications. The standard does not cover Carbon steel pipes used in high-pressure applications. The JIS G3444 symbol of grade are JIS G3444 STK 290, JIS G3444 STK 400, JIS G3444 STK 490, JIS G3444 STK 500, and JIS G3444 STK 540.

●Dimensions and Sizes of JIS G3444

Nominal Size	Outside Diameter	Thickness (t)	Weight	Cross Sectional Area	Geometrical Moment of Inertia	Modulus of Section	Radius of Gyration
mm.	mm.	mm.	kg/m	cm2	cm4	cm 3	cm
15	21.7	2	0.972	1.238	0.607	0.56	0.7

20	27.2	2	1.24	1.583	1.26	0.93	0.89
		2.3	1.41	1.799	1.41	1.03	0.88
25	34	2.3	1.8	2.291	2.89	1.7	1.12
32	42.7	2.3	2.29	2.919	5.97	2.8	1.43
		2.5	2.48	3.157	6.4	3	1.42
40	48.6	2.3	2.63	3.345	8.99	3.7	1.64
		2.5	2.84	3.621	9.65	3.97	1.63
		2.8	3.16	4.029	10.6	4.36	1.62
		3.2	3.58	4.564	11.8	4.86	1.61
50	60.5	2.3	3.3	4.205	17.8	5.9	2.06
		3.2	4.52	5.76	23.7	7.84	2.03
		4	5.57	7.1	28.5	9.41	2
65	76.3	2.8	5.08	6.465	43.7	11.5	2.6
		3.2	5.77	7.349	49.2	12.9	2.59
		4	7.13	9.085	59.5	15.6	2.58
80	89.1	2.8	5.96	7.591	70.7	15.9	3.05
		3.2	6.78	8.636	79.8	17.9	3.04
90	101.6	3.2	7.76	9.892	120	23.6	3.48
		4	9.63	12.26	146	28.8	3.45
		5	11.9	15.17	177	34.9	3.42
100	114.3	3.2	8.77	11.17	172	30.2	3.93
		3.5	9.56	12.18	187	32.7	3.92
		4.5	12.2	15.52	234	41	3.89
125	139.8	3.6	12.1	15.4	357	51.1	4.82
		4	13.4	17.07	394	56.3	4.8
		4.5	15	19.13	438	62.7	4.79
		6	19.8	25.22	566	80.9	4.74
150	165.2	4.5	17.8	22.72	734	88.9	5.68
		5	19.8	25.16	808	97.8	5.67
		6	23.6	30.01	952	115	5.63
		7.1	27.7	35.26	1100	134	5.6
175	190.7	4.5	20.7	26.32	1140	120	6.59
		5.3	24.2	30.87	1330	139	6.56
		6	27.3	34.82	1490	156	6.53
		7	31.7	40.4	1710	179	6.5
		8.2	36.9	47.01	1960	206	6.46
200	216.3	4.5	23.5	29.94	1680	155	7.49
		5.8	30.1	38.36	2130	197	7.45
		6	31.1	39.64	2190	203	7.44

		7	36.1	46.03	2520	233	7.4
		8	41.1	52.35	2840	263	7.37
		8.2	42.1	53.61	2910	269	7.36
250	267.4	6	38.7	49.27	4210	315	9.24
		6.6	42.4	54.08	4600	344	9.22
		7	45	57.26	4860	363	9.21
		8	51.2	65.19	5490	411	9.18
		9	57.3	73.06	6110	457	9.14
		9.3	59.2	75.41	6290	470	9.13
300	318.5	6	46.2	58.91	7190	452	11.1
		6.9	53	67.55	8200	515	11
		8	61.3	78.04	9410	591	11
		9	68.7	87.51	10500	659	10.9
		10.3	78.3	99.73	11900	744	10.9
350	355.6	6.4	55.1	70.21	10700	602	12.3
		7.9	67.7	86.29	13000	734	12.3
		9	76.9	98	14700	828	12.3
		9.5	81.1	103.3	15500	871	12.2
		12	102	129.5	19100	1080	12.2
		12.7	107	136.8	20100	1130	12.1
400	406.4	7.9	77.6	98.9	19600	967	14.1
		9	88.2	112.4	22200	1090	14.1
		9.5	93	118.5	23300	1150	14
		12	117	148.7	28900	1420	14
		12.7	123	157.1	30500	1500	13.9

●Dimensional Tolerances of JIS G3444

- Outside Diameter Tolerance a)

Classification	O.D. b)	Tolerances on O.D. c)	Applicable Division
Class 1	Under 50mm	± 0.5mm	Applied when there is no specification. Applicable to hot-finished seamless steel tubes.
	50mm or Over	± 1%	
Class 2	Under 50mm	± 0.25mm	Applied when there is a specification. Not applicable to hot-finished seamless steel tubes.
	50mm or Over	± 0.5%	

Notes: a) For the local parts such as repaired parts if the wall thickness can be confirmed to be within the tolerance in the table below, the outside diameter tolerance of this table need not be applied.
b) The method for measuring the outside diameter of tubes exceeding 350mm in outside diameter may be determined by the circumferential length. The mutual conversion of outside diameter D and the circumferential

length l shall be by the following formula: D = l / π Where D: outside diameter (mm) l: circumferential length (mm) π：3.1416

c) The tolerances on the outside diameter of ends of electric resistance welded and automatic arc welded steel tubes exceeding 350mm in outside diameter shall be ±0.5%。

- Wall Thickness Tolerance a)

Classification	For Seamless Steel Tube		For Other than Seamless Steel Tube		Applicable Division
	Wall Thickness	Tolerance of Wall Thickness	Wall Thickness	Tolerance of Wall Thickness	
Class 1	Under 4mm	+0.6mm, -0.5mm	Under 4mm	+0.6mm, -0.5mm	Applied when there is no specification. Applicable to hot-finished seamless steel tubes.
	4mm or Over	+15%, -12.5%	4mm or Over to and excl. 12mm	+15%, -12.5%	
			12mm or Over	+15%, -1.5mm	
Class 2	Under 3mm	±0.3mm	Under 3mm	±0.3mm	Applied when there is a specification. Not applicable to hot-finished seamless steel tubes.
	3mm or Over	±10%	3mm or Over to and excl. 12mm	±10%	
			12mm or Over	+10%，-1.2mm	

Notes: a) The tolerances on the wall thickness of tubes exceeding 1016.0 mm in outside diameter may be agreed upon between the manufacturer and the purchaser.

●Chemical Composition of JIS G3444

Symbol of Grade	C	Si	Mn	P	S
JIS G3444 STK 290	–	–	–	0.050max.	0.050max.
JIS G3444 STK 400	0.25max.	–	–	0.040max.	0.040max.
JIS G3444 STK 490	0.18max.	0.55max.	1.65max.	0.035max.	0.035max.
JIS G3444 STK 500	0.24max.	0.35max.	0.30 to 1.30	0.040max.	0.040max.
JIS G3444 STK 540	0.23max.	0.55max.	1.50max.	0.040max.	0.040max.

Notes: 1. If necessary, other alloy elements than those given in this table may be added. 2. For STK540, the chemical composition of tubes of wall thickness over 12.5 mm may be agreed upon between the purchaser and the manufacturer.

●Mechanical Properties Tensile Strength and Yield Strength of JIS G3444

Symbol of Grade	Tensile Strength N/mm2	Yield Point or Proof Stress N/mm2	Weld Tensile N/mm2	Flattening Resistance Strength	Bendability	
				Distance between Flat Plates (H)	Bending Angle, a)	Inside Radius
	Applicable Outside Diameter					
	All Outside Diameters	All Outside Diameters	All Outside Diameters	All Outside Diameters	50 mm or under	
JIS G3444 STK 290	290 min.	–	290 min.	2/3D	90°	6D
JIS G3444 STK 400	400 min.	235 min.	400 min.	2/3D	90°	6D
JIS G3444 STK 490	490 min.	315 min.	490 min.	7/8D	90°	6D
JIS G3444 STK 500	500 min.	355 min.	500 min.	7/8D	90°	6D
JIS G3444 STK 540	540 min.	390 min.	540 min.	7/8D	90°	6D
NOTE 1 In this table, D stands for the outside diameter of the tube. NOTE 2 1 N/mm 2 = 1 MPa Note a) The bending angle shall be measured from the starting point of the bend.						