

ASME B16.34-2025

(Revision of ASME B16.34-2020)

Valves — Flanged, Threaded, and Welding End

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

ASTM A105, A216 Grade WCB

BODY MATERIAL CODE - 02

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.6	51.0	102.0	153.1	255.1	425.1	765.3
50	19.1	49.8	99.6	149.3	248.9	414.9	746.7
100	17.7	46.7	93.4	140.1	233.5	389.1	700.5
150	15.8	45.1	90.1	135.2	225.3	375.4	675.8
200	13.8	43.8	87.6	131.5	219.1	365.1	657.3
250	12.1	42.0	83.9	125.9	209.8	349.7	629.5
300	10.2	39.9	79.8	119.7	199.5	332.6	598.6
325	9.3	38.7	77.3	116.0	193.4	322.3	580.1
350	8.4	37.6	75.3	112.9	188.2	313.7	564.7
375	7.4	36.4	72.8	109.2	182.1	303.4	546.2
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	17.5	35.0	52.5	87.4	145.7	262.3
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.6	103.3	154.9	258.2	430.4	774.6
150	19.6	51.0	102.0	153.0	255.0	425.0	765.0
200	19.4	50.6	101.1	151.7	252.9	421.4	758.6
250	19.4	50.6	101.1	151.7	252.9	421.4	758.6
300	19.4	50.6	101.1	151.7	252.9	421.4	758.6
325	19.3	50.4	100.7	151.1	251.8	419.6	755.4
350	18.8	49.0	98.0	147.1	245.1	408.5	735.3
375	18.2	47.4	94.8	142.2	237.1	395.1	711.2
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.4	21.9	43.7	65.6	109.3	182.1	327.9
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

- (1) Upon prolonged exposure to temperatures above 427°C, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 427°C.

BASED ON ASME B16.34 – 2025

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ASTM A217 Grade WC1

BODY MATERIAL CODE - 03

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	17.3	45.3	90.5	135.8	226.3	377.1	678.9
150	15.8	44.0	88.0	132.1	220.1	366.9	660.3
200	13.8	42.6	85.2	127.7	212.9	354.9	638.7
250	12.1	40.7	81.5	122.2	203.7	339.4	611.0
300	10.2	38.7	77.3	116.0	193.4	322.3	580.1
325	9.3	37.6	75.3	112.9	188.2	313.7	564.7
350	8.4	36.4	72.8	109.2	182.1	303.4	546.2
375	7.4	35.0	69.9	104.9	174.9	291.4	524.6
400	6.5	32.6	65.1	97.7	162.9	271.4	488.6
425	5.5	27.3	54.6	81.9	136.5	227.4	409.4
450	4.6	21.7	43.3	65.0	108.3	180.6	325.0
475	3.7	15.5	31.1	46.6	77.7	129.4	233.0
500	2.8	10.9	21.7	32.6	54.3	90.6	163.0
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	18.4	48.0	96.0	144.0	240.0	400.0	720.0
150	18.4	48.0	96.0	144.0	240.0	400.0	720.0
200	18.4	48.0	96.0	144.0	240.0	400.0	720.0
250	18.4	48.0	96.0	144.0	240.0	400.0	720.0
300	18.4	48.0	96.0	144.0	240.0	400.0	720.0
325	18.4	48.0	96.0	144.0	240.0	400.0	720.0
350	18.2	47.4	94.8	142.2	237.1	395.1	711.2
375	17.5	45.5	91.1	136.6	227.7	379.5	683.0
400	15.6	40.7	81.4	122.1	203.6	339.3	610.7
425	13.1	34.1	68.2	102.3	170.6	284.3	511.7
450	10.4	27.1	54.2	81.3	135.4	225.7	406.3
475	7.4	19.4	38.8	58.2	97.1	161.8	291.2
500	5.2	13.6	27.2	40.8	67.9	113.2	203.8
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Upon prolonged exposure to temperatures above 468°C, the carbide phase of carbon-molybdenum steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 468°C.

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F1

BODY MATERIAL CODE - 03

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	17.7	48.0	96.0	144.0	240.0	400.0	720.0
150	15.8	47.3	94.6	141.9	236.6	394.3	709.7
200	13.8	45.9	91.7	137.6	229.4	382.3	688.1
250	12.1	44.4	88.9	133.3	222.2	370.3	666.5
300	10.2	43.2	86.4	129.6	216.0	360.0	648.0
325	9.3	42.6	85.2	127.7	212.9	354.9	638.7
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	23.3	46.7	70.0	116.7	194.6	350.2
538	1.4	11.2	22.4	33.5	55.9	93.2	167.7
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	18.4	48.0	96.0	144.0	240.0	400.0	720.0
150	18.4	48.0	96.0	144.0	240.0	400.0	720.0
200	18.4	48.0	96.0	144.0	240.0	400.0	720.0
250	18.4	48.0	96.0	144.0	240.0	400.0	720.0
300	18.4	48.0	96.0	144.0	240.0	400.0	720.0
325	18.4	48.0	96.0	144.0	240.0	400.0	720.0
350	18.4	48.0	96.0	144.0	240.0	400.0	720.0
375	18.4	48.0	96.0	144.0	240.0	400.0	720.0
400	18.4	48.0	96.0	144.0	240.0	400.0	720.0
425	18.4	48.0	96.0	144.0	240.0	400.0	720.0
450	18.1	48.0	96.0	144.0	240.0	400.0	720.0
475	16.4	45.0	90.0	135.0	225.0	375.0	675.0
500	11.2	29.2	58.4	87.6	145.9	243.2	437.8
538	5.4	14.0	27.9	41.9	69.9	116.5	209.6

NOTES:

(1) Upon prolonged exposure to temperatures above 468°C, the carbide phase of steel of carbon-molybdenum steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 468°C.

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F5

BODY MATERIAL CODE - 04

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.6	103.1	154.7	257.8	429.6	773.3
100	17.7	50.6	101.1	151.7	252.9	421.4	758.6
150	15.8	48.1	96.3	144.4	240.7	401.1	722.1
200	13.8	46.3	92.6	138.9	231.4	385.7	694.3
250	12.1	44.8	89.7	134.5	224.2	373.7	672.7
300	10.2	43.6	87.2	130.8	218.1	363.4	654.2
325	9.3	43.0	86.0	129.0	215.0	358.3	644.9
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.0	69.9	104.9	174.9	291.4	524.6
475	3.7	27.8	55.6	83.4	139.0	231.7	417.1
500	2.8	21.2	42.4	63.6	105.9	176.6	317.8
538	1.4	13.8	27.6	41.5	69.1	115.2	207.3
550	1.4	11.9	23.8	35.7	59.5	99.1	178.5
575	1.4	8.8	17.7	26.5	44.2	73.7	132.7
600	1.4	5.9	11.9	17.8	29.7	49.4	89.0
625	1.4	3.9	7.9	11.8	19.7	32.9	59.1
649	0.9	2.4	4.7	7.1	11.8	19.6	35.3

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.6	103.1	154.7	257.8	429.6	773.3
100	19.4	50.6	101.1	151.7	252.9	421.4	758.6
150	19.1	49.7	99.4	149.1	248.6	414.3	745.7
200	19.1	49.7	99.4	149.1	248.6	414.3	745.7
250	19.0	49.6	99.2	148.8	248.0	413.4	744.1
300	18.9	49.2	98.4	147.5	245.9	409.8	737.7
325	18.6	48.6	97.3	145.9	243.2	405.4	729.6
350	18.4	47.9	95.8	143.7	239.5	399.1	718.4
375	18.4	47.9	95.8	143.7	239.5	399.1	718.4
400	18.4	47.9	95.8	143.7	239.5	399.1	718.4
425	18.4	47.9	95.8	143.7	239.5	399.1	718.4
450	16.8	43.7	87.4	131.1	218.6	364.3	655.7
475	13.3	34.8	69.5	104.3	173.8	289.6	521.4
500	10.2	26.5	53.0	79.5	132.4	220.7	397.3

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F5

BODY MATERIAL CODE - 04

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	6.6	17.3	34.6	51.8	86.4	144.0	259.2
550	5.7	14.9	29.7	44.6	74.4	123.9	223.1
575	4.2	11.1	22.1	33.2	55.3	92.1	165.9
600	2.8	7.4	14.8	22.2	37.1	61.8	111.2
625	1.9	4.9	9.9	14.8	24.6	41.1	73.9
649	1.1	2.9	5.9	8.8	14.7	24.5	44.2

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ASTM A217 Grade C5

BODY MATERIAL CODE - 04

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.3	70.6	106.9	176.6	294.3	529.7
475	3.7	27.6	55.3	82.8	138.2	230.3	414.5
500	2.8	21.3	42.5	63.8	106.3	177.1	318.9
538	1.4	13.8	27.6	41.5	69.1	115.2	207.4
550	1.4	11.9	23.9	35.8	59.7	99.4	179.0
575	1.4	8.8	17.7	26.5	44.2	73.7	132.7
600	1.4	6.2	12.3	18.5	30.9	51.4	92.6
625	1.4	3.9	7.9	11.8	19.7	32.9	59.1
649	0.9	2.4	4.7	7.1	11.8	19.6	35.3
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	20.0	51.7	103.4	155.1	258.6	430.9	775.7
300	20.0	51.7	103.4	155.1	258.6	430.9	775.7
325	20.0	51.7	103.4	155.1	258.6	430.9	775.7
350	19.8	51.5	102.8	154.3	257.1	428.6	771.4
375	19.3	51.4	102.5	153.8	256.3	427.2	768.8
400	19.3	51.3	102.5	153.6	256.2	426.7	768.3
425	19.0	51.1	102.3	153.4	255.6	426.1	766.9
450	16.9	44.1	88.3	132.4	220.7	367.9	662.1
475	13.2	34.5	69.1	103.6	172.7	287.9	518.1
500	10.2	26.6	53.1	79.7	132.9	221.4	398.6

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ASTM A217 Grade C5

BODY MATERIAL CODE - 04

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	6.6	17.3	34.6	51.8	86.4	144.0	259.2
550	5.7	14.9	29.8	44.7	74.6	124.3	223.7
575	4.2	11.1	22.1	33.2	55.3	92.1	165.9
600	3.0	7.7	15.4	23.1	38.6	64.3	115.7
625	1.9	4.9	9.9	14.8	24.6	41.1	73.9
649	1.1	2.9	5.9	8.8	14.7	24.5	44.2

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F11, ASTM A 217 Grade WC6

BODY MATERIAL CODE - 05

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	49.8	99.6	149.3	248.9	414.9	746.7
200	13.8	47.9	95.9	143.8	239.7	399.4	719.0
250	12.1	46.3	92.6	138.9	231.4	385.7	694.3
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	25.0	50.0	75.0	125.0	208.3	374.9
538	1.4	15.1	30.1	45.2	75.3	125.5	226.0
550	1.4	12.4	24.9	37.3	62.2	103.7	186.7
575	1.4	8.6	17.3	25.9	43.2	72.0	129.6
600	1.4	6.0	12.1	18.1	30.2	50.3	90.5
625	1.4	4.3	8.5	12.8	21.3	35.4	63.8
649	1.1	2.8	5.7	8.5	14.1	23.6	42.4
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.7	103.4	155.1	258.6	430.9	775.7
150	19.8	51.7	103.4	155.1	258.6	430.9	775.7
200	19.8	51.7	103.4	155.1	258.6	430.9	775.7
250	19.8	51.7	103.4	155.1	258.6	430.9	775.7
300	19.8	51.7	103.4	155.1	258.6	430.9	775.7
325	19.8	51.7	103.4	155.1	258.6	430.9	775.7
350	19.8	51.5	102.8	154.3	257.1	428.6	771.4
375	19.3	51.4	102.5	153.8	256.3	427.2	768.8
400	19.3	51.3	102.5	153.6	256.2	426.7	768.3
425	19.0	51.1	102.3	153.4	255.6	426.1	766.9
450	18.1	49.7	99.1	148.5	247.6	412.8	743.0
475	16.4	45.0	90.0	135.0	225.0	375.0	675.0
500	12.0	31.2	62.5	93.7	156.2	260.4	468.6

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F11, ASTM A 217 Grade WC6

BODY MATERIAL CODE - 05

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	7.2	18.8	37.7	56.5	94.1	156.9	282.4
550	6.0	15.6	31.1	46.7	77.8	129.6	233.4
575	4.1	10.8	21.6	32.4	54.0	90.0	162.0
600	2.9	7.5	15.1	22.6	37.7	62.9	113.1
625	2.0	5.3	10.6	15.9	26.6	44.3	79.7
649	1.4	3.5	7.1	10.6	17.7	29.5	53.1

NOTES:

(1) Not to be used over 593°C.

ASTM A182 Grade F22

BODY MATERIAL CODE - 06

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	30.7	61.3	92.0	153.3	255.4	459.8
538	1.4	18.6	37.1	55.7	92.8	154.6	278.3
550	1.4	15.4	30.8	46.2	77.0	128.3	230.9
575	1.4	10.3	20.6	31.0	51.6	86.0	154.8
600	1.4	6.8	13.5	20.3	33.8	56.3	101.3
625	1.4	4.4	8.8	13.3	22.1	36.9	66.3
649	1.1	2.8	5.7	8.5	14.1	23.6	42.4

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.6	103.3	154.9	258.2	430.4	774.6
150	19.6	51.0	102.0	153.0	255.0	425.0	765.0
200	19.2	50.1	100.3	150.4	250.7	417.9	752.1
250	19.1	49.9	99.9	149.8	249.6	416.1	748.9
300	19.1	49.8	99.6	149.5	249.1	415.2	747.3
325	19.0	49.6	99.2	148.8	248.0	413.4	744.1
350	18.9	49.3	98.6	147.9	246.4	410.7	739.3
375	18.9	49.3	98.6	147.9	246.4	410.7	739.3
400	18.9	49.3	98.6	147.9	246.4	410.7	739.3
425	18.9	49.3	98.6	147.9	246.4	410.7	739.3
450	18.1	49.3	98.6	147.9	246.4	410.7	739.3
475	16.4	46.4	92.8	139.1	231.9	386.6	695.8
500	13.7	38.3	76.6	114.9	191.6	319.3	574.7

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ASTM A182 Grade F22

BODY MATERIAL CODE - 06

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	8.9	23.2	46.4	69.6	116.0	193.3	347.9
550	7.4	19.2	38.5	57.7	96.2	160.4	288.6
575	4.9	12.9	25.8	38.7	64.5	107.5	193.5
600	3.2	8.4	16.9	25.3	42.2	70.4	126.6
625	2.1	5.5	11.1	16.6	27.6	46.1	82.9
649	1.4	3.5	7.1	10.6	17.7	29.5	53.1

NOTES:

(1) Permissible, but not recommended for prolonged use above 593°C.

BASED ON ASME B16.34 – 2025

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ASTM A217 Grade WC9

BODY MATERIAL CODE - 06

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	30.7	61.3	92.0	153.3	255.4	459.8
538	1.4	18.6	37.1	55.7	92.8	154.6	278.3
550	1.4	15.4	30.8	46.2	77.0	128.3	230.9
575	1.4	10.3	20.6	31.0	51.6	86.0	154.8
600	1.4	6.8	13.5	20.3	33.8	56.3	101.3
625	1.4	4.4	8.8	13.3	22.1	36.9	66.3
649	1.1	2.8	5.7	8.5	14.1	23.6	42.4
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.6	103.3	154.9	258.2	430.4	774.6
150	19.6	51.0	102.0	153.0	255.0	425.0	765.0
200	19.2	50.1	100.3	150.4	250.7	417.9	752.1
250	19.1	49.9	99.9	149.8	249.6	416.1	748.9
300	19.1	49.8	99.6	149.5	249.1	415.2	747.3
325	19.0	49.6	99.2	148.8	248.0	413.4	744.1
350	18.9	49.3	98.6	147.9	246.4	410.7	739.3
375	18.9	49.3	98.6	147.9	246.4	410.7	739.3
400	18.9	49.3	98.6	147.9	246.4	410.7	739.3
425	18.9	49.3	98.6	147.9	246.4	410.7	739.3
450	18.1	49.3	98.6	147.9	246.4	410.7	739.3
475	16.4	46.4	92.8	139.1	231.9	386.6	695.8
500	13.7	38.3	76.6	114.9	191.6	319.3	574.7

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ASTM A217 Grade WC9

BODY MATERIAL CODE - 06

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	8.9	23.2	46.4	69.6	116.0	193.3	347.9
550	7.4	19.2	38.5	57.7	96.2	160.4	288.6
575	4.9	12.9	25.8	38.7	64.5	107.5	193.5
600	3.2	8.4	16.9	25.3	42.2	70.4	126.6
625	2.1	5.5	11.1	16.6	27.6	46.1	82.9
649	1.4	3.5	7.1	10.6	17.7	29.5	53.1

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ASTM A182 Grade F9, ASTM A217 Grade C12

BODY MATERIAL CODE - 09

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	30.2	60.5	90.7	151.2	252.0	453.6
538	1.4	17.7	35.3	53.0	88.4	147.3	265.1
550	1.4	14.7	29.5	44.2	73.7	122.9	221.1
575	1.4	10.3	20.6	30.9	51.4	85.7	154.3
600	1.4	7.1	14.1	21.2	35.3	58.9	105.9
625	1.4	4.9	9.9	14.8	24.7	41.1	74.1
649	1.4	3.6	7.1	10.7	17.8	29.6	53.3
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	20.0	51.7	103.4	155.1	258.6	430.9	775.7
300	20.0	51.7	103.4	155.1	258.6	430.9	775.7
325	20.0	51.7	103.4	155.1	258.6	430.9	775.7
350	19.8	51.5	102.8	154.3	257.1	428.6	771.4
375	19.3	51.4	102.5	153.8	256.3	427.2	768.8
400	19.3	51.3	102.5	153.6	256.2	426.7	768.3
425	19.0	51.1	102.3	153.4	255.6	426.1	766.9
450	18.1	49.7	99.1	148.5	247.6	412.8	743.0
475	16.4	46.4	92.8	139.1	231.9	386.6	695.8
500	13.7	37.8	75.6	113.4	189.0	315.0	567.0

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F9, ASTM A217 Grade C12

BODY MATERIAL CODE - 09

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	8.5	22.1	44.2	66.3	110.5	184.1	331.4
550	7.1	18.4	36.9	55.3	92.1	153.6	276.4
575	4.9	12.9	25.7	38.6	64.3	107.1	192.9
600	3.4	8.8	17.7	26.5	44.1	73.6	132.4
625	2.4	6.2	12.3	18.5	30.9	51.4	92.6
649	1.7	4.4	8.9	13.3	22.2	37.0	66.7

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ASTM A182 Grade F316H, ASTM A351 Grade CF10M

BODY MATERIAL CODE - 10

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	16.2	42.2	84.3	126.5	210.9	351.4	632.6
150	14.7	38.4	76.8	115.2	192.0	320.0	576.0
200	13.7	35.7	71.3	107.0	178.3	297.1	534.9
250	12.1	33.4	66.7	100.1	166.8	278.0	500.4
300	10.2	31.4	62.9	94.3	157.2	262.0	471.6
325	9.3	31.0	61.9	92.9	154.8	258.0	464.4
350	8.4	30.2	60.5	90.7	151.2	252.0	453.6
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.5	59.0	88.6	147.6	246.0	442.8
425	5.5	29.0	58.1	87.1	145.2	242.0	435.6
450	4.6	28.8	57.6	86.4	144.0	240.0	432.0
475	3.7	28.6	57.1	85.7	142.8	238.0	428.4
500	2.8	28.3	56.6	85.0	141.6	236.0	424.8
538	1.4	26.7	53.4	80.1	133.5	222.6	400.6
550	1.4	26.6	53.2	79.8	133.0	221.7	399.1
575	1.4	25.3	50.5	75.8	126.3	210.6	379.0
600	1.4	19.9	39.7	59.6	99.3	165.4	297.8
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	10.3	20.6	31.0	51.6	86.0	154.8
700	1.4	8.3	16.7	25.0	41.7	69.4	125.0
725	1.4	7.0	13.9	20.9	34.8	58.0	104.4
750	1.4	5.8	11.7	17.5	29.1	48.6	87.4
775	1.4	4.6	9.2	13.8	23.0	38.3	68.9
800	1.2	3.6	7.1	10.7	17.8	29.7	53.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.9	51.7	103.4	155.1	258.6	430.9	775.7
100	18.1	47.1	94.3	141.4	235.7	392.9	707.1

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ASTM A182 Grade F316H, ASTM A351 Grade CF10M

BODY MATERIAL CODE - 10

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	16.4	42.9	85.7	128.6	214.3	357.1	642.9
200	15.2	39.6	79.3	118.9	198.2	330.4	594.6
250	14.3	37.2	74.5	111.7	186.2	310.4	558.6
300	13.5	35.1	70.2	105.3	175.5	292.5	526.5
325	13.2	34.5	69.1	103.6	172.7	287.9	518.1
350	12.9	33.8	67.5	101.3	168.9	281.4	506.6
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.6	33.0	65.9	98.9	164.8	274.6	494.4
425	12.4	32.4	64.8	97.2	162.0	270.0	486.0
450	12.3	32.1	64.3	96.4	160.7	267.9	482.1
475	12.2	31.9	63.8	95.7	159.4	265.7	478.3
500	12.1	31.6	63.3	94.9	158.1	263.6	474.4
538	11.0	30.8	61.6	92.4	154.1	256.8	462.2
550	11.0	30.6	61.1	91.7	152.8	254.6	458.4
575	10.9	30.0	60.0	90.0	150.0	250.0	450.0
600	9.5	24.8	49.6	74.4	124.1	206.8	372.2
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.9	12.9	25.8	38.7	64.5	107.5	193.5
700	4.0	10.4	20.8	31.2	52.1	86.8	156.2
725	3.3	8.7	17.4	26.1	43.5	72.5	130.5
750	2.8	7.3	14.6	21.9	36.4	60.7	109.3
775	2.2	5.7	11.5	17.2	28.7	47.9	86.1
800	1.7	4.5	8.9	13.4	22.3	37.1	66.9
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F304, ASTM A351 Grade CF8

BODY MATERIAL CODE - 11

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	15.6	40.8	81.6	122.4	204.0	340.0	612.0
150	14.2	37.0	74.1	111.1	185.1	308.6	555.4
200	13.1	34.3	68.6	102.9	171.4	285.7	514.3
250	12.1	32.2	64.3	96.5	160.8	268.0	482.4
300	10.2	31.0	61.9	92.9	154.8	258.0	464.4
325	9.3	30.2	60.5	90.7	151.2	252.0	453.6
350	8.4	29.5	59.0	88.6	147.6	246.0	442.8
375	7.4	29.0	58.1	87.1	145.2	242.0	435.6
400	6.5	28.3	56.6	85.0	141.6	236.0	424.8
425	5.5	28.1	56.2	84.2	140.4	234.0	421.2
450	4.6	27.4	54.7	82.1	136.8	228.0	410.4
475	3.7	26.9	53.8	80.6	134.4	224.0	403.2
500	2.8	26.4	52.8	79.2	132.0	220.0	396.0
538	1.4	24.4	48.8	73.2	122.1	203.4	366.2
550	1.4	24.0	48.0	72.0	120.0	200.0	360.0
575	1.4	21.0	42.0	62.9	104.9	174.9	314.7
600	1.4	16.8	33.6	50.4	84.0	140.0	252.0
625	1.4	13.7	27.5	41.2	68.7	114.6	206.2
650	1.4	11.2	22.5	33.7	56.2	93.7	168.7
675	1.4	9.3	18.7	28.0	46.6	77.7	139.9
700	1.4	8.0	16.0	24.1	40.1	66.9	120.3
725	1.4	6.7	13.4	20.2	33.6	56.0	100.8
750	1.4	5.7	11.5	17.2	28.6	47.7	85.9
775	1.4	4.8	9.5	14.3	23.8	39.7	71.5
800	1.2	3.8	7.6	11.4	19.0	31.7	57.1
816	1.0	3.3	6.6	9.9	16.4	27.4	49.3
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.7	51.4	102.9	154.3	257.1	428.6	771.4
100	17.4	45.4	90.9	136.3	227.1	378.6	681.4
150	15.8	41.3	82.5	123.8	206.4	343.9	619.1
200	14.7	38.3	76.6	114.9	191.6	319.3	574.7
250	13.8	35.9	71.8	107.7	179.6	299.3	538.7
300	13.2	34.5	69.1	103.6	172.7	287.9	518.1

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F304, ASTM A351 Grade CF8

BODY MATERIAL CODE - 11

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
325	12.9	33.8	67.5	101.3	168.9	281.4	506.6
350	12.6	33.0	65.9	98.9	164.8	274.6	494.4
375	12.4	32.4	64.8	97.2	162.0	270.0	486.0
400	12.1	31.6	63.3	94.9	158.1	263.6	474.4
425	12.0	31.3	62.7	94.0	156.6	261.1	469.9
450	11.7	30.6	61.1	91.7	152.8	254.6	458.4
475	11.5	30.0	60.0	90.0	150.0	250.0	450.0
500	11.3	29.5	59.0	88.5	147.4	245.7	442.3
538	10.9	28.4	56.8	85.2	142.1	236.8	462.2
550	10.8	28.1	56.2	84.3	140.6	234.3	421.7
575	10.1	26.2	52.5	78.7	131.1	218.6	393.4
600	8.1	21.0	42.0	63.0	105.0	175.0	315.0
625	6.6	17.2	34.4	51.6	85.9	143.2	257.8
650	5.4	14.1	28.1	42.2	70.3	117.1	210.9
675	4.5	11.7	23.3	35.0	58.3	97.1	174.9
700	3.8	10.0	20.1	30.1	50.1	83.6	150.4
725	3.2	8.4	16.8	25.2	42.0	70.0	126.0
750	2.7	7.2	14.3	21.5	35.8	59.6	107.4
775	2.2	6.0	11.9	17.9	29.8	49.6	89.4
800	1.8	4.8	9.5	14.3	23.8	39.6	71.4
816	1.4	4.1	8.2	12.3	20.5	34.2	61.6

NOTES:

(1) At temperatures above 538°C, use only when the carbon content is 0.04% or higher.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F304L

BODY MATERIAL CODE - 12

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.5	40.5	80.9	121.4	202.3	337.1	606.9
100	13.4	35.0	69.9	105.9	174.9	291.4	524.6
150	12.1	31.4	62.9	94.3	157.2	262.0	471.6
200	11.1	29.0	58.1	87.1	145.2	242.0	435.6
250	10.5	27.4	54.7	82.1	136.8	228.0	410.4
300	9.9	25.9	51.8	77.8	129.6	216.0	388.8
325	9.3	25.4	50.9	76.3	127.2	212.0	381.6
350	8.4	25.0	49.9	74.9	124.8	208.0	374.4
375	7.4	24.7	49.4	74.2	123.6	206.0	370.8
400	6.5	24.2	48.5	72.7	121.2	202.0	363.6
425	5.5	23.9	47.7	71.6	119.3	198.9	357.9
454	4.6	23.4	46.8	70.3	117.1	195.1	351.3
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.3	45.0	90.0	135.0	225.0	375.0	675.0
100	14.9	38.8	77.7	116.5	194.1	323.6	582.4
150	13.5	35.1	70.2	105.3	175.5	292.5	526.5
200	12.4	32.4	64.8	97.2	162.0	270.0	486.0
250	11.7	30.6	61.1	91.7	152.8	254.6	458.4
300	11.1	28.9	57.9	86.8	144.6	241.1	433.9
325	10.9	28.4	56.8	85.2	142.1	236.8	426.2
350	10.7	27.9	55.7	83.6	139.3	232.1	417.9
375	10.6	27.6	55.2	82.8	138.0	230.0	414.0
400	10.4	27.0	54.1	81.1	135.2	225.4	405.6
425	10.2	26.6	53.2	79.8	133.1	221.8	399.2
454	10.0	26.1	52.2	78.3	130.5	217.5	391.5

NOTES:

(1) Not to be used over 454°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A351 Grade CF3

BODY MATERIAL CODE - 12

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	15.6	40.8	81.6	122.4	204.0	340.0	612.0
150	14.2	37.0	74.1	111.1	185.1	308.6	555.4
200	13.1	34.3	68.6	102.9	171.4	285.7	514.3
250	12.1	32.2	64.3	96.5	160.8	268.0	482.4
300	10.2	31.0	61.9	92.9	154.8	258.0	464.4
325	9.3	30.2	60.5	90.7	151.2	252.0	453.6
350	8.4	29.5	59.0	88.6	147.6	246.0	442.8
375	7.4	29.0	58.1	87.1	145.2	242.0	435.6
400	6.5	28.3	56.6	85.0	141.6	236.0	424.8
425	5.5	28.1	56.2	84.2	140.4	234.0	421.2
450	4.6	27.4	54.7	82.1	136.8	228.0	410.4
475	3.7	26.9	53.8	80.6	134.4	224.0	403.2
500	2.8	26.4	52.8	79.2	132.0	220.0	396.0
538	1.4	24.4	48.8	73.2	122.1	203.4	366.2
550	1.4	24.0	48.0	72.0	120.0	200.0	360.0
575	1.4	21.0	42.0	62.9	104.9	174.9	314.7
600	1.4	16.8	33.6	50.4	84.0	140.0	252.0
625	1.4	13.7	27.5	41.2	68.7	114.6	206.2
650	1.4	11.2	22.5	33.7	56.2	93.7	168.7
675	1.4	9.3	18.7	28.0	46.6	77.7	139.9
700	1.4	8.0	16.0	24.1	40.1	66.9	120.3
725	1.4	6.7	13.4	20.2	33.6	56.0	100.8
750	1.4	5.7	11.5	17.2	28.6	47.7	85.9
775	1.4	4.8	9.5	14.3	23.8	39.7	71.5
800	1.2	3.8	7.6	11.4	19.0	31.7	57.1
816	1.0	3.3	6.6	9.9	16.4	27.4	49.3

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.7	51.4	102.9	154.3	257.1	428.6	771.4
100	17.4	45.4	90.9	136.3	227.1	378.6	681.4
150	15.8	41.3	82.5	123.8	206.4	343.9	619.1
200	14.7	38.3	76.6	114.9	191.6	319.3	574.7
250	13.8	35.9	71.8	107.7	179.6	299.3	538.7
300	13.2	34.5	69.1	103.6	172.7	287.9	518.1

BASED ON ASME B16.34 – 2025

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ASTM A351 Grade CF3

BODY MATERIAL CODE - 12

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
325	12.9	33.8	67.5	101.3	168.9	281.4	506.6
350	12.6	33.0	65.9	98.9	164.8	274.6	494.4
375	12.4	32.4	64.8	97.2	162.0	270.0	486.0
400	12.1	31.6	63.3	94.9	158.1	263.6	474.4
425	12.0	31.3	62.7	94.0	156.6	261.1	469.9
450	11.7	30.6	61.1	91.7	152.8	254.6	458.4
475	11.5	30.0	60.0	90.0	150.0	250.0	450.0
500	11.3	29.5	59.0	88.5	147.4	245.7	442.3
538	10.9	28.4	56.8	85.2	142.1	236.8	462.2
550	10.8	28.1	56.2	84.3	140.6	234.3	421.7
575	10.1	26.2	52.5	78.7	131.1	218.6	393.4
600	8.1	21.0	42.0	63.0	105.0	175.0	315.0
625	6.6	17.2	34.4	51.6	85.9	143.2	257.8
650	5.4	14.1	28.1	42.2	70.3	117.1	210.9
675	4.5	11.7	23.3	35.0	58.3	97.1	174.9
700	3.8	10.0	20.1	30.1	50.1	83.6	150.4
725	3.2	8.4	16.8	25.2	42.0	70.0	126.0
750	2.7	7.2	14.3	21.5	35.8	59.6	107.4
775	2.2	6.0	11.9	17.9	29.8	49.6	89.4
800	1.8	4.8	9.5	14.3	23.8	39.6	71.4
816	1.4	4.1	8.2	12.3	20.5	34.2	61.6

NOTES:

(1) Not to be used over 427°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F316, ASTM A351 Grade CF8M

BODY MATERIAL CODE - 13

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	16.2	42.2	84.3	126.5	210.9	351.4	632.6
150	14.7	38.4	76.8	115.2	192.0	320.0	576.0
200	13.7	35.7	71.3	107.0	178.3	297.1	534.9
250	12.1	33.4	66.7	100.1	166.8	278.0	500.4
300	10.2	31.4	62.9	94.3	157.2	262.0	471.6
325	9.3	31.0	61.9	92.9	154.8	258.0	464.4
350	8.4	30.2	60.5	90.7	151.2	252.0	453.6
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.5	59.0	88.6	147.6	246.0	442.8
425	5.5	29.0	58.1	87.1	145.2	242.0	435.6
450	4.6	28.8	57.6	86.4	144.0	240.0	432.0
475	3.7	28.6	57.1	85.7	142.8	238.0	428.4
500	2.8	28.3	56.6	85.0	141.6	236.0	424.8
538	1.4	26.7	53.4	80.1	133.5	222.6	400.6
550	1.4	26.6	53.2	79.8	133.0	221.7	399.1
575	1.4	25.3	50.5	75.8	126.3	210.6	379.0
600	1.4	19.9	39.7	59.6	99.3	165.4	297.8
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	10.3	20.6	31.0	51.6	86.0	154.8
700	1.4	8.3	16.7	25.0	41.7	69.4	125.0
725	1.4	7.0	13.9	20.9	34.8	58.0	104.4
750	1.4	5.8	11.7	17.5	29.1	48.6	87.4
775	1.4	4.6	9.2	13.8	23.0	38.3	68.9
800	1.2	3.6	7.1	10.7	17.8	29.7	53.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.9	51.7	103.4	155.1	258.6	430.9	775.7
100	18.1	47.1	94.3	141.4	235.7	392.9	707.1

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F316, ASTM A351 Grade CF8M

BODY MATERIAL CODE - 13

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	16.4	42.9	85.7	128.6	214.3	357.1	642.9
200	15.2	39.6	79.3	118.9	198.2	330.4	594.6
250	14.3	37.2	74.5	111.7	186.2	310.4	558.6
300	13.5	35.1	70.2	105.3	175.5	292.5	526.5
325	13.2	34.5	69.1	103.6	172.7	287.9	518.1
350	12.9	33.8	67.5	101.3	168.9	281.4	506.6
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.6	33.0	65.9	98.9	164.8	274.6	494.4
425	12.4	32.4	64.8	97.2	162.0	270.0	486.0
450	12.3	32.1	64.3	96.4	160.7	267.9	482.1
475	12.2	31.9	63.8	95.7	159.4	265.7	478.3
500	12.1	31.6	63.3	94.9	158.1	263.6	474.4
538	11.0	30.8	61.6	92.4	154.1	256.8	462.2
550	11.0	30.6	61.1	91.7	152.8	254.6	458.4
575	10.9	30.0	60.0	90.0	150.0	250.0	450.0
600	9.5	24.8	49.6	74.4	124.1	206.8	372.2
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.9	12.9	25.8	38.7	64.5	107.5	193.5
700	4.0	10.4	20.8	31.2	52.1	86.8	156.2
725	3.3	8.7	17.4	26.1	43.5	72.5	130.5
750	2.8	7.3	14.6	21.9	36.4	60.7	109.3
775	2.2	5.7	11.5	17.2	28.7	47.9	86.1
800	1.7	4.5	8.9	13.4	22.3	37.1	66.9
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

NOTES:

(1) At temperatures above 538°C, use only when the carbon content is 0.04% or higher.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F316L

BODY MATERIAL CODE - 14

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.5	40.5	80.9	121.4	202.3	337.1	606.9
100	13.4	35.0	69.9	105.9	174.9	291.4	524.6
150	12.1	31.4	62.9	94.3	157.2	262.0	471.6
200	11.1	29.0	58.1	87.1	145.2	242.0	435.6
250	10.5	27.4	54.7	82.1	136.8	228.0	410.4
300	9.9	25.9	51.8	77.8	129.6	216.0	388.8
325	9.3	25.4	50.9	76.3	127.2	212.0	381.6
350	8.4	25.0	49.9	74.9	124.8	208.0	374.4
375	7.4	24.7	49.4	74.2	123.6	206.0	370.8
400	6.5	24.2	48.5	72.7	121.2	202.0	363.6
425	5.5	23.9	47.7	71.6	119.3	198.9	357.9
454	4.6	23.4	46.8	70.3	117.1	195.1	351.3
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.3	45.0	90.0	135.0	225.0	375.0	675.0
100	14.9	38.8	77.7	116.5	194.1	323.6	582.4
150	13.5	35.1	70.2	105.3	175.5	292.5	526.5
200	12.4	32.4	64.8	97.2	162.0	270.0	486.0
250	11.7	30.6	61.1	91.7	152.8	254.6	458.4
300	11.1	28.9	57.9	86.8	144.6	241.1	433.9
325	10.9	28.4	56.8	85.2	142.1	236.8	426.2
350	10.7	27.9	55.7	83.6	139.3	232.1	417.9
375	10.6	27.6	55.2	82.8	138.0	230.0	414.0
400	10.4	27.0	54.1	81.1	135.2	225.4	405.6
425	10.2	26.6	53.2	79.8	133.1	221.8	399.2
454	10.0	26.1	52.2	78.3	130.5	217.5	391.5

NOTES:

(1) Not to be used over 454°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A351 Grade CF3M

BODY MATERIAL CODE - 14

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	16.2	42.2	84.3	126.5	210.9	351.4	632.6
150	14.7	38.4	76.8	115.2	192.0	320.0	576.0
200	13.7	35.7	71.3	107.0	178.3	297.1	534.9
250	12.1	33.4	66.7	100.1	166.8	278.0	500.4
300	10.2	31.4	62.9	94.3	157.2	262.0	471.6
325	9.3	31.0	61.9	92.9	154.8	258.0	464.4
350	8.4	30.2	60.5	90.7	151.2	252.0	453.6
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.5	59.0	88.6	147.6	246.0	442.8
425	5.5	29.0	58.1	87.1	145.2	242.0	435.6
450	4.6	28.8	57.6	86.4	144.0	240.0	432.0
475	3.7	28.6	57.1	85.7	142.8	238.0	428.4
500	2.8	28.3	56.6	85.0	141.6	236.0	424.8
538	1.4	26.7	53.4	80.1	133.5	222.6	400.6
550	1.4	26.6	53.2	79.8	133.0	221.7	399.1
575	1.4	25.3	50.5	75.8	126.3	210.6	379.0
600	1.4	19.9	39.7	59.6	99.3	165.4	297.8
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	10.3	20.6	31.0	51.6	86.0	154.8
700	1.4	8.3	16.7	25.0	41.7	69.4	125.0
725	1.4	7.0	13.9	20.9	34.8	58.0	104.4
750	1.4	5.8	11.7	17.5	29.1	48.6	87.4
775	1.4	4.6	9.2	13.8	23.0	38.3	68.9
800	1.2	3.6	7.1	10.7	17.8	29.7	53.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-254 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.9	51.7	103.4	155.1	258.6	430.9	775.7
100	18.1	47.1	94.3	141.4	235.7	392.9	707.1

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ASTM A351 Grade CF3M

BODY MATERIAL CODE - 14

Temperature, °C	B — Special Class						
	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	16.4	42.9	85.7	128.6	214.3	357.1	642.9
200	15.2	39.6	79.3	118.9	198.2	330.4	594.6
250	14.3	37.2	74.5	111.7	186.2	310.4	558.6
300	13.5	35.1	70.2	105.3	175.5	292.5	526.5
325	13.2	34.5	69.1	103.6	172.7	287.9	518.1
350	12.9	33.8	67.5	101.3	168.9	281.4	506.6
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.6	33.0	65.9	98.9	164.8	274.6	494.4
425	12.4	32.4	64.8	97.2	162.0	270.0	486.0
450	12.3	32.1	64.3	96.4	160.7	267.9	482.1
475	12.2	31.9	63.8	95.7	159.4	265.7	478.3
500	12.1	31.6	63.3	94.9	158.1	263.6	474.4
538	11.0	30.8	61.6	92.4	154.1	256.8	462.2
550	11.0	30.6	61.1	91.7	152.8	254.6	458.4
575	10.9	30.0	60.0	90.0	150.0	250.0	450.0
600	9.5	24.8	49.6	74.4	124.1	206.8	372.2
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.9	12.9	25.8	38.7	64.5	107.5	193.5
700	4.0	10.4	20.8	31.2	52.1	86.8	156.2
725	3.3	8.7	17.4	26.1	43.5	72.5	130.5
750	2.8	7.3	14.6	21.9	36.4	60.7	109.3
775	2.2	5.7	11.5	17.2	28.7	47.9	86.1
800	1.7	4.5	8.9	13.4	22.3	37.1	66.9
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

NOTES:

(1) Not to be used over 454°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F347

BODY MATERIAL CODE - 15

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.8	49.0	98.1	147.1	245.1	408.6	735.4
100	17.3	45.3	90.5	135.8	226.3	377.1	678.9
150	15.8	42.5	85.0	127.5	212.6	354.3	637.7
200	13.8	39.8	79.5	119.3	198.9	331.4	596.6
250	12.1	37.7	75.4	113.1	188.6	314.3	565.7
300	10.2	36.0	72.0	108.0	180.0	300.0	540.0
325	9.3	35.3	70.6	105.9	176.6	294.3	529.7
350	8.4	35.0	69.9	104.9	174.9	291.4	524.6
375	7.4	34.1	68.2	102.2	170.4	284.0	511.2
400	6.5	33.8	67.7	101.5	169.2	282.0	507.6
425	5.5	33.6	67.2	100.8	168.0	280.0	504.0
450	4.6	33.4	66.7	100.1	166.8	278.0	500.4
475	3.7	33.4	66.7	100.1	166.8	278.0	500.4
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	27.8	55.6	83.3	138.9	231.4	416.6
600	1.4	25.3	50.2	75.1	125.2	208.8	376.0
625	1.4	21.5	43.0	64.5	107.2	178.6	321.7
650	1.4	16.6	33.2	50.2	83.4	138.9	249.8
675	1.4	14.2	28.4	42.6	71.0	118.3	212.9
700	1.4	10.9	21.8	32.7	54.5	90.9	163.5
725	1.4	8.2	16.4	24.6	41.0	68.3	122.9
750	1.4	6.4	12.9	19.3	32.2	53.7	96.7
775	1.4	5.0	10.0	15.0	25.0	41.7	75.1
800	1.2	3.7	7.4	11.1	18.5	30.9	55.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	19.4	50.6	101.1	151.7	252.9	421.4	758.6

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F347

BODY MATERIAL CODE - 15

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	18.2	47.6	95.1	142.7	237.9	396.4	713.6
200	17.1	44.6	89.1	133.7	222.9	371.4	668.6
250	16.1	42.0	84.1	126.1	210.2	350.4	630.6
300	15.4	40.2	80.4	120.6	201.0	335.0	603.0
325	15.1	39.4	78.8	118.2	196.9	328.2	590.8
350	14.9	38.8	77.7	116.5	194.1	323.6	582.4
375	14.6	38.1	76.1	114.2	190.3	317.1	570.9
400	14.5	37.8	75.5	113.3	188.8	314.6	566.4
425	14.4	37.5	75.0	112.5	187.5	312.5	562.5
450	14.3	37.2	74.5	111.7	186.2	310.4	558.6
475	14.3	37.2	74.5	111.7	186.2	310.4	558.6
500	13.7	37.2	74.5	111.7	186.2	310.4	558.6
538	11.0	33.4	66.6	99.9	166.9	278.0	500.4
550	11.0	33.4	66.6	99.9	166.9	278.0	500.4
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	10.3	31.5	62.6	94.1	156.8	261.4	470.2
625	8.7	27.0	53.7	80.6	134.3	224.0	402.8
650	6.9	21.1	41.9	62.7	104.5	174.5	314.0
675	6.2	17.7	35.5	53.2	88.7	147.9	266.1
700	4.8	13.6	27.3	40.9	68.1	113.6	204.4
725	3.7	10.2	20.5	30.7	51.2	85.4	153.6
750	2.8	8.1	16.1	24.2	40.3	67.1	120.9
775	2.2	6.3	12.5	18.8	31.3	52.1	93.9
800	1.8	4.6	9.3	13.9	23.1	38.6	69.4
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

NOTES:

(1) Not to be used over 538°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A351 Grade CF8C

BODY MATERIAL CODE - 15

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.8	49.0	98.1	147.1	245.1	408.6	735.4
100	17.3	45.3	90.5	135.8	226.3	377.1	678.9
150	15.8	42.5	85.0	127.5	212.6	354.3	637.7
200	13.8	39.8	79.5	119.3	198.9	331.4	596.6
250	12.1	37.7	75.4	113.1	188.6	314.3	565.7
300	10.2	36.0	72.0	108.0	180.0	300.0	540.0
325	9.3	35.3	70.6	105.9	176.6	294.3	529.7
350	8.4	35.0	69.9	104.9	174.9	291.4	524.6
375	7.4	34.1	68.2	102.2	170.4	284.0	511.2
400	6.5	33.8	67.7	101.5	169.2	282.0	507.6
425	5.5	33.6	67.2	100.8	168.0	280.0	504.0
450	4.6	33.4	66.7	100.1	166.8	278.0	500.4
475	3.7	33.4	66.7	100.1	166.8	278.0	500.4
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	26.5	52.9	79.4	132.3	220.6	397.0
600	1.4	19.8	39.6	59.3	98.9	164.9	296.7
625	1.4	13.7	27.4	41.0	68.4	114.0	205.2
650	1.4	10.3	20.6	30.9	51.4	85.7	154.3
675	1.4	8.0	15.9	23.9	39.8	66.3	119.3
700	1.4	5.6	11.2	16.8	27.9	46.6	83.8
725	1.4	3.8	7.7	11.5	19.2	32.0	57.6
750	1.2	3.1	6.1	9.2	15.3	25.5	45.9
775	0.9	2.4	4.9	7.3	12.1	20.2	36.4
800	0.8	2.0	4.0	5.9	9.9	16.5	29.7
816	0.7	1.9	3.8	5.6	9.4	15.7	28.2
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.7	51.4	102.9	154.3	257.1	428.6	771.4
100	18.7	48.9	97.7	146.6	244.3	407.1	732.9
150	17.4	45.4	90.9	136.3	227.1	378.6	681.4
200	16.4	42.9	85.7	128.6	214.3	357.1	642.9
250	15.9	41.6	83.1	124.7	207.9	346.4	623.6
300	15.4	40.2	80.4	120.6	201.0	335.0	603.0
325	15.1	39.4	78.8	118.2	196.9	328.2	590.8

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ASTM A351 Grade CF8C

BODY MATERIAL CODE - 15

Temperature, °C	B — Special Class						
	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
350	14.9	38.8	77.7	116.5	194.1	323.6	582.4
375	14.6	38.1	76.1	114.2	190.3	317.1	570.9
400	14.5	37.8	75.5	113.3	188.8	314.6	566.4
425	14.4	37.5	75.0	112.5	187.5	312.5	562.5
450	14.3	37.2	74.5	111.7	186.2	310.4	558.6
475	14.3	37.2	74.5	111.7	186.2	310.4	558.6
500	13.7	37.2	74.5	111.7	186.2	310.4	558.6
538	11.0	33.4	66.9	99.9	166.9	278.0	500.4
550	11.0	33.4	66.9	99.9	166.9	278.0	500.4
575	10.9	33.1	66.2	99.3	165.4	275.7	496.3
600	9.5	24.7	49.5	74.2	123.6	206.1	370.9
625	6.6	17.1	34.2	51.3	85.5	142.5	256.5
650	4.9	12.9	25.7	38.6	64.3	107.1	192.9
675	3.8	9.9	19.9	29.8	49.7	82.9	149.1
700	2.7	7.0	14.0	21.0	34.9	58.2	104.8
725	1.8	4.8	9.6	14.4	24.0	40.0	72.0
750	1.5	3.8	7.7	11.5	19.1	31.9	57.4
775	1.2	3.0	6.1	9.1	15.2	25.3	45.5
800	0.9	2.5	4.9	7.4	12.4	20.6	37.1
816	0.9	2.3	4.7	7.0	11.7	19.6	35.2

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ASTM A182 Grade F304H

BODY MATERIAL CODE - 16

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	15.6	40.8	81.6	122.4	204.0	340.0	612.0
150	14.2	37.0	74.1	111.1	185.1	308.6	555.4
200	13.1	34.3	68.6	102.9	171.4	285.7	514.3
250	12.1	32.2	64.3	96.5	160.8	268.0	482.4
300	10.2	31.0	61.9	92.9	154.8	258.0	464.4
325	9.3	30.2	60.5	90.7	151.2	252.0	453.6
350	8.4	29.5	59.0	88.6	147.6	246.0	442.8
375	7.4	29.0	58.1	87.1	145.2	242.0	435.6
400	6.5	28.3	56.6	85.0	141.6	236.0	424.8
425	5.5	28.1	56.2	84.2	140.4	234.0	421.2
450	4.6	27.4	54.7	82.1	136.8	228.0	410.4
475	3.7	26.9	53.8	80.6	134.4	224.0	403.2
500	2.8	26.4	52.8	79.2	132.0	220.0	396.0
538	1.4	24.4	48.8	73.2	122.1	203.4	366.2
550	1.4	24.0	48.0	72.0	120.0	200.0	360.0
575	1.4	21.0	42.0	62.9	104.9	174.9	314.7
600	1.4	16.8	33.6	50.4	84.0	140.0	252.0
625	1.4	13.7	27.5	41.2	68.7	114.6	206.2
650	1.4	11.2	22.5	33.7	56.2	93.7	168.7
675	1.4	9.3	18.7	28.0	46.6	77.7	139.9
700	1.4	8.0	16.0	24.1	40.1	66.9	120.3
725	1.4	6.7	13.4	20.2	33.6	56.0	100.8
750	1.4	5.7	11.5	17.2	28.6	47.7	85.9
775	1.4	4.8	9.5	14.3	23.8	39.7	71.5
800	1.2	3.8	7.6	11.4	19.0	31.7	57.1
816	1.0	3.3	6.6	9.9	16.4	27.4	49.3

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.7	51.4	102.9	154.3	257.1	428.6	771.4
100	17.4	45.4	90.9	136.3	227.1	378.6	681.4
150	15.8	41.3	82.5	123.8	206.4	343.9	619.1
200	14.7	38.3	76.6	114.9	191.6	319.3	574.7
250	13.8	35.9	71.8	107.7	179.6	299.3	538.7
300	13.2	34.5	69.1	103.6	172.7	287.9	518.1

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F304H

BODY MATERIAL CODE - 16

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
325	12.9	33.8	67.5	101.3	168.9	281.4	506.6
350	12.6	33.0	65.9	98.9	164.8	274.6	494.4
375	12.4	32.4	64.8	97.2	162.0	270.0	486.0
400	12.1	31.6	63.3	94.9	158.1	263.6	474.4
425	12.0	31.3	62.7	94.0	156.6	261.1	469.9
450	11.7	30.6	61.1	91.7	152.8	254.6	458.4
475	11.5	30.0	60.0	90.0	150.0	250.0	450.0
500	11.3	29.5	59.0	88.5	147.4	245.7	442.3
538	10.9	28.4	56.8	85.2	142.1	236.8	462.2
550	10.8	28.1	56.2	84.3	140.6	234.3	421.7
575	10.1	26.2	52.5	78.7	131.1	218.6	393.4
600	8.1	21.0	42.0	63.0	105.0	175.0	315.0
625	6.6	17.2	34.4	51.6	85.9	143.2	257.8
650	5.4	14.1	28.1	42.2	70.3	117.1	210.9
675	4.5	11.7	23.3	35.0	58.3	97.1	174.9
700	3.8	10.0	20.1	30.1	50.1	83.6	150.4
725	3.2	8.4	16.8	25.2	42.0	70.0	126.0
750	2.7	7.2	14.3	21.5	35.8	59.6	107.4
775	2.2	6.0	11.9	17.9	29.8	49.6	89.4
800	1.8	4.8	9.5	14.3	23.8	39.6	71.4
816	1.4	4.1	8.2	12.3	20.5	34.2	61.6

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F321

BODY MATERIAL CODE - 18

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	747.5
50	18.7	48.7	97.4	146.1	243.4	405.7	730.3
100	17.0	44.2	88.5	132.7	221.1	368.6	663.4
150	15.8	41.1	82.3	123.4	205.7	342.9	617.1
200	13.8	38.4	76.8	115.2	192.0	320.0	576.0
250	12.1	36.0	72.0	108.0	180.0	300.0	540.0
300	10.2	34.1	68.2	102.2	170.4	284.0	511.2
325	9.3	33.4	66.7	100.1	166.8	278.0	500.4
350	8.4	32.6	65.3	97.9	163.2	272.0	489.6
375	7.4	31.9	63.8	95.8	159.6	266.0	478.8
400	6.5	31.7	63.4	95.0	158.4	264.0	475.2
425	5.5	31.2	62.4	93.6	156.0	260.0	468.0
450	4.6	30.7	61.4	92.2	153.6	256.0	460.8
475	3.7	30.5	61.0	91.4	152.4	254.0	457.2
500	2.8	30.2	60.5	90.7	151.2	252.0	453.6
538	1.4	27.5	55.0	82.5	137.5	229.1	412.5
550	1.4	27.5	55.0	82.5	137.5	229.1	412.5
575	1.4	26.6	53.3	79.9	133.2	220.0	399.6
600	1.4	20.1	40.3	60.4	100.6	167.7	301.9
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	9.8	19.7	29.5	49.2	82.0	147.6
700	1.4	7.9	15.7	23.6	39.3	65.4	117.8
725	1.4	6.3	12.6	18.9	31.5	52.6	94.6
750	1.4	4.9	9.9	14.8	24.7	41.1	74.1
775	1.4	3.9	7.9	11.8	19.7	32.9	59.1
800	1.2	3.1	6.3	9.4	15.7	26.2	47.1
816	1.0	2.6	5.2	7.8	12.9	21.6	38.8

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	18.9	49.3	98.6	147.9	246.4	410.7	739.3
150	17.6	45.9	91.7	137.6	229.3	382.1	687.9
200	16.4	42.9	85.7	128.6	214.3	357.1	642.9
250	15.4	40.2	80.4	120.6	201.0	335.0	603.0
300	14.6	38.1	76.1	114.2	190.3	317.1	570.9
325	14.3	37.2	74.5	111.7	186.2	310.4	558.6

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F321

BODY MATERIAL CODE - 18

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
350	14.0	36.4	72.9	109.3	182.1	303.6	546.4
375	13.7	35.6	71.2	106.8	178.1	296.8	534.2
400	13.6	35.4	70.7	106.1	176.8	294.6	530.4
425	13.4	34.8	69.7	104.5	174.2	290.4	522.6
450	13.1	34.3	68.6	102.9	171.4	285.7	514.3
475	13.0	34.0	68.1	102.1	170.1	283.6	510.4
500	12.9	33.8	67.5	101.3	168.9	281.4	506.6
538	11.0	33.2	66.4	99.6	166.1	276.8	498.2
550	11.0	33.2	66.4	99.6	166.1	276.8	498.2
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	9.6	25.2	50.3	75.5	125.8	209.6	377.4
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.7	12.3	24.6	36.9	61.5	102.5	184.5
700	3.8	9.8	19.6	29.4	49.1	81.8	147.2
725	3.0	7.9	15.8	23.7	39.4	65.7	118.3
750	2.4	6.2	12.3	18.5	30.9	51.4	92.6
775	1.9	4.9	9.9	14.8	24.6	41.1	73.9
800	1.5	3.9	7.9	11.8	19.6	32.7	58.9
816	1.2	3.2	6.5	9.7	16.2	27.0	48.5

NOTES:

(1) Not to be used over 538°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A494 Grade M35-1

BODY MATERIAL CODE - 19

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.5	40.5	80.9	121.4	202.3	337.1	606.9
100	13.7	35.7	71.3	107.0	178.3	297.1	534.9
150	13.0	33.8	67.7	101.5	169.2	282.0	507.6
200	12.5	32.6	65.3	97.9	163.2	272.0	489.6
250	12.1	32.6	65.3	97.9	163.2	272.0	489.6
300	10.2	32.6	65.3	97.9	163.2	272.0	489.6
325	9.3	32.6	65.3	97.9	163.2	272.0	489.6
350	8.4	32.6	65.3	97.9	163.2	272.0	489.6
375	7.4	32.4	64.8	97.2	162.0	270.0	486.0
400	6.5	32.2	64.3	96.5	160.8	268.0	482.4
425	5.5	31.7	63.4	95.0	158.4	264.0	475.2
450	4.6	26.9	53.8	80.7	134.6	224.3	403.7
475	3.7	20.6	41.3	61.9	103.2	172.0	309.6
482	3.4	18.8	37.8	56.6	94.4	157.3	283.1
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.3	45.0	90.0	135.0	225.0	375.0	675.0
100	15.3	40.1	79.8	119.7	199.5	332.5	598.5
150	14.5	39.9	75.5	113.3	188.8	314.6	566.4
200	14.0	37.8	72.9	109.3	182.1	303.6	546.4
250	14.0	36.4	72.9	109.3	182.1	303.6	546.4
300	14.0	36.4	72.9	109.3	182.1	303.6	546.4
325	14.0	36.4	72.9	109.3	182.1	303.6	546.4
350	14.0	36.4	72.9	109.3	182.1	303.6	546.4
375	13.9	36.2	72.3	108.5	180.9	301.4	542.6
400	13.8	35.9	71.8	107.7	179.6	299.3	538.7
425	13.6	35.4	70.7	106.1	176.8	294.6	530.4
450	12.9	33.6	67.3	100.9	168.2	280.4	504.6
475	9.9	25.8	51.6	77.4	129.0	215.0	387.0
482	9.1	23.6	47.2	70.8	118.0	196.6	353.9

BASED ON ASME B16.34 – 2025

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ASTM B564 Grade N06625 (INCONEL 625)

BODY MATERIAL CODE - 20

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.1	100.1	150.2	250.3	417.1	750.9
200	13.8	48.0	96.0	144.0	240.0	400.0	720.0
250	12.1	45.9	91.9	137.8	229.7	382.9	689.1
300	10.2	44.6	89.1	133.7	222.9	371.4	668.6
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	27.8	55.6	83.3	138.9	231.4	416.6
600	1.4	25.3	50.2	75.1	125.2	208.8	376.0
625	1.4	20.8	41.6	62.4	104.1	173.4	312.2
650	1.4	14.0	28.0	42.0	69.9	116.6	209.8
675	1.4	11.5	23.0	34.5	57.4	95.7	172.3
700	1.4	8.8	17.6	26.4	44.1	73.4	132.2
725	1.4	8.8	17.6	26.4	44.1	73.4	132.2
750	1.4	7.3	14.4	21.6	36.4	60.4	108.5
775	1.4	5.6	11.0	16.7	27.8	46.4	83.4
800	1.2	4.3	8.7	13.0	21.6	36.2	65.2
816	1.0	3.5	7.4	10.8	17.8	30.0	53.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7

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ASTM B564 Grade N06625 (INCONEL 625)

BODY MATERIAL CODE - 20

Temperature, °C	B — Special Class						
	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	19.7	51.4	102.9	154.3	257.1	428.6	771.4
300	19.1	49.7	99.4	149.1	248.6	414.3	745.7
325	18.7	48.9	97.7	146.6	244.3	407.1	732.9
350	18.6	48.4	96.9	145.3	242.1	403.6	726.4
375	18.2	47.6	95.1	142.7	237.9	396.4	713.6
400	18.1	47.1	94.3	141.4	235.7	392.9	707.1
425	17.9	46.7	93.4	140.1	233.6	389.3	700.7
450	17.9	46.7	93.4	140.1	233.6	389.3	700.7
475	16.4	46.3	92.6	138.9	231.4	385.7	694.3
500	13.7	40.6	81.5	122.1	203.6	339.2	610.4
538	11.0	33.4	66.6	99.9	166.9	278.0	500.4
550	11.0	33.4	66.6	99.9	166.9	278.0	500.4
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	10.3	31.5	62.6	94.1	156.8	261.4	470.2
625	8.7	26.0	52.0	78.0	130.1	216.8	390.2
650	6.7	17.5	35.0	52.5	87.4	145.7	262.3
675	5.5	14.4	28.7	43.1	71.8	119.6	215.4
700	4.2	11.0	22.0	33.0	55.1	91.8	165.2
725	3.7	11.0	22.0	33.0	55.1	91.8	165.2

NOTES:

(1)Not to be used over 649°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM B564 Grade N10276 (Hastelloy C)

BODY MATERIAL CODE - 21

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.1	100.1	150.2	250.3	417.1	750.9
200	13.8	48.0	96.0	144.0	240.0	400.0	720.0
250	12.1	45.9	91.9	137.8	229.7	382.9	689.1
300	10.2	44.6	89.1	133.7	222.9	371.4	668.6
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	27.8	55.6	83.3	138.9	231.4	416.6
600	1.4	25.3	50.2	75.1	125.2	208.8	376.0
625	1.4	20.8	41.6	62.4	104.1	173.4	312.2
650	1.4	14.0	28.0	42.0	69.9	116.6	209.8
675	1.4	11.5	23.0	34.5	57.4	95.7	172.3
700	1.4	8.8	17.6	26.4	44.1	73.4	132.2
725	1.4	8.8	17.6	26.4	44.1	73.4	132.2
750	1.4	7.3	14.4	21.6	36.4	60.4	108.5
775	1.4	5.6	11.0	16.7	27.8	46.4	83.4
800	1.2	4.3	8.7	13.0	21.6	36.2	65.2
816	1.0	3.5	7.4	10.8	17.8	30.0	53.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7

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<https://velan.com/quality-certifications/>

ASTM B564 Grade N10276 (Hastelloy C)

BODY MATERIAL CODE - 21

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	19.7	51.4	102.9	154.3	257.1	428.6	771.4
300	19.1	49.7	99.4	149.1	248.6	414.3	745.7
325	18.7	48.9	97.7	146.6	244.3	407.1	732.9
350	18.6	48.4	96.9	145.3	242.1	403.6	726.4
375	18.2	47.6	95.1	142.7	237.9	396.4	713.6
400	18.1	47.1	94.3	141.4	235.7	392.9	707.1
425	17.9	46.7	93.4	140.1	233.6	389.3	700.7
450	17.9	46.7	93.4	140.1	233.6	389.3	700.7
475	16.4	46.3	92.6	138.9	231.4	385.7	694.3
500	13.7	40.6	81.5	122.1	203.6	339.2	610.4
538	11.0	33.4	66.6	99.9	166.9	278.0	500.4
550	11.0	33.4	66.6	99.9	166.9	278.0	500.4
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	10.3	31.5	62.6	94.1	156.8	261.4	470.2
625	8.7	26.0	52.0	78.0	130.1	216.8	390.2
650	6.7	17.5	35.0	52.5	87.4	145.7	262.3
675	5.5	14.4	28.7	43.1	71.8	119.6	215.4
700	4.2	11.0	22.0	33.0	55.1	91.8	165.2
725	3.7	11.0	22.0	33.0	55.1	91.8	165.2

NOTES:

(1) Not to be used over 677°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A494 Grade CW-12MW

BODY MATERIAL CODE - 21

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.6	40.8	81.6	122.4	204.0	340.0	612.0
100	14.5	37.7	75.4	113.1	188.6	314.3	565.7
150	13.7	35.7	71.3	107.0	178.3	297.1	534.9
200	13.0	33.8	67.7	101.5	169.2	282.0	507.6
250	12.1	32.2	64.3	96.5	160.8	268.0	482.4
300	10.2	30.7	61.4	92.2	153.6	256.0	460.8
325	9.3	30.0	60.0	90.0	150.0	250.0	450.0
350	8.4	29.5	59.0	88.6	147.6	246.0	442.8
375	7.4	28.8	57.6	86.4	144.0	240.0	432.0
400	6.5	28.3	56.6	85.0	141.6	236.0	424.8
425	5.5	27.6	55.2	82.8	138.0	230.0	414.0
450	4.6	27.1	54.2	81.4	135.6	226.0	406.8
475	3.7	26.9	53.8	80.6	134.4	224.0	403.2
500	2.8	26.4	52.8	79.2	132.0	220.0	396.0
538	1.4	25.2	50.4	75.6	126.0	210.0	378.0
550	1.4	24.7	49.4	74.2	123.6	206.0	370.8
575	1.4	24.2	48.5	72.7	121.2	202.0	363.6
600	1.4	23.7	47.5	71.2	118.6	197.7	355.9
625	1.4	21.5	42.9	64.4	107.2	178.6	321.7
650	1.4	16.6	33.2	50.2	83.4	138.9	249.8
675	1.4	14.1	28.3	42.4	70.6	117.7	211.9
700	1.4	11.5	23.0	34.6	57.6	96.0	172.8
725	1.4	9.5	18.6	28.1	46.7	77.9	140.1
750	1.4	7.3	14.4	21.6	36.4	60.4	108.5
775	1.4	5.6	11.0	16.7	27.8	46.4	83.4
800	1.2	4.3	8.7	13.0	21.6	36.2	65.2
816	1.0	3.5	7.4	10.8	17.8	30.0	53.8

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.4	45.4	90.0	136.3	227.1	378.6	681.4
100	16.1	42.0	84.1	126.1	210.2	350.4	630.6
150	15.3	39.9	79.8	119.7	199.5	332.5	598.5
200	14.5	37.8	75.5	113.3	188.8	314.6	566.4
250	13.8	35.9	71.8	107.7	179.6	299.3	538.7

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A494 Grade CW-12MW

BODY MATERIAL CODE - 21

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
300	13.1	34.3	68.6	102.9	171.4	285.7	514.3
325	12.8	33.5	66.9	100.4	167.4	278.9	502.1
350	12.6	33.0	65.9	98.9	164.8	274.6	494.4
375	12.3	32.1	64.3	96.4	160.7	267.9	482.1
400	12.1	31.6	63.3	94.9	158.1	263.6	474.4
425	11.8	30.8	61.6	92.4	154.1	256.8	462.2
450	11.6	30.3	60.5	90.8	151.3	252.1	453.9
475	11.5	30.0	60.0	90.0	150.0	250.0	450.0
500	11.3	29.5	59.0	88.5	147.4	245.7	442.3
538	10.8	28.1	56.2	84.3	140.6	234.3	421.7
550	10.6	27.6	55.2	82.8	138.0	230.0	414.0
575	10.4	27.0	54.1	81.1	135.2	225.4	405.6
600	10.2	26.5	53.0	79.5	132.4	220.7	397.3
625	8.7	25.9	51.8	77.7	129.4	215.7	388.3
650	6.9	21.1	41.9	62.7	104.5	174.5	314.0
675	6.2	17.7	35.3	53.0	88.3	147.1	264.9
700	4.8	14.4	28.8	43.2	72.0	120.0	216.0
725	3.7	11.7	23.6	35.0	58.4	97.0	174.8
750	2.8	9.1	18.2	27.2	45.1	75.3	135.7
775	2.2	7.1	13.9	21.0	34.8	58.1	104.4
800	1.8	5.5	10.9	16.4	27.3	45.4	81.3
816	1.4	4.3	9.1	13.5	22.6	37.3	66.9

NOTES:

(1) Not to be used over 538°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A351 Grade CN7M (ALLOY 20)

BODY MATERIAL CODE - 23

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.5	40.5	80.9	121.4	202.3	337.1	606.9
100	13.5	35.3	70.6	105.9	176.6	294.3	529.7
150	12.2	31.9	63.8	95.8	159.6	266.0	478.8
200	11.2	29.3	58.6	87.8	146.4	244.0	439.2
250	10.4	27.1	54.2	81.4	135.6	226.0	406.8
300	9.8	25.4	50.9	76.3	127.2	212.0	381.6
316	9.5	24.7	49.4	74.2	123.6	206.0	370.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	17.6	45.9	91.7	137.6	229.3	382.1	687.9
50	17.1	44.6	89.1	133.7	222.9	371.4	668.6
100	14.6	38.1	76.3	114.4	190.7	317.9	572.1
150	13.5	35.1	70.3	105.4	175.7	292.9	527.1
200	12.5	32.7	65.4	98.1	163.5	272.5	490.5
250	11.6	30.3	60.5	90.8	151.3	252.1	453.9
300	10.9	28.4	56.8	85.2	142.1	236.8	426.2
316	10.6	27.6	55.2	82.0	138.0	230.0	414.0

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A350 Grade LF1

BODY MATERIAL CODE - 24

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	16.3	42.6	85.2	127.7	212.9	354.9	638.7
50	15.9	41.6	83.2	124.8	208.0	346.6	623.9
100	14.9	38.9	77.8	116.6	194.4	324.0	583.2
150	14.4	37.6	75.3	112.9	188.2	313.7	564.7
200	13.8	36.4	72.8	109.2	182.1	303.4	546.2
250	12.1	35.0	69.9	104.9	174.9	291.4	524.6
300	10.2	33.1	66.2	99.4	165.6	276.0	496.8
325	9.3	32.3	64.6	96.9	161.5	269.1	484.5
350	8.4	31.3	62.5	93.8	156.3	260.6	469.0
375	7.4	30.4	60.9	91.3	152.2	253.7	456.7
400	6.5	29.4	58.8	88.3	147.1	245.1	441.3
425	5.5	25.8	51.6	77.5	129.1	215.1	387.3
450	4.6	21.5	42.9	64.4	107.3	178.9	321.9
475	3.7	13.4	26.9	40.3	67.2	112.0	201.6
500	2.8	10.3	20.6	31.0	51.6	86.0	154.8
538	1.4	5.9	11.7	17.6	29.3	48.9	88.0
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	17.0	44.4	88.7	133.1	221.8	369.6	665.4
50	17.0	44.4	88.7	133.1	221.8	369.6	665.4
100	17.0	44.4	88.7	133.1	221.8	369.6	665.4
150	17.0	44.4	88.7	133.1	221.8	369.6	665.4
200	17.0	44.4	88.7	133.1	221.8	369.6	665.4
250	17.0	44.4	88.7	133.1	221.8	369.6	665.4
300	16.5	43.1	86.3	129.4	215.6	359.4	646.9
325	16.1	42.1	84.1	126.2	210.3	350.4	630.8
350	15.6	40.7	81.4	122.1	203.6	339.3	610.7
375	15.2	39.6	79.3	118.9	198.2	330.4	594.6
400	14.6	38.1	76.2	114.3	190.5	317.5	571.5
425	12.4	32.3	64.5	96.8	161.4	268.9	484.1
450	10.3	26.8	53.7	80.5	134.1	223.6	402.4
475	6.4	16.8	33.6	50.4	84.0	140.0	252.0
500	4.9	12.9	25.8	38.7	64.5	107.5	193.5
538	2.8	7.3	14.7	22.0	36.7	61.1	110.0

NOTES:

(1) Upon prolonged exposure to temperatures above 427°C, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 427°C.

BASED ON ASME B16.34 – 2025

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ASTM A352 Grade LCB

BODY MATERIAL CODE - 25

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-46 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	17.3	45.3	90.5	135.8	226.3	377.1	678.9
150	15.8	44.0	88.0	132.1	220.1	366.9	660.3
200	13.8	42.6	85.2	127.7	212.9	354.9	638.7
250	12.1	40.7	81.5	122.2	203.7	339.4	611.0
300	10.2	38.7	77.3	116.0	193.4	322.3	580.1
325	9.3	37.6	75.3	112.9	188.2	313.7	564.7
350	8.4	36.4	72.8	109.2	182.1	303.4	546.2
375	7.4	35.0	69.9	104.9	174.9	291.4	524.6
400	6.5	32.6	65.1	97.7	162.9	271.4	488.6
425	5.5	27.3	54.6	81.9	136.5	227.4	409.4
450	4.6	21.7	43.3	65.0	108.3	180.6	325.0
475	3.7	15.5	31.1	46.6	77.7	129.4	233.0
500	2.8	10.9	21.7	32.6	54.3	90.6	163.0
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-46 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	18.4	48.0	96.0	144.0	240.0	400.0	720.0
150	18.4	48.0	96.0	144.0	240.0	400.0	720.0
200	18.4	48.0	96.0	144.0	240.0	400.0	720.0
250	18.4	48.0	96.0	144.0	240.0	400.0	720.0
300	18.4	48.0	96.0	144.0	240.0	400.0	720.0
325	18.4	48.0	96.0	144.0	240.0	400.0	720.0
350	18.2	47.4	94.8	142.2	237.1	395.1	711.2
375	17.5	45.5	91.1	136.6	227.7	379.5	683.0
400	15.6	40.7	81.4	122.1	203.6	339.3	610.7
425	13.1	34.1	68.2	102.3	170.6	284.3	511.7
450	10.4	27.1	54.2	81.3	135.4	225.7	406.3
475	7.4	19.4	38.8	58.2	97.1	161.8	291.2
500	5.2	13.6	27.2	40.8	67.9	113.2	203.8
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Not to be used over 371°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A350 Grade LF2

BODY MATERIAL CODE - 26

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-46 to 38	19.6	51.0	102.0	153.1	255.1	425.1	765.3
50	19.1	49.8	99.6	149.3	248.9	414.9	746.7
100	17.7	46.7	93.4	140.1	233.5	389.1	700.5
150	15.8	45.1	90.1	135.2	225.3	375.4	675.8
200	13.8	43.8	87.6	131.5	219.1	365.1	657.3
250	12.1	42.0	83.9	125.9	209.8	349.7	629.5
300	10.2	39.9	79.8	119.7	199.5	332.6	598.6
325	9.3	38.7	77.3	116.0	193.4	322.3	580.1
350	8.4	37.6	75.3	112.9	188.2	313.7	564.7
375	7.4	36.4	72.8	109.2	182.1	303.4	546.2
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	17.5	35.0	52.5	87.4	145.7	262.3
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-46 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.6	103.3	154.9	258.2	430.4	774.6
150	19.6	51.0	102.0	153.0	255.0	425.0	765.0
200	19.4	50.6	101.1	151.7	252.9	421.4	758.6
250	19.4	50.6	101.1	151.7	252.9	421.4	758.6
300	19.4	50.6	101.1	151.7	252.9	421.4	758.6
325	19.3	50.4	100.7	151.1	251.8	419.6	755.4
350	18.8	49.0	98.0	147.1	245.1	408.5	735.3
375	18.2	47.4	94.8	142.2	237.1	395.1	711.2
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.4	21.9	43.7	65.6	109.3	182.1	327.9
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Upon prolonged exposure to temperatures above 427°C, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 427°C.

BASED ON ASME B16.34 – 2025

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ASTM A350 Grade LF3

BODY MATERIAL CODE - 27

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-101 to 38	19.6	51.0	102.0	153.1	255.1	425.1	765.3
50	19.1	49.8	99.6	149.3	248.9	414.9	746.7
100	17.7	46.7	93.4	140.1	233.5	389.1	700.5
150	15.8	45.1	90.1	135.2	225.3	375.4	675.8
200	13.8	43.8	87.6	131.5	219.1	365.1	657.3
250	12.1	42.0	83.9	125.9	209.8	349.7	629.5
300	10.2	39.9	79.8	119.7	199.5	332.6	598.6
325	9.3	38.7	77.3	116.0	193.4	322.3	580.1
350	8.4	37.6	75.3	112.9	188.2	313.7	564.7
375	7.4	36.4	72.8	109.2	182.1	303.4	546.2
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	17.5	35.0	52.5	87.4	145.7	262.3
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-101 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.6	103.3	154.9	258.2	430.4	774.6
150	19.6	51.0	102.0	153.0	255.0	425.0	765.0
200	19.4	50.6	101.1	151.7	252.9	421.4	758.6
250	19.4	50.6	101.1	151.7	252.9	421.4	758.6
300	19.4	50.6	101.1	151.7	252.9	421.4	758.6
325	19.3	50.4	100.7	151.1	251.8	419.6	755.4
350	18.8	49.0	98.0	147.1	245.1	408.5	735.3
375	18.2	47.4	94.8	142.2	237.1	395.1	711.2
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.4	21.9	43.7	65.6	109.3	182.1	327.9
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Not to be used over 343°C.

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A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-101 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.2	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	43.6	87.2	130.8	218.1	363.4	654.2
325	9.3	42.0	83.9	125.9	209.8	349.7	629.5
350	8.4	40.1	80.2	120.3	200.6	334.3	601.7
375	7.4	38.1	76.1	114.2	190.3	317.1	570.9
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	16.9	33.9	50.8	84.7	141.1	254.1
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-101 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.7	103.4	155.1	258.6	430.9	775.7
150	19.8	51.7	103.4	155.1	258.6	430.9	775.7
200	19.8	51.7	103.4	155.1	258.6	430.9	775.7
250	19.8	51.7	103.4	155.1	258.6	430.9	775.7
300	19.8	51.7	103.4	155.1	258.6	430.9	775.7
325	19.8	51.7	103.4	155.1	258.6	430.9	775.7
350	19.7	51.4	102.8	154.3	257.1	428.6	771.4
375	19.0	49.6	99.1	148.7	247.8	412.9	743.3
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.1	21.2	42.3	63.5	105.9	176.4	317.6
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F317

BODY MATERIAL CODE - 28

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	16.2	42.2	84.3	126.5	210.9	351.4	632.6
150	14.7	38.4	76.8	115.2	192.0	320.0	576.0
200	13.7	35.7	71.3	107.0	178.3	297.1	534.9
250	12.1	33.4	66.7	100.1	166.8	278.0	500.4
300	10.2	31.4	62.9	94.3	157.2	262.0	471.6
325	9.3	31.0	61.9	92.9	154.8	258.0	464.4
350	8.4	30.2	60.5	90.7	151.2	252.0	453.6
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.5	59.0	88.6	147.6	246.0	442.8
425	5.5	29.0	58.1	87.1	145.2	242.0	435.6
450	4.6	28.8	57.6	86.4	144.0	240.0	432.0
475	3.7	28.6	57.1	85.7	142.8	238.0	428.4
500	2.8	28.3	56.6	85.0	141.6	236.0	424.8
538	1.4	26.7	53.4	80.1	133.5	222.6	400.6
550	1.4	26.6	53.2	79.8	133.0	221.7	399.1
575	1.4	25.3	50.5	75.8	126.3	210.6	379.0
600	1.4	19.9	39.7	59.6	99.3	165.4	297.8
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	10.3	20.6	31.0	51.6	86.0	154.8
700	1.4	8.3	16.7	25.0	41.7	69.4	125.0
725	1.4	7.0	13.9	20.9	34.8	58.0	104.4
750	1.4	5.8	11.7	17.5	29.1	48.6	87.4
775	1.4	4.6	9.2	13.8	23.0	38.3	68.9
800	1.2	3.6	7.1	10.7	17.8	29.7	53.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.9	51.7	103.4	155.1	258.6	430.9	775.7
100	18.1	47.1	94.3	141.4	235.7	392.9	707.1

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F317

BODY MATERIAL CODE - 28

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	16.4	42.9	85.7	128.6	214.3	357.1	642.9
200	15.2	39.6	79.3	118.9	198.2	330.4	594.6
250	14.3	37.2	74.5	111.7	186.2	310.4	558.6
300	13.5	35.1	70.2	105.3	175.5	292.5	526.5
325	13.2	34.5	69.1	103.6	172.7	287.9	518.1
350	12.9	33.8	67.5	101.3	168.9	281.4	506.6
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.6	33.0	65.9	98.9	164.8	274.6	494.4
425	12.4	32.4	64.8	97.2	162.0	270.0	486.0
450	12.3	32.1	64.3	96.4	160.7	267.9	482.1
475	12.2	31.9	63.8	95.7	159.4	265.7	478.3
500	12.1	31.6	63.3	94.9	158.1	263.6	474.4
538	11.0	30.8	61.6	92.4	154.1	256.8	462.2
550	11.0	30.6	61.1	91.7	152.8	254.6	458.4
575	10.9	30.0	60.0	90.0	150.0	250.0	450.0
600	9.5	24.8	49.6	74.4	124.1	206.8	372.2
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.9	12.9	25.8	38.7	64.5	107.5	193.5
700	4.0	10.4	20.8	31.2	52.1	86.8	156.2
725	3.3	8.7	17.4	26.1	43.5	72.5	130.5
750	2.8	7.3	14.6	21.9	36.4	60.7	109.3
775	2.2	5.7	11.5	17.2	28.7	47.9	86.1
800	1.7	4.5	8.9	13.4	22.3	37.1	66.9
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

NOTES:

(1) At temperatures above 538°C, use only when the carbon content is 0.04% or higher.

BASED ON ASME B16.34 – 2025

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ASTM A351 Grade CG8M

BODY MATERIAL CODE - 28

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	16.2	42.2	84.3	126.5	210.9	351.4	632.6
150	14.7	38.4	76.8	115.2	192.0	320.0	576.0
200	13.7	35.7	71.3	107.0	178.3	297.1	534.9
250	12.1	33.4	66.7	100.1	166.8	278.0	500.4
300	10.2	31.4	62.9	94.3	157.2	262.0	471.6
325	9.3	31.0	61.9	92.9	154.8	258.0	464.4
350	8.4	30.2	60.5	90.7	151.2	252.0	453.6
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.5	59.0	88.6	147.6	246.0	442.8
425	5.5	29.0	58.1	87.1	145.2	242.0	435.6
450	4.6	28.8	57.6	86.4	144.0	240.0	432.0
475	3.7	28.6	57.1	85.7	142.8	238.0	428.4
500	2.8	28.3	56.6	85.0	141.6	236.0	424.8
538	1.4	26.7	53.4	80.1	133.5	222.6	400.6
550	1.4	26.6	53.2	79.8	133.0	221.7	399.1
575	1.4	25.3	50.5	75.8	126.3	210.6	379.0
600	1.4	19.9	39.7	59.6	99.3	165.4	297.8
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	10.3	20.6	31.0	51.6	86.0	154.8
700	1.4	8.3	16.7	25.0	41.7	69.4	125.0
725	1.4	7.0	13.9	20.9	34.8	58.0	104.4
750	1.4	5.8	11.7	17.5	29.1	48.6	87.4
775	1.4	4.6	9.2	13.8	23.0	38.3	68.9
800	1.2	3.6	7.1	10.7	17.8	29.7	53.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.9	51.7	103.4	155.1	258.6	430.9	775.7
100	18.1	47.1	94.3	141.4	235.7	392.9	707.1

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ASTM A351 Grade CG8M

BODY MATERIAL CODE - 28

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	16.4	42.9	85.7	128.6	214.3	357.1	642.9
200	15.2	39.6	79.3	118.9	198.2	330.4	594.6
250	14.3	37.2	74.5	111.7	186.2	310.4	558.6
300	13.5	35.1	70.2	105.3	175.5	292.5	526.5
325	13.2	34.5	69.1	103.6	172.7	287.9	518.1
350	12.9	33.8	67.5	101.3	168.9	281.4	506.6
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.6	33.0	65.9	98.9	164.8	274.6	494.4
425	12.4	32.4	64.8	97.2	162.0	270.0	486.0
450	12.3	32.1	64.3	96.4	160.7	267.9	482.1
475	12.2	31.9	63.8	95.7	159.4	265.7	478.3
500	12.1	31.6	63.3	94.9	158.1	263.6	474.4
538	11.0	30.8	61.6	92.4	154.1	256.8	462.2
550	11.0	30.6	61.1	91.7	152.8	254.6	458.4
575	10.9	30.0	60.0	90.0	150.0	250.0	450.0
600	9.5	24.8	49.6	74.4	124.1	206.8	372.2
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.9	12.9	25.8	38.7	64.5	107.5	193.5
700	4.0	10.4	20.8	31.2	52.1	86.8	156.2
725	3.3	8.7	17.4	26.1	43.5	72.5	130.5
750	2.8	7.3	14.6	21.9	36.4	60.7	109.3
775	2.2	5.7	11.5	17.2	28.7	47.9	86.1
800	1.7	4.5	8.9	13.4	22.3	37.1	66.9
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

NOTES:

(1) Not to be used over 538°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F317L

BODY MATERIAL CODE - 29

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.5	40.5	80.9	121.4	202.3	337.1	606.9
100	13.4	35.0	69.9	105.9	174.9	291.4	524.6
150	12.1	31.4	62.9	94.3	157.2	262.0	471.6
200	11.1	29.0	58.1	87.1	145.2	242.0	435.6
250	10.5	27.4	54.7	82.1	136.8	228.0	410.4
300	9.9	25.9	51.8	77.8	129.6	216.0	388.8
325	9.3	25.4	50.9	76.3	127.2	212.0	381.6
350	8.4	25.0	49.9	74.9	124.8	208.0	374.4
375	7.4	24.7	49.4	74.2	123.6	206.0	370.8
400	6.5	24.2	48.5	72.7	121.2	202.0	363.6
425	5.5	23.9	47.7	71.6	119.3	198.9	357.9
454	4.6	23.4	46.8	70.3	117.1	195.1	351.3

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.3	45.0	90.0	135.0	225.0	375.0	675.0
100	14.9	38.8	77.7	116.5	194.1	323.6	582.4
150	13.5	35.1	70.2	105.3	175.5	292.5	526.5
200	12.4	32.4	64.8	97.2	162.0	270.0	486.0
250	11.7	30.6	61.1	91.7	152.8	254.6	458.4
300	11.1	28.9	57.9	86.8	144.6	241.1	433.9
325	10.9	28.4	56.8	85.2	142.1	236.8	426.2
350	10.7	27.9	55.7	83.6	139.3	232.1	417.9
375	10.6	27.6	55.2	82.8	138.0	230.0	414.0
400	10.4	27.0	54.1	81.1	135.2	225.4	405.6
425	10.2	26.6	53.2	79.8	133.1	221.8	399.2
454	10.0	26.1	52.2	78.3	130.5	217.5	391.5

NOTES:

(1) Not to be used over 454°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A351 Grade CG3M

BODY MATERIAL CODE - 29

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.5	48.3	96.7	145.0	241.7	402.9	725.1
100	16.2	42.2	84.3	126.5	210.9	351.4	632.6
150	14.7	38.4	76.8	115.2	192.0	320.0	576.0
200	13.7	35.7	71.3	107.0	178.3	297.1	534.9
250	12.1	33.4	66.7	100.1	166.8	278.0	500.4
300	10.2	31.4	62.9	94.3	157.2	262.0	471.6
325	9.3	31.0	61.9	92.9	154.8	258.0	464.4
350	8.4	30.2	60.5	90.7	151.2	252.0	453.6
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.5	59.0	88.6	147.6	246.0	442.8
425	5.5	29.0	58.1	87.1	145.2	242.0	435.6
450	4.6	28.8	57.6	86.4	144.0	240.0	432.0
475	3.7	28.6	57.1	85.7	142.8	238.0	428.4
500	2.8	28.3	56.6	85.0	141.6	236.0	424.8
538	1.4	26.7	53.4	80.1	133.5	222.6	400.6
550	1.4	26.6	53.2	79.8	133.0	221.7	399.1
575	1.4	25.3	50.5	75.8	126.3	210.6	379.0
600	1.4	19.9	39.7	59.6	99.3	165.4	297.8
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	10.3	20.6	31.0	51.6	86.0	154.8
700	1.4	8.3	16.7	25.0	41.7	69.4	125.0
725	1.4	7.0	13.9	20.9	34.8	58.0	104.4
750	1.4	5.8	11.7	17.5	29.1	48.6	87.4
775	1.4	4.6	9.2	13.8	23.0	38.3	68.9
800	1.2	3.6	7.1	10.7	17.8	29.7	53.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.9	51.7	103.4	155.1	258.6	430.9	775.7
50	19.9	51.7	103.4	155.1	258.6	430.9	775.7
100	18.1	47.1	94.3	141.4	235.7	392.9	707.1

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ASTM A351 Grade CG3M

BODY MATERIAL CODE - 29

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	16.4	42.9	85.7	128.6	214.3	357.1	642.9
200	15.2	39.6	79.3	118.9	198.2	330.4	594.6
250	14.3	37.2	74.5	111.7	186.2	310.4	558.6
300	13.5	35.1	70.2	105.3	175.5	292.5	526.5
325	13.2	34.5	69.1	103.6	172.7	287.9	518.1
350	12.9	33.8	67.5	101.3	168.9	281.4	506.6
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.6	33.0	65.9	98.9	164.8	274.6	494.4
425	12.4	32.4	64.8	97.2	162.0	270.0	486.0
450	12.3	32.1	64.3	96.4	160.7	267.9	482.1
475	12.2	31.9	63.8	95.7	159.4	265.7	478.3
500	12.1	31.6	63.3	94.9	158.1	263.6	474.4
538	11.0	30.8	61.6	92.4	154.1	256.8	462.2
550	11.0	30.6	61.1	91.7	152.8	254.6	458.4
575	10.9	30.0	60.0	90.0	150.0	250.0	450.0
600	9.5	24.8	49.6	74.4	124.1	206.8	372.2
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.9	12.9	25.8	38.7	64.5	107.5	193.5
700	4.0	10.4	20.8	31.2	52.1	86.8	156.2
725	3.3	8.7	17.4	26.1	43.5	72.5	130.5
750	2.8	7.3	14.6	21.9	36.4	60.7	109.3
775	2.2	5.7	11.5	17.2	28.7	47.9	86.1
800	1.7	4.5	8.9	13.4	22.3	37.1	66.9
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

NOTES:

(1) Not to be used over 454°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A352 Grade LCC

BODY MATERIAL CODE - 31

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-46 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.2	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	43.6	87.2	130.8	218.1	363.4	654.2
325	9.3	42.0	83.9	125.9	209.8	349.7	629.5
350	8.4	40.1	80.2	120.3	200.6	334.3	601.7
375	7.4	38.1	76.1	114.2	190.3	317.1	570.9
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	16.9	33.9	50.8	84.7	141.1	254.1
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-46 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.7	103.4	155.1	258.6	430.9	775.7
150	19.8	51.7	103.4	155.1	258.6	430.9	775.7
200	19.8	51.7	103.4	155.1	258.6	430.9	775.7
250	19.8	51.7	103.4	155.1	258.6	430.9	775.7
300	19.8	51.7	103.4	155.1	258.6	430.9	775.7
325	19.8	51.7	103.4	155.1	258.6	430.9	775.7
350	19.7	51.4	102.8	154.3	257.1	428.6	771.4
375	19.0	49.6	99.1	148.7	247.8	412.9	743.3
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.1	21.2	42.3	63.5	105.9	176.4	317.6
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Not to be used over 371°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F91, ASTM A217 Grade C12A

BODY MATERIAL CODE - 34

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	25.9	51.8	77.7	129.4	215.7	388.3
600	1.4	18.6	37.2	55.9	93.1	155.1	279.3
625	1.4	12.6	25.2	37.9	63.1	105.1	189.3
649	1.4	8.4	16.8	25.2	42.0	70.0	126.1
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	20.0	51.7	103.4	155.1	258.6	430.9	775.7
300	20.0	51.7	103.4	155.1	258.6	430.9	775.7
325	20.0	51.7	103.4	155.1	258.6	430.9	775.7
350	19.8	51.5	102.8	154.3	257.1	428.6	771.4
375	19.3	51.4	102.5	153.8	256.3	427.2	768.8
400	19.3	51.3	102.5	153.6	256.2	426.7	768.3
425	19.0	51.1	102.3	153.4	255.6	426.1	766.9
450	18.1	49.7	99.1	148.5	247.6	412.8	743.0
475	16.4	46.4	92.8	139.1	231.9	386.6	695.8
500	13.7	40.6	81.5	122.1	203.6	339.2	610.4

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ASTM A182 Grade F321H

BODY MATERIAL CODE - 36

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	747.5
50	18.7	48.7	97.4	146.1	243.4	405.7	730.3
100	17.0	44.2	88.5	132.7	221.1	368.6	663.4
150	15.8	41.1	82.3	123.4	205.7	342.9	617.1
200	13.8	38.4	76.8	115.2	192.0	320.0	576.0
250	12.1	36.0	72.0	108.0	180.0	300.0	540.0
300	10.2	34.1	68.2	102.2	170.4	284.0	511.2
325	9.3	33.4	66.7	100.1	166.8	278.0	500.4
350	8.4	32.6	65.3	97.9	163.2	272.0	489.6
375	7.4	31.9	63.8	95.8	159.6	266.0	478.8
400	6.5	31.7	63.4	95.0	158.4	264.0	475.2
425	5.5	31.2	62.4	93.6	156.0	260.0	468.0
450	4.6	30.7	61.4	92.2	153.6	256.0	460.8
475	3.7	30.5	61.0	91.4	152.4	254.0	457.2
500	2.8	30.2	60.5	90.7	151.2	252.0	453.6
538	1.4	27.5	55.0	82.5	137.5	229.1	412.5
550	1.4	27.5	55.0	82.5	137.5	229.1	412.5
575	1.4	26.6	53.3	79.9	133.2	220.0	399.6
600	1.4	20.1	40.3	60.4	100.6	167.7	301.9
625	1.4	15.8	31.5	47.3	78.9	131.4	236.6
650	1.4	12.7	25.3	38.0	63.3	105.4	189.8
675	1.4	9.8	19.7	29.5	49.2	82.0	147.6
700	1.4	7.9	15.7	23.6	39.3	65.4	117.8
725	1.4	6.3	12.6	18.9	31.5	52.6	94.6
750	1.4	4.9	9.9	14.8	24.7	41.1	74.1
775	1.4	3.9	7.9	11.8	19.7	32.9	59.1
800	1.2	3.1	6.3	9.4	15.7	26.2	47.1
816	1.0	2.6	5.2	7.8	12.9	21.6	38.8

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	18.9	49.3	98.6	147.9	246.4	410.7	739.3
150	17.6	45.9	91.7	137.6	229.3	382.1	687.9
200	16.4	42.9	85.7	128.6	214.3	357.1	642.9
250	15.4	40.2	80.4	120.6	201.0	335.0	603.0
300	14.6	38.1	76.1	114.2	190.3	317.1	570.9
325	14.3	37.2	74.5	111.7	186.2	310.4	558.6

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F321H

BODY MATERIAL CODE - 36

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
350	14.0	36.4	72.9	109.3	182.1	303.6	546.4
375	13.7	35.6	71.2	106.8	178.1	296.8	534.2
400	13.6	35.4	70.7	106.1	176.8	294.6	530.4
425	13.4	34.8	69.7	104.5	174.2	290.4	522.6
450	13.1	34.3	68.6	102.9	171.4	285.7	514.3
475	13.0	34.0	68.1	102.1	170.1	283.6	510.4
500	12.9	33.8	67.5	101.3	168.9	281.4	506.6
538	11.0	33.2	66.4	99.6	166.1	276.8	498.2
550	11.0	33.2	66.4	99.6	166.1	276.8	498.2
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	9.6	25.2	50.3	75.5	125.8	209.6	377.4
625	7.6	19.7	39.4	59.1	98.6	164.3	295.7
650	6.1	15.8	31.6	47.4	79.1	131.8	237.2
675	4.7	12.3	24.6	36.9	61.5	102.5	184.5
700	3.8	9.8	19.6	29.4	49.1	81.8	147.2
725	3.0	7.9	15.8	23.7	39.4	65.7	118.3
750	2.4	6.2	12.3	18.5	30.9	51.4	92.6
775	1.9	4.9	9.9	14.8	24.6	41.1	73.9
800	1.5	3.9	7.9	11.8	19.6	32.7	58.9
816	1.2	3.2	6.5	9.7	16.2	27.0	48.5

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM B564 Grade N08825 (INCOLOY 825)

BODY MATERIAL CODE - 37

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.1	100.1	150.2	250.3	417.1	750.9
200	13.8	48.0	96.0	144.0	240.0	400.0	720.0
250	12.1	45.9	91.9	137.8	229.7	382.9	689.1
300	10.2	44.6	89.1	133.7	222.9	371.4	668.6
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	27.8	55.6	83.3	138.9	231.4	416.6
600	1.4	25.3	50.2	75.1	125.2	208.8	376.0
625	1.4	20.8	41.6	62.4	104.1	173.4	312.2
650	1.4	14.0	28.0	42.0	69.9	116.6	209.8
675	1.4	11.5	23.0	34.5	57.4	95.7	172.3
700	1.4	8.8	17.6	26.4	44.1	73.4	132.2
725	1.4	8.8	17.6	26.4	44.1	73.4	132.2
750	1.4	7.3	14.4	21.6	36.4	60.4	108.5
775	1.4	5.6	11.0	16.7	27.8	46.4	83.4
800	1.2	4.3	8.7	13.0	21.6	36.2	65.2
816	1.0	3.5	7.4	10.8	17.8	30.0	53.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7

BASED ON ASME B16.34 – 2025

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ASTM B564 Grade N08825 (INCOLOY 825)

BODY MATERIAL CODE - 37

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	19.7	51.4	102.9	154.3	257.1	428.6	771.4
300	19.1	49.7	99.4	149.1	248.6	414.3	745.7
325	18.7	48.9	97.7	146.6	244.3	407.1	732.9
350	18.6	48.4	96.9	145.3	242.1	403.6	726.4
375	18.2	47.6	95.1	142.7	237.9	396.4	713.6
400	18.1	47.1	94.3	141.4	235.7	392.9	707.1
425	17.9	46.7	93.4	140.1	233.6	389.3	700.7
450	17.9	46.7	93.4	140.1	233.6	389.3	700.7
475	16.4	46.3	92.6	138.9	231.4	385.7	694.3
500	13.7	40.6	81.5	122.1	203.6	339.2	610.4
538	11.0	33.4	66.6	99.9	166.9	278.0	500.4
550	11.0	33.4	66.6	99.9	166.9	278.0	500.4
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	10.3	31.5	62.6	94.1	156.8	261.4	470.2
625	8.7	26.0	52.0	78.0	130.1	216.8	390.2
650	6.7	17.5	35.0	52.5	87.4	145.7	262.3
675	5.5	14.4	28.7	43.1	71.8	119.6	215.4
700	4.2	11.0	22.0	33.0	55.1	91.8	165.2
725	3.7	11.0	22.0	33.0	55.1	91.8	165.2

NOTES:

(1) Not to be used over 538°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A352 Grade LC1

BODY MATERIAL CODE - 38

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-59 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	17.3	45.3	90.5	135.8	226.3	377.1	678.9
150	15.8	44.0	88.0	132.1	220.1	366.9	660.3
200	13.8	42.6	85.2	127.7	212.9	354.9	638.7
250	12.1	40.7	81.5	122.2	203.7	339.4	611.0
300	10.2	38.7	77.3	116.0	193.4	322.3	580.1
325	9.3	37.6	75.3	112.9	188.2	313.7	564.7
350	8.4	36.4	72.8	109.2	182.1	303.4	546.2
375	7.4	35.0	69.9	104.9	174.9	291.4	524.6
400	6.5	32.6	65.1	97.7	162.9	271.4	488.6
425	5.5	27.3	54.6	81.9	136.5	227.4	409.4
450	4.6	21.7	43.3	65.0	108.3	180.6	325.0
475	3.7	15.5	31.1	46.6	77.7	129.4	233.0
500	2.8	10.9	21.7	32.6	54.3	90.6	163.0
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-59 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.4	48.0	96.0	144.0	240.0	400.0	720.0
100	18.4	48.0	96.0	144.0	240.0	400.0	720.0
150	18.4	48.0	96.0	144.0	240.0	400.0	720.0
200	18.4	48.0	96.0	144.0	240.0	400.0	720.0
250	18.4	48.0	96.0	144.0	240.0	400.0	720.0
300	18.4	48.0	96.0	144.0	240.0	400.0	720.0
325	18.4	48.0	96.0	144.0	240.0	400.0	720.0
350	18.2	47.4	94.8	142.2	237.1	395.1	711.2
375	17.5	45.5	91.1	136.6	227.7	379.5	683.0
400	15.6	40.7	81.4	122.1	203.6	339.3	610.7
425	13.1	34.1	68.2	102.3	170.6	284.3	511.7
450	10.4	27.1	54.2	81.3	135.4	225.7	406.3
475	7.4	19.4	38.8	58.2	97.1	161.8	291.2
500	5.2	13.6	27.2	40.8	67.9	113.2	203.8
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Not to be used over 371°C.

BASED ON ASME B16.34 – 2025

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ASTM A352 Grade LC2

BODY MATERIAL CODE - 39

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-73 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.2	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	43.6	87.2	130.8	218.1	363.4	654.2
325	9.3	42.0	83.9	125.9	209.8	349.7	629.5
350	8.4	40.1	80.2	120.3	200.6	334.3	601.7
375	7.4	38.1	76.1	114.2	190.3	317.1	570.9
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	16.9	33.9	50.8	84.7	141.1	254.1
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-73 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.7	103.4	155.1	258.6	430.9	775.7
150	19.8	51.7	103.4	155.1	258.6	430.9	775.7
200	19.8	51.7	103.4	155.1	258.6	430.9	775.7
250	19.8	51.7	103.4	155.1	258.6	430.9	775.7
300	19.8	51.7	103.4	155.1	258.6	430.9	775.7
325	19.8	51.7	103.4	155.1	258.6	430.9	775.7
350	19.7	51.4	102.8	154.3	257.1	428.6	771.4
375	19.0	49.6	99.1	148.7	247.8	412.9	743.3
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.1	21.2	42.3	63.5	105.9	176.4	317.6
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Not to be used over 343°C.

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F55, ASTM A995 Grade CD3MWCuN(6A)

BODY MATERIAL CODE - 45

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-51 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
316	9.6	43.9	87.6	131.5	219.2	365.3	657.3
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-51 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	20.0	51.7	103.4	155.1	258.6	430.9	775.7
300	20.0	51.7	103.4	155.1	258.6	430.9	775.7
316	20.0	51.7	103.4	155.1	258.6	430.9	775.7

NOTES:

(1) This steel may become brittle after service at moderately elevated temperatures. Not to be used over 316°C.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F347H

BODY MATERIAL CODE - 47

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	19.1	49.7	99.4	149.1	248.6	414.3	745.7
50	18.8	49.0	98.1	147.1	245.1	408.6	735.4
100	17.3	45.3	90.5	135.8	226.3	377.1	678.9
150	15.8	42.5	85.0	127.5	212.6	354.3	637.7
200	13.8	39.8	79.5	119.3	198.9	331.4	596.6
250	12.1	37.7	75.4	113.1	188.6	314.3	565.7
300	10.2	36.0	72.0	108.0	180.0	300.0	540.0
325	9.3	35.3	70.6	105.9	176.6	294.3	529.7
350	8.4	35.0	69.9	104.9	174.9	291.4	524.6
375	7.4	34.1	68.2	102.2	170.4	284.0	511.2
400	6.5	33.8	67.7	101.5	169.2	282.0	507.6
425	5.5	33.6	67.2	100.8	168.0	280.0	504.0
450	4.6	33.4	66.7	100.1	166.8	278.0	500.4
475	3.7	33.4	66.7	100.1	166.8	278.0	500.4
500	2.8	32.1	64.4	96.6	160.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	27.8	55.6	83.3	138.9	231.4	416.6
600	1.4	25.3	50.2	75.1	125.2	208.8	376.0
625	1.4	21.5	43.0	64.5	107.2	178.6	321.7
650	1.4	16.6	33.2	50.2	83.4	138.9	249.8
675	1.4	14.2	28.4	42.6	71.0	118.3	212.9
700	1.4	10.9	21.8	32.7	54.5	90.9	163.5
725	1.4	8.2	16.4	24.6	41.0	68.3	122.9
750	1.4	6.4	12.9	19.3	32.2	53.7	96.7
775	1.4	5.0	10.0	15.0	25.0	41.7	75.1
800	1.2	3.7	7.4	11.1	18.5	30.9	55.5
816	1.0	3.1	6.1	9.2	15.3	25.4	45.8

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	19.4	50.6	101.1	151.7	252.9	421.4	758.6

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM A182 Grade F347H

BODY MATERIAL CODE - 47

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
150	18.2	47.6	95.1	142.7	237.9	396.4	713.6
200	17.1	44.6	89.1	133.7	222.9	371.4	668.6
250	16.1	42.0	84.1	126.1	210.2	350.4	630.6
300	15.4	40.2	80.4	120.6	201.0	335.0	603.0
325	15.1	39.4	78.8	118.2	196.9	328.2	590.8
350	14.9	38.8	77.7	116.5	194.1	323.6	582.4
375	14.6	38.1	76.1	114.2	190.3	317.1	570.9
400	14.5	37.8	75.5	113.3	188.8	314.6	566.4
425	14.4	37.5	75.0	112.5	187.5	312.5	562.5
450	14.3	37.2	74.5	111.7	186.2	310.4	558.6
475	14.3	37.2	74.5	111.7	186.2	310.4	558.6
500	13.7	37.2	74.5	111.7	186.2	310.4	558.6
538	11.0	33.4	66.6	99.9	166.9	278.0	500.4
550	11.0	33.4	66.6	99.9	166.9	278.0	500.4
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	10.3	31.5	62.6	94.1	156.8	261.4	470.2
625	8.7	27.0	53.7	80.6	134.3	224.0	402.8
650	6.9	21.1	41.9	62.7	104.5	174.5	314.0
675	6.2	17.7	35.5	53.2	88.7	147.9	266.1
700	4.8	13.6	27.3	40.9	68.1	113.6	204.4
725	3.7	10.2	20.5	30.7	51.2	85.4	153.6
750	2.8	8.1	16.1	24.2	40.3	67.1	120.9
775	2.2	6.3	12.5	18.8	31.3	52.1	93.9
800	1.8	4.6	9.3	13.9	23.1	38.6	69.4
816	1.4	3.8	7.6	11.4	19.1	31.8	57.2

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.2	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	43.6	87.2	130.8	218.1	363.4	654.2
325	9.3	42.0	83.9	125.9	209.8	349.7	629.5
350	8.4	40.1	80.2	120.3	200.6	334.3	601.7
375	7.4	38.1	76.1	114.2	190.3	317.1	570.9
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	16.9	33.9	50.8	84.7	141.1	254.1
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.7	103.4	155.1	258.6	430.9	775.7
150	19.8	51.7	103.4	155.1	258.6	430.9	775.7
200	19.8	51.7	103.4	155.1	258.6	430.9	775.7
250	19.8	51.7	103.4	155.1	258.6	430.9	775.7
300	19.8	51.7	103.4	155.1	258.6	430.9	775.7
325	19.8	51.7	103.4	155.1	258.6	430.9	775.7
350	19.7	51.4	102.8	154.3	257.1	428.6	771.4
375	19.0	49.6	99.1	148.7	247.8	412.9	743.3
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.1	21.2	42.3	63.5	105.9	176.4	317.6
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Upon prolonged exposure to temperatures above 427°C, the carbide phase of steel may be converted to graphite. Permissible, but not recommended for prolonged usage above 427°C.

ASTM A350 Grade LF6 Class 2

BODY MATERIAL CODE - 54

A — Standard Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-51 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.2	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	43.6	87.2	130.8	218.1	363.4	654.2
325	9.3	42.0	83.9	125.9	209.8	349.7	629.5
350	8.4	40.1	80.2	120.3	200.6	334.3	601.7
375	7.4	38.1	76.1	114.2	190.3	317.1	570.9
400	6.5	34.6	69.3	103.9	173.1	288.6	519.4
425	5.5	28.7	57.5	86.2	143.7	239.4	431.0
450	4.6	23.0	45.9	68.9	114.9	191.4	344.6
475	3.7	16.9	33.9	50.8	84.7	141.1	254.1
500	2.8	11.5	23.0	34.6	57.6	96.0	172.8
538	1.4	5.8	11.6	17.4	29.0	48.4	87.1

B — Special Class

Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-51 to 38	19.8	51.7	103.4	155.1	258.6	430.9	775.7
50	19.8	51.7	103.4	155.1	258.6	430.9	775.7
100	19.8	51.7	103.4	155.1	258.6	430.9	775.7
150	19.8	51.7	103.4	155.1	258.6	430.9	775.7
200	19.8	51.7	103.4	155.1	258.6	430.9	775.7
250	19.8	51.7	103.4	155.1	258.6	430.9	775.7
300	19.8	51.7	103.4	155.1	258.6	430.9	775.7
325	19.8	51.7	103.4	155.1	258.6	430.9	775.7
350	19.7	51.4	102.8	154.3	257.1	428.6	771.4
375	19.0	49.6	99.1	148.7	247.8	412.9	743.3
400	16.6	43.3	86.6	129.9	216.4	360.7	649.3
425	13.8	35.9	71.8	107.7	179.6	299.3	538.7
450	11.0	28.7	57.4	86.1	143.6	239.3	430.7
475	8.1	21.2	42.3	63.5	105.9	176.4	317.6
500	5.5	14.4	28.8	43.2	72.0	120.0	216.0
538	2.8	7.3	14.5	21.8	36.3	60.5	108.8

NOTES:

(1) Not to be used over 260°C.

BASED ON ASME B16.34 – 2025

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ASTM A182 Grade F92

BODY MATERIAL CODE - 58

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	32.1	64.4	96.6	106.6	267.9	482.2
538	1.4	29.0	57.5	86.5	144.3	240.2	432.2
550	1.4	28.8	57.3	86.0	143.6	239.2	430.3
575	1.4	27.8	55.6	83.3	138.9	231.4	416.6
600	1.4	25.3	50.2	75.1	125.2	208.8	376.0
625	1.4	19.4	38.7	58.1	96.9	161.4	290.6
649	1.4	13.4	26.8	40.1	66.9	111.5	200.7
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	20.0	51.7	103.4	155.1	258.6	430.9	775.7
300	20.0	51.7	103.4	155.1	258.6	430.9	775.7
325	20.0	51.7	103.4	155.1	258.6	430.9	775.7
350	19.8	51.5	102.8	154.3	257.1	428.6	771.4
375	19.3	51.4	102.5	153.8	256.3	427.2	768.8
400	19.3	51.3	102.5	153.6	256.2	426.7	768.3
425	19.0	51.1	102.3	153.4	255.6	426.1	766.9
450	18.1	49.7	99.1	148.5	247.6	412.8	743.0
475	16.4	46.4	92.8	139.1	231.9	386.6	695.8
500	13.7	40.6	81.5	122.1	203.6	339.2	610.4

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ASTM A182 Grade F92

BODY MATERIAL CODE - 58

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	11.0	33.4	66.6	99.9	166.9	278.0	500.4
550	11.0	33.4	66.6	99.9	166.9	278.0	500.4
575	10.9	33.2	66.2	99.4	165.9	276.4	497.4
600	10.3	31.5	62.6	94.1	156.8	261.4	470.2
625	8.7	24.2	48.4	72.6	121.1	201.8	363.2
649	6.4	16.7	33.5	50.2	83.6	139.4	250.9

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ASTM A351 Grade CK20

BODY MATERIAL CODE - 59

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.2	44.9	89.8	134.7	224.6	374.3	673.7
100	14.3	37.4	74.7	112.1	186.9	311.4	560.6
150	13.4	35.0	69.9	104.9	174.9	291.4	524.6
200	12.9	33.6	67.2	100.8	168.0	280.0	504.0
250	12.1	32.6	65.3	97.9	163.2	272.0	489.6
300	10.2	31.7	63.4	95.0	158.4	264.0	475.2
325	9.3	31.2	62.4	93.6	156.0	260.0	468.0
350	8.4	30.5	61.0	91.4	152.4	254.0	457.2
375	7.4	29.8	59.5	89.3	148.8	248.0	446.4
400	6.5	29.0	58.1	87.1	145.2	242.0	435.6
425	5.5	28.3	56.6	85.0	141.6	236.0	424.8
450	4.6	27.6	55.2	82.8	138.0	230.0	414.0
475	3.7	26.6	53.3	79.9	133.2	222.0	399.6
500	2.8	25.9	51.8	77.8	129.6	216.0	388.8
538	1.4	23.4	46.8	70.1	116.9	194.9	350.7
550	1.4	23.0	45.9	68.9	114.9	191.4	344.6
575	1.4	21.7	43.3	65.0	108.3	180.6	325.0
600	1.4	19.5	38.9	58.4	97.4	162.3	292.1
625	1.4	16.8	33.7	50.5	84.2	140.3	252.5
650	1.4	14.1	28.1	42.2	70.3	117.1	210.9
675	1.4	11.5	23.0	34.6	57.6	96.0	172.8
700	1.4	8.7	17.5	26.2	43.7	72.9	131.1
725	1.4	6.3	12.5	18.8	31.4	52.3	94.1
750	1.4	4.4	8.8	13.2	21.9	36.6	65.8
775	1.2	3.1	6.1	9.2	15.3	25.5	45.9
800	0.9	2.3	4.5	6.8	11.3	18.8	33.9
816	0.7	1.9	3.8	5.6	9.4	15.6	28.1
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-29 to 38	18.4	48.0	96.0	144.0	240.0	400.0	720.0
50	18.1	47.1	94.3	141.4	235.7	392.9	707.1
100	16.0	41.8	83.6	125.4	208.9	348.2	628.6
150	14.9	38.8	77.7	116.5	194.1	323.6	582.4
200	14.4	37.5	75.0	112.5	187.5	312.5	562.5
250	14.0	36.4	72.9	109.3	182.1	303.6	546.4
300	13.6	35.4	70.7	106.1	176.8	294.6	530.4
325	13.4	34.8	69.7	104.5	174.2	290.4	522.6

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ASTM A351 Grade CK20

BODY MATERIAL CODE - 59

Temperature, °C	B — Special Class						
	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
350	13.0	34.0	68.1	102.1	170.1	283.6	510.4
375	12.7	33.2	66.4	99.6	166.1	276.8	498.2
400	12.4	32.4	64.8	97.2	162.0	270.0	486.0
425	12.1	31.6	63.3	94.9	158.1	263.6	474.4
450	11.8	30.8	61.6	92.4	154.1	256.8	462.2
475	11.4	29.7	59.5	89.2	148.7	247.9	446.1
500	11.1	28.9	57.9	86.8	144.6	241.1	433.9
538	10.7	27.9	55.7	83.6	139.3	232.1	417.9
550	10.7	27.9	55.7	83.6	139.3	232.1	417.9
575	10.4	27.1	54.2	81.3	135.4	225.7	406.3
600	9.3	24.3	48.7	73.0	121.7	202.9	365.1
625	8.1	21.0	42.1	63.1	105.2	175.4	315.6
650	6.7	17.6	35.1	52.7	87.9	146.4	263.6
675	5.5	14.4	28.8	43.2	72.0	120.0	216.0
700	4.2	10.9	21.9	32.8	54.6	91.1	163.9
725	3.0	7.8	15.7	23.5	39.2	65.4	117.6
750	2.1	5.5	11.0	16.5	27.4	45.7	82.3
775	1.5	3.8	7.7	11.5	19.1	31.9	57.4
800	1.1	2.8	5.6	8.5	14.1	23.5	42.4
816	0.9	2.3	4.7	7.0	11.7	19.5	35.2

NOTES:

(1) At temperatures above 538°C, use only when the carbon content is 0.04% or higher.

BASED ON ASME B16.34 – 2025

<https://velan.com/quality-certifications/>

ASTM B564 Grade N08810 (INCOLOY 800H/800HT)

BODY MATERIAL CODE - 60

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	15.8	41.1	82.3	123.4	205.7	342.9	617.1
50	15.6	40.8	81.6	122.4	204.0	340.0	612.0
100	14.5	37.7	75.4	113.1	188.6	314.3	565.7
150	13.7	35.7	71.3	107.0	178.3	297.1	534.9
200	13.0	33.8	67.7	101.5	169.2	282.0	507.6
250	12.1	32.2	64.3	96.5	160.8	268.0	482.4
300	10.2	30.7	61.4	92.2	153.6	256.0	460.8
325	9.3	30.0	60.0	90.0	150.0	250.0	450.0
350	8.4	29.5	59.0	88.6	147.6	246.0	442.8
375	7.4	28.8	57.6	86.4	144.0	240.0	432.0
400	6.5	28.3	56.6	85.0	141.6	236.0	424.8
425	5.5	27.6	55.2	82.8	138.0	230.0	414.0
450	4.6	27.1	54.2	81.4	135.6	226.0	406.8
475	3.7	26.9	53.8	80.6	134.4	224.0	403.2
500	2.8	26.4	52.8	79.2	132.0	220.0	396.0
538	1.4	25.2	50.4	75.6	126.0	210.0	378.0
550	1.4	24.7	49.4	74.2	123.6	206.0	370.8
575	1.4	24.2	48.5	72.7	121.2	202.0	363.6
600	1.4	23.7	47.5	71.2	118.6	197.7	355.9
625	1.4	21.5	42.9	64.4	107.2	178.6	321.7
650	1.4	16.6	33.2	50.2	83.4	138.9	249.8
675	1.4	14.1	28.3	42.4	70.6	117.7	211.9
700	1.4	11.5	23.0	34.6	57.6	96.0	172.8
725	1.4	9.5	18.6	28.1	46.7	77.9	140.1
750	1.4	7.3	14.4	21.6	36.4	60.4	108.5
775	1.4	5.6	11.0	16.7	27.8	46.4	83.4
800	1.2	4.3	8.7	13.0	21.6	36.2	65.2
816	1.0	3.5	7.4	10.8	17.8	30.0	53.8
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	17.7	46.3	92.6	138.9	231.4	385.7	694.3
50	17.4	45.4	90.0	136.3	227.1	378.6	681.4
100	16.1	42.0	84.1	126.1	210.2	350.4	630.6
150	15.3	39.9	79.8	119.7	199.5	332.5	598.5
200	14.5	37.8	75.5	113.3	188.8	314.6	566.4
250	13.8	35.9	71.8	107.7	179.6	299.3	538.7

BASED ON ASME B16.34 – 2025

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ASTM B564 Grade N08810 (INCOLOY 800H/800HT)

BODY MATERIAL CODE - 60

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
300	13.1	34.3	68.6	102.9	171.4	285.7	514.3
325	12.8	33.5	66.9	100.4	167.4	278.9	502.1
350	12.6	33.0	65.9	98.9	164.8	274.6	494.4
375	12.3	32.1	64.3	96.4	160.7	267.9	482.1
400	12.1	31.6	63.3	94.9	158.1	263.6	474.4
425	11.8	30.8	61.6	92.4	154.1	256.8	462.2
450	11.6	30.3	60.5	90.8	151.3	252.1	453.9
475	11.5	30.0	60.0	90.0	150.0	250.0	450.0
500	11.3	29.5	59.0	88.5	147.4	245.7	442.3
538	10.8	28.1	56.2	84.3	140.6	234.3	421.7
550	10.6	27.6	55.2	82.8	138.0	230.0	414.0
575	10.4	27.0	54.1	81.1	135.2	225.4	405.6
600	10.2	26.5	53.0	79.5	132.4	220.7	397.3
625	8.7	25.9	51.8	77.7	129.4	215.7	388.3
650	6.9	21.1	41.9	62.7	104.5	174.5	314.0
675	6.2	17.7	35.3	53.0	88.3	147.1	264.9
700	4.8	14.4	28.8	43.2	72.0	120.0	216.0
725	3.7	11.7	23.6	35.0	58.4	97.0	174.8
750	2.8	9.1	18.2	27.2	45.1	75.3	135.7
775	2.2	7.1	13.9	21.0	34.8	58.1	104.4
800	1.8	5.5	10.9	16.4	27.3	45.4	81.3
816	1.4	4.3	9.1	13.5	22.6	37.3	66.9

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ASTM B564 Grade N06600 (INCONEL 600)

BODY MATERIAL CODE - 61

A — Standard Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	19.5	51.7	103.4	155.1	258.6	430.9	775.7
100	17.7	51.5	103.0	154.6	257.6	429.4	773.0
150	15.8	50.3	100.3	150.6	250.8	418.2	752.8
200	13.8	48.6	97.2	145.8	243.4	405.4	729.8
250	12.1	46.3	92.7	139.0	231.8	386.2	694.8
300	10.2	45.0	90.0	135.0	225.1	375.0	674.7
325	9.3	43.3	86.3	129.6	215.9	359.8	647.5
350	8.4	41.9	83.6	125.5	209.1	348.7	627.4
375	7.4	40.5	80.7	121.2	201.9	336.1	605.1
400	6.5	38.0	76.2	114.2	190.4	317.1	570.4
425	5.5	36.8	73.2	109.8	183.0	304.7	548.3
450	4.6	35.4	71.1	106.5	177.5	295.9	532.4
475	3.7	34.4	68.8	103.2	171.6	286.3	515.2
500	2.8	29.7	59.3	89.0	148.3	247.1	444.9
538	1.4	16.8	33.6	50.4	84.0	140.0	252.0
550	1.4	13.7	27.4	41.1	68.6	114.3	205.7
575	1.4	9.2	18.4	27.6	45.9	76.6	137.8
600	1.4	6.5	13.0	19.5	32.6	54.3	97.7
625	1.4	5.1	10.1	15.2	25.4	42.3	76.1
649	1.4	4.8	9.6	14.4	24.0	40.0	72.0
B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
-198 to 38	20.0	51.7	103.4	155.1	258.6	430.9	775.7
50	20.0	51.7	103.4	155.1	258.6	430.9	775.7
100	20.0	51.7	103.4	155.1	258.6	430.9	775.7
150	20.0	51.7	103.4	155.1	258.6	430.9	775.7
200	20.0	51.7	103.4	155.1	258.6	430.9	775.7
250	20.0	51.7	103.4	155.1	258.6	430.9	775.7
300	20.0	51.7	103.4	155.1	258.6	430.9	775.7
325	20.0	51.7	103.4	155.1	258.6	430.9	775.7
350	19.8	51.5	102.8	154.3	257.1	428.6	771.4
375	19.3	51.4	102.5	153.8	256.3	427.2	768.8
400	19.3	51.3	102.5	153.6	256.2	426.7	768.3
425	19.0	51.1	102.3	153.4	255.6	426.1	766.9
450	18.1	49.7	99.1	148.5	247.6	412.8	743.0
475	16.4	46.4	92.8	139.1	231.9	386.6	695.8
500	13.7	37.1	74.1	111.2	184.5	308.9	556.1

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ASTM B564 Grade N06600 (INCONEL 600)

BODY MATERIAL CODE - 61

B — Special Class							
Temperature, °C	Working Pressures by Class, bar						
	150	300	600	900	1500	2500	4500
538	8.1	21.0	42.0	63.0	105.0	175.0	315.0
550	6.6	17.1	34.3	51.4	85.7	142.9	257.1
575	4.4	11.5	23.0	34.5	57.4	95.7	172.3
600	3.1	8.1	16.3	24.4	40.7	67.9	122.1
625	2.4	6.3	12.7	19.0	31.7	52.9	95.1
649	2.3	6.0	12.0	18.0	30.0	50.0	90.0

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