

Specifications of JIS G3454 Carbon Steel Tube

1. Mechanical Properties

Grade	Tensile Property (N/mm ²)	Yield Point or Yield Strength (N/mm ²)	Elongation (%)			
			NO. 11 Sample; NO. 12 Sample		NO. 4 Sample	
			Longitudinal	Transverse	Longitudinal	Transverse
STPG370	≥ 370	≥ 215	≥ 30	≥ 25	≥ 28	≥ 23
STPG410	≥ 410	≥ 245	≥ 25	≥ 20	≥ 24	≥ 19

Note:

- For the carbon steel pipes with the thickness of less than 8 mm, we use NO.12 or NO.5 sample for tensile test. The minimum elongation will be reduced by 1.5% from the table value when the thickness reduces 1 mm. The value obtained will be rounded to an integer value according to JIS Z8401 (a rounding method).
- The above elongation is not applicable for the carbon steel tubes with the nominal pipe diameter of equal or less than 25A. This must be recorded.
- When we take the electric resistance welded steel pipes for tensile test, we also choose NO.12 or NO.5 sample from the parts not containing welding seams. For the carbon steel pipes with the thickness of less than 8 mm, we use the elongation of NO.12 sample (longitudinal) or NO.5 sample (transverse) to calculate.

Grade	Sample Shape	Elongation differs according to the wall thickness. (%)						
		>7~<8	>6~<7	>5~<6	>4~<5	>3~<4	>2~<3	>1~<2
STPG370	NO.12 Sample	30	28	27	26	24	22	21
	NO.5 Sample	25	24	22	20	19	18	16
STPG410	NO.12 Sample	25	24	22	20	19	18	16
	NO.5 Sample	20	18	17	16	14	12	11

2. Chemical Composition of Carbon Steel Tube (Unit: %)

Grade	C	Si	Mn	P	S
STPG370	≤ 0.25	≤ 0.35	0.30-0.90	≤ 0.040	≤ 0.040
STPG410	≤ 0.30	≤ 0.35	0.30-1.00	≤ 0.040	≤ 0.040

3. Allowable Deviation of Outer Diameter and Wall Thickness

Type	Allowable Deviation of Outer Diameter		Allowable Deviation of Wall Thickness	
Hot-Working Seamless Steel Tube	≤ 40A	± 0.5 mm	< 4 mm	+ 0.6mm 0.5
	≥ 30A	± 1%		
	≤ 125A			
	150A	± 1.6 mm	≥ 4mm	+ 15% - 12.5%
	≥ 200A	± 0.8%		
For ≥350A ones, we can measure according to the perimeter. The allowable deviation is ± 0.5%.				
Cold-Working Seamless Steel Pipe and Electric-Resistance Welded Steel Pipe	≤ 25A	± 0.03 mm	< 3 mm	± 0.3 mm
	≥ 32A	± 0.8%		
	For ≥350A ones, we can measure according to the perimeter. The allowable deviation is ± 0.5%.		≥ 3 mm	± 10%

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Note: 1. When we measure the outer diameter through perimeter, we can determine by converting circumference measurement or measured value to be the outer diameter. Both are applicable to the same tolerance ($\pm 0.5\%$).

2. For the repaired parts, confirm the wall thickness tolerance meet the above table. The outer diameter tolerance is not applicable for the table.

3. The appearance of carbon steel pipes used below 350°C is regulated by the following provisions:

1) The pipe should be straight with practicality. Its ends must be perpendicular to the tube axis.

2) The inner and outer of tube should be processed well without harmful defects.

4. Size and Weight of Carbon Steel Pipe

Nominal Diameter		Outer Diameter (mm)	Nominal Wall Thickness											
			Wall Thickness NO.10		Wall Thickness NO.20		Wall Thickness NO.30		Wall Thickness NO.40		Wall Thickness NO.60		Wall Thickness NO.80	
A	B		Thickness (mm)	Unit Weight (kg/m)	Thickness (mm)	Unit Weight (kg/m)	Thickness (mm)	Unit Weight (kg/m)	Thickness (mm)	Unit Weight (kg/m)	Thickness (mm)	Unit Weight (kg/m)	Thickness (mm)	Unit Weight (kg/m)
6	1/3	10.5	—	—	—	—	—	—	1.7	0.369	2.2	0.450	2.4	0.479
8	1/4	13.8	—	—	—	—	—	—	2.2	0.829	2.4	0.675	3.0	0.799
10	3/8	17.3	—	—	—	—	—	—	2.3	0.851	2.8	1.00	3.2	1.11
15	1/2	21.7	—	—	—	—	—	—	2.8	1.31	3.2	1.46	3.7	1.64
20	3/4	27.2	—	—	—	—	—	—	2.9	1.74	3.4	2.00	3.9	2.24
25	1	34.0	—	—	—	—	—	—	3.4	2.57	3.9	2.89	4.5	3.27
32	1 1/4	42.7	—	—	—	—	—	—	3.8	3.47	4.5	4.24	4.9	4.57
40	1 1/2	48.6	—	—	—	—	—	—	3.7	4.10	4.5	4.89	6.0	5.47
50	2	60.5	—	—	3.2	4.52	—	—	3.9	5.44	4.9	6.72	6.6	7.46
65	2 1/2	76.3	—	—	4.5	7.97	—	—	5.2	9.12	6.0	10.4	7.0	12.0
80	3	89.1	—	—	4.5	9.39	—	—	5.5	11.3	6.6	13.4	7.6	15.3
90	3 1/2	101.6	—	—	4.5	10.8	—	—	5.7	13.6	7.0	16.3	8.1	18.7
100	7	114.3	—	—	4.9	13.2	—	—	6.0	16.0	7.1	18.8	8.6	22.4
125	5	139.8	—	—	5.1	16.9	—	—	6.6	21.7	8.1	26.3	9.5	30.5
150	6	165.2	—	—	5.5	21.7	—	—	7.1	27.7	9.3	35.8	11.0	41.8
200	8	216.3	—	—	6.4	33.1	7.0	36.1	8.2	42.1	10.3	52.3	12.7	63.8
250	10	267.4	—	—	6.4	41.2	7.8	49.9	9.3	59.2	12.7	79.8	15.1	93.9
300	12	318.5	—	—	6.4	49.3	8.4	64.2	10.3	78.3	14.3	107	17.4	129
350	11	355.6	6.4	55.1	7.9	67.7	9.5	81.1	11.1	94.3	15.1	127	19.0	158
400	16	406.4	6.4	63.1	7.9	77.6	9.5	93.0	12.7	123	16.7	160	21.4	203
450	18	457.2	6.4	71.1	7.9	87.5	11.1	122	14.3	156	19.0	205	25.8	254
500	20	508.0	6.4	79.2	9.5	117	12.7	155	15.1	184	20.6	248	26.2	311

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550	22	358.8	6.4	87.2	9.5	129	12.7	171	15.9	213	—	—	—	—
600	24	609.6	6.4	92.2	9.5	141	14.3	210	—	—	—	—	—	—
660	26	660.4	7.9	127	12.7	203	—	—	—	—	—	—	—	—

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