

Table A1.1 Materials Used for ASME B16.5 Flange Construction (Partial Listing)

Material group	Nominal designation	(Applicable ASTM specifications) Forgings	(Applicable ASTM specifications) Castings	(Applicable ASTM specifications) Plates
1.1	C-Si C-Mn-Si C-Mn-Si	A 105 A 350 Gr. LF2	A 216 Gr. WCB	A 515 Gr. 70 A 516 Gr. 70 A 537 Cl. 1
1.2	C-Mn-Si C-Mn-Si-V 2 1/2Ni 3 1/2Ni	A 350 Gr. LF6 Cl.2	A 216 Gr. WCC A 352 Gr. LCC A 352 Gr. LC2 A 352 Gr. LC3	A 203 Gr. B A 203 Gr. E
1.3	C-Si C-Mn-Si 2 1/2Ni 3 1/2Ni		A 352 Gr. LCB	A 515 Gr. 65 A 516 Gr. 65 A 203 Gr. A A 203 Gr. D
1.4	C-Si C-Mn-Si	A 350 Gr. LF1 Cl. 1		A 515 Gr. 60 A 516 Gr. 60
1.5	C-1/2Mo C-1/2Mo	A 182 Gr. F1		A 204 Gr. A A 204 Gr. B
1.7	1/2Cr-1/2Mo Ni-1/2Cr-1/2Mo 3/4Ni-3/4Cr- 1Mo	A 182 Gr. F2	A 217 Gr. WC4 A 217 Gr. WC5	
1.9	1 1/4Cr-1/2Mo 1 1/4Cr-1/2Mo-Si	A 182 Gr. F11 Cl. 2	A 217 Gr. WC6	A 387 Gr. 11 Cl. 2
1.10	2 1/4Cr-1Mo	A 182 Gr. F22 Cl. 3	A 217 Gr. WC9	A 387 Gr. 22 Cl. 2
1.13	5Cr-1/2Mo	A 182 Gr. F5a	A 217 Gr. C5	
1.14	9Cr-1Mo	A 182 Gr. F9	A 217 Gr. C12	
2.1	18Cr-8Ni 18Cr-8Ni	A 182 Gr. F304 A 182 Gr. F304H	A 351 Gr. CF3 A 351 Gr. CF8	A 240 Gr. 304 A 240 Gr. 304H
2.2	16Cr-12Ni-2Mo 16Cr-12Ni-2Mo 18Cr-13Ni-3Mo 19Cr-10Ni-3Mo	A 182 Gr. F316 A 182 Gr. F316H A182 Gr. F317	A 351 Gr. CF3M A 351 Gr. CF8M A 351 Gr. CG8M	A 240 Gr. 316 A 240 Gr. 316H A 240 Gr. 317
2.3	18Cr-8Ni 16Cr-12Ni-2Mo 18Cr-13Ni-3Mo	A 182 Gr. F304L A 182 Gr. F316L	A351 Gr.CG8M	A 240 Gr. 304L A 240 Gr. 316L
2.4	18Cr-10Ni-Ti 18Cr-10Ni-Ti	A 182 Gr. F321 A 182 Gr. F321H		A 240 Gr. 321 A 240 Gr. 321H

Source: Adapted from ASME B16.5, 2017, *Pipe Flanges and Flanged Fittings*, American Society of Mechanical Engineers, Table 1A, page 5,

Table B1.1 Pressure-Temperature Ratings for ASME B16.5 Flanges Made from Material Group 1.1 Materials

Class temps., °F	Working pressure by classes, psig†						
	150	300	400	600	900	1500	2500
-20 to 100	285	740	990	1480	2220	3705	6170
200	260	675	900	1350	2025	3375	5625
300	230	655	875	1315	1970	3280	5470
400	200	635	845	1270	1900	3170	5280
500	170	600	800	1200	1795	2995	4990
600	140	550	730	1095	1640	2735	4560
650	125	535	715	1075	1610	2685	4475
700*	110	535	710	1065	1600	2665	4440
750*	95	505	670	1010	1510	2520	4200
800*	80	410	550	825	1235	2060	3430
850*	65	270	355	535	805	1340	2230
900*	50	170	230	345	515	860	1430
950*	35	105	140	205	310	515	860
1000*	20	50	70	105	155	260	430

* For notes concerning the use of carbon-steel materials covered by this table at temperatures over 500°F (260°C), see ASME B16.5, 2017, Table 2-1.1. Notes on page 24,
† To convert pressures to kPa gage, multiply tabular value by 6.9.
Source: Adapted from ASME B16.5, 2017, *Pipe Flanges and Flanged Fittings*, American Society of Mechanical Engineers, New York, Table 2-1.1, p.24

Table B2.1 Pressure-Temperature Ratings for ASME B16.5 Flanges Made from Material Group 2.1 Materials

Class temps., °F	Working pressure by classes, psig†						
	150	300	400	600	900	1500	2500
-20 to 100	275	720	960	1440	2160	3600	6000
200	235	600	800	1200	1800	3000	5000
300	205	530	705	1055	1585	2640	4400
400	180	470	630	940	1410	2350	3920
500	170	435	585	875	1310	2185	3640
600	140	415	555	830	1245	2075	3460
650	125	410	545	815	1225	2040	3400
700*	110	405	540	805	1210	2015	3360
750*	95	400	530	795	1195	1990	3320
800*	80	395	525	790	1180	1970	3280
850*	65	390	520	780	1165	1945	3240
900*	50	385	510	770	1150	1920	3200
950*	35	375	500	750	1125	1870	3120
1000*	20	325	430	645	965	1610	2685

* For notes concerning the use of materials covered by this table at temperatures over 797°F (425°C) see ASME B16.5 limitations,
Source: Adapted from ASME B16.5, 2017, *Pipe Flanges and Flanged Fittings*, American Society of Mechanical Engineers, New York, Table 2-2-1, p. 38
******When using the tables, linear interpolation between listed temperatures and pressures may be employed to determine intermediate pressure ratings.

Table B2.2 Pressure-Temperature Ratings for ASME B16.5 Flanges Made from Material Group 2.2 Materials

Class temps., °F	Working pressure by classes, psig†						
	150	300	400	600	900	1500	2500
-20 to 100	275	720	960	1440	2160	3600	6000
200	240	620	825	1240	1860	3095	5160
300	215	560	745	1120	1680	2795	4660
400	195	515	685	1030	1540	2570	4280
500	170	480	635	955	1435	2390	3980
600	140	450	600	905	1355	2255	3760
650	125	445	590	890	1330	2220	3700
700*	110	430	575	865	1295	2160	3600
750*	95	425	565	845	1270	2110	3520
800*	80	415	555	830	1245	2075	3460
850*	65	405	540	810	1215	2030	3380
900*	50	395	525	790	1180	1970	3280
950*	35	385	515	775	1160	1930	3220
1000*	20	365	485	725	1090	1820	3030

* For notes concerning the use of materials covered by this table at temperatures over 851°F (455°C) see ASME B16.5 limitations,
Source: Adapted from ASME B16.5, 2017, *Pipe Flanges and Flanged Fittings*, American Society of Mechanical Engineers, New York, Table 2-2-2, p.39
******When using the tables, linear interpolation between listed temperatures and pressures may be employed to determine intermediate pressure ratings.