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A N A M E R I C A N N A T I O N A L S T A N D A R D

# PIPE FLANGES AND FLANGED FITTINGS

NPS  $\frac{1}{2}$  Through NPS 24 Metric/Inch  
Standard

**ASME B16.5-2003**  
(Revision of ASME B16.5-1998)

ASME B16.5-2003

## ANNEX F

# PRESSURE-TEMPERATURE RATINGS AND DIMENSIONAL DATA FOR CLASSES 150, 300, 400, 600, 900, 1500, AND 2500 FLANGES AND CLASSES 150 AND 300 FLANGED FITTINGS IN U.S. CUSTOMARY UNITS

This Annex is an integral part of ASME B16.5-2003, and is placed after the main text for convenience.

The pressure-temperature ratings for the materials listed in Table 1A and covered by this Standard, are as listed in Tables 2-1.1 through 2-3.17 and Tables F2-1.1 through F2-3.17 of of this Annex.

Tables 2-1.1 through 2-3.17 have pressure-temperature ratings using bar units for pressure (1 bar = 100 kPa) and degrees Celsius units for temperature.

Tables F2-1.1 through F2-3.17 of Annex F have coterminous pressure-temperature ratings using psi units for

pressure and degrees Fahrenheit units for temperature.

All tabulated pressures are gage pressures.

Other tables and figures included in this Annex provide dimensional data in U.S. Customary units for the following:

(a) Classes 150, 300, 400, 600, 900, 1500, and 2500 flanges

(b) Classes 150 and 300 flanged fittings

Annex G includes dimensional data for Classes 400, 600, 900, 1500, and 2500 flanged fittings for information.

ASME B16.5-2003

ANNEX F

**Table F2-1.1 Pressure-Temperature Ratings for Group 1.1 Materials**

Nominal Designation	Forgings	Castings	Plates
C-Si	A 105 (1)	A 216 Gr. WCB (1)	A 515 Gr. 70 (1)
C-Mn-Si	A 350 Gr. LF2 (1)		A 516 Gr. 70 (1), (2)
C-Mn-Si-V	A 350 Gr. LF6 Cl. 1 (4)		A 537 Cl. 1 (3)
3 $\frac{1}{2}$ Ni	A 350 Gr. LF 3		

  

Working Pressures by Classes, psig							
Class Temp., °F	150	300	400	600	900	1500	2500
-20 to 100	285	740	985	1480	2220	3705	6170
200	260	680	905	1360	2035	3395	5655
300	230	655	870	1310	1965	3270	5450
400	200	635	845	1265	1900	3170	5280
500	170	605	805	1205	1810	3015	5025
600	140	570	755	1135	1705	2840	4730
650	125	550	730	1100	1650	2745	4575
700	110	530	710	1060	1590	2655	4425
750	95	505	675	1015	1520	2535	4230
800	80	410	550	825	1235	2055	3430
850	65	320	425	640	955	1595	2655
900	50	230	305	460	690	1150	1915
950	35	135	185	275	410	685	1145
1000	20	85	115	170	255	430	715

**NOTES:**

- (1) Upon prolonged exposure to temperatures above 800°F, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged use above 800°F.
- (2) Not to be used over 850°F.
- (3) Not to be used over 700°F.
- (4) Not to be used over 500°F.

# Pipe Flanges—Engineering Information

**2450.1300**

-40F to 220F, special gasket materials are required - see ASME B31.8, paragraph 831.23 for more information.

## 5. Pressure-Temperature Ratings

5.1 Pressure ratings for pipe flanges shall be in accordance with ANSI/ASME B16.1 if made of cast iron, or ANSI/ASME B16.5 if made of steel.

Table 2. Cast iron pipe flanges and flanged fittings (ANSI/ASME B16.1)

Temperature (°F)	Rating in psig	
	Class 125 ASTM A126 Class A (NPS 1-12)	Class 250 ASTM A126 Class A (NPS 1-12)
- 20 to 150	175	400
200	165	375
225	155	355
250	150	340

NOTE: For temperatures or pressures outside of the range listed, refer to ANSI/ASME B16.

Table 3. Steel pipe flanges and flanged fittings (ANSI/ASME B16.5)

Temperature (°F)	Rating in psig			
	Class 150 ASTM A105	Class 300 ASTM A105	Class 400 ASTM A105	Class 600 ASTM A105
- 20 to 100	285	740	990	1480
200	260	675	900	1350
300	230	655	875	1315

NOTE: For temperatures or pressures in excess of those listed, refer to ANSI/ASME B16.5.

## 6. Dimensions

6.1 The size of fittings is identified by the corresponding nominal pipe size (NPS). *Nominal* is intended to indicate that the stated dimension or size is used for purposes of designation. The actual dimension may be the nominal dimension subject to the variation of established tolerances.