ASTM Carbon Steel Pipe & Flange Specifications

Pipe and Tubing Description and Applications	Spec No.	ASTM or Type	Grade Strength PSI	Yield Point or Strength PSI	Elongation (% in 2")				Chemical Composition, %			
					STD Round	Rectangular t	Rectangular 5/16"	Rectangular 5/16"	C	MN	P	S
Seamless milled steel pipe for high-temperature service, suitable for bending, flanging & similar forming operations.	(1) A106	A	48,000	30,000	28 long. OR (4) 20 trans.	17.5+ or 12.5+	56t 40t	35 25	.25 max	.27 to.93	.048 max	.058 max
As above, except use Grade A for close coiling, cold bending or forge welding.	(1) A106	B	60,000	35,000	28 long. OR (4) 12 trans.	17.5+ or 6.5+	56t 32t	35 16.5	30 max	.27 to 1.06	.048 max	.058 max
Black or hot-dip galvanize seamless or res-welded steel pipe suitable for coiling, bending, flanging, & other special purposes, suitable for welding.	A 53	A	48,000	30,000	28	17.5+	56t	35	(2)	–	(3)	-
As above, except use Grade A for close coiling, cold bending or forge welding.	A 53	B	60,000	35,000	22	15+	48t	30	(2)	–	(3)	-
Black or hot-dip galvanize seamless or res. welded steel pipe suitable for ordinary uses. (When tension, flattening or bend test required, order to A-53).	A 120 (obsolete)	–	–	–	–	–	–	–	–	–	–	
Resistance welded steel pipe for liquid, gas or vapor.	A 135	A	48,000	30,000	–	17.5+	56t	35	–	–	.050 max	.060 max
As above, except use Grade A for flanging & bending.	A 135	B	60,000	35,000	–	15+	48t	30	–	–	.050 max	.060 max

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					STD Round	Rectangular						
						t	5/16"	5/16"	C	MN	P	S
Electric-fusion-welded strait- or spiral-seam pipe for liquid, gas or vapor from mill grades of plate.	A 139	A	48,000	30,000	–	17.5+	56t	35	–	.30 to 1.00	.040 max	.050 max
As above	A 139	B	60,000	35,000	–	15+	48t	30	.30 max	.30 to 1.00	.040 max	.050 max
Forged Pipe, Flanges Description and Applications												
Forged or rolled steel pipe flanges, fittings (6) values and parts for high temperature service. Heat treatment required; may be annealed or normalized.	A105	I	60,000	30,000	25		–	–	.35 (5) max	.90 max	.05 max	.05 max
As above	A 105	II	70,000	36,000	22		–	–	.35 (5) max	.90 max	.05 max	.05 max
As above except for general service. Heat treatment is not required.	A 181	I	60,000	30,000	22		–	–	.35 (5) max	.90 max	.05 max	.05 max
As above	A 181	II	70,000	36,000	18		–	–	.35 (5) max	.90 max	.05 max	.05 max

(1) 0.10% silicon minimum.

(2) Open hearth, 0.13 max for 1/8" and 1/4" size resistance welded pipe only

(3) Seamless: open hearth 0.048 max, acid bessemar 0.11 max; Res. welded: open hearth 0.050 max.

(4) Longitudinal or transverse direction of test specimen with respect to pipe axis

(5) When flanges will be subject to fusion welding, carbon content shall be ≤0.35%. If carbon is ≤0.35%, it may be necessary to add silicon to meet required tensile properties. The silicon content shall be ≤0.35%.

(6) Factor-made Wrought Carbon Steel and Ferritic Alloy Steel Welding Fitting Specifications are covered under ASTM A234.