

DIMENSIONAL STANDARD · ASME B16.5

ASME B16.5 Flange Pressure–Temperature Ratings

Flange working pressure by class and temperature for carbon, alloy and stainless steel material groups, in bar.

A flange class is not a pressure. The **maximum allowable working pressure** of an ASME B16.5 flange depends on its class, its material group and the design temperature. These tables give the ratings in bar gauge for the material groups most often specified.

Material Group 1.1: A105, A350 LF2, A216 WCB

Temp. °C	Class 150 bar	Class 300 bar	Class 600 bar	Class 900 bar	Class 1500 bar	Class 2500 bar	Temp. °C to 38	Class 150 bar	Class 300 bar	Class 600 bar	Class 900 bar	Class 1500 bar	Class 2500 bar
-29 to 38	19.6	51.1	102.1	153.2	255.3	425.5	50	19.5	51.7	103.4	155.1	258.6	
50	19.2	50.1	100.2	150.4	250.6	417.7	100	17.7	51.5	103.0	154.6	257.6	
100	17.7	46.6	93.2	139.8	233.0	388.3	150	15.8	50.3	100.3	150.6	250.8	
150	15.8	45.1	90.2	135.2	225.4	375.6	200	13.8	48.6	97.2	145.8	243.4	
200	13.8	43.8	87.6	131.4	219.0	365.0	250	12.1	46.3	92.7	139.0	231.8	
250	12.1	41.9	83.9	125.8	209.7	349.5	300	10.2	42.9	85.7	128.6	214.4	
300	10.2	39.8	79.6	119.5	199.1	331.8	325	9.3	41.4	82.6	124.0	206.6	
325	9.3	38.7	77.4	116.1	193.6	322.6	350	8.4	40.3	80.4	120.7	201.1	
350	8.4	37.6	75.1	112.7	187.8	313.0	375	7.4	38.9	77.6	116.5	194.1	
375	7.4	36.4	72.7	109.1	181.8	303.1	400	6.5	36.5	73.3	109.8	183.1	
400	6.5	34.7	69.4	104.2	173.6	289.3	425	5.5	35.2	70.0	105.1	175.1	
425	5.5	28.8	57.5	86.3	143.8	239.7	450	4.6	33.7	67.7	101.4	169.0	
450	4.6	23.0	46.0	69.0	115.0	191.7	475	3.7	31.7	63.4	95.1	158.2	
475	3.7	17.4	34.9	52.3	87.2	145.3	500	2.8	28.2	56.5	84.7	140.9	
500	2.8	11.8	23.5	35.3	58.8	97.9	538	1.4	18.4	36.9	55.3	92.2	
538	1.4	5.9	11.8	17.7	29.5	49.2							

Material Group 1.10: A182 F22 Cl.3 (also A217 WC9)

Material Group 1.9: A182 F11 Cl.2 (also A217 WC6)

Temp. °C	Class 150 bar	Class 300 bar	Class 600 bar	Class 900 bar	Class 1500 bar	Class 2500 bar	Temp. °C to 38	Class 150 bar	Class 300 bar	Class 600 bar	Class 900 bar	Class 1500 bar	Class 2500 bar
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	50	18.3	47.8	95.6	143.5	239.1	
50	19.5	51.7	103.4	155.1	258.6	430.9	100	15.7	40.9	81.7	122.6	204.3	
100	17.7	51.5	103.0	154.4	257.4	429.0	150	14.2	37.0	74.0	111.0	185.0	
150	15.8	49.7	99.5	149.2	248.7	414.5	200	13.2	34.5	69.0	103.4	172.4	
200	13.8	48.0	95.9	143.9	239.8	399.6	250	12.1	32.5	65.0	97.5	162.4	
250	12.1	46.3	92.7	139.0	231.8	386.2	300	10.2	30.9	61.8	92.7	154.6	
300	10.2	42.9	85.7	128.6	214.4	357.1	325	9.3	30.2	60.4	90.7	151.1	
325	9.3	41.4	82.6	124.0	206.6	344.3	350	8.4	29.6	59.3	88.9	148.1	
350	8.4	40.3	80.4	120.7	201.1	335.3	375	7.4	29.0	58.1	87.1	145.2	
375	7.4	38.9	77.6	116.5	194.1	323.2	400	6.5	28.4	56.9	85.3	142.2	
400	6.5	36.5	73.3	109.8	183.1	304.9	425	5.5	28.0	56.0	84.0	140.0	
425	5.5	35.2	70.0	105.1	175.1	291.6	450	4.6	27.4	54.8	82.2	137.0	
450	4.6	33.7	67.7	101.4	169.0	281.8	475	3.7	26.9	53.9	80.8	134.7	
475	3.7	31.7	63.4	95.1	158.2	263.9	500	2.8	26.5	53.0	79.5	132.4	
500	2.8	25.7	51.5	77.2	128.6	214.4	538	1.4	24.4	48.9	73.3	122.1	
538	1.4	14.9	29.8	44.7	74.5	124.1							

Material Group 2.1: A182 F304 / F304H

Material Group 2.2: A182 F316 / F316H

Material Group 2.3: A182 F304L / F316L

Temp. °C	Class 150 bar	Class 300 bar	Class 600 bar	Class 900 bar	Class 1500 bar	Class 2500 bar	Temp. °C	Class 150 bar	Class 300 bar	Class 600 bar	Class 900 bar	Class 1500 bar	Class 2500 bar
-29 to 38	19.0	49.6	99.3	148.9	248.2	413.2	-29 to 38	15.9	41.4	82.7	124.1	206.8	413.2
50	18.4	48.1	96.2	144.3	240.6	406.0	50	15.3	40.0	80.0	120.1	200.1	406.0
100	16.2	42.2	84.4	126.6	211.0	351.0	100	13.3	34.8	69.6	104.4	173.9	351.0
150	14.8	38.5	77.0	115.5	192.5	320.5	150	12.0	31.4	62.8	94.2	157.0	320.5
200	13.7	35.7	71.3	107.0	178.3	292.0	200	11.2	29.2	58.3	87.5	145.8	292.0
250	12.1	33.4	66.8	100.1	166.9	272.5	250	10.5	27.5	54.9	82.4	137.3	272.5
300	10.2	31.6	63.2	94.9	158.1	263.0	300	10.0	26.1	52.1	78.2	130.3	263.0
325	9.3	30.9	61.8	92.7	154.4	253.25	325	9.3	25.5	51.0	76.4	127.4	253.25
350	8.4	30.3	60.7	91.0	151.6	253.50	350	8.4	25.1	50.1	75.2	125.4	253.50
375	7.4	29.9	59.8	89.6	149.4	249.75	375	7.4	24.8	49.5	74.3	123.8	249.75
400	6.5	29.4	58.9	88.3	147.2	248.00	400	6.5	24.3	48.6	72.9	121.5	248.00
425	5.5	29.1	58.3	87.4	145.7	244.25	425	5.5	23.9	47.7	71.6	119.3	244.25
450	4.6	28.8	57.7	86.5	144.2	240.50	450	4.6	23.4	46.8	70.2	117.1	240.50
475	3.7	28.7	57.3	86.0	143.4	238.9	475						238.9
500	2.8	28.2	56.5	84.7	140.9	235.0	500						235.0
538	1.4	25.2	50.0	75.2	125.5	208.9	538						208.9

Notes

- Working pressures are in bar gauge. Linear interpolation between temperatures is permitted by the standard.
- Group 1.1 includes ASTM A105, A350 LF2 and A216 WCB. Prolonged use of carbon steel above about 425 °C is not recommended because of graphitisation.
- Group 2.3: F304L is not to be used above 425 °C; F316L is rated to 450 °C.
- Ratings are those of the ASME B16.5 metric tables in the 2013 to 2020 editions. Confirm against the edition your project specifies.
- The Group 1.9 (F11 Cl.2) table was cross-checked against the equivalent ASME B16.34 valve ratings; confirm it against the current edition of ASME B16.5 for design.

Reference information compiled from the published standard for convenience. It does not replace the current edition of the governing standard, which takes precedence. Verify critical dimensions and properties before design, purchase or fabrication. Teshi Engineers & Sales Promoters (P) Ltd accepts no liability for errors or omissions.

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