

Materials specifications for butt - welding fittings ASTM materials

Marking Symbol	Materials	Form	Chemical Composition (Percent)					
			Max. Or Range (Unless Otherwise Indicated)					
			C	Si	Mn	P	S	Ni
A234	A106 Gr. B	P	0.30	0.10 Min.	0.29-1.06	0.048	0.058	-
	A515 Gr. 65	PL	0.28-0.33	0.13-0.33	0.90	0.035	0.040	-
	A516 Gr. 70	PL	0.31-0.35	0.13-0.33	0.90	0.035	0.040	-
	A106 Gr. C	P	0.35	0.10 Min.	0.29-1.06	0.048	0.058	-
	A335 Gr. P1	P	0.10-0.20	0.10-0.50	0.30-0.60	0.045	0.055	-
	A204 Gr. B	PL	0.20-0.27	0.13-0.32	0.90	0.035	0.040	-
	A335 Gr. P12	P	0.15	0.50	0.30-0.61	0.045	0.055	-
	A387 Gr. 12	PL	0.17	0.15-0.32	0.36-0.69	0.035	0.055	-
	A335 Gr. P11	P	0.15	0.50-1.00	0.30-0.60	0.030	0.030	-
	A387 Gr. 11	PL	0.17	0.44-0.86	0.36-0.69	0.035	0.040	-
	A335 Gr. P22	P	0.15	0.50	0.30-0.60	0.030	0.030	-
	A387 Gr. 22	PL	0.15-0.17	0.50	0.27-0.63	0.035	0.035	-
A335 Gr. P5	P	0.15	0.50	0.30-0.60	0.030	0.030	-	
A387 Gr. 5	PL	0.15	0.50	0.27-0.63	0.040	0.030	-	
A335 Gr. 9	P	0.15	0.25-1.00	0.30-0.60	0.025	0.025	A234	
A387 Gr. 9	PL	0.15	1.00	0.30-0.60	0.030	0.030	A234	
A312 Gr. TP304	P	0.08	0.75	2.00	0.040	0.030	8.00-11.00	
A240 Type 304	PL	0.15	1.00	2.00	0.045	0.030	8.00-10.05	
A312 Gr. TP304H	P	0.14-0.19	0.75	2.00	0.045	0.030	8.00-11.00	
A240 Type 304	PL	0.04-0.10	1.00	2.00	0.045	0.030	8.00-10.05	
A312 Gr. TP304L	P	0.035	0.75	2.00	0.040	0.030	8.00-10.00	
A240 Type 304	PL	0.030	1.00	2.00	0.045	0.030	8.00-12.00	
A312 Gr. TP309	P	0.15	0.75	2.00	0.040	0.030	12.00-15.00	
A240 Type 309S	PL	0.08	1.00	2.00	0.045	0.030	12.00-15.00	
A312 Gr. TP10	P	0.15	0.75	2.00	0.040	0.030	19.00-22.00	
A240 Type 310S	PL	0.08	1.00	2.00	0.045	0.030	19.00-22.00	
A312 Gr. TP316	P	0.08	0.75	2.00	0.040	0.030	11.00-14.00	
A240 Type 316	PL	0.08	1.00	2.00	0.045	0.030	10.00-14.00	
A312 Gr. TP316H	P	0.04-0.10	0.75	2.00	0.040	0.030	11.00-14.00	
A240 Type 316H*	PL	0.04-0.10	1.00	2.00	0.045	0.030	10.00-14.00	
A312 Gr. TP316L	P	0.035	0.75	2.00	0.040	0.030	10.00-15.00	
A240 Type 316L	PL	0.030	1.00	2.00	0.045	0.030	10.00-14.00	
A312 Gr. TP317L	P	0.035	0.75	2.00	0.040	0.030	11.00-15.00	
A240 Type 317L	PL	0.030	0.75	2.00	0.045	0.030	11.00-15.00	
A312 Gr. TP321	P	0.08	0.75	2.00	0.040	0.030	9.00-13.00	
A240 Type 321	PL	0.08	1.00	2.00	0.045	0.030	9.00-12.00	
A312 Gr. TP321H	P	0.04-0.10	0.75	2.00	0.040	0.030	9.00-13.00	
A240 Type 321H*	PL	0.04-0.10	1.00	2.00	0.045	0.030	9.00-12.00	
A312 Gr. TP347	P	0.08	0.75	2.00	0.040	0.030	9.00-13.00	
A240 Type 347	PL	0.08	1.00	2.00	0.045	0.030	9.00-13.00	
A312 Gr. TP347H	P	0.04-0.10	0.75	2.00	0.040	0.030	9.00-13.00	
A240 Type 347H*	PL	0.08	1.00	2.00	0.045	0.030	9.00-13.00	
A333 and A334 Gr. 6	P	0.30	0.10 Min.	0.29-1.06	0.048	0.058	-	
A516 Gr. 60	PL	0.20-0.27	0.13-0.33	0.60-1.25	0.035	0.040	-	
A333 and A334 Gr. 3	P	0.18	0.18-0.37	0.31-0.64	0.050	0.050	3.18-3.82	
A203 Gr. D	PL	0.17-0.20	0.13-0.32	0.70-0.80	0.035	0.040	3.18-3.82	
A333 and A334 Gr. 8	P	0.20	0.40-1.06	0.025	0.025	1.60-2.24	-	
A203 Gr. A	PL	0.17	0.15-0.40	0.70	0.035	0.040	2.10-2.50	

* Asterisks (*) denote that the carbon content shall be 0.04 to 0.10%
 Designations followed by the minimum tensile strength shall be 65,000 psi (450 MPa), and that the minimum yield strength shall be 25,000 psi (172 MPa).
 * The yield strength shall be determined by the offset method at 0.2% bending moment in accordance with ASTM A370 specification.
 An alternative method of determining yield strength may be based on a total extension under load of 0.5%.

* The basic minimum elongation for walls 3/16" (4.8mm) and over in thickness shall be determined according to strip tests; all small sizes are tested in their full section.
 * P denoted Pipe, PL Plate.

