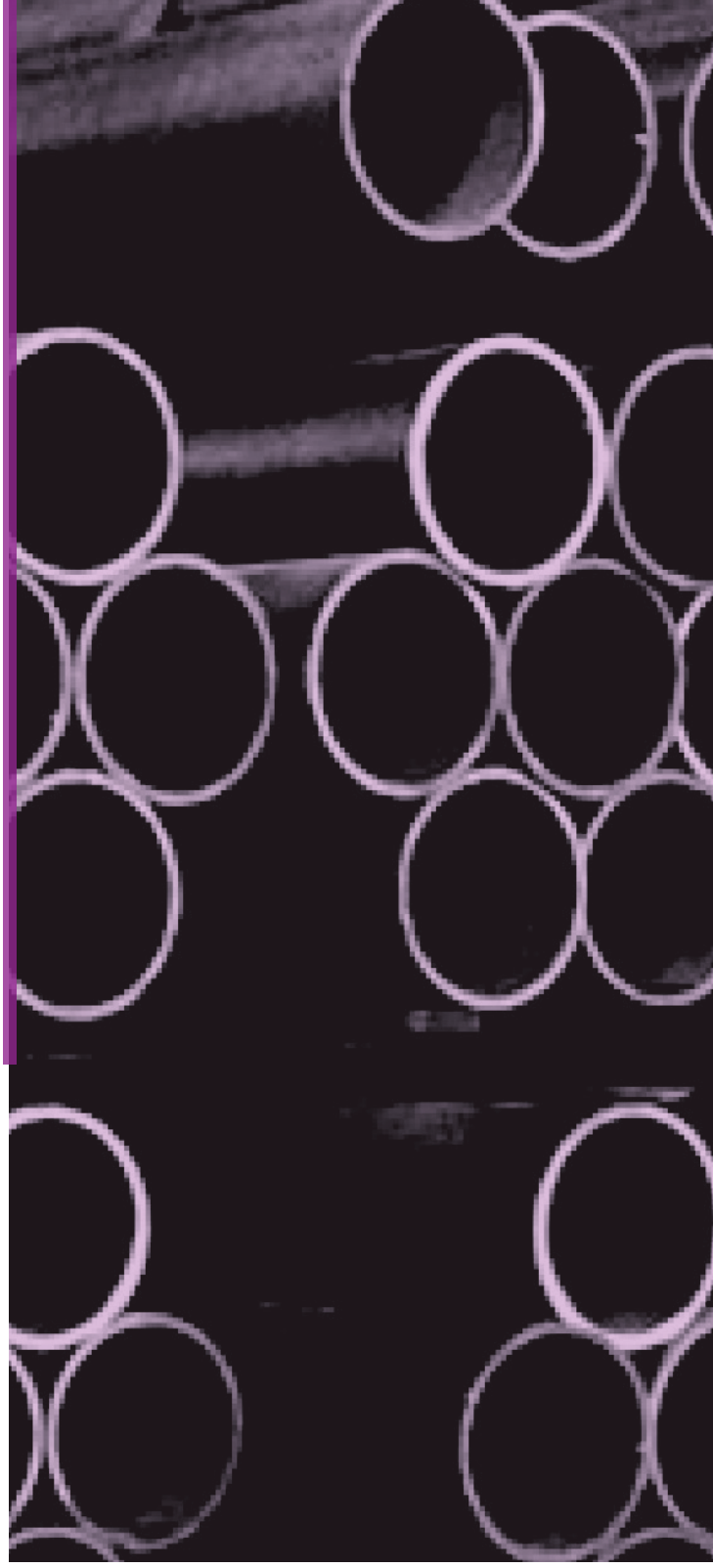
STEEL

PIPES



7g) Carbon Steel Pipes For Ordinary Piping

Japanese Industrial Standard (Extracts from JIS G 3452 : 2004)

General Information

This Japanese Industrial Standard specifies the carbon steel pipes (hereafter referred to as the "pipes") used for the piping for conveying steam, water (excepting public water supply service). Oil, gas, air, etc. at comparatively low working pressures.

The pipes shall be classified into one grade and its symbol shall be as given in Table 1. In addition, they shall be divided into black pipes and galvanized ones according to the existence of zinc coating.

Table 1. Symbol of grade

Symbol Of Grade	Division	Remark
SGP	Black pipe	Pipe without zinc coating
	Galvanized pipe	Black pipe with zinc coating

Chemical Composition

The resulting cast analysis values shall be as given in Table 2.

Table 2. Chemical Composition

Unit: %

Symbol Of Grade	P	S
SGP	0.040 max.	0.040 max.

Mechanical Strength (Tensile Test)

The resulting tensile strength and elongation shall be as given in Table 3. When the tensile test is carried out for *No.12 or *No.5 test piece for the pipe under 8 mm in wall thickness, the minimum value of elongation shall be as given in Table 4.

Table 3. Mechanical properties

Symbol Of Grade	Tensile Strength N/mm²	Elongation %	
		*No. 11 Test Piece *No. 12 Test Piece	*No. 5 Test Piece
		Longitudinal	Transverse
SGP	290 min.	30 min.	25 min.

Table 4. Elongation values for *No.12 test piece (longitudinal) and *No.5 test piece (transverse) taken from pipes under 8 mm in wall thickness

Shape Of Test Piece	Elongation Values For Wall Thickness Divisions %				
	Over 7mm to and excl. 8 mm	Over 6mm up to and incl. 7 mm	Over 5mm up to and incl. 6 mm	Over 4mm up to and incl. 5 mm	Over 3mm up to and incl. 4 mm
*No. 12 Test Piece	30	28	27	26	24
*No. 5 Test Piece	25	24	22	20	19

* Please refer to Appendix 'A' Tension Test Pieces for Metallic Materials - JIS Z 2201 (pg153-155)

Bending Test

For the black pipe of nominal size 50A or smaller. The pipe shall be bent through 90° around an inside diameter that is 6 times its outside diameter and the pipe shall be free from the occurrence of flaws or cracks on its wall surface.

Cold Flattening Test

A test piece 50 mm over in length shall be cut off from the end of a pipe. The test piece shall not generate flaws or cracks on its wall surface and in this case, the distance between the two plates shall be 2/3 of the outside diameter of the pipe. The weld shall be placed at right angles to the direction of compression.

Uniformity of zinc coating

The number of immersions in the copper sulfate test as given in Table 5. In this case, the pipe shall not show a fixed deposit of zinc even after the successive immersing operations of frequency given in Table 5.

Table 5. Uniformity test

Symbol Of Grade	Number Of Immersions (One minutes per dips)
SGP	5

Hydrostatic Test

For hydrostatic test characteristics, when not specified by the purchaser, a hydrostatic pressure of 2.5 MPa shall be selected by the manufacturer, and black pipe shall withstand it without leakage.

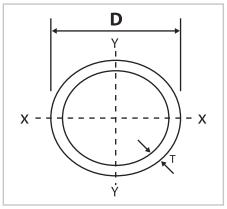
Tolerances On Dimensions and Mass

The dimensions, weight and dimensional tolerances of the black pipe shall be as specified in Table 6.

Table 6. Dimension, weights and dimensional tolerances

Nominal Diameter		Outside Diameter	Tolerance On Outside Diameter		Wall Thickness	Tolerance On Wall Thickness	Bevel Angle	Root Face	Test Pressure		Unit Mass Excluding Socket kg/m
A	B	mm	Pipes To Be Cut In Taper Thread	Other Pipes	mm				Kg/cm²	PSI	
6	1/8	10.5	± 0.5 mm	± 0.5 mm	2.0	+ not specified - 12.5 %	30° +5°,-0°	2.4 mm max.	25	360	0.419
8	1/4	13.8	± 0.5 mm	± 0.5 mm	2.3				25	360	0.652
10	3/8	17.3	± 0.5 mm	± 0.5 mm	2.3				25	360	0.851
15	1/2	21.7	± 0.5 mm	± 0.5 mm	2.8				25	360	1.31
20	3/4	27.2	± 0.5 mm	± 0.5 mm	2.8				25	360	1.68
25	1	34.0	± 0.5 mm	± 0.5 mm	3.2				25	360	2.43
32	1 1/4	42.7	± 0.5 mm	± 0.5 mm	3.5				25	360	3.38
40	1 1/2	48.6	± 0.5 mm	± 0.5 mm	3.5				25	360	3.89
50	2	60.5	± 0.5 mm	± 1 %	3.8				25	360	5.31
65	2 1/2	76.3	± 0.7 mm	± 1 %	4.2				25	360	7.47
80	3	89.1	± 0.8 mm	± 1 %	4.2				25	360	8.79
90	3 1/2	101.6	± 0.8 mm	± 1 %	4.2				25	360	10.1
100	4	114.3	± 0.8 mm	± 1 %	4.5				25	360	12.2
125	5	139.8	± 0.8 mm	± 1 %	4.5				25	360	15.0
150	6	165.2	± 0.8 mm	± 1.6 mm	5.0				25	360	19.8
175	7	190.7	± 0.9 mm	± 1.6 mm	5.3				25	360	24.2
200	8	216.3	± 1.0 mm	± 0.8 %	5.8				25	360	30.1
225	9	241.8	± 1.2 mm	± 0.8 %	6.2				25	360	36.0
250	10	267.4	± 1.3 mm	± 0.8 %	6.6				25	360	42.4
300	12	318.5	± 1.5 mm	± 0.8 %	6.9				25	360	53.0
350	14	355.6	-	± 0.8 %	7.9				25	360	67.7
400	16	406.4	-	± 0.8 %	7.9				25	360	77.6
450	18	457.2	-	± 0.8 %	7.9				25	360	87.5
500	20	508.0	-	± 0.8 %	7.9				25	360	97.4

Pipes JIS G 3452



7g(i) Carbon Steel Pipe For Ordinary Piping

JIS G 3452 : 2004 / Manufacturer's Standard

Nominal Size		Outside Diameter D		Wall Thickness t		Weight (Pain Ends)			Test Pressure	
mm	in	mm	in	mm	in	Kg/m	Kg/6m	Kg/ft	Kg/cm²	psi
6	1/8	10.5	0.413	2.0	0.079	0.419	2.514	0.13	25	360
8	1/4	13.8	0.543	2.3	0.091	0.652	3.912	0.20	25	360
10	3/8	17.3	0.681	2.3	0.091	0.851	5.106	0.26	25	360
15	1/2	21.7	0.854	2.8	0.110	1.31	7.86	0.40	25	360
20	3/4	27.2	1.071	2.8	0.110	1.68	10.08	0.51	25	360
25	1	34.0	1.339	3.2	0.126	2.43	14.58	0.74	25	360
32	1 1/4	42.7	1.681	3.5	0.138	3.38	20.28	1.03	25	360
40	1 1/2	48.6	1.913	3.5	0.138	3.89	23.34	1.19	25	360
50	2	60.5	2.382	3.8	0.150	5.31	31.86	1.62	25	360
65	2 1/2	76.3	3.004	4.2	0.165	7.47	44.82	2.28	25	360
80	3	89.1	3.508	4.2	0.165	8.79	52.74	2.68	25	360
90	3 1/2	101.6	4.000	4.2	0.165	10.10	60.60	3.08	25	360
100	4	114.3	4.500	4.5	0.177	12.20	73.20	3.72	25	360
125	5	139.8	5.504	4.5	0.177	15.00	90.00	4.57	25	360
150	6	165.2	6.504	5.0	0.197	19.80	118.80	6.03	25	360
175	7	190.7	7.508	5.3	0.209	24.20	145.20	7.38	25	360
200	8	216.3	8.516	5.8	0.228	30.10	180.60	9.17	25	360
225	9	241.8	9.520	6.2	0.244	36.00	216.00	10.97	25	360
250	10	267.4	10.528	6.6	0.260	42.40	254.40	12.92	25	360
300	12	318.5	12.539	6.9	0.272	53.00	318.00	16.15	25	360
350	14	355.6	14.000	7.9	0.311	67.70	406.20	20.63	25	360
400	16	406.4	16.000	7.9	0.311	77.60	465.60	23.65	25	360