

INFORMATION SHEET



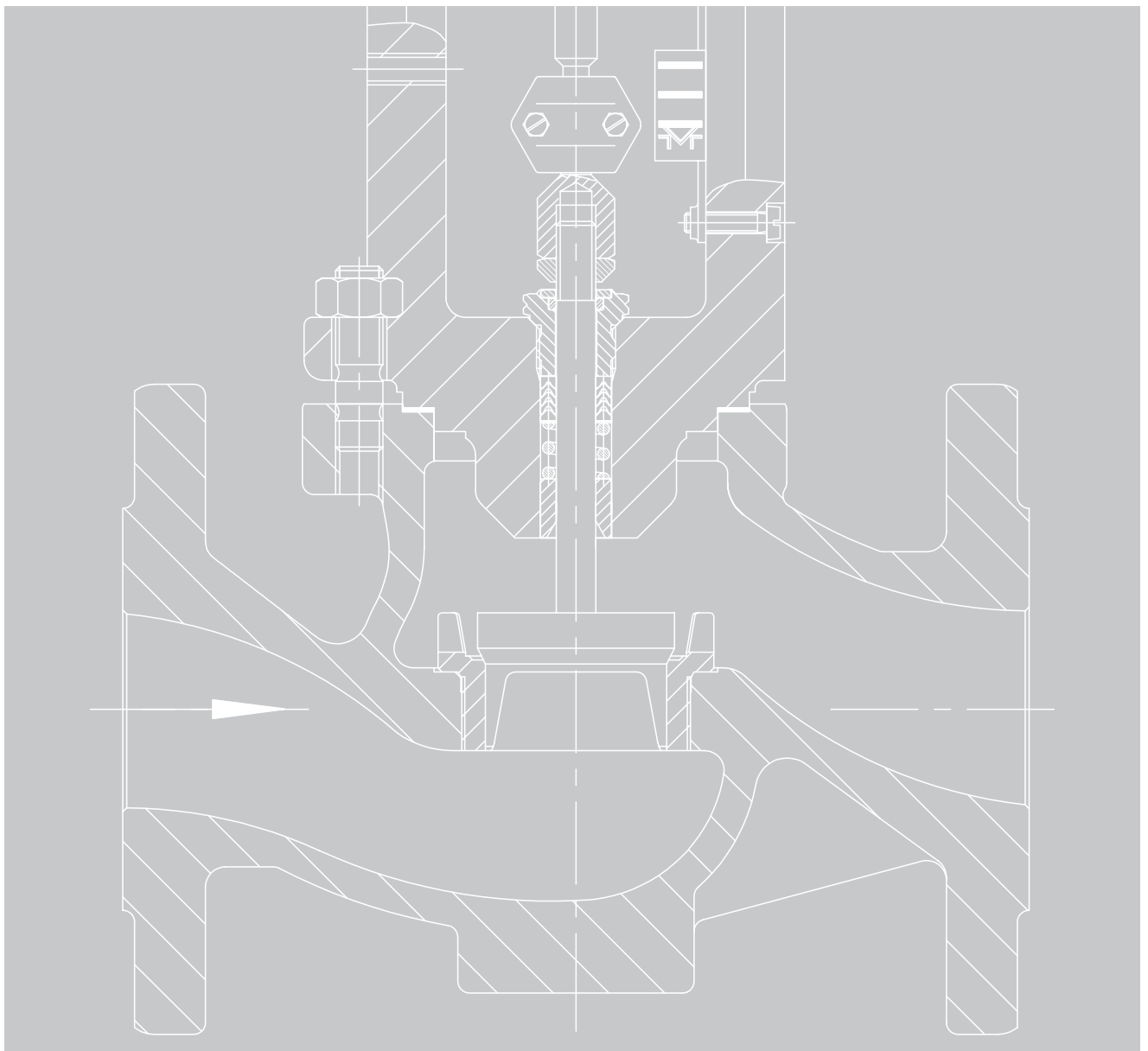
T 8000-2 EN

Electric and Pneumatic Control Valves

Series 240 • 250 • 290 • SAMSON PFEIFFER

Materials and pressure-temperature diagrams

DN 10 to 600 • PN 10 to 400 • -254 to +700 °C
NPS ¼ to 24 • Class 125 to 2500 • -425 to +1300 °F
DN 15A to 250A • JIS 10K/20K • -196 to +400 °C



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2 Materials according to DIN and ANSI/ASME

The table below lists the body materials that are most frequently used at SAMSON together with their temperature ranges and possible pressure ratings.

The limits of application of these materials are specified in the associated pressure-temperature diagrams on the following pages.

Details on special materials are available on request.

The restrictions specified in the data sheets also apply in addition to the pressure-temperature diagrams in this Information Sheet.

Table 1: Valve materials and pressure ratings – DIN versions

For Series 240 (•) and Series 250 (X) as well as Type 3251-AM (o)

Material	Short name	EN material number	Temperature range in °C	PN								
				10 16	25	40	63	100	160	250	320	400
Cast iron	EN-GJL-250	(GG 25)	-10 to +300	•								
Spheroidal graphite iron	EN-GJS-400-18U-LT	(GGG 40.3)	-10 to +350	•	•							
Cast steel	GP240GH	1.0619	-10 to +400	•	•	• X	X	X	X	X	X	X
	G9Ni14	1.5638	-80 to +300	•	•	• X	X	X	X	X	X	X
	G20Mn5+QT	1.6220+QT	-50 to +300	•	•	• X	X	X	X	X	X	X
	G17CrMo5-5	1.7357	-10 to +500			X	X	X	X	X	X	X
Cast stainless steel	GX5CrNiMo19-11-2	1.4408	-196 to +600	•	•	• X	X	X	X	X	X	X
	GX5CrNi19-10	1.4308	-196 to +300	•	•	• X	X	X	X	X	X	X
Forged steel	P250GH	1.0460	-10 to +400	•	•	•						
Forged stainless steel	X2CrNiMo17-12-2	1.4404	-196 to +500	•	•	•	X	X	X	X	X	X
	X6CrNiMoTi17-12-2	1.4571	-196 to +550	•	•	•						
AM (additive manufacturing) material	SPBF 4401/4404	1.4404	-196 to +450	o (PN 16 only)	o	o	o	o	o	o	o	o
	SPBF AT 4401/4404	1.4404+AT	-196 to +450	o (PN 16 only)	o	o	o	o	o	o	o	o

Table 2: Valve materials and pressure ratings – ANSI versions

For Series 240 (•), Series 250 and 290 (X) as well as Type 3251-AM (o)

Material	Short name	Temperature range in °C	Class								
			125	150	250	300	600	900	1500	2500	
Cast iron	A126B	-29 to +232	•		•						
Cast steel	A216 WCC	-29 to +425		•		• X	X	X	X	X	X
	A217 WC6	-29 to +500				X	X	X	X	X	
	A217 WC9	-29 to +600				X	X	X	X	X	
	A352 LCC	-46 to +345		•		• X	X	X	X	X	
	A352 LC3	-101 to +345		•		• X	X	X	X	X	
Cast stainless steel	A351 CF8M	-254 to +700		•		• X	X	X	X	X	
	A351 CF8	-254 to +538		•		• X	X	X	X	X	
Forged stainless steel	A182 F316L	-254 to +538		•		•	X	X	X	X	
AM (additive manufacturing) material	SPBF 316/316L	-196 to +450		o		o	o	o	o	o	
	SPBF AT 316/316L	-196 to +450		o		o	o	o	o	o	

Table 3: Valve materials and pressure ratings ¹⁾ – JIS versions

For Series 240 (●)

Material	Short name	Temperature range in °C	10K	20K
Cast iron	FC250	-29 to +300	•	
Cast steel	A216 WCC	-29 to +400	•	•
Cast stainless steel	A351 CF8M	-196 to +400	•	•

¹⁾ The pressuring rating is specified in K according to the Japanese Industrial Standard (JIS). For example, 10K means that the JIS flange is designed for a pressure of 10 kg/cm².

3 Pressure-temperature diagrams · DIN EN materials

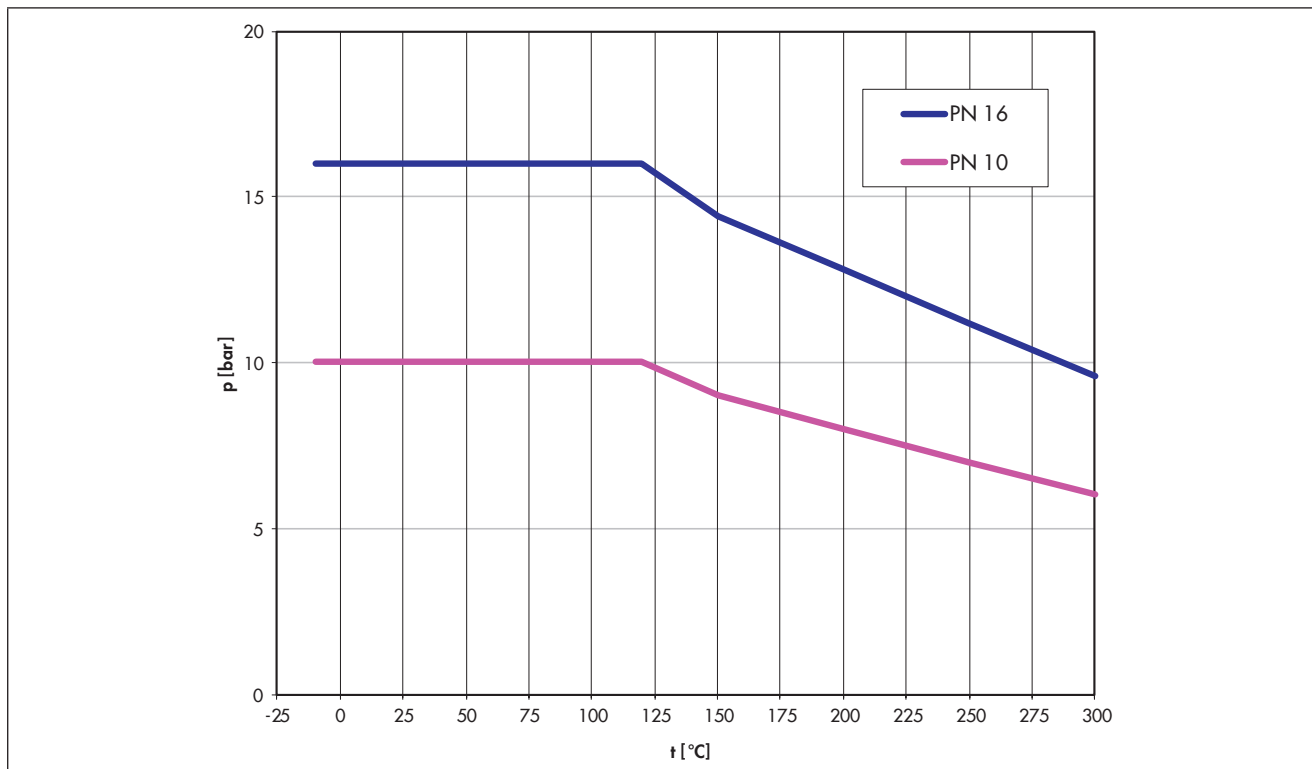
The pressure-temperature diagrams as well as the pressure and temperature specifications in the corresponding data sheets determine the maximum permissible limits of application of the valve. It is possible that these limits are restricted by factors, such as the design of the seat and plug. For typetested versions, the limits may be restricted by the applicable safety regulations.

Further details can be found in the technical data tables in the corresponding data sheet.

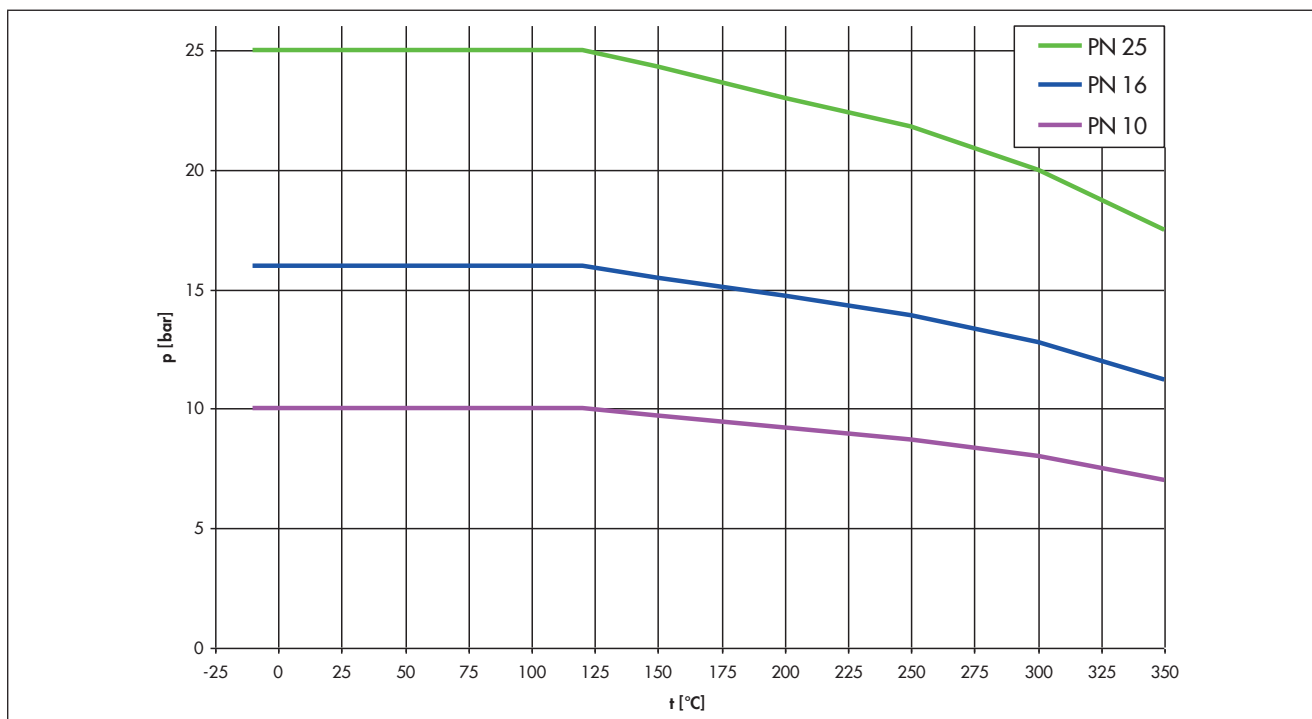
Note that the possible formation of ice on the valve body or plug stem when the medium temperature falls below 0 °C is not taken into account.

All pressure stated in bar/g.

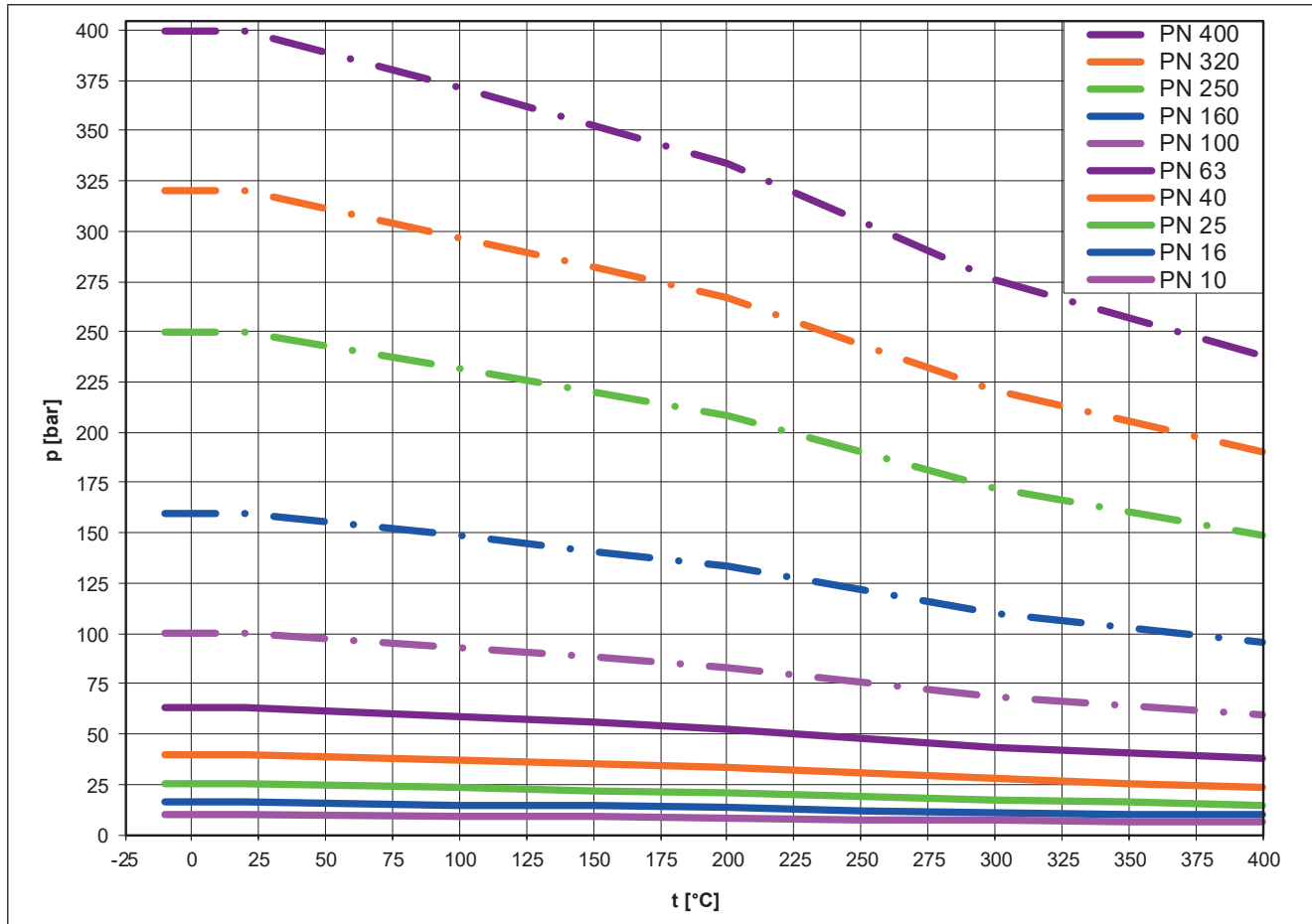
3.1 Cast iron EN-GJL-250



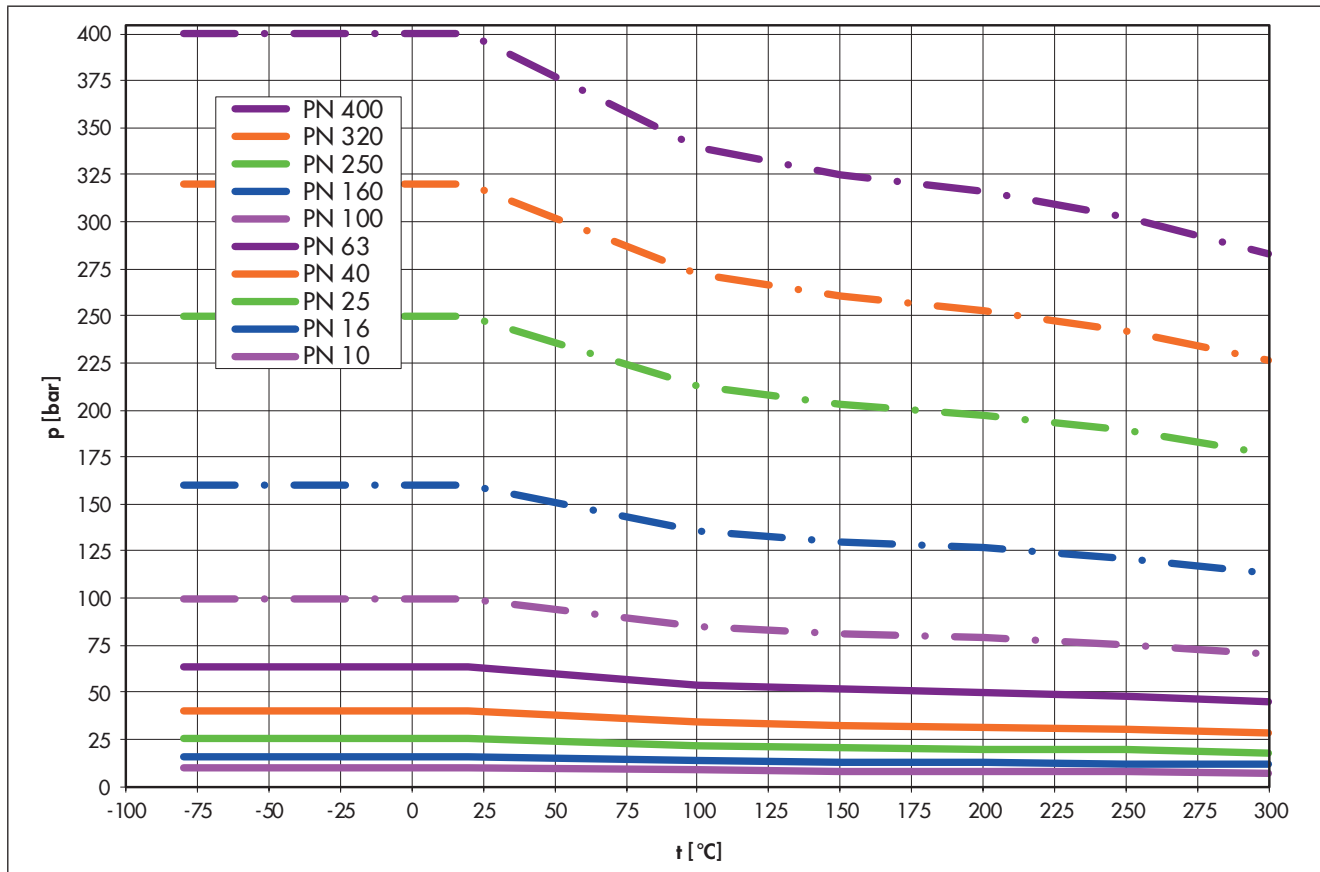
3.2 Spheroidal graphite iron EN-GJS-400-18U-LT



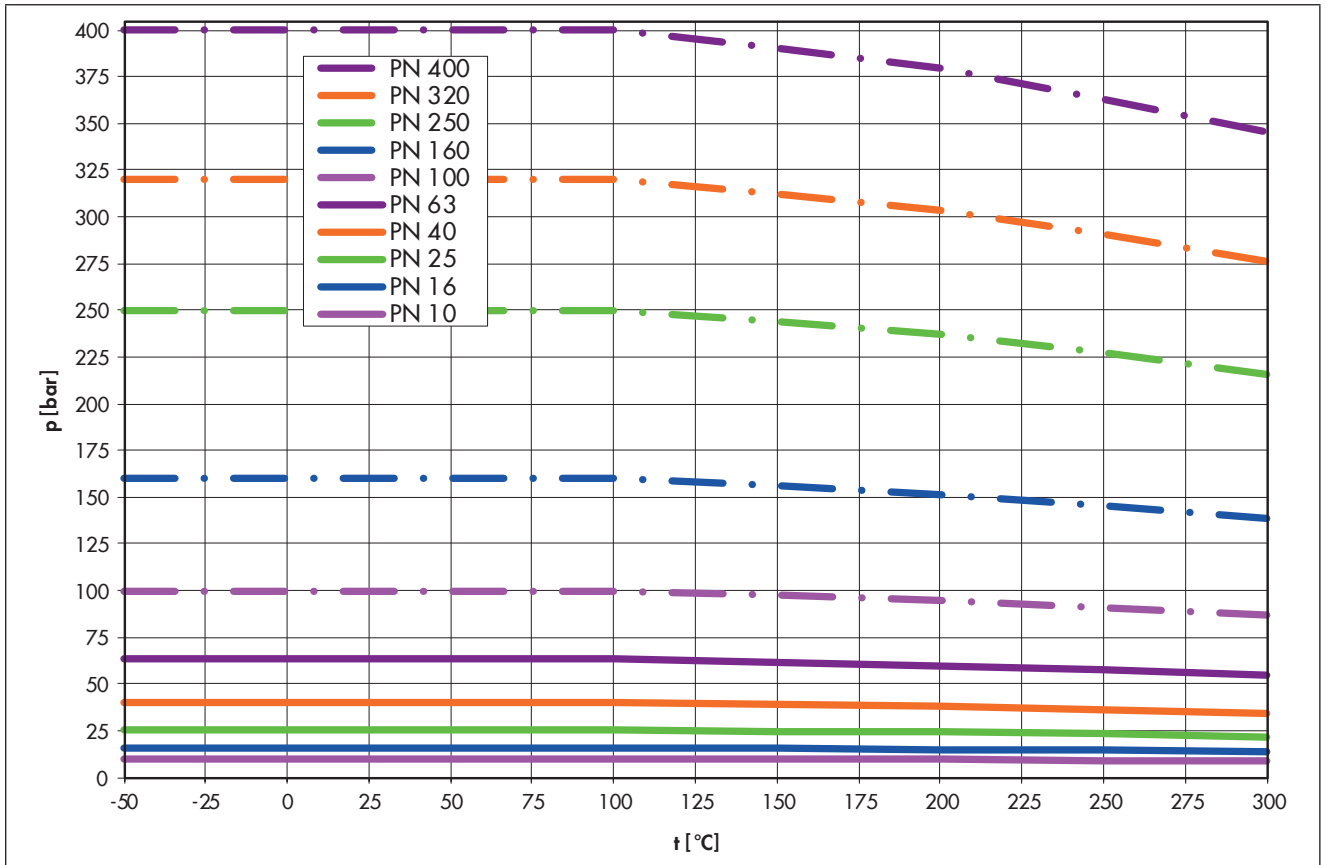
3.3 Cast steel GP240GH · 1.0619



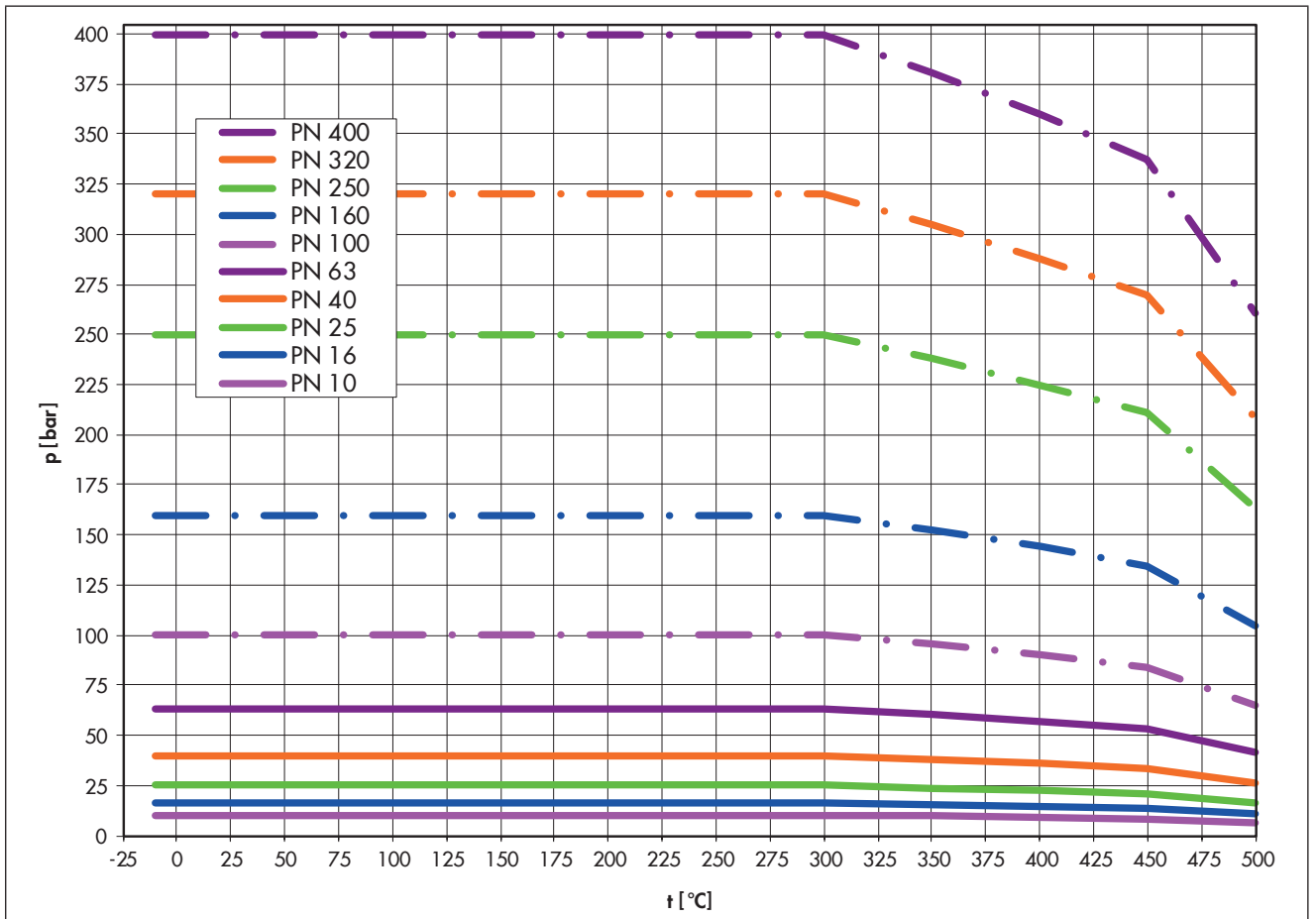
3.4 Cast steel G9Ni14 · 1.5638



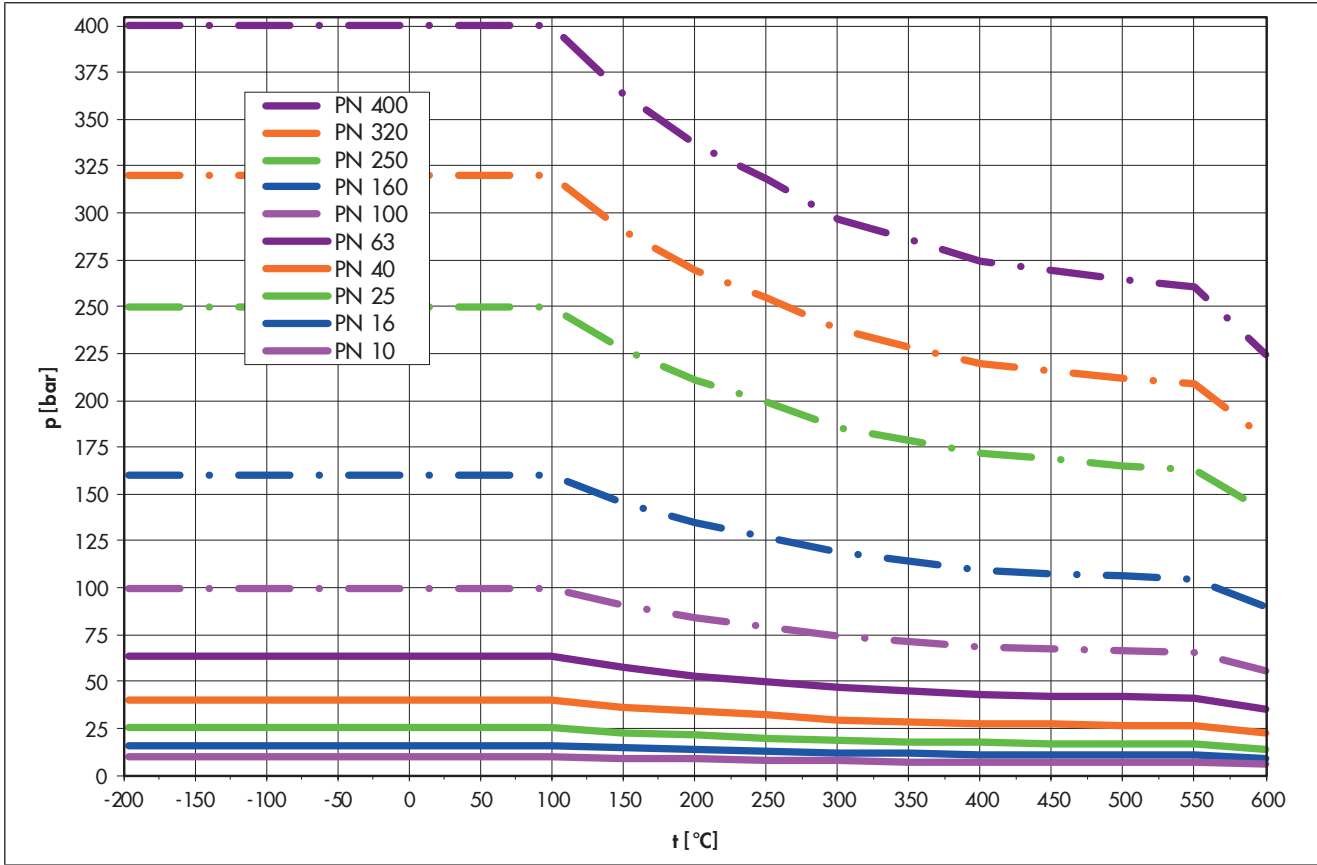
3.5 Cast steel G20Mn5+QT · 1.6220+QT



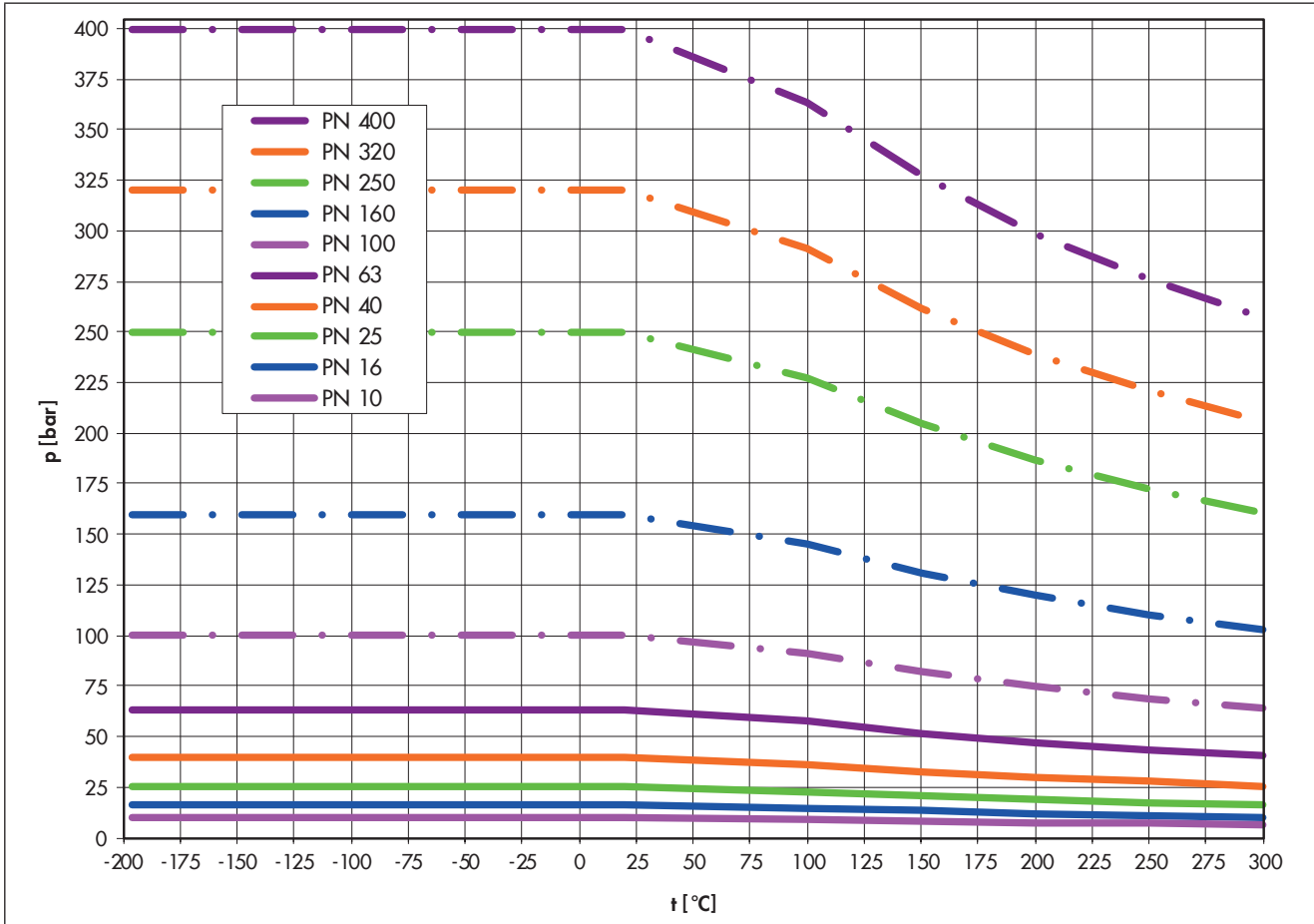
3.6 Cast steel G17CrMo5-5 · 1.7357



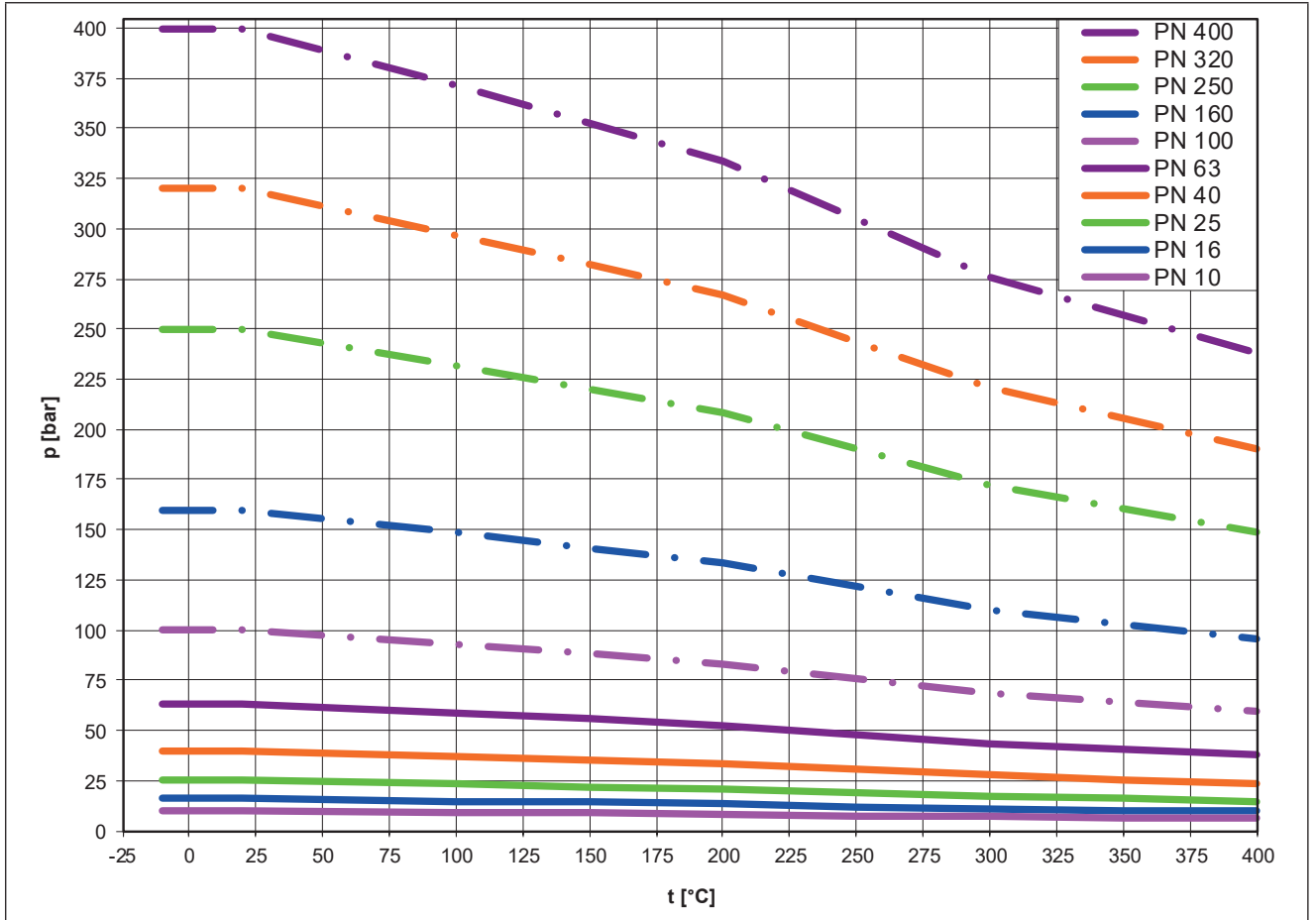
3.7 Cast stainless steel GX5CrNiMo19-11-2 · 1.4408



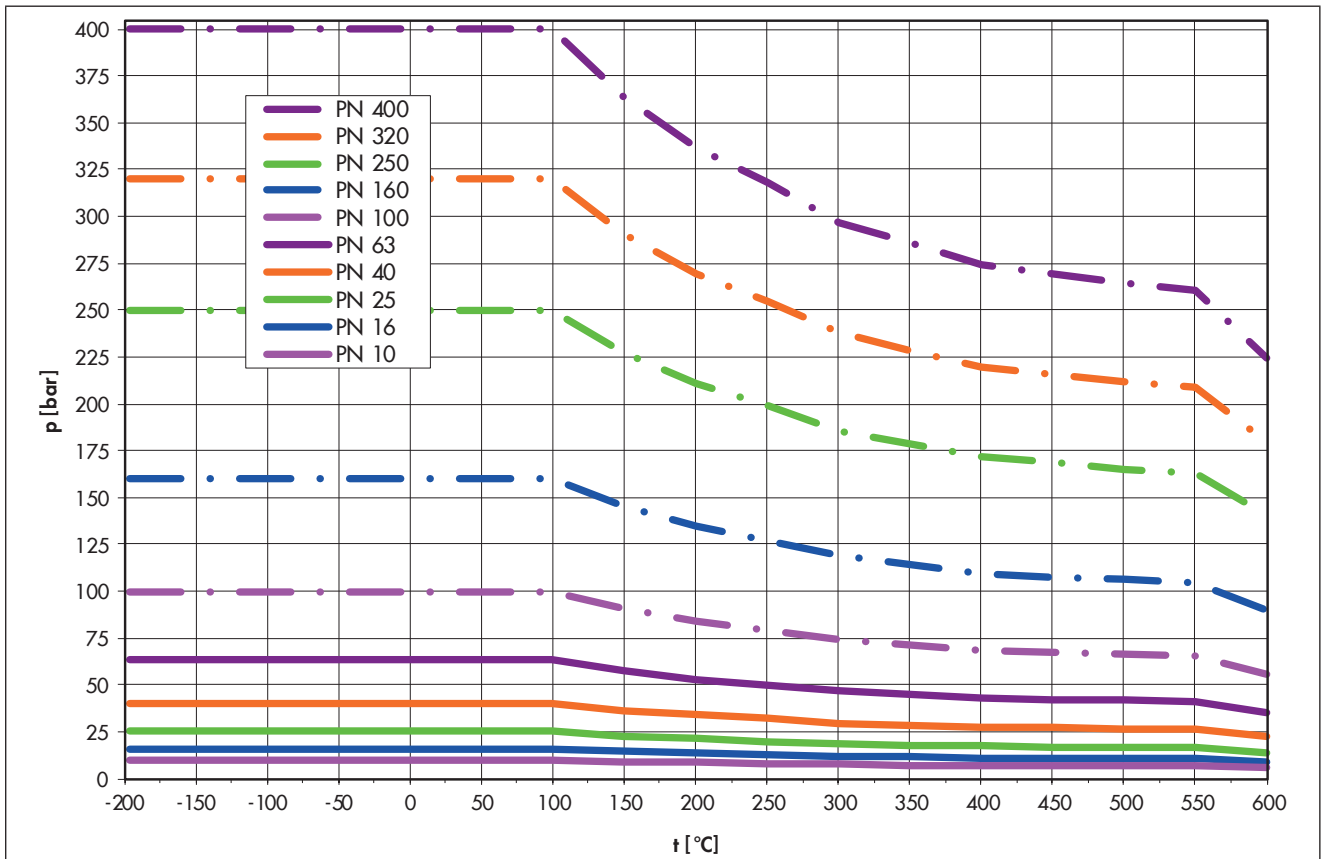
3.8 Cast stainless steel GX5CrNi19-10 · 1.4308



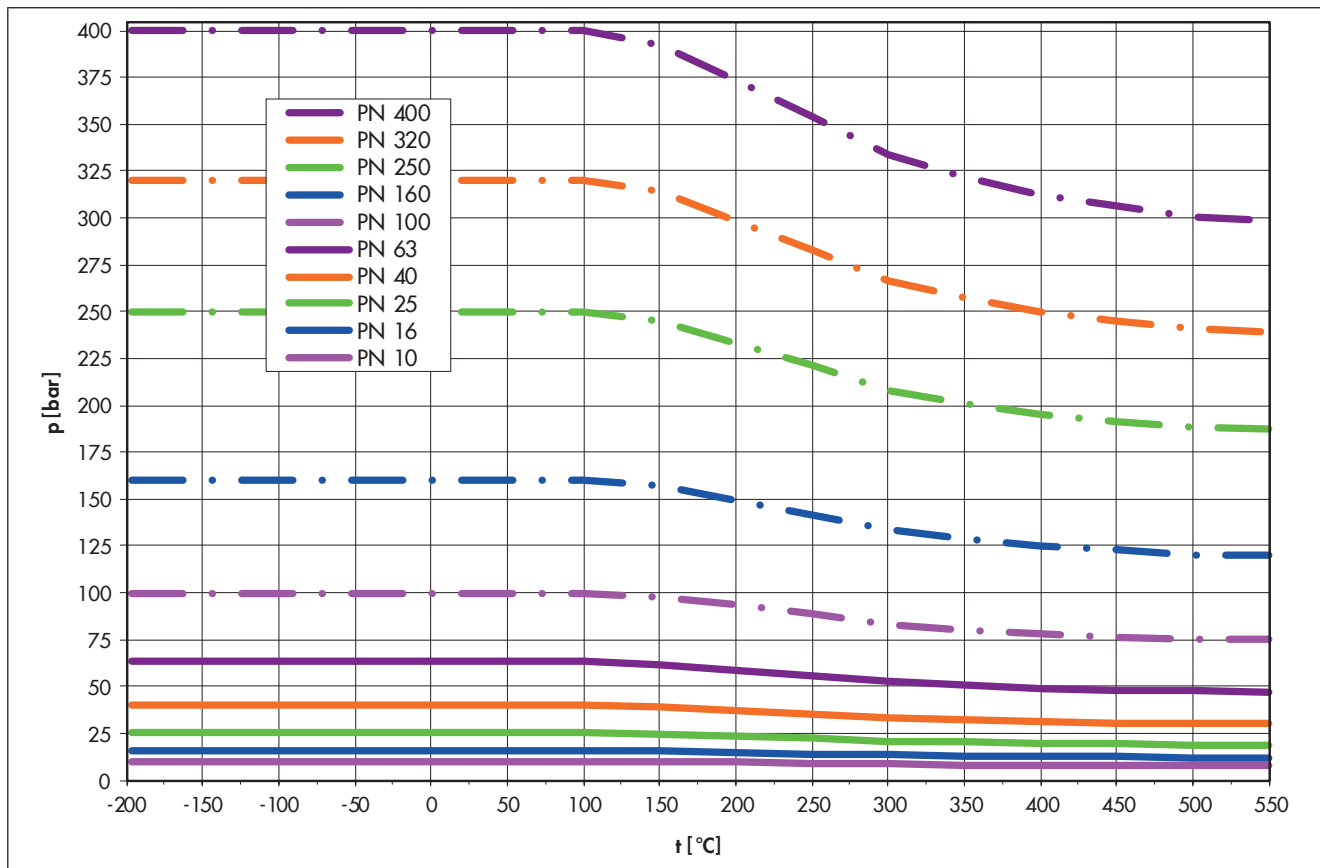
3.9 Forged steel P250GH · 1.0460



3.10 Forged stainless steel X2CrNiMo17-12-2 · 1.4404 and AM materials SPBF 4401/4404 · SPBF AT 4401/4404 (up to 450 °C)



3.11 Forged stainless steel X6CrNiMoTi17-12-2 · 1.4571



4 Pressure-temperature diagrams · ASTM materials

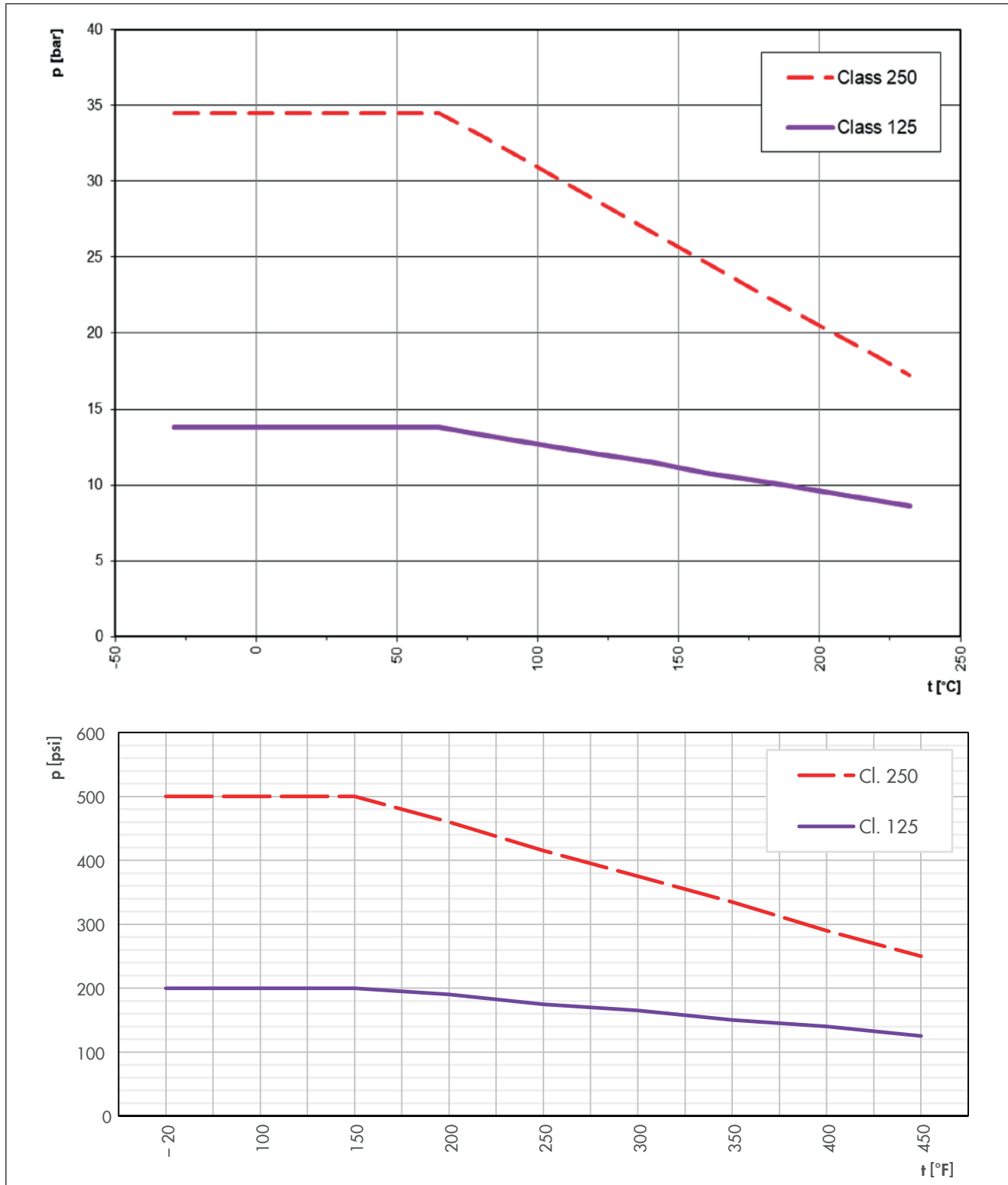
The pressure-temperature diagrams as well as the pressure and temperature specifications in the corresponding data sheets determine the maximum permissible limits of application of the valve. It is possible that these limits are restricted by factors, such as the design of the seat and plug. For type-tested versions, the limits may be restricted by the applicable safety regulations.

Further details can be found in the technical data tables in the corresponding data sheet.

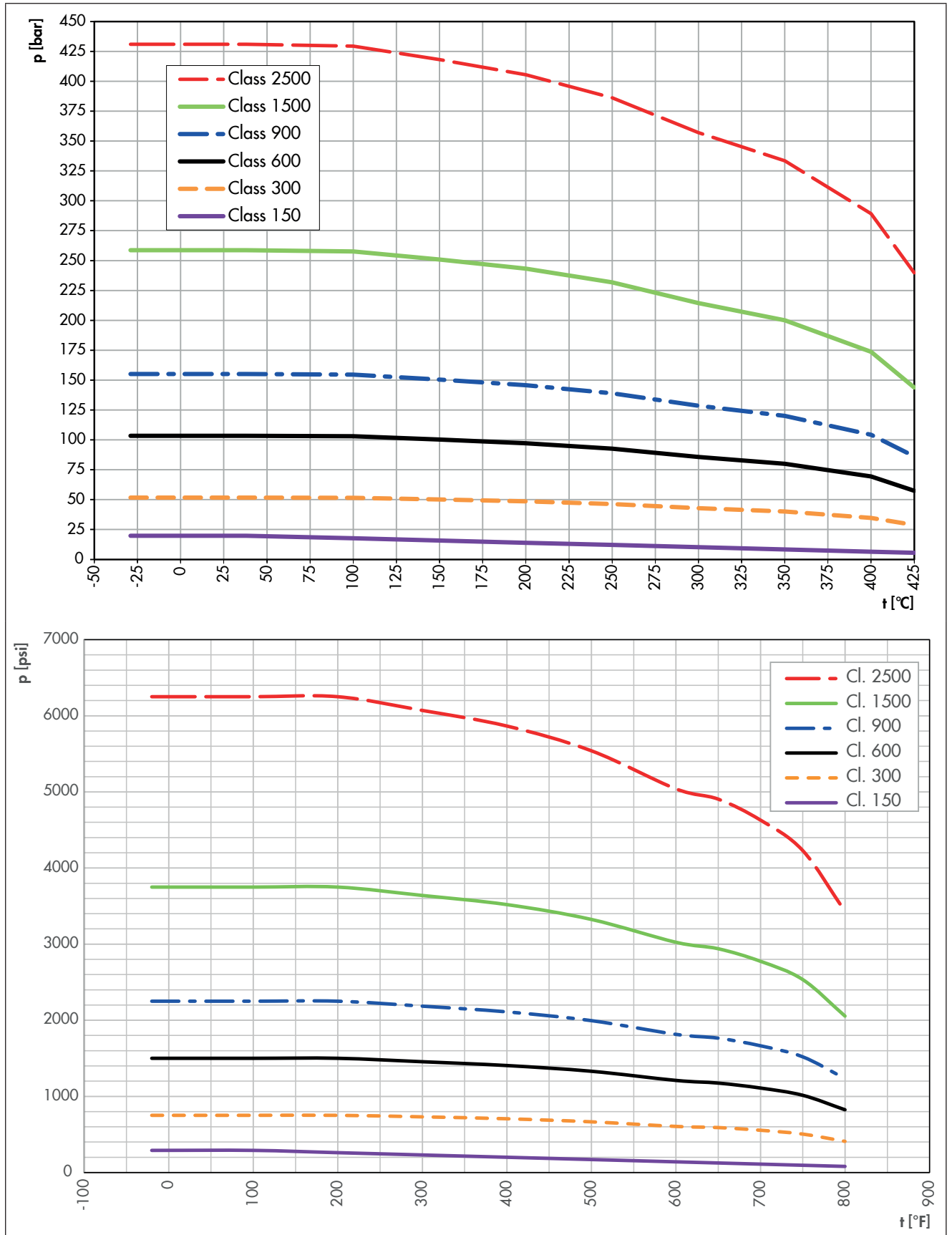
Note that the possible formation of ice on the valve body or plug stem when the medium temperature falls below 0 °C is not taken into account.

All pressure stated in bar/g.

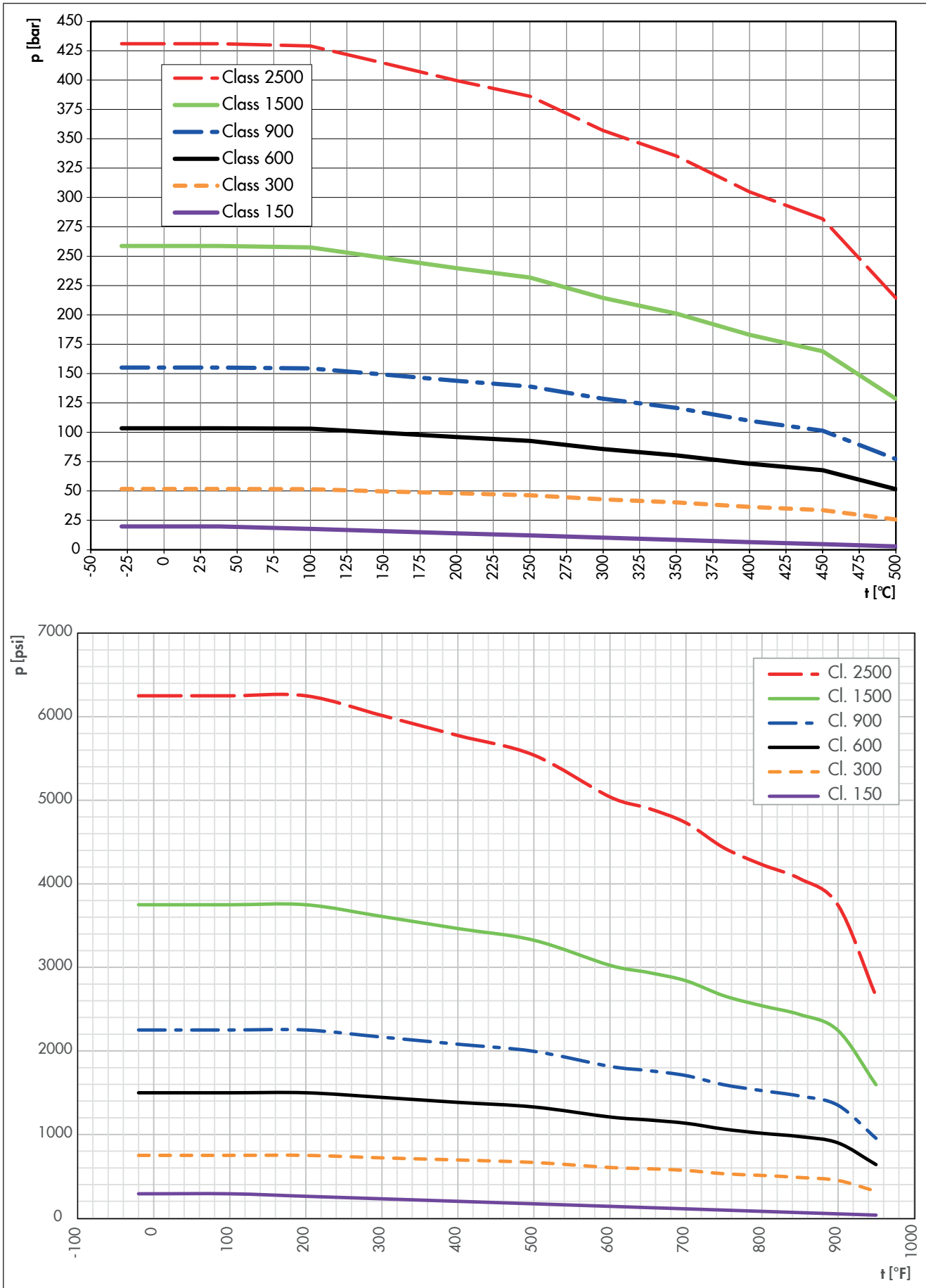
4.1 Cast iron · A126B



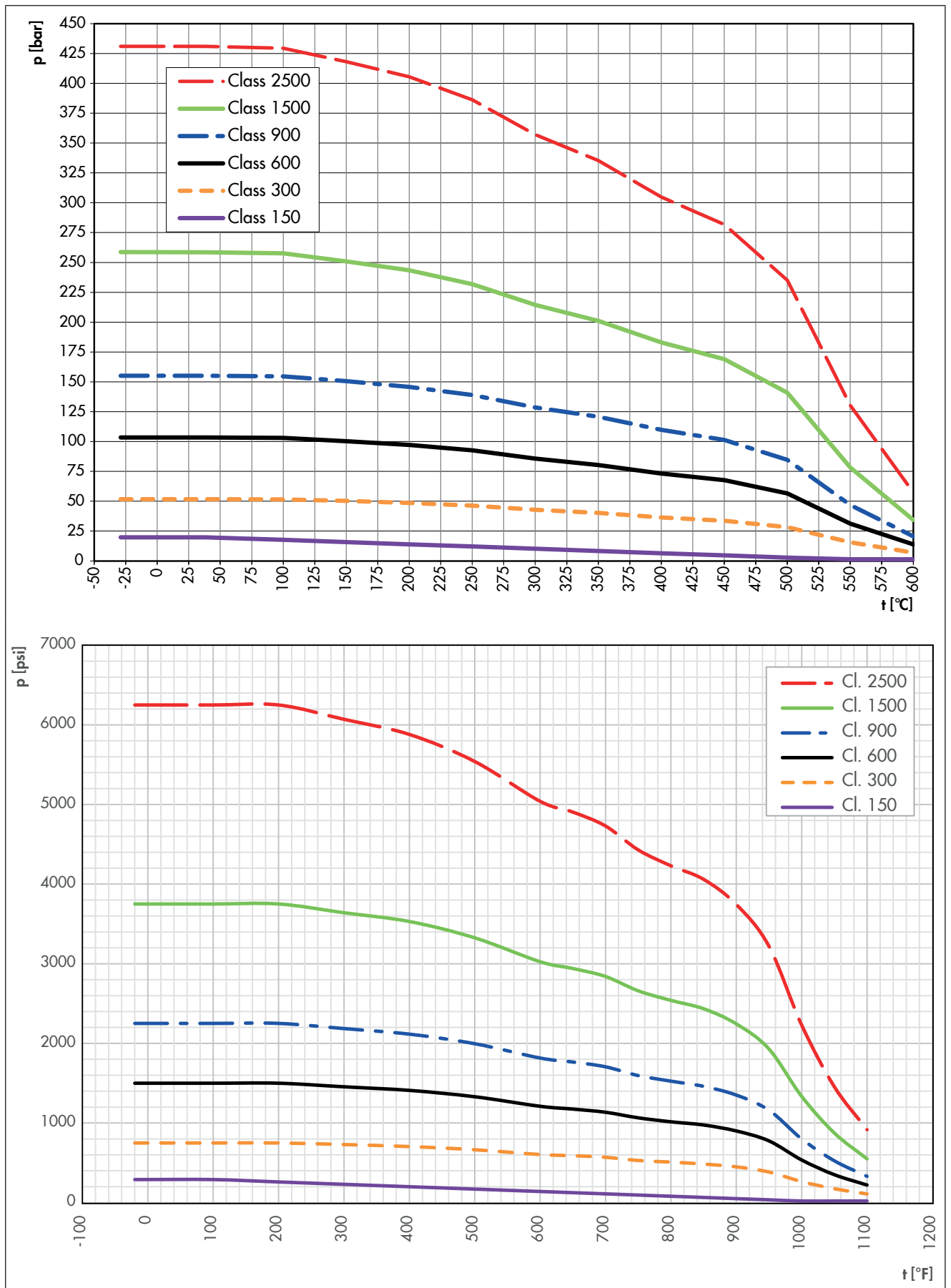
4.2 Cast steel · A216 WCC



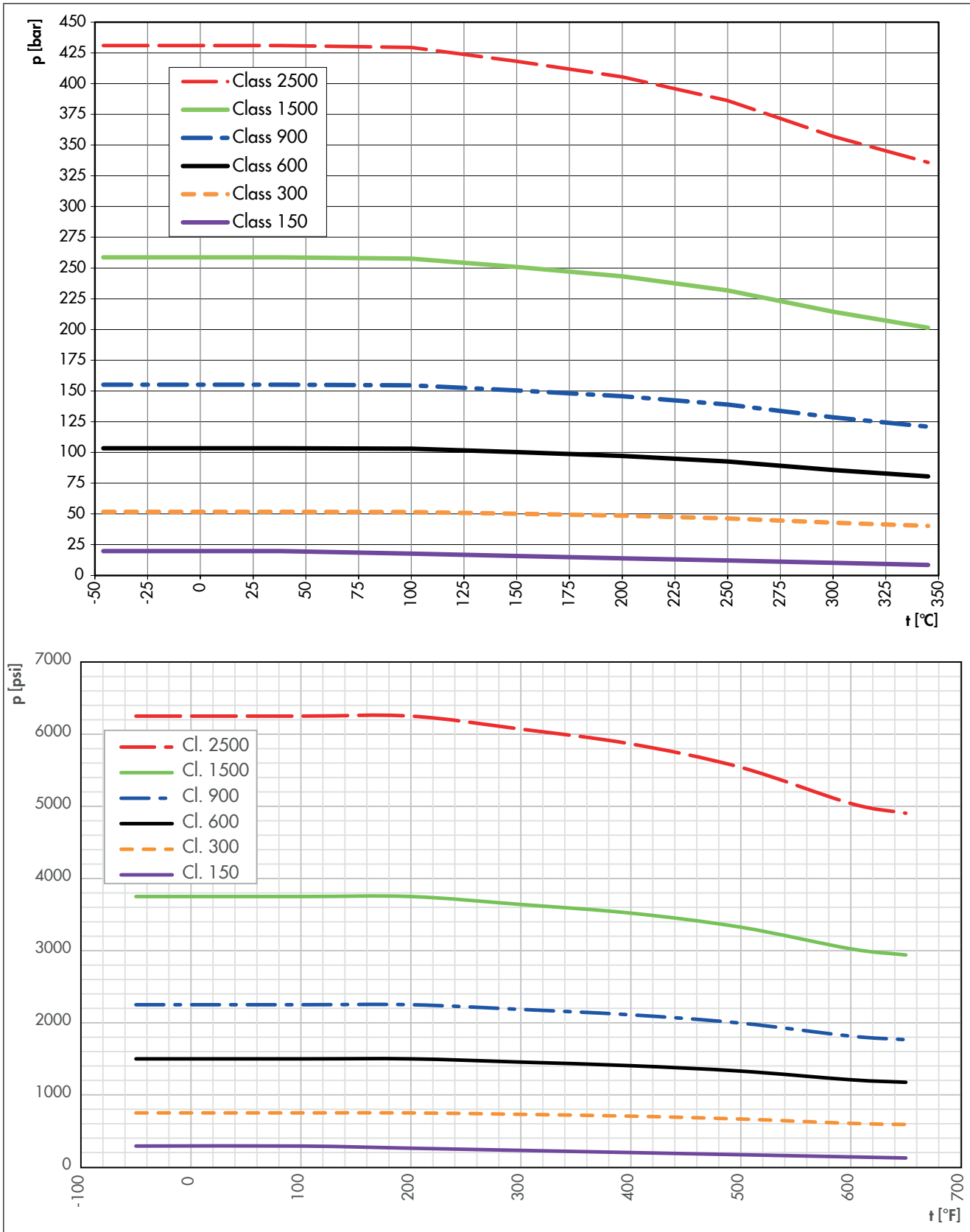
4.3 Cast steel · A217 WC6



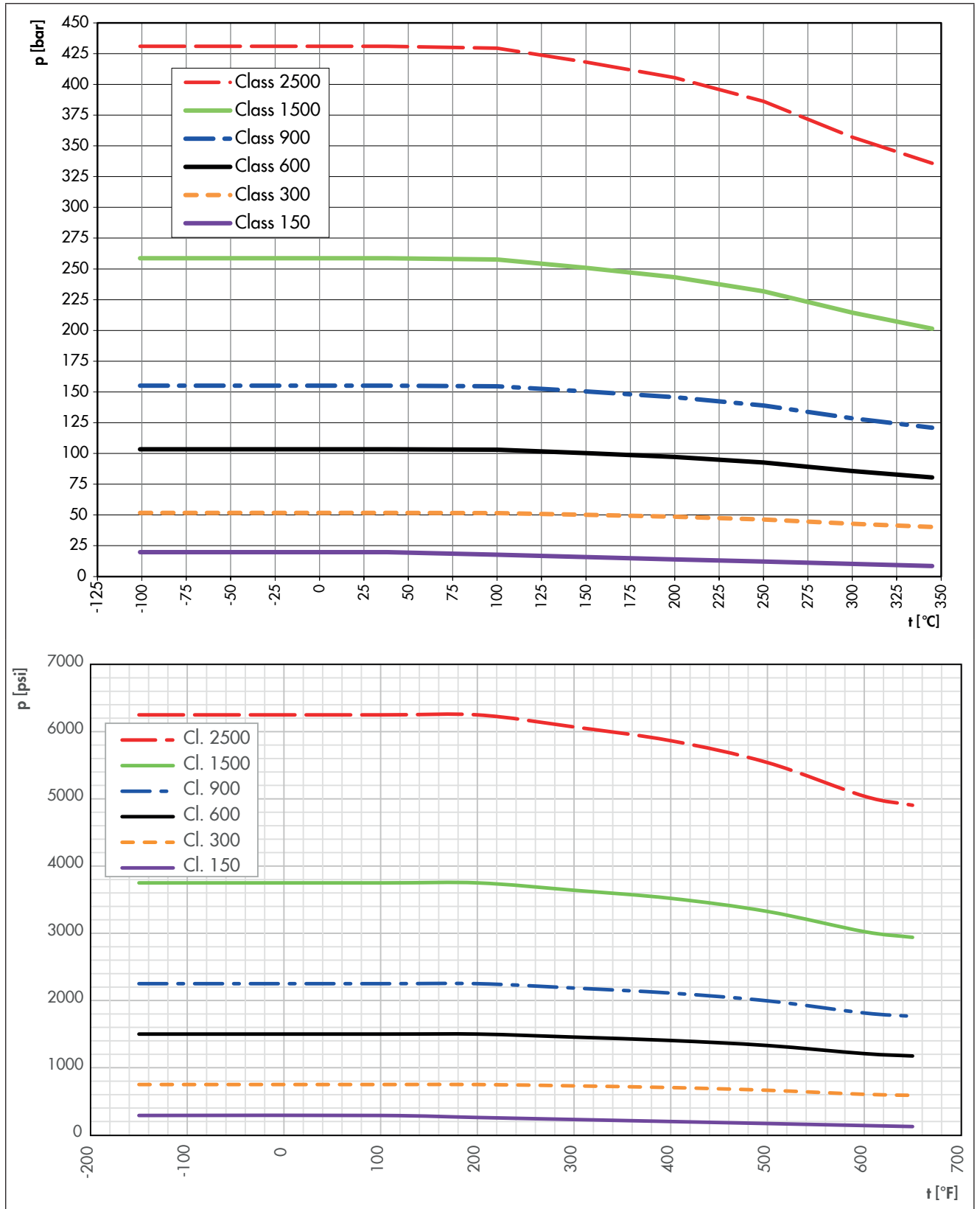
4.4 Cast steel · A217 WC9



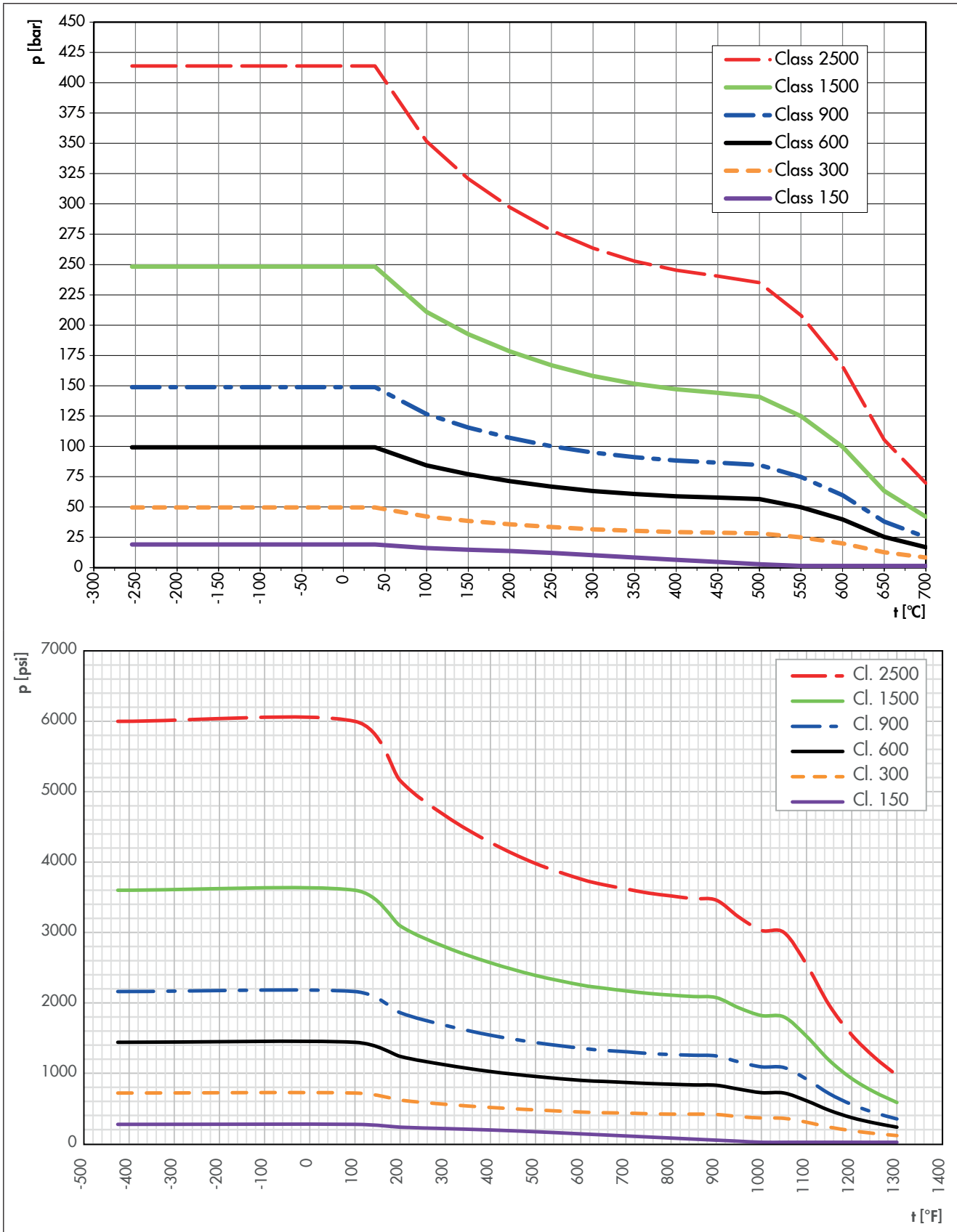
4.5 Cast steel · A352 LCC



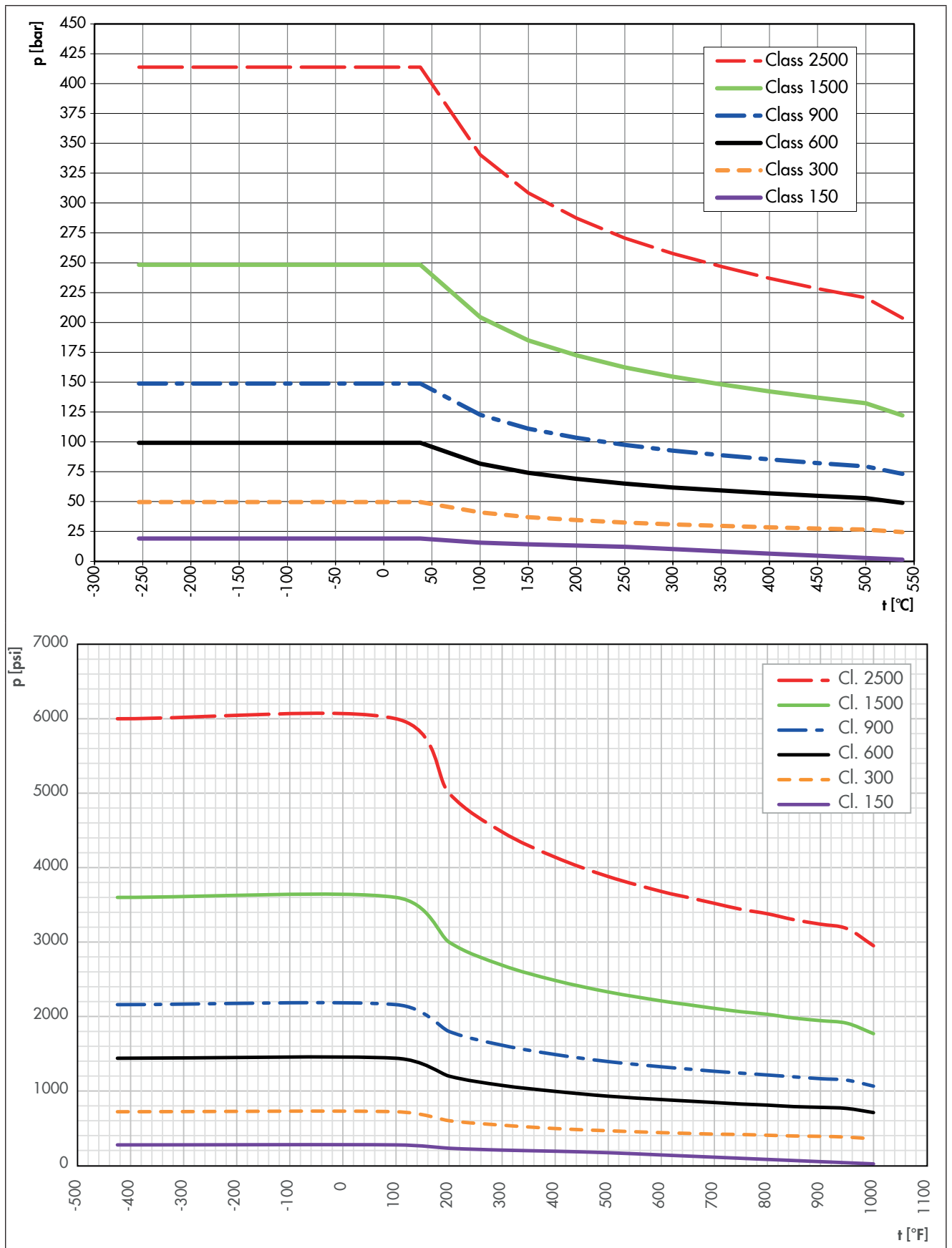
4.6 Cast steel · A352 LC3



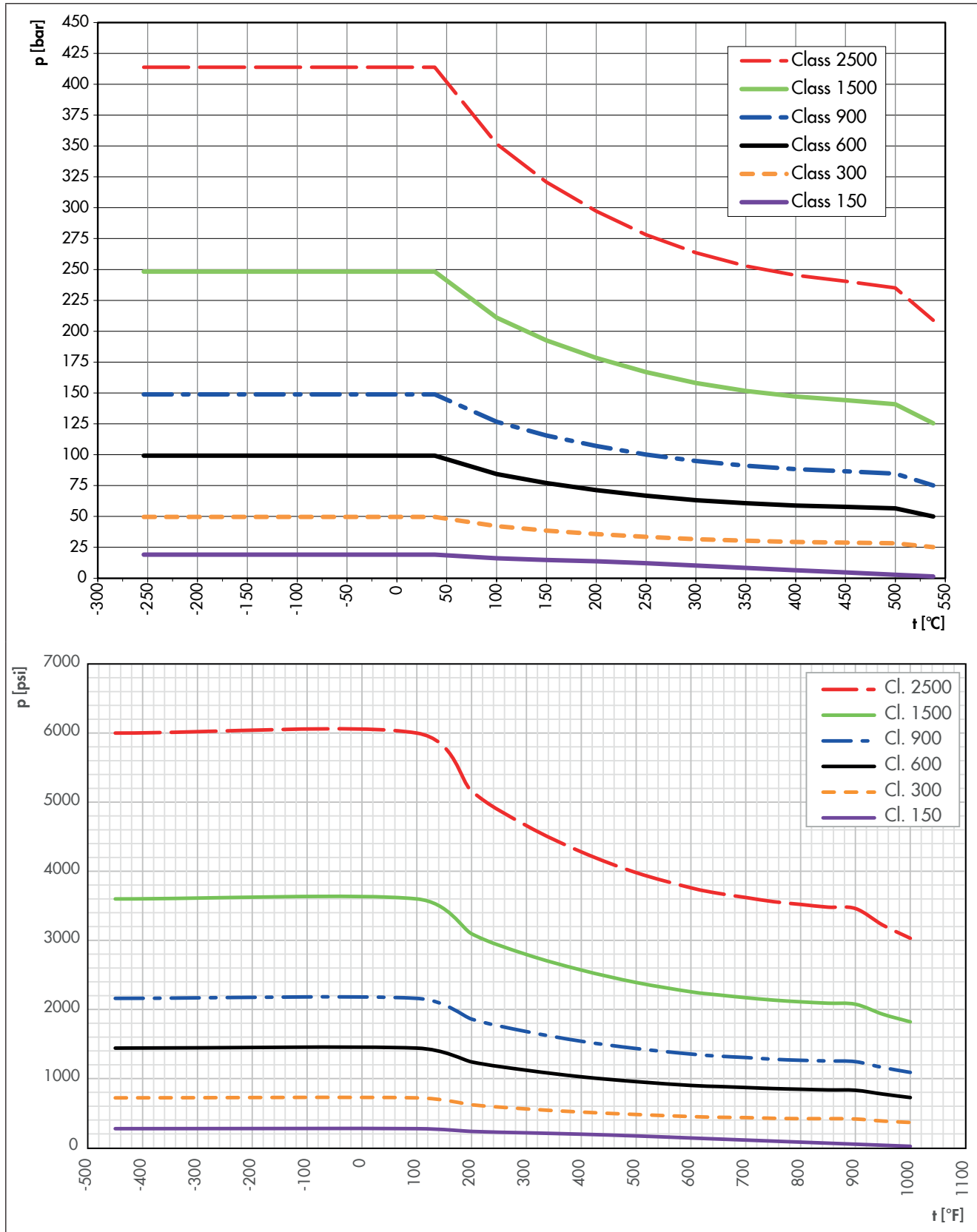
4.7 Cast stainless steel · A351 CF8M



4.8 Cast stainless steel · A351 CF8



4.9 Forged stainless steel · A182 F316L and AM materials SPBF 316/316L · SPBF AT 316/316L (-196 to +450 °C)



5 Pressure-temperature diagrams · JIS materials

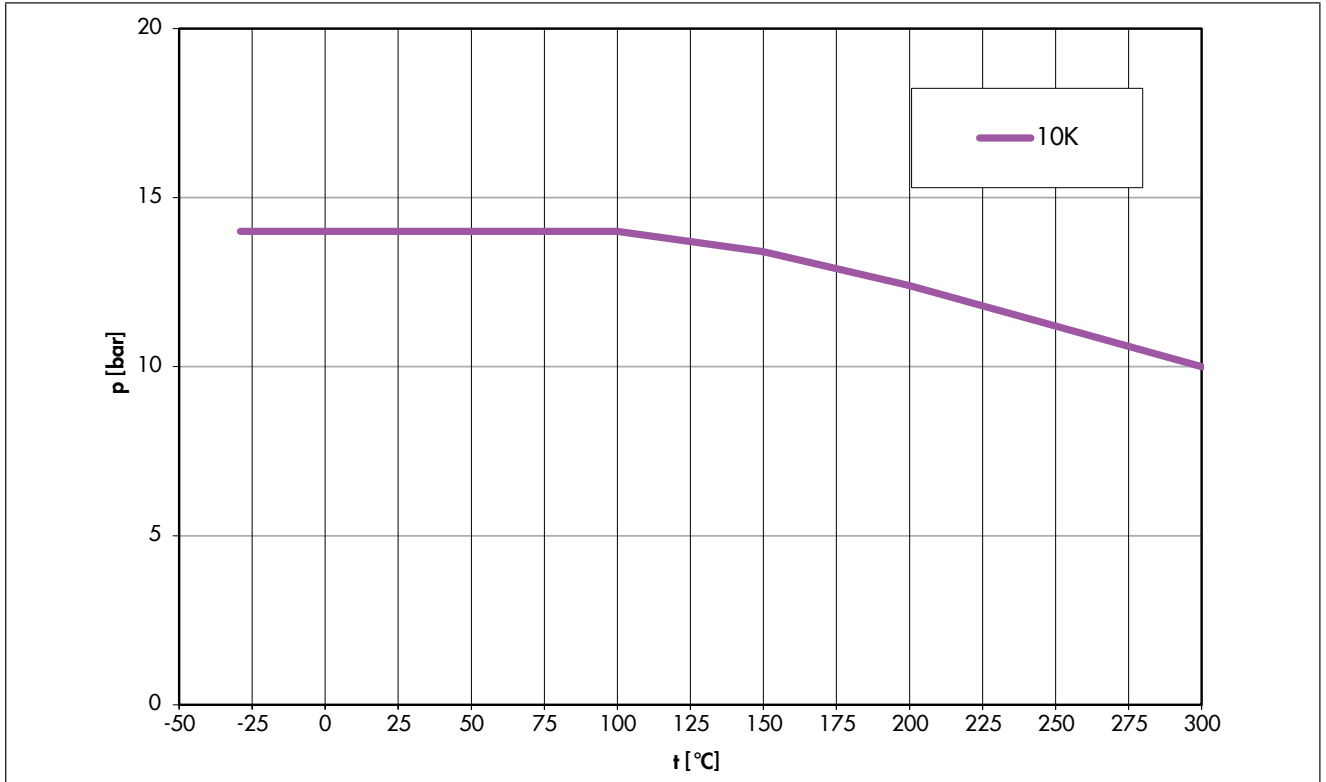
The pressure-temperature diagrams as well as the pressure and temperature specifications in the corresponding data sheets determine the maximum permissible limits of application of the valve. It is possible that these limits are restricted by factors, such as the design of the seat and plug. For type-tested versions, the limits may be restricted by the applicable safety regulations.

Further details can be found in the technical data tables in the corresponding data sheet.

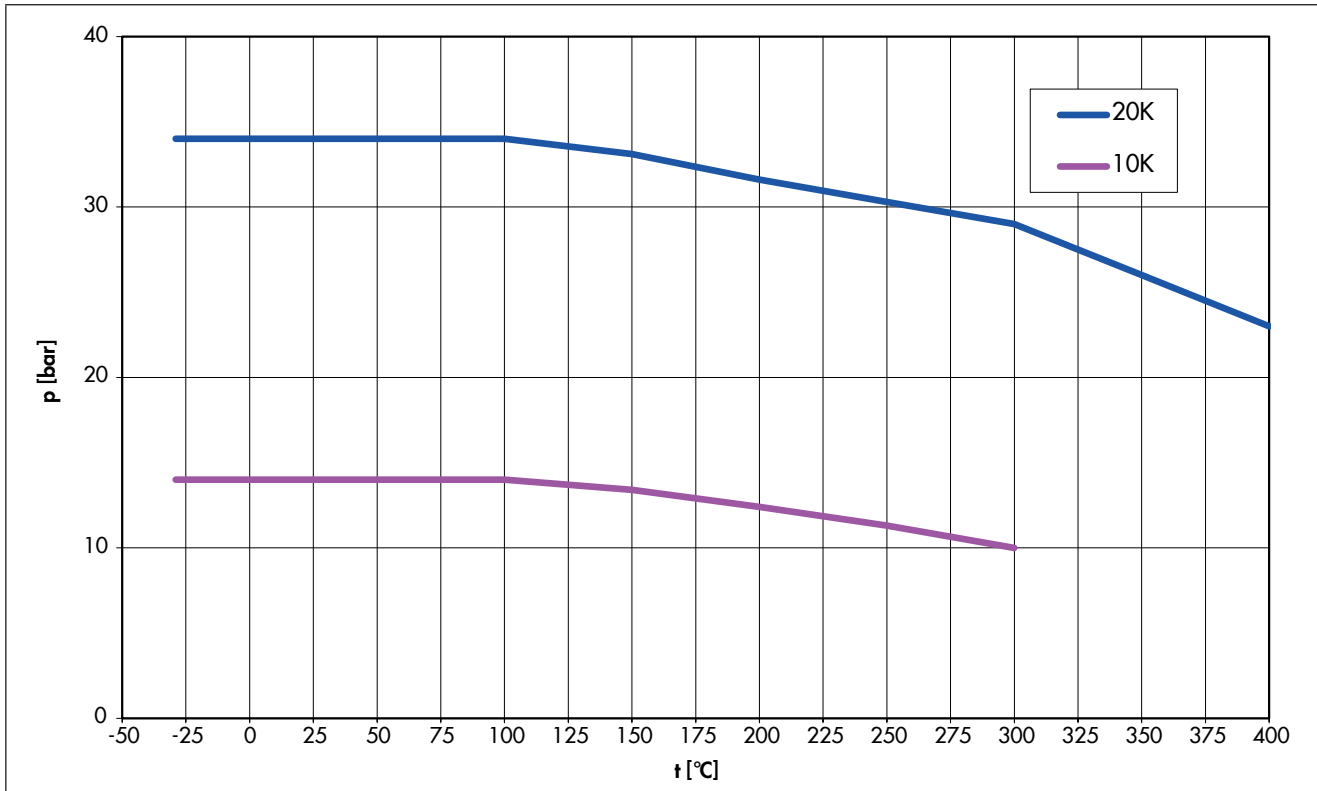
Note that the possible formation of ice on the valve body or plug stem when the medium temperature falls below 0 °C is not taken into account.

All pressure stated in bar/g.

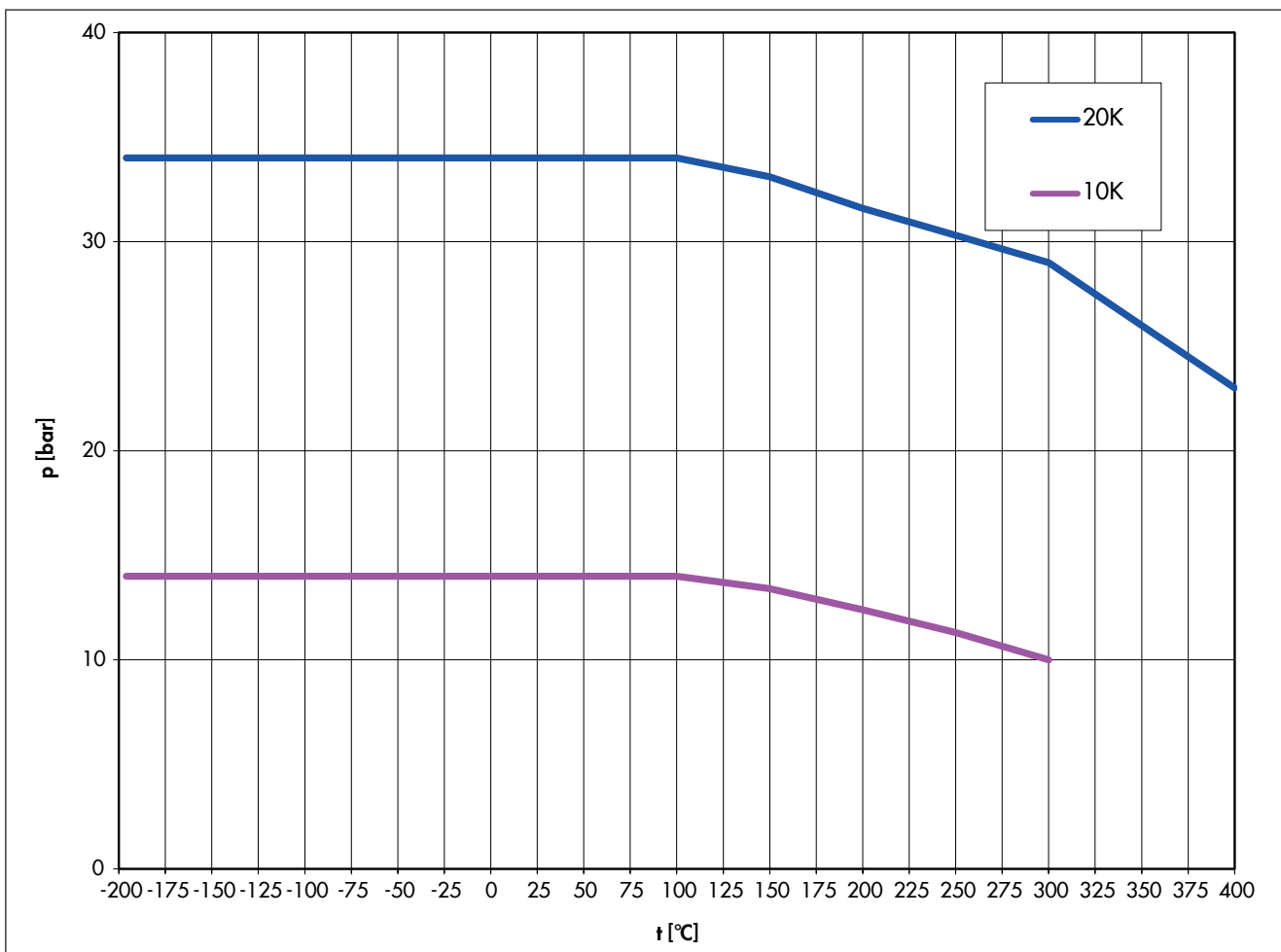
5.1 Cast iron · FC250



5.2 Cast steel · A216 WCC



5.3 Cast stainless steel · A351 CF8M



6 Permissible operating pressures

The pressure-temperature diagrams as well as the pressure and temperature specifications in the corresponding data sheets determine the maximum permissible limits of application of the valve. It is possible that these limits are restricted by factors, such as the design of the seat and plug. For typetested versions, the limits may be restricted by the applicable safety regulations.

Further details can be found in the technical data tables in the corresponding data sheet.

Note that the possible formation of ice on the valve body or plug stem when the medium temperature falls below 0 °C is not taken into account.

All pressure stated in bar/g.

Table 4: Permissible operating pressure depending on temperature · DIN versions

Pressures in bar

Cast iron EN-GJL-250 (-10 to +300 °C)															
Temp. in °C	-10	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.0	8.0	7.0	6.0	-							
PN 16	16.0	16.0	16.0	14.4	12.8	11.2	9.6								
Spheroidal graphite iron EN-GJS-400-18U-LT (-10 to +350 °C)															
Temp. in °C	-10	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.7	9.2	8.7	8.0	7.0	-						
PN 16	16.0	16.0	16.0	15.5	14.7	13.9	12.8	11.2							
PN 25	25.0	25.0	25.0	24.3	23.0	21.8	20.0	17.5							
Cast steel GP240GH · 1.0619 (-10 to +400 °C)															
Temp. in °C	-10	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	9.2	8.8	8.3	7.6	6.9	6.4	5.9	-					
PN 16	16.0	16.0	14.8	14.0	13.3	12.1	11.0	10.2	9.5						
PN 25	25.0	25.0	23.2	22.0	20.8	19.0	17.2	16.0	14.8						
PN 40	40.0	40.0	37.1	35.2	33.3	30.4	27.6	25.7	23.8						
PN 63	63.0	63.0	58.5	55.5	52.5	48.0	43.5	40.5	37.5						
PN 100	100.0	100.0	92.8	88.0	83.3	76.1	69.0	64.2	59.5						
PN 160	160.0	160.0	148.5	140.9	133.3	121.9	110.4	102.8	95.2						
PN 250	250.0	250.0	232.1	220.2	208.3	190.4	172.6	160.7	148.8						
PN 320	320.0	320.0	297.1	281.9	266.6	243.8	220.9	205.7	190.4						
PN 400	400.0	400.0	371.4	352.3	333.3	304.7	276.1	257.1	238.0						
Cast steel G9Ni14 · 1.5638 (-80 to +300 °C)															
Temp. in °C	-80	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	8.5	8.1	7.9	7.5	7.0	-							
PN 16	16.0	16.0	13.6	13.0	12.6	12.1	11.3								
PN 25	25.0	25.0	21.5	20.6	20.0	19.1	17.9								
PN 40	40.0	40.0	34.0	32.5	31.6	30.2	28.2								
PN 63	63.0	63.0	53.8	51.5	50.0	47.9	44.7								
PN 100	100.0	100.0	85.0	81.3	79.0	75.6	70.6								
PN 160	160.0	160.0	136.0	130.1	126.4	121.0	113.0								
PN 250	250.0	250.0	212.5	203.3	197.5	189.1	176.6								
PN 320	320.0	320.0	272.0	260.2	252.8	242.1	226.1								
PN 400	400.0	400.0	340.0	325.3	316.0	302.6	282.6								

Cast steel G20Mn5+QT · 1.6220+QT (-50 to +300 °C)															
Temp. in °C	-50	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.7	9.4	9.0	8.6								
PN 16	16.0	16.0	16.0	15.6	15.1	14.5	13.8								
PN 25	25.0	25.0	25.0	24.7	24.0	23.0	21.8								
PN 40	40.0	40.0	40.0	39.0	37.9	36.3	34.5								
PN 63	63.0	63.0	63.0	61.8	60.0	57.5	54.7								
PN 100	100.0	100.0	100.0	97.6	94.8	90.8	86.4								
PN 160	160.0	160.0	160.0	156.1	151.6	145.2	138.2								
PN 250	250.0	250.0	250.0	244.0	237.0	227.0	216.0								
PN 320	320.0	320.0	320.0	312.3	303.3	290.5	276.4								
PN 400	400.0	400.0	400.0	390.4	379.2	363.2	345.6								
Cast steel G17CrMo5-5 · 1.7357 (-10 to +500 °C)															
Temp. in °C	-10	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.5	9.0	8.4	6.5				
PN 16	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.2	14.4	13.4	10.4				
PN 25	25.0	25.0	25.0	25.0	25.0	25.0	25.0	23.8	22.5	21.0	16.3				
PN 40	40.0	40.0	40.0	40.0	40.0	40.0	40.0	38.0	36.0	33.7	26.0				
PN 63	63.0	63.0	63.0	63.0	63.0	63.0	63.0	60.0	56.7	53.1	41.1				
PN 100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	95.2	90.0	84.2	65.2				
PN 160	160.0	160.0	160.0	160.0	160.0	160.0	160.0	152.3	144.0	134.8	104.3				
PN 250	250.0	250.0	250.0	250.0	250.0	250.0	250.0	238.0	225.0	210.7	163.0				
PN 320	320.0	320.0	320.0	320.0	320.0	320.0	320.0	304.7	288.0	269.7	208.7				
PN 400	400.0	400.0	400.0	400.0	400.0	400.0	400.0	380.9	360.0	337.1	260.9				
Cast stainless steel GX5CrNiMo19-11-2 · 1.4408 (-200 to +700 °C)															
Temp. in °C	-200	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.0	8.4	7.9	7.4	7.1	6.8	6.7	6.6	6.5	5.6	3.4	1.9
PN 16	16.0	16.0	16.0	14.5	13.4	12.7	11.8	11.4	10.9	10.7	10.5	10.4	8.9	5.3	3.0
PN 25	25.0	25.0	25.0	22.7	21.0	19.8	18.5	17.8	17.1	16.8	16.5	16.3	14.0	8.4	4.8
PN 40	40.0	40.0	40.0	36.3	33.7	31.8	29.7	28.5	27.4	26.9	26.4	26.0	22.4	13.4	7.6
PN 63	63.0	63.0	63.0	57.3	53.1	50.1	46.8	45.0	43.2	42.4	41.7	41.1	35.4	21.2	12.0
PN 100	100.0	100.0	100.0	90.9	84.2	79.5	74.2	71.4	68.5	67.3	66.1	65.2	56.1	33.7	19.1
PN 160	160.0	160.0	160.0	145.5	134.8	127.2	118.8	114.2	109.7	107.8	105.9	104.3	89.9	53.9	30.6
PN 250	250.0	250.0	250.0	227.3	210.7	198.8	185.7	178.5	171.4	168.4	165.4	163.0	140.4	84.2	47.7
PN 320	320.0	320.0	320.0	291.0	269.7	254.4	237.7	228.5	219.4	215.6	211.8	208.7	179.8	107.9	61.1
PN 400	400.0	400.0	400.0	363.8	337.1	318.0	297.1	285.7	274.2	269.5	264.7	260.9	224.7	134.8	76.4
Cast stainless steel GX5CrNi19-10 · 1.4308 (-200 to +300 °C)															
Temp. in °C	-200	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	9.0	8.1	7.4	6.9	6.4								
PN 16	16.0	16.0	14.5	13.1	11.9	11.0	10.2								
PN 25	25.0	25.0	22.7	20.4	18.6	17.2	16.0								
PN 40	40.0	40.0	36.3	32.7	29.9	27.6	25.7								
PN 63	63.0	63.0	57.3	51.6	47.1	43.5	40.5								
PN 100	100.0	100.0	90.9	81.9	74.7	69.0	64.2								
PN 160	160.0	160.0	145.5	131.0	119.6	110.4	102.8								
PN 250	250.0	250.0	227.3	204.7	186.9	172.6	160.7								
PN 320	320.0	320.0	291.0	262.0	239.2	220.9	205.7								
PN 400	400.0	400.0	363.8	327.6	299.0	276.1	257.1								

Forged steel 1.0460 (-10 to +400 °C)															
Temp. in °C	-10	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.3	8.3	7.6	6.9	6.4	5.9						
PN 16	16.0	16.0	16.0	15.3	14.0	13.0	11.0	10.2	9.5						
PN 25	25.0	25.0	25.0	23.9	22.0	20.0	17.0	16.0	14.8						
PN 40	40.0	40.0	40.0	38.1	35.0	32.0	28.0	25.7	23.8						
PN 63	63	63	58.5	55.5	52.5	48	43.5	40.5	37.5						
PN 100	100	100	92.8	88	83.3	76.1	69	64.2	59.5						
PN 160	160	160	148.5	140.9	133.3	121.9	110.4	102.8	95.2						
PN 250	250	250	232.1	220.2	208.3	190.4	172.6	160.7	148.8						
PN 320	320	320	297.1	281.9	266.6	243.8	220.9	205.7	190.4						
PN 400	400	400	371.4	352.3	333.3	304.7	276.1	257.1	238						
Forged stainless steel 1.4404 (-196 to +500 °C)															
Temp. in °C	-196	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	9.4	8.6	7.9	7.4	6.9	6.6	6.4	6.2	6.0				
PN 16	16.0	16.0	15.1	13.7	12.7	11.9	11.0	10.5	10.2	10.0	9.7				
PN 25	25.0	25.0	23.6	21.5	19.8	18.6	17.2	16.5	16.0	15.6	15.2				
PN 40	40.0	40.0	37.9	34.4	31.8	29.9	27.6	26.4	25.7	25.0	24.3				
PN 63	63.0	63.0	59.7	54.3	50.1	47.1	43.5	41.7	40.5	39.4	38.4				
PN 100	100.0	100.0	94.7	86.1	79.5	74.7	69.0	66.1	64.2	62.6	60.9				
PN 160	160.0	160.0	151.6	137.9	127.2	119.6	110.4	105.9	102.8	100.1	97.5				
PN 250	250.0	250.0	236.9	215.4	198.8	186.9	172.6	165.4	160.7	156.5	152.3				
PN 320	320.0	320.0	303.2	275.8	254.4	239.2	220.9	211.8	205.7	200.3	195.0				
PN 400	400.0	400.0	379.0	344.7	318.0	299.0	276.1	264.7	257.1	250.4	243.8				
Forged stainless steel 1.4571 (-200 to +550 °C)															
Temp. in °C	-200	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.8	9.3	8.8	8.3	8.0	7.8	7.6	7.5	7.4			
PN 16	16.0	16.0	16.0	15.6	14.9	14.1	13.3	12.8	12.4	12.2	12.0	11.9			
PN 25	25.0	25.0	25.0	24.5	23.3	22.1	20.8	20.1	19.5	19.1	18.8	18.6			
PN 40	40.0	40.0	40.0	39.2	37.3	35.4	33.3	32.1	31.2	30.6	30.0	29.9			
PN 63	63	63	63	61.8	58.8	55.8	52.5	50.7	49.2	48.3	47.4	47.1			
PN 100	100	100	100	98	93.3	88.5	83.3	80.4	78	76.6	75.2	74.7			
PN 160	160	160	160	156.9	149.3	141.7	133.3	128.7	124.9	122.6	120.3	119.6			
PN 250	250	250	250	245.2	233.3	221.4	208.3	201.1	195.2	191.6	188	186.9			
PN 320	320	320	320	313.9	298.6	283.4	266.6	257.5	249.9	245.3	240.7	239.2			
PN 400	400	400	400	392.3	373.3	354.2	333.3	321.9	312.3	306.6	300.9	299			
AM materials SPBF 4401/4404 and SPBF AT 4401/4404 (-196 to +450 °C)															
Temp. in °C	-196	20	100	150	200	250	300	350	400	450	500	550	600	650	700
PN 10	10.0	10.0	10.0	9.0	8.4	7.9	7.4	7.1	6.8	6.7					
PN 16	16.0	16.0	16.0	14.5	13.4	12.7	11.8	11.4	10.9	10.7					
PN 25	25.0	25.0	25.0	22.7	21.0	19.8	18.5	17.8	17.1	16.8					
PN 40	40.0	40.0	40.0	36.3	33.7	31.8	29.7	28.5	27.4	26.9					
PN 63	63.0	63.0	63.0	57.3	53.1	50.1	46.8	45.0	43.2	42.4					
PN 100	100.0	100.0	100.0	90.9	84.2	79.5	74.2	71.4	68.5	67.3					
PN 160	160.0	160.0	160.0	145.5	134.8	127.2	118.8	114.2	109.7	107.8					
PN 250	250.0	250.0	250.0	227.3	210.7	198.8	185.7	178.5	171.4	168.4					
PN 320	320.0	320.0	320.0	291.0	269.7	254.4	237.7	228.5	219.4	215.6					
PN 400	400.0	400.0	400.0	363.8	337.1	318.0	297.1	285.7	274.2	269.5					

Table 5: Permissible operating pressure depending on temperature · ANSI versions

Table 5.1: Temperatures in °C · Pressures in bar

Cast iron · A126B (–29 to +232 °C)																				
Temp. in °C	–29	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 125	13.8		13.8	12.7	11.1	9.6	8.6													
Class 250	34.5	–	34.5	30.9	25.6	20.5	17.2							–						
Cast steel · A216 WCC (–29 to +425 °C)																				
Temp. in °C	–29	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.8	19.8		17.7	15.8	13.8		12.1	10.2		8.4	6.5	5.5							
Class 300	51.7	51.7		51.5	50.2	48.6		46.3	42.9		40.0	34.7	28.8							
Class 600	103.4	103.4		103.0	100.3	97.2		92.7	85.7		80.0	69.4	57.5							
Class 900	155.1	155.1	–	154.6	150.5	145.8	–	139.0	128.6	–	120.1	104.2	86.3				–			
Class 1500	258.6	258.6		257.6	250.8	243.2		231.8	214.4		200.1	173.6	143.8							
Class 2500	430.9	430.9		429.4	418.1	405.4		386.2	357.1		333.5	289.3	239.7							
Cast steel · A217 WC6 (–29 to +500 °C)																				
Temp. in °C	–29	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.8	19.8		17.7	15.8	13.8		12.1	10.2		8.4	6.5		4.6	2.8					
Class 300	51.7	51.7		51.5	49.7	48.0		46.3	42.9		40.3	36.5		33.7	25.7					
Class 600	103.4	103.4		103.0	99.5	95.9		92.7	85.7		80.4	73.3		67.7	51.5					
Class 900	155.1	155.1	–	154.4	149.2	143.9	–	139.0	128.6	–	120.7	109.8	–	101.4	77.2			–		
Class 1500	258.6	258.6		257.4	248.7	239.8		231.8	214.4		201.1	183.1		169.0	128.6					
Class 2500	430.9	430.9		429.0	414.5	399.6		386.2	357.1		335.3	304.9		281.8	214.4					
Cast steel · A217 WC9 (–29 to +600 °C)																				
Temp. in °C	–29	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.8	19.8		17.7	15.8	13.8		12.1	10.2		8.4	6.5		4.6	2.8			1.4	1.4	
Class 300	51.7	51.7		51.5	50.3	48.6		46.3	42.9		40.3	36.5		33.7	28.2			15.6	6.9	
Class 600	103.4	103.4		103.0	100.3	97.2		92.7	85.7		80.4	73.3		67.7	56.5			31.3	13.8	
Class 900	155.1	155.1	–	154.6	150.6	145.8	–	139.0	128.6	–	120.7	109.8	–	101.4	84.7			46.9	20.7	–
Class 1500	258.5	258.5		257.6	250.8	243.4		231.8	214.4		201.1	183.1		169.0	140.9			78.2	34.4	
Class 2500	430.9	430.9		429.4	418.2	405.4		386.2	357.1		335.3	304.9		281.8	235.0			130.3	57.4	
Cast steel · A352 LCC (–46 to +345 °C)																				
Temp. in °C	–46	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.8	19.8		17.7	15.8	13.8		12.1	10.2	8.5										
Class 300	51.7	51.7		51.5	50.2	48.6		46.3	42.9	40.3										
Class 600	103.4	103.4		103.0	100.3	97.2		92.7	85.7	80.5										
Class 900	155.1	155.1	–	154.6	150.5	145.8	–	139.0	128.6	120.9										
Class 1500	258.6	258.6		257.6	250.8	243.2		231.8	214.4	201.5										
Class 2500	430.9	430.9		429.4	418.1	405.4		386.2	357.1	335.8										
Cast steel · A352 LC3 (–101 to +345 °C)																				
Temp. in °C	–101	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.8	19.8		17.7	15.8	13.8		12.1	10.2	8.5										
Class 300	51.7	51.7		51.5	50.2	48.6		46.3	42.9	40.3										
Class 600	103.4	103.4		103.0	100.3	97.2		92.7	85.7	80.5										
Class 900	155.1	155.1	–	154.6	150.5	145.8	–	139.0	128.6	120.9										
Class 1500	258.6	258.6		257.6	250.8	243.2		231.8	214.4	201.5										
Class 2500	430.9	430.9		429.4	418.1	405.4		386.2	357.1	335.8										

Cast stainless steel - A351 CF8M (-254 to +700 °C)																				
Temp. in °C	-254	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.0	19.0	-	16.2	14.8	13.7	-	12.1	10.2	-	8.4	6.5	-	4.6	2.8	-	1.4	1.4	1.4	1.4
Class 300	49.6	49.6	-	42.2	38.5	35.7	-	33.4	31.6	-	30.3	29.4	-	28.8	28.2	-	25.0	19.9	12.7	8.4
Class 600	99.3	99.3	-	84.4	77.0	71.3	-	66.8	63.2	-	60.7	58.9	-	57.7	56.5	-	49.8	39.8	25.3	16.8
Class 900	148.9	148.9	-	126.6	115.5	107.0	-	100.1	94.9	-	91.0	88.3	-	86.5	84.7	-	74.8	59.7	38.0	25.1
Class 1500	248.2	248.2	-	211.0	192.5	178.3	-	166.9	158.1	-	151.6	147.2	-	144.2	140.9	-	124.9	99.5	63.3	41.9
Class 2500	413.7	413.7	-	351.6	320.8	297.2	-	278.1	263.5	-	252.7	245.3	-	240.4	235.0	-	208.0	165.9	105.5	69.8
Cast stainless steel - A351 CF8 (-254 to +538 °C)																				
Temp. in °C	-254	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.0	19.0	-	15.7	14.2	13.2	-	12.1	10.2	-	8.4	6.5	-	4.6	2.8	1.4	-	-	-	-
Class 300	49.6	49.6	-	40.9	37.0	34.5	-	32.5	30.9	-	29.6	28.4	-	27.4	26.5	24.4	-	-	-	-
Class 600	99.3	99.3	-	81.7	74.0	69.0	-	65.0	61.8	-	59.3	56.9	-	54.8	53.0	48.9	-	-	-	-
Class 900	148.9	148.9	-	122.6	111.0	103.4	-	97.5	92.7	-	88.9	85.3	-	82.2	79.5	73.3	-	-	-	-
Class 1500	248.2	248.2	-	204.3	185.0	172.4	-	162.4	154.6	-	148.1	142.2	-	137.0	132.4	122.1	-	-	-	-
Class 2500	413.7	413.7	-	340.4	308.4	287.3	-	270.7	257.6	-	246.9	237.0	-	228.4	220.7	203.6	-	-	-	-
Forged stainless steel - A182 F316L (-254 to +538 °C)																				
Temp. in °C	-254	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.0	19.0	-	16.2	14.8	13.7	-	12.1	10.2	-	8.4	6.5	-	4.6	2.8	1.4	-	-	-	-
Class 300	49.6	49.6	-	42.2	38.5	35.7	-	33.4	31.6	-	30.3	29.4	-	28.8	28.2	25.2	-	-	-	-
Class 600	99.3	99.3	-	84.4	77.0	71.3	-	66.8	63.2	-	60.7	58.9	-	57.7	56.5	50.0	-	-	-	-
Class 900	148.9	148.9	-	126.6	115.5	107.0	-	100.1	94.9	-	91.0	88.3	-	86.5	84.7	75.2	-	-	-	-
Class 1500	248.2	248.2	-	211.0	192.5	178.3	-	166.9	158.1	-	151.6	147.2	-	144.2	140.9	125.5	-	-	-	-
Class 2500	413.7	413.7	-	351.6	320.8	297.2	-	278.1	263.5	-	252.7	245.3	-	240.4	235.0	208.9	-	-	-	-
AM materials SPBF 316/316L - SPBF AT 316/316L (-196 to +450 °C)																				
Temp. in °C	-196	38	65	100	150	200	232	250	300	345	350	400	425	450	500	538	550	600	650	700
Class 150	19.0	19.0	-	16.2	14.8	13.7	-	12.1	10.2	-	8.4	6.5	-	4.6	-	-	-	-	-	-
Class 300	49.6	49.6	-	42.2	38.5	35.7	-	33.4	31.6	-	30.3	29.4	-	28.8	-	-	-	-	-	-
Class 600	99.3	99.3	-	84.4	77.0	71.3	-	66.8	63.2	-	60.7	58.9	-	57.7	-	-	-	-	-	-
Class 900	148.9	148.9	-	126.6	115.5	107.0	-	100.1	94.9	-	91.0	88.3	-	86.5	-	-	-	-	-	-
Class 1500	248.2	248.2	-	211.0	192.5	178.3	-	166.9	158.1	-	151.6	147.2	-	144.2	-	-	-	-	-	-
Class 2500	413.7	413.7	-	351.6	320.8	297.2	-	278.1	263.5	-	252.7	245.3	-	240.4	-	-	-	-	-	-

Table 5.2: Temperatures in °F · Pressures in psi

Cast iron · A126B (-20 to +450 °F)																						
Temp. in °F	-20	100	150	200	250	300	350	400	450	500	600	700	750	800	850	900	950	1000	1050 to 1300			
Class 125	200	200	200	190	175	165	150	140	125													
Class 250	500	500	500	460	415	375	335	290	250													
Cast steel · A216 WCC (-20 to +800 °F)																						
Temp. in °F	-20	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	
Class 150	290	290	260	230	200	170	140	125	110	95	80											
Class 300	750	750	750	730	705	665	605	590	555	505	410											
Class 600	1500	1500	1500	1455	1405	1330	1210	1175	1110	1015	825											
Class 900	2250	2250	2250	2185	2110	1995	1815	1765	1665	1520	1235											
Class 1500	3750	3750	3750	3640	3520	3325	3025	2940	2775	2535	2055											
Class 2500	6250	6250	6250	6070	5865	5540	5040	4905	4630	4230	3430											
Cast steel · A217 WC6 (-20 to +950 °F)																						
Temp. in °F	-20	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	
Class 150	290	290	260	230	200	170	140	125	110	95	80	65	50	35								
Class 300	750	750	750	720	695	665	605	590	570	530	510	485	450	320								
Class 600	1500	1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640								
Class 900	2250	2250	2250	2165	2080	1995	1815	1765	1705	1595	1525	1460	1350	955								
Class 1500	3750	3750	3750	3610	3465	3325	3025	2940	2840	2660	2540	2435	2245	1595								
Class 2500	6250	6250	6250	6015	5775	5540	5040	4905	4730	4430	4230	4060	3745	2655								
Cast steel · A217 WC9 (-20 to +1100 °F)																						
Temp. in °F	-20	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	
Class 150	290	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20	20					
Class 300	750	750	750	730	705	665	605	590	570	530	510	485	450	385	265	175	110					
Class 600	1500	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	775	535	350	220					
Class 900	2250	2250	2250	2185	2115	1995	1815	1765	1705	1595	1525	1460	1350	1160	800	525	330					
Class 1500	3750	3750	3750	3640	3530	3325	3025	2940	2840	2660	2540	2435	2245	1930	1335	875	550					
Class 2500	6250	6250	6250	6070	5880	5540	5040	4905	4730	4430	4230	4060	3745	3220	2230	1455	915					
Cast steel · A352 LCC (-50 to +650 °F)																						
Temp. in °F	-50	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	
Class 150	290	290	260	230	200	170	140	125														
Class 300	750	750	750	730	705	665	605	590														
Class 600	1500	1500	1500	1455	1405	1330	1210	1175														
Class 900	2250	2250	2250	2185	2110	1995	1815	1765														
Class 1500	3750	3750	3750	3640	3520	3325	3025	2940														
Class 2500	6250	6250	6250	6070	5865	5540	5040	4905														
Cast steel · A352 LC3 (-150 to +650 °F)																						
Temp. in °F	-150	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	
Class 150	290	290	260	230	200	170	140	125														
Class 300	750	750	750	730	705	665	605	590														
Class 600	1500	1500	1500	1455	1405	1330	1210	1175														
Class 900	2250	2250	2250	2185	2110	1995	1815	1765														
Class 1500	3750	3750	3750	3640	3520	3325	3025	2940														
Class 2500	6250	6250	6250	6070	5865	5540	5040	4905														

Cast stainless steel - A351 CF8M (-425 to +1300 °F)																					
Temp. in °F	-425	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
Class 150	275	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20	20	20	20	20	20
Class 300	720	720	620	560	515	480	450	440	435	425	420	420	415	385	365	360	305	235	185	145	115
Class 600	1440	1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725	720	610	475	370	295	235
Class 900	2160	2160	1860	1680	1540	1435	1355	1325	1305	1280	1265	1255	1245	1160	1090	1080	915	710	555	440	350
Class 1500	3600	3600	3095	2795	2570	2390	2255	2210	2170	2135	2110	2090	2075	1930	1820	1800	1525	1185	925	735	585
Class 2500	6000	6000	5160	4660	4280	3980	3760	3680	3620	3560	3520	3480	3460	3220	3030	3000	2545	1970	1545	1230	970
Cast stainless steel - A351 CF8 (-425 to +1000 °F)																					
Temp. in °F	-425	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
Class 150	275	275	230	205	190	170	140	125	110	95	80	65	50	35	20						
Class 300	720	720	600	540	495	465	440	430	420	415	405	395	390	380	355						
Class 600	1440	1440	1200	1075	995	930	885	865	845	825	810	790	780	765	710						
Class 900	2160	2160	1800	1615	1490	1395	1325	1295	1265	1240	1215	1190	1165	1145	1065						
Class 1500	3600	3600	3000	2690	2485	2330	2210	2160	2110	2065	2030	1980	1945	1910	1770						
Class 2500	6000	6000	5000	4480	4140	3880	3680	3600	3520	3440	3380	3300	3240	3180	2950						
Forged stainless steel - A182 F316L (-425 to +1000 °F)																					
Temp. in °F	-425	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
Class 150	275	275	235	215	195	170	140	125	110	95	80	65	50	35	20						
Class 300	720	720	620	560	515	480	450	440	435	425	420	420	415	385	365						
Class 600	1440	1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725						
Class 900	2160	2160	1860	1680	1540	1435	1355	1325	1305	1280	1265	1255	1245	1160	1090						
Class 1500	3600	3600	3095	2795	2570	2390	2255	2210	2170	2135	2110	2090	2075	1930	1820						
Class 2500	6000	6000	5160	4660	4280	3980	3760	3680	3620	3560	3520	3480	3460	3220	3030						
AM materials SPBF 316/316L - SPBF AT 316/316L (-325 to +850 °F)																					
Temp. in °F	-325	100	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
Class 150	275	275	235	215	195	170	140	125	110	95	80	65									
Class 300	720	720	620	560	515	480	450	440	435	425	420	420									
Class 600	1440	1440	1240	1120	1025	955	900	885	870	855	845	835									
Class 900	2160	2160	1860	1680	1540	1435	1355	1325	1305	1280	1265	1255									
Class 1500	3600	3600	3095	2795	2570	2390	2255	2210	2170	2135	2110	2090									
Class 2500	6000	6000	5160	4660	4280	3980	3760	3680	3620	3560	3520	3480									

Table 6: Permissible operating pressure depending on temperature · JIS versions**Table 6.1:** Temperatures in °C · Pressures in bar

Cast iron FC250 (-29 to +300 °C)									
Temp. in °C	-29	20	100	150	200	250	300	350	400
10K ¹⁾	14	14	14	13.4	12.4	11.2	10	-	
Cast steel · A216 WCC (-29 to +400 °C)									
Temp. in °C	-29	20	100	150	200	250	300	350	400
10K ¹⁾	14	14	14	13.4	12.4	11.3	10	-	
20K ¹⁾	34	34	34	33.1	31.6	30.3	29	26	23
Cast stainless steel · A351 CF8M (-196 to +400 °C)									
Temp. in °C	-196	20	100	150	200	250	300	350	400
10K ¹⁾	14	14	14	13.4	12.4	11.3	10	-	
20K ¹⁾	34	34	34	33.1	31.6	30.3	29	26	23

¹⁾ The pressuring rating is specified in K according to the Japanese Industrial Standard (JIS). For example, 10K means that the JIS flange is designed for a pressure of 10 kg/cm².

