

CSA Linepipe Performance Ratings

Metric Units

OD (mm)	Wall Thickness (mm)	Linear Mass (kg/m)	ID	Grade 359				Grade 386				Grade 414				Grade 448				Grade 483			
				Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)
60.3	2.1	3.01	56.1	13,700	21,880	12,310	18,000	14,730	23,520	12,740	19,360	15,800	25,230	13,120	20,760	17,090	27,300	13,550	22,470	18,430	29,440	13,910	24,220
	2.8	3.97	54.7	18,040	29,170	23,110	24,000	19,400	31,370	24,070	25,810	20,810	33,640	24,970	27,680	22,520	36,400	25,980	29,960	24,280	39,250	26,890	32,300
	3.2	4.51	53.9	20,480	33,340	30,200	27,430	22,020	35,850	31,740	29,500	23,620	38,450	33,220	31,640	25,550	41,610	34,960	34,240	27,550	44,860	36,610	36,910
	3.6	5.03	53.1	22,880	37,510	37,290	30,860	24,600	40,330	39,410	33,180	26,380	43,250	41,460	35,590	28,550	46,810	43,950	38,510	30,780	50,460	46,330	41,520
	3.9	5.42	52.5	24,650	40,630	42,610	33,440	26,510	43,690	45,160	35,950	28,430	46,860	47,650	38,560	30,760	50,710	50,680	41,720	33,170	54,670	53,630	44,980
	4.4	6.06	51.5	27,570	45,840	48,500	37,220	29,640	49,250	52,240	40,560	31,790	52,870	55,970	43,500	34,400	57,210	60,630	47,070	37,090	61,680	65,290	50,750
	4.8	6.57	50.7	29,860	50,010	52,540	41,150	32,100	53,770	56,580	44,250	34,430	57,670	60,620	47,460	37,260	62,410	65,670	51,350	40,170	67,280	70,720	55,360
	5.5	7.43	49.3	33,780	57,300	59,440	47,150	36,320	61,610	64,010	50,700	38,950	66,080	68,580	54,380	42,150	71,510	74,300	58,840	45,450	77,100	80,010	63,440
	6.4	8.51	47.5	38,660	66,680	68,030	54,870	41,570	71,690	73,260	58,990	44,580	76,900	78,490	63,270	48,240	83,210	85,030	68,470	52,010	89,710	91,580	73,820
	7.1	9.31	46.1	42,330	73,970	74,490	60,870	45,520	79,540	80,220	65,450	48,820	85,310	85,950	70,190	52,830	92,310	93,110	75,960	56,950	99,520	100,270	81,890
	8.7	11.07	42.9	50,310	90,640	88,530	74,590	54,100	97,460	95,340	80,200	58,020	104,530	102,150	86,010	62,780	113,110	110,660	93,080	67,690	121,950	119,170	100,350
11.1	13.47	38.1	61,200	115,650	107,700	95,160	65,810	124,350	115,980	102,320	70,580	133,370	124,270	109,740	76,380	144,320	134,620	118,750	82,350	155,590	144,980	128,030	
88.9	2.1	4.49	84.7	20,430	14,840	4,480	12,210	21,960	15,960	4,480	13,130	23,560	17,110	4,480	14,080	25,490	18,520	4,480	15,240	27,480	19,970	4,480	16,430
	2.8	5.94	83.3	27,020	19,790	9,930	16,280	29,050	21,280	10,180	17,510	31,160	22,820	10,390	18,780	33,720	24,690	10,590	20,320	36,350	26,620	10,720	21,910
	3.2	6.76	82.5	30,730	22,610	13,150	18,610	33,050	24,310	13,630	20,010	35,440	26,080	14,080	21,460	38,350	28,220	14,590	23,220	41,350	30,430	15,030	25,040
	3.6	7.57	81.7	34,420	25,440	16,760	20,930	37,000	27,350	17,210	22,510	39,690	29,340	17,770	24,140	42,950	31,750	18,580	26,120	46,300	34,230	19,340	28,170
	4.0	8.37	80.9	38,060	28,270	21,570	23,260	40,920	30,390	22,410	25,010	43,890	32,600	23,180	26,820	47,500	35,280	24,030	29,030	51,210	38,030	24,780	31,290
	4.4	9.17	80.1	41,670	31,090	26,380	25,590	44,800	33,430	27,610	27,510	48,050	35,860	28,770	29,510	52,000	38,800	30,120	31,930	56,060	41,830	31,370	34,420
	4.8	9.95	79.3	45,240	33,920	31,190	27,910	48,640	36,470	32,810	30,010	52,170	39,120	34,370	32,190	56,460	42,330	36,220	34,830	60,870	45,640	37,970	37,550
	5.5	11.31	77.9	51,410	38,870	39,610	31,980	55,270	41,790	41,910	34,390	59,280	44,820	44,160	36,880	64,150	48,500	46,880	39,910	69,160	52,290	49,510	43,030
	6.4	13.02	76.1	59,170	45,230	47,910	37,220	63,620	48,630	51,590	40,020	68,240	52,160	55,280	42,920	73,840	56,440	59,880	46,440	79,610	60,850	64,350	50,070
	7.1	14.32	74.7	65,090	50,180	52,690	41,290	69,980	53,950	56,750	44,390	75,060	57,860	60,800	47,610	81,230	62,610	65,870	51,520	87,570	67,510	70,930	55,550
	7.6	15.24	73.7	69,250	53,710	56,060	44,190	74,450	57,750	60,370	47,520	79,860	61,940	64,680	50,970	86,410	67,020	70,080	55,150	93,170	72,260	75,470	59,460
11.1	21.29	66.7	96,780	78,440	78,350	64,550	104,060	84,340	84,380	69,400	111,610	90,460	90,410	74,440	120,780	97,890	97,940	80,550	130,210	105,540	105,470	86,840	
15.2	27.62	58.5	125,550	107,420	101,640	88,390	134,990	115,500	109,460	95,040	144,780	123,870	117,280	101,930	156,670	134,050	127,050	110,300	168,910	144,520	136,820	118,920	
114.3	2.1	5.81	110.1	26,410	11,540	2,080	9,500	28,390	12,410	2,080	10,210	30,450	13,310	2,080	10,950	32,950	14,400	2,080	11,850	35,530	15,530	2,080	12,780
	2.8	7.70	108.7	34,990	15,390	5,000	12,660	37,620	16,550	5,000	13,620	40,350	17,750	5,000	14,600	43,660	19,210	5,000	15,800	47,070	20,710	5,000	17,040
	3.2	8.77	107.9	39,840	17,590	7,430	14,470	42,840	18,910	7,490	15,560	45,950	20,280	7,520	16,690	49,720	21,950	7,520	18,060	53,610	23,660	7,520	19,470
	3.6	9.83	107.1	44,660	19,790	9,930	16,280	48,020	21,280	10,180	17,510	51,510	22,820	10,390	18,780	55,740	24,690	10,590	20,320	60,090	26,620	10,720	21,910
	4.0	10.88	106.3	49,450	21,990	12,440	18,090	53,160	23,640	12,870	19,450	57,020	25,350	13,260	20,860	61,700	27,440	13,700	22,580	66,530	29,580	14,070	24,340
	4.4	11.92	105.5	54,190	24,180	14,940	19,900	58,270	26,000	15,550	21,400	62,500	27,890	16,130	22,950	67,630	30,180	16,810	24,830	72,910	32,540	17,420	26,770
	4.8	12.96	104.7	58,900	26,380	18,360	21,710	63,340	28,370	18,940	23,340	67,930	30,430	19,450	25,040	73,510	32,920	19,970	27,090	79,250	35,500	20,780	29,210
	5.2	13.99	103.9	63,580	28,580	22,100	23,520	68,360	30,730	22,990	25,290	73,320	32,960	23,800	27,120	79,340	35,670	24,710	29,350	85,540	38,450	25,510	31,640
	5.6	15.01	103.1	68,220	30,780	25,840	25,330	73,350	33,100	27,030	27,230	78,670	35,500	28,150	29,210	85,130	38,410	29,450	31,610	91,780	41,410	30,640	34,080
	6.0	16.02	102.3	72,820	32,980	29,580	27,140	78,300	35,460	31,080	29,180	83,980	38,030	32,500	31,290	90,880	41,150	34,190	33,860	97,980	44,370	35,770	36,510
	6.4	17.03	101.5	77,390	35,180	33,330	28,950	83,210	37,820	35,120	31,120	89,250	40,570	36,850	33,380	96,580	43,900	38,920	36,120	104,120	47,330	40,900	38,940
7.1	18.77	100.1	85,300	39,030	39,870	32,110	91,720	41,960	42,200	34,530	98,370	45,000	44,470	37,030	106,450	48,700	47,220	40,070	114,760	52,500	49,870	43,200	
7.9	20.73	98.5	94,200	43,420	46,130	35,730	101,290	46,960	49,680	38,420	108,640	50,070	53,170	41,200	117,560	54,190	56,690	44,590	126,740	58,420	60,130	48,070	
8.6	22.41	97.1	101,880	47,270	49,890	38,900	109,540	50,830	53,730	41,820	117,480	54,510	57,570	44,860	127,130	58,990	62,370	48,540	137,060	63,600	67,160	52,330	
11.1	28.25	92.1	128,380	61,010	62,870	50,200	138,040	65,600	67,710	53,980	148,050	70,360	72,550	57,890	160,210	76,140	78,590	62,650	172,720	82,080	84,640	67,540	
13.5	33.55	87.3	152,510	74,200	74,690	61,060	163,980	79,780	84,430	65,650	175,870	85,570	86,180	70,410	190,320	92,600	93,360	76,200	205,180	99,830	100,540	82,150	
17.1	40.98	80.1	186,280	93,990	91,230	77,340	200,290	101,060	98,240	83,160	214,820	108,390	105,260	89,190	232,460	117,290	114,030	96,510	250,620	126,450	122,810	104,050	
168.3	2.1	8.61	164.1	39,120	7,840	640	6,450	42,060	8,430	640	6,940	45,110	9,040										

CSA Linepipe Performance Ratings

Metric Units

OD (mm)	Wall Thickness (mm)	Linear Mass (kg/m)	ID	Grade 359				Grade 386				Grade 414				Grade 448				Grade 483			
				Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)
15.1	75.96	188.9		345,230	43,300	46,010	35,630	371,190	46,550	49,550	38,310	398,120	49,930	52,920	41,090	430,810	54,030	56,420	44,460	464,470	58,250	59,840	47,930
15.9	79.67	187.3		362,090	45,590	48,260	37,520	389,320	49,020	51,970	40,340	417,560	52,580	55,680	43,260	451,860	56,890	60,330	46,820	487,160	61,340	64,970	50,470
18.3	90.61	182.5		411,820	52,470	54,890	43,180	442,800	56,420	59,110	46,430	474,920	60,510	63,330	49,790	513,920	65,480	68,610	53,880	554,070	70,600	73,890	58,090
19.1	94.19	180.9		428,110	54,770	57,060	45,070	460,310	58,890	61,450	48,460	493,700	63,160	65,840	51,970	534,250	68,350	71,320	56,240	575,990	73,680	76,810	60,630
20.6	100.83	177.9		458,270	59,070	61,080	48,610	492,740	63,510	65,780	52,260	528,480	68,120	70,480	56,050	571,880	73,710	76,350	60,650	616,560	79,470	82,220	65,390
22.2	107.78	174.7		489,890	63,660	65,290	52,380	526,730	68,440	70,320	56,320	564,940	73,410	75,340	60,410	611,330	79,440	81,620	65,370	659,100	85,640	87,890	70,470
23.0	111.22	173.1		505,480	65,950	67,370	54,270	543,490	70,910	72,550	58,350	582,920	76,050	77,740	62,580	630,790	82,300	84,210	67,720	680,070	88,730	90,690	73,010
25.4	121.32	168.3		551,390	72,830	73,490	59,930	592,860	78,310	79,140	64,440	635,870	83,990	84,800	69,110	688,090	90,890	91,860	74,790	741,840	97,990	98,930	80,630
273.1	4.0	26.54	265.1	120,630	9,200	1,050	7,570	129,710	9,890	1,050	8,140	139,120	10,610	1,050	8,730	150,540	11,480	1,050	9,450	162,300	12,380	1,050	10,190
	4.8	31.76	263.5	144,330	11,040	1,820	9,090	155,190	11,870	1,820	9,770	166,440	12,730	1,820	10,480	180,110	13,780	1,820	11,340	194,180	14,860	1,820	12,220
	5.2	34.35	262.7	156,130	11,960	2,320	9,840	167,870	12,860	2,320	10,580	180,040	13,790	2,320	11,350	194,830	14,930	2,320	12,280	210,050	16,090	2,320	13,240
	5.6	36.94	261.9	167,880	12,880	2,910	10,600	180,510	13,850	2,910	11,400	193,600	14,860	2,910	12,220	209,500	16,080	2,910	13,230	225,870	17,330	2,910	14,260
	6.4	42.09	260.3	191,290	14,720	4,370	12,110	205,680	15,830	4,370	13,030	220,600	16,980	4,370	13,970	238,720	18,370	4,370	15,120	257,370	19,810	4,370	16,300
	7.1	46.57	258.9	211,660	16,330	6,000	13,440	227,580	17,560	6,000	14,450	244,090	18,840	6,000	15,500	264,130	20,380	6,000	16,770	284,770	21,970	6,000	18,080
	7.8	51.03	257.5	231,910	17,940	7,830	14,760	249,360	19,290	7,930	15,880	267,450	20,690	7,980	17,030	289,410	22,390	7,990	18,430	312,020	24,140	7,990	19,860
	8.7	56.72	255.7	257,800	20,010	10,190	16,470	277,190	21,520	10,460	17,710	297,290	23,080	10,690	18,990	321,710	24,980	10,910	20,550	346,840	26,930	11,070	22,160
	9.3	60.49	254.5	274,950	21,390	11,760	17,600	295,630	23,000	12,140	18,930	317,070	24,670	12,490	20,300	343,110	26,700	12,860	21,970	369,920	28,780	13,170	23,680
	11.1	71.71	250.9	325,930	25,530	16,920	21,010	350,440	27,460	17,380	22,590	375,860	29,450	17,890	24,230	406,730	31,870	18,720	26,220	438,500	34,350	19,480	28,270
	12.7	81.55	247.7	370,630	29,220	23,180	24,040	398,510	31,410	24,150	25,850	427,410	33,690	25,050	27,720	462,510	36,460	26,080	30,000	498,650	39,310	26,990	32,340
	14.3	91.26	244.5	414,760	32,900	29,440	27,070	445,950	35,370	30,920	29,100	478,300	37,940	32,340	31,220	517,580	41,050	34,010	33,780	558,020	44,260	35,580	36,420
	15.1	96.06	242.9	436,610	34,740	32,580	28,580	469,450	37,350	34,310	30,730	503,500	40,060	35,980	32,960	544,850	43,350	37,970	35,670	587,420	46,730	39,870	38,460
	15.9	100.84	241.3	458,320	36,580	35,710	30,100	492,790	39,330	37,700	32,360	528,530	42,180	39,620	34,710	571,940	45,640	41,940	37,560	616,620	49,210	44,160	40,490
	18.3	114.98	236.5	522,570	42,100	44,830	34,640	561,880	45,260	47,850	37,250	602,630	48,550	50,550	39,950	652,120	52,530	53,840	43,230	703,070	56,640	57,040	46,610
	20.6	128.26	231.9	582,940	47,390	50,010	38,990	626,780	50,950	53,850	41,930	672,250	54,650	57,700	44,970	727,460	59,140	62,510	48,660	784,290	63,760	67,320	52,460
	21.4	132.82	230.3	603,660	49,230	51,790	40,510	649,060	52,930	55,770	43,560	696,140	56,770	59,750	46,710	753,320	61,430	64,730	50,550	812,170	66,230	69,710	54,500
	22.2	137.35	228.7	624,240	51,070	53,550	42,020	671,190	54,910	57,670	45,180	719,870	58,890	61,790	48,460	778,990	63,730	66,940	52,440	839,850	68,710	72,090	56,540
	23.8	146.30	225.5	664,960	54,750	57,040	45,050	714,970	58,870	61,430	48,440	766,830	63,140	65,820	51,950	829,810	68,320	71,300	56,220	894,640	73,660	76,790	60,610
	25.4	155.14	222.3	705,110	58,430	60,490	48,080	758,140	62,830	65,140	51,700	813,130	67,380	69,790	55,450	879,910	72,920	75,610	60,000	948,660	78,610	81,430	64,690
	28.6	172.43	215.9	783,690	65,790	67,230	54,140	842,630	70,740	72,400	58,210	903,750	75,870	77,570	62,430	977,970	82,100	84,040	67,560	1,054,370	88,520	90,500	72,840
	31.8	189.21	209.5	859,970	73,150	73,770	60,200	924,640	78,660	79,450	64,720	991,720	84,360	85,120	69,420	1,073,160	91,290	92,220	75,120	1,157,000	98,420	99,310	80,990
323.9	4.4	34.66	315.1	157,550	8,530	830	7,020	169,400	9,180	830	7,550	181,690	9,840	830	8,100	196,610	10,650	830	8,760	211,970	11,480	830	9,450
	4.8	37.77	314.3	171,660	9,310	1,090	7,660	184,570	10,010	1,090	8,240	197,960	10,740	1,090	8,830	214,210	11,620	1,090	9,560	230,950	12,530	1,090	10,310
	5.2	40.86	313.5	185,730	10,090	1,380	8,300	199,700	10,840	1,380	8,920	214,180	11,630	1,380	9,570	231,770	12,590	1,380	10,360	249,880	13,570	1,380	11,170
	5.6	43.95	312.7	199,770	10,860	1,730	8,940	214,790	11,680	1,730	9,610	230,370	12,530	1,730	10,310	249,290	13,550	1,730	11,150	268,770	14,610	1,730	12,030
	6.4	50.11	311.1	227,730	12,410	2,600	10,210	244,860	13,350	2,600	10,980	262,620	14,320	2,600	11,780	284,190	15,490	2,600	12,750	306,390	16,700	2,600	13,740
	7.1	55.46	309.7	252,080	13,770	3,560	11,330	271,040	14,810	3,560	12,180	290,700	15,880	3,560	13,070	314,570	17,190	3,560	14,140	339,150	18,530	3,560	15,250
	7.9	61.56	308.1	279,780	15,320	4,930	12,610	300,820	16,480	4,930	13,560	322,640	17,670	4,930	14,540	349,140	19,120	4,930	15,730	376,410	20,620	4,930	16,960
	8.4	65.35	307.1	297,010	16,290	5,950	13,410	319,350	17,520	5,950	14,420	342,520	18,790	5,950	15,460	370,650	20,330	5,950	16,730	399,600	21,920	5,950	18,040
	8.7	67.62	306.5	307,330	16,870	6,610	13,890	330,440	18,140	6,620	14,930	354,410	19,460	6,620	16,010	383,520	21,060	6,620	17,330	413,480	22,700	6,620	18,680
	9.5	73.65	304.9	334,740	18,430	8,380	15,160	359,910	19,810	8,520	16,300	386,020	21,250	8,610	17,490	417,720	22,990	8,670	18,920	450,360	24,790	8,670	20,400
	10.3	79.65	303.3	362,000	19,980	10,150	16,440	389,230	21,480	10,410	17,680	417,460	23,040	10,640	18,960	451,750	24,930	10,860	20,510	487,040	26,880	11,010	22,120
	11.1	85.61	301.7	389,120	21,530	11,920	17,720	418,390	23,150	12,310	19,050	448,740	24,830	12,660	20,430	485,590	26,870	13,050	22,110	523,530	28,970	13,380	23,840
	12.7	97.45	298.5	442,940	24,630	15,450	20,270	476,250	26,490	16,100	21,790	510,790	28,410	16,720	23,380	552,740	30,740	17,440	25,290	595,930	33,140	18,110	27,270
	14.3	109.17	295.3	496,170	27,740	20,660	22,820	533,490	29,820	21,430	24,540	572,190	31,990	22,130	26,320	619,180	34,610	22,890	28,480	667,550	37,320	23,540	30,710
	15.9	120.76	292.1	548,840	30,840	25,950	25,380	590,120	33,160	27,140	27,290	632,920	35,570	28,270	29,270	684,900	38,490	29,580	31,670	738,410	41,490	30,780	34,140
	17.5	132.22	288.9	600,930	33,94																		

CSA Linepipe Performance Ratings

Metric Units

OD (mm)	Wall Thickness (mm)	Linear Mass (kg/m)	ID	Grade 359				Grade 386				Grade 414				Grade 448				Grade 483			
				Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)
28.6	230.61	298.4		1,048,120	50,530	53,030	41,580	1,126,950	54,330	57,110	44,700	1,208,690	58,270	61,190	47,950	1,307,960	63,060	66,290	51,890	1,410,140	67,980	71,390	55,940
31.8	253.90	292.0		1,153,990	56,180	58,390	46,230	1,240,780	60,410	62,880	49,710	1,330,780	64,790	67,370	53,310	1,440,070	70,110	72,990	57,690	1,552,580	75,590	78,600	62,200
406.4	4.8	47.53	396.8	216,040	7,420	550	6,110	232,290	7,980	550	6,570	249,140	8,560	550	7,040	269,600	9,260	550	7,620	290,660	9,980	550	8,210
	5.2	51.44	396.0	233,810	8,040	700	6,610	251,390	8,640	700	7,110	269,630	9,270	700	7,630	291,770	10,030	700	8,250	314,570	10,820	700	8,900
	5.6	55.34	395.2	251,540	8,660	870	7,120	270,460	9,310	870	7,660	290,080	9,980	870	8,210	313,900	10,800	870	8,890	338,430	11,650	870	9,580
	6.4	63.12	393.6	286,900	9,890	1,310	8,140	308,480	10,640	1,310	8,750	330,860	11,410	1,310	9,390	358,030	12,350	1,310	10,160	386,000	13,310	1,310	10,950
	7.1	69.91	392.2	317,730	10,980	1,790	9,030	341,620	11,800	1,790	9,710	366,400	12,660	1,790	10,420	396,500	13,700	1,790	11,270	427,470	14,770	1,790	12,150
	7.9	77.63	390.6	352,820	12,210	2,470	10,050	379,350	13,130	2,470	10,800	406,870	14,080	2,470	11,590	440,290	15,240	2,470	12,540	474,680	16,430	2,470	13,520
	8.7	85.32	389.0	387,770	13,450	3,320	11,070	416,930	14,460	3,320	11,900	447,170	15,510	3,320	12,760	483,900	16,780	3,320	13,810	521,700	18,090	3,320	14,890
	9.5	92.97	387.4	422,570	14,690	4,340	12,080	454,350	15,790	4,340	12,990	487,310	16,940	4,340	13,940	527,330	18,330	4,340	15,080	568,530	19,760	4,340	16,260
	10.3	100.60	385.8	457,230	15,920	5,550	13,100	491,620	17,120	5,550	14,090	527,280	18,360	5,550	15,110	570,590	19,870	5,550	16,350	615,160	21,420	5,550	17,630
	11.1	108.20	384.2	491,750	17,160	6,940	14,120	528,790	18,450	6,970	15,180	567,020	19,790	6,970	16,280	613,660	21,410	6,970	17,620	661,610	23,090	6,970	19,000
	11.9	115.76	382.6	526,130	18,400	8,350	15,140	565,700	19,780	8,480	16,280	606,730	21,210	8,570	17,460	656,560	22,960	8,620	18,890	707,850	24,750	8,620	20,370
	12.7	123.29	381.0	560,360	19,630	9,750	16,160	602,500	21,110	9,990	17,370	646,210	22,640	10,190	18,630	699,280	24,500	10,370	20,160	753,910	26,410	10,490	21,740
	14.3	138.26	377.8	628,390	22,110	12,570	18,190	675,650	23,770	13,010	19,560	724,660	25,490	13,420	20,980	784,180	27,590	13,870	22,700	845,440	29,740	14,260	24,470
	15.9	153.10	374.6	695,850	24,580	15,390	20,230	748,180	26,430	16,030	21,750	802,460	28,350	16,650	23,320	868,360	30,670	17,370	25,240	936,200	33,070	18,030	27,210
	16.7	160.47	373.0	729,360	25,820	17,400	21,240	784,220	27,760	17,900	22,840	841,100	29,770	18,330	24,500	910,180	32,220	19,110	26,510	981,290	34,730	19,910	28,580
	17.5	167.82	371.4	762,730	27,050	19,500	22,260	820,100	29,090	20,170	23,940	879,590	31,200	20,770	25,670	951,820	33,760	21,420	27,780	1,026,180	36,400	21,940	29,950
	19.1	182.41	368.2	829,040	29,530	23,710	24,300	891,400	31,750	24,730	26,120	956,060	34,050	25,670	28,020	1,034,570	36,850	26,750	30,320	1,115,400	39,730	27,710	32,690
	20.6	195.97	365.2	890,690	31,850	27,660	26,200	957,680	34,240	28,990	28,170	1,027,150	36,720	30,260	30,220	1,111,500	39,740	31,740	32,700	1,198,340	42,840	33,120	35,260
	21.4	203.16	363.6	923,360	33,080	29,760	27,220	992,810	35,570	31,270	29,270	1,064,820	38,150	32,700	31,390	1,152,270	41,280	34,410	33,970	1,242,290	44,510	36,010	36,620
	22.2	210.31	362.0	955,890	34,320	31,860	28,240	1,027,780	36,900	33,540	30,360	1,102,330	39,580	35,150	32,570	1,192,860	42,830	37,070	35,240	1,286,060	46,170	38,890	37,990
	23.8	224.53	358.8	1,020,510	36,790	36,070	30,270	1,097,260	39,560	38,090	32,550	1,176,860	42,430	40,050	34,910	1,273,510	45,910	42,400	37,780	1,373,000	49,500	44,660	40,730
	25.4	238.63	355.6	1,084,560	39,270	40,280	32,310	1,166,130	42,220	42,640	34,740	1,250,720	45,280	44,940	37,260	1,353,440	49,000	47,730	40,320	1,459,180	52,830	50,440	43,470
	26.2	245.63	354.0	1,116,380	40,500	42,390	33,330	1,200,340	43,550	44,920	35,830	1,287,410	46,710	47,390	38,430	1,393,140	50,540	50,400	41,590	1,501,980	54,490	53,320	44,840
	27.0	252.59	352.4	1,148,040	41,740	44,470	34,350	1,234,390	44,880	47,190	36,930	1,323,930	48,130	49,840	39,610	1,432,650	52,090	53,060	42,860	1,544,580	56,160	56,210	46,210
	28.6	266.43	349.2	1,210,950	44,210	46,910	36,380	1,302,020	47,540	50,520	39,120	1,396,470	50,990	54,130	41,950	1,511,150	55,170	58,390	45,400	1,629,210	59,480	61,980	48,950
	30.2	280.15	346.0	1,273,280	46,690	49,330	38,420	1,369,040	50,200	53,120	41,310	1,468,350	53,840	56,910	44,300	1,588,930	58,260	61,660	47,940	1,713,070	62,810	66,400	51,680
	31.0	286.96	344.4	1,304,230	47,920	50,520	39,430	1,402,310	51,530	54,410	42,400	1,504,040	55,260	58,300	45,470	1,627,560	59,800	63,160	49,210	1,754,710	64,480	68,010	53,050
	31.8	293.73	342.8	1,335,030	49,160	51,720	40,450	1,435,440	52,860	55,700	43,490	1,539,560	56,690	59,670	46,650	1,666,000	61,350	64,650	50,480	1,796,160	66,140	69,620	54,420
457	4.8	53.52	447.4	243,260	6,600	380	5,430	261,550	7,090	380	5,840	280,530	7,610	380	6,260	303,570	8,230	380	6,780	327,280	8,880	380	7,310
	5.2	57.93	446.6	263,300	7,150	490	5,880	283,100	7,690	490	6,320	303,640	8,240	490	6,780	328,570	8,920	490	7,340	354,240	9,620	490	7,910
	5.6	62.33	445.8	283,300	7,700	610	6,330	304,610	8,280	610	6,810	326,700	8,880	610	7,310	353,530	9,610	610	7,910	381,150	10,360	610	8,520
	6.4	71.11	444.2	323,200	8,800	910	7,240	347,500	9,460	910	7,780	372,710	10,150	910	8,350	403,320	10,980	910	9,030	434,830	11,840	910	9,740
	7.1	78.77	442.8	357,990	9,760	1,250	8,030	384,910	10,490	1,250	8,640	412,840	11,260	1,250	9,260	446,740	12,180	1,250	10,020	481,640	13,130	1,250	10,810
	7.9	87.48	441.2	397,620	10,860	1,730	8,940	427,520	11,680	1,730	9,610	458,540	12,520	1,730	10,310	496,190	13,550	1,730	11,150	534,960	14,610	1,730	12,020
	8.7	96.17	439.6	437,100	11,960	2,320	9,840	469,980	12,860	2,320	10,580	504,070	13,790	2,320	11,350	545,470	14,930	2,320	12,280	588,080	16,090	2,320	13,240
	9.5	104.83	438.0	476,450	13,060	3,030	10,750	512,280	14,040	3,030	11,550	549,440	15,060	3,030	12,390	594,560	16,300	3,030	13,410	641,010	17,570	3,030	14,460
	10.3	113.45	436.4	515,640	14,160	3,880	11,650	554,420	15,220	3,880	12,530	594,640	16,330	3,880	13,440	643,480	17,670	3,880	14,540	693,750	19,050	3,880	15,680
	11.1	122.04	434.8	554,700	15,260	4,870	12,560	596,420	16,410	4,870	13,500	639,680	17,600	4,870	14,480	692,210	19,040	4,870	15,670	746,290	20,530	4,870	16,890
	11.9	130.61	433.2	593,610	16,360	6,030	13,460	638,250	17,590	6,030	14,470	684,550	18,870	6,030	15,520	740,770	20,410	6,030	16,800	798,650	22,010	6,030	18,110
	12.7	139.14	431.6	632,380	17,460	7,280	14,370	679,940	18,770	7,340	15,450	729,260	20,130	7,350	16,570	789,150	21,790	7,350	17,930	850,800	23,490	7,350	19,330
	14.3	156.10	428.4	709,480	19,660	9,780	16,180	762,840	21,140	10,020	17,390	818,180	22,670	10,220	18,650	885,370	24,530	10,410	20,190	954,540	26,450	10,520	21,760
	15.9	172.94	425.2	786,020	21,860	12,290	17,990	845,130	23,500	12,710	19,340	906,440	25,210	13,090	20,740	980,880	27,280	13,520	22,450	1,057,510	29,410	13,880	24,200
	17.5	189.65	422.0	861,970	24,060	14,800	19,800	926,800	25,870	15,400	21,280	994,030	27,740	15,970	22,830	1,075,670	30,020	16,630	24,700	1,159,700	32,370	17,230	26,630
	19.1	206.24	418.8	937,360	26,2																		

CSA Linepipe Performance Ratings

Metric Units

OD (mm)	Wall Thickness (mm)	Linear Mass (kg/m)	ID	Grade 359				Grade 386				Grade 414				Grade 448				Grade 483			
				Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)
31.8	373.40	444.4	1,697,120	39,330	40,390	32,360	1,824,760	42,290	42,760	34,790	1,957,130	45,350	45,060	37,320	2,117,860	49,080	47,870	40,380	2,283,320	52,910	50,580	43,540	
33.3	389.78	441.4	1,771,580	41,180	43,540	33,890	1,904,820	44,280	46,170	36,440	2,042,990	47,490	48,740	39,080	2,210,770	51,390	51,860	42,290	2,383,490	55,410	54,910	45,590	
34.9	407.13	438.2	1,850,440	43,160	45,880	35,520	1,989,610	46,410	49,410	38,190	2,133,930	49,770	52,650	40,960	2,309,180	53,860	56,130	44,320	2,489,590	58,070	59,520	47,780	
559	5.6	76.42	547.8	347,320	6,290	330	5,180	373,440	6,770	330	5,570	400,530	7,260	330	5,970	433,420	7,850	330	6,460	467,280	8,470	330	6,970
6.4	87.21	546.2	396,360	7,190	500	5,920	426,170	7,730	500	6,360	457,080	8,290	500	6,830	494,620	8,980	500	7,390	533,260	9,680	500	7,960	
7.1	96.62	544.8	439,150	7,980	680	6,570	472,180	8,580	680	7,060	506,430	9,200	680	7,570	548,020	9,960	680	8,190	590,840	10,740	680	8,830	
7.9	107.35	543.2	487,930	8,880	940	7,310	524,620	9,550	940	7,860	562,680	10,240	940	8,430	608,890	11,080	940	9,120	656,460	11,950	940	9,830	
8.7	118.05	541.6	536,560	9,780	1,260	8,050	576,910	10,510	1,260	8,650	618,760	11,280	1,260	9,280	669,570	12,200	1,260	10,040	721,890	13,160	1,260	10,820	
9.5	128.72	540.0	585,040	10,680	1,640	8,790	629,040	11,480	1,640	9,450	674,670	12,310	1,640	10,130	730,080	13,320	1,640	10,960	787,120	14,360	1,640	11,820	
10.3	139.36	538.4	633,390	11,580	2,100	9,530	681,020	12,450	2,100	10,240	730,420	13,350	2,100	10,980	790,410	14,450	2,100	11,890	852,160	15,570	2,100	12,820	
11.1	149.96	536.8	681,590	12,480	2,640	10,270	732,850	13,410	2,640	11,040	786,010	14,390	2,640	11,840	850,560	15,570	2,640	12,810	917,010	16,780	2,640	13,810	
11.9	160.54	535.2	729,640	13,370	3,260	11,010	784,520	14,380	3,260	11,830	841,430	15,420	3,260	12,690	910,530	16,690	3,260	13,730	981,660	17,990	3,260	14,810	
12.7	171.08	533.6	777,560	14,270	3,970	11,740	836,040	15,350	3,970	12,630	896,680	16,460	3,970	13,540	970,320	17,810	3,970	14,660	1,046,130	19,200	3,970	15,800	
14.3	192.07	530.4	872,950	16,070	5,710	13,220	938,610	17,280	5,710	14,220	1,006,690	18,530	5,710	15,250	1,089,370	20,060	5,710	16,500	1,174,470	21,620	5,710	17,790	
15.9	212.93	527.2	967,770	17,870	7,750	14,700	1,040,560	19,210	7,840	15,810	1,116,040	20,610	7,890	16,960	1,207,690	22,300	7,890	18,350	1,302,050	24,040	7,890	19,780	
17.5	233.67	524.0	1,062,020	19,670	9,790	16,180	1,141,890	21,150	10,030	17,400	1,224,730	22,680	10,230	18,660	1,325,310	24,540	10,420	20,200	1,428,850	26,460	10,540	21,770	
19.1	254.28	520.8	1,155,700	21,470	11,840	17,660	1,242,610	23,080	12,230	18,990	1,332,750	24,750	12,580	20,370	1,442,210	26,790	12,960	22,040	1,554,880	28,880	13,280	23,760	
20.6	273.48	517.8	1,242,990	23,150	13,760	19,050	1,336,480	24,890	14,290	20,480	1,433,420	26,700	14,780	21,970	1,551,150	28,890	15,350	23,770	1,672,330	31,150	15,850	25,630	
22.2	293.85	514.6	1,335,560	24,950	15,920	20,530	1,436,000	26,830	16,490	22,070	1,540,170	28,770	17,130	23,680	1,666,660	31,140	17,890	25,620	1,796,860	33,570	18,590	27,620	
23.8	314.09	511.4	1,427,540	26,750	18,980	22,010	1,534,910	28,760	19,610	23,670	1,646,250	30,850	20,170	25,380	1,781,450	33,380	20,760	27,470	1,920,620	35,990	21,330	29,610	
25.4	334.20	508.2	1,518,960	28,550	22,040	23,490	1,633,200	30,690	22,920	25,260	1,751,670	32,920	23,730	27,090	1,895,530	35,620	24,630	29,310	2,043,610	38,410	25,430	31,600	
27.0	354.19	505.0	1,609,800	30,340	25,100	24,970	1,730,870	32,630	26,230	26,850	1,856,430	34,990	27,290	28,790	2,008,890	37,870	28,510	31,160	2,165,830	40,830	29,620	33,590	
28.6	374.05	501.8	1,700,070	32,140	28,160	26,450	1,827,930	34,560	29,540	28,440	1,960,520	37,070	30,850	30,500	2,121,530	40,110	32,380	33,010	2,287,280	43,250	33,820	35,580	
30.2	393.78	498.6	1,789,760	33,940	31,220	27,930	1,924,370	36,490	32,850	30,030	2,063,960	39,140	34,410	32,210	2,233,460	42,360	36,260	34,850	2,407,950	45,660	38,010	37,580	
31.8	413.39	495.4	1,878,880	35,740	34,280	29,410	2,020,190	38,430	36,160	31,620	2,166,730	41,210	37,960	33,910	2,344,680	44,600	40,130	36,700	2,527,850	48,080	42,210	39,570	
33.3	431.66	492.4	1,961,910	37,430	37,150	30,800	2,109,460	40,240	39,260	33,110	2,262,480	43,160	41,300	35,510	2,448,290	46,700	43,770	38,430	2,639,560	50,350	46,140	41,430	
34.9	451.02	489.2	2,049,920	39,220	40,210	32,280	2,204,090	42,170	42,560	34,700	2,363,970	45,230	44,860	37,220	2,558,110	48,950	47,640	40,280	2,757,970	52,770	50,340	43,420	
36.5	470.26	486.0	2,137,350	41,020	43,270	33,750	2,298,100	44,110	45,870	36,290	2,464,800	47,310	48,420	38,930	2,667,220	51,190	51,520	42,120	2,875,600	55,190	54,530	45,410	
38.1	489.37	482.8	2,224,210	42,820	45,540	35,230	2,391,490	46,040	49,040	37,880	2,564,970	49,380	51,980	40,630	2,775,620	53,440	55,390	43,970	2,992,460	57,610	58,730	47,400	
610	5.6	83.46	598.8	379,320	5,770	260	4,750	407,850	6,200	260	5,100	437,440	6,650	260	5,470	473,360	7,200	260	5,920	510,340	7,760	260	6,390
6.4	95.26	597.2	432,940	6,590	380	5,420	465,500	7,090	380	5,830	499,270	7,600	380	6,250	540,270	8,230	380	6,770	582,480	8,870	380	7,300	
7.1	105.55	595.8	479,730	7,310	520	6,020	515,810	7,860	520	6,470	553,230	8,430	520	6,940	598,670	9,130	520	7,510	645,440	9,840	520	8,100	
7.9	117.29	594.2	533,080	8,140	720	6,700	573,170	8,750	720	7,200	614,750	9,380	720	7,720	665,240	10,150	720	8,350	717,210	10,950	720	9,010	
8.7	128.99	592.6	586,280	8,960	970	7,370	630,380	9,630	970	7,930	676,100	10,330	970	8,500	731,630	11,180	970	9,200	788,790	12,060	970	9,920	
9.5	140.67	591.0	639,340	9,780	1,260	8,050	687,430	10,520	1,260	8,660	737,290	11,280	1,260	9,280	797,840	12,210	1,260	10,050	860,170	13,160	1,260	10,830	
10.3	152.31	589.4	692,260	10,610	1,610	8,730	744,320	11,410	1,610	9,390	798,310	12,230	1,610	10,070	863,880	13,240	1,610	10,890	931,370	14,270	1,610	11,740	
11.1	163.92	587.8	745,030	11,430	2,020	9,410	801,060	12,290	2,020	10,110	859,170	13,180	2,020	10,850	929,730	14,270	2,020	11,740	1,002,370	15,380	2,020	12,660	
11.9	175.50	586.2	797,660	12,260	2,500	10,080	857,650	13,180	2,500	10,840	919,860	14,130	2,500	11,630	995,410	15,290	2,500	12,590	1,073,170	16,490	2,500	13,570	
12.7	187.05	584.6	850,140	13,080	3,050	10,760	914,080	14,060	3,050	11,570	980,390	15,080	3,050	12,410	1,060,910	16,320	3,050	13,430	1,143,790	17,600	3,050	14,480	
14.3	210.05	581.4	954,690	14,730	4,370	12,120	1,026,490	15,840	4,370	13,030	1,100,950	16,980	4,370	13,980	1,191,360	18,380	4,370	15,120	1,284,440	19,810	4,370	16,300	
15.9	232.93	578.2	1,058,650	16,380	6,040	13,470	1,138,270	17,610	6,040	14,490	1,220,840	18,880	6,040	15,540	1,321,100	20,440	6,040	16,820	1,424,320	22,030	6,040	18,130	
17.5	255.67	575.0	1,162,050	18,020	7,920	14,830	1,249,440	19,380	8,030	15,950	1,340,070	20,780	8,090	17,100	1,450,130	22,490	8,100	18,510	1,563,420	24,250	8,100	19,950	
19.1	278.30	571.8	1,264,860	19,670	9,800	16,190	1,359,990	21,150	10,040	17,400	1,458,650	22,690	10,240	18,670	1,578,440	24,550	10,430	20,200	1,701,750	26,470	10,540	21,780	
20.6	299.39	568.8	1,360,740	21,220	11,560	17,460	1,463,080	22,810	11,930	18,770	1,569,210	24,470	12,260	20,130	1,698,080	26,480	12,610	21,790	1,830,740	28,540	12,900	23,490	
22.2	321.77	565.6	1,462,440	22,860	13,440	18,810	1,572,430	24,580	13,940	20,230	1,686,500	26,370	14,410	21,700	1,825,000	28,530	14,940	23,480	1,967,580	30,760	15,410	25,310	
23.8	344.02	562.4	1,563,580	24,510	15,310	20,170	1,681,170	26,360	15,950	21,690	1,803,120	28,270	16,560	23,260	1,951,210	30,590	17,270	25,170	2,103,640	32,980	17,920		

CSA Linepipe Performance Ratings

Metric Units

OD (mm)	Wall Thickness (mm)	Linear Mass (kg/m)	ID	Grade 359				Grade 386				Grade 414				Grade 448				Grade 483			
				Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)	Pipe Yield Strength (daN)	Internal Yield Pressure (kPa)	Collapse Pressure (kPa)	MAOP (kPa)
914	5.6	125.44	902.8	570,110	3,850	80	3,170	612,990	4,140	80	3,410	657,460	4,440	80	3,650	711,450	4,800	80	3,950	767,030	5,180	80	4,260
	6.4	143.23	901.2	650,990	4,400	110	3,620	699,950	4,730	110	3,890	750,720	5,070	110	4,170	812,370	5,490	110	4,520	875,840	5,920	110	4,870
	7.1	158.77	899.8	721,630	4,880	150	4,020	775,900	5,250	150	4,320	832,190	5,630	150	4,630	900,530	6,090	150	5,010	970,880	6,570	150	5,400
	7.9	176.51	898.2	802,230	5,430	210	4,470	862,570	5,840	210	4,800	925,140	6,260	210	5,150	1,001,110	6,780	210	5,580	1,079,330	7,310	210	6,010
	8.7	194.21	896.6	882,690	5,980	280	4,920	949,080	6,430	280	5,290	1,017,920	6,900	280	5,670	1,101,520	7,460	280	6,140	1,187,580	8,050	280	6,620
	9.5	211.88	895.0	963,010	6,530	370	5,370	1,035,430	7,020	370	5,780	1,110,540	7,530	370	6,200	1,201,750	8,150	370	6,710	1,295,630	8,790	370	7,230
	10.3	229.52	893.4	1,043,180	7,080	470	5,830	1,121,630	7,610	470	6,260	1,203,000	8,160	470	6,720	1,301,790	8,840	470	7,270	1,403,500	9,530	470	7,840
	11.1	247.13	891.8	1,123,210	7,630	590	6,280	1,207,680	8,200	590	6,750	1,295,280	8,800	590	7,240	1,401,660	9,520	590	7,830	1,511,170	10,270	590	8,450
	11.9	264.70	890.2	1,203,090	8,180	730	6,730	1,293,570	8,790	730	7,240	1,387,410	9,430	730	7,760	1,501,350	10,210	730	8,400	1,618,640	11,000	730	9,060
	12.7	282.25	888.6	1,282,830	8,730	890	7,180	1,379,310	9,390	890	7,720	1,479,370	10,070	890	8,280	1,600,860	10,890	890	8,960	1,725,930	11,740	890	9,660
	14.3	317.24	885.4	1,441,880	9,830	1,280	8,090	1,550,330	10,570	1,280	8,700	1,662,790	11,340	1,280	9,330	1,799,340	12,270	1,280	10,090	1,939,920	13,220	1,280	10,880
	15.9	352.11	882.2	1,600,360	10,930	1,770	8,990	1,720,720	11,750	1,770	9,670	1,845,540	12,600	1,770	10,370	1,997,110	13,640	1,770	11,220	2,153,130	14,700	1,770	12,100
	17.5	386.85	879.0	1,758,270	12,030	2,360	9,900	1,890,510	12,930	2,360	10,640	2,027,640	13,870	2,360	11,410	2,194,160	15,010	2,360	12,350	2,365,580	16,180	2,360	13,320
	19.1	421.47	875.8	1,915,600	13,130	3,080	10,800	2,059,670	14,120	3,080	11,620	2,209,080	15,140	3,080	12,460	2,390,500	16,380	3,080	13,480	2,577,250	17,660	3,080	14,530
	20.6	453.81	872.8	2,062,580	14,160	3,880	11,650	2,217,700	15,220	3,880	12,530	2,378,570	16,330	3,880	13,440	2,573,910	17,670	3,880	14,540	2,775,000	19,050	3,880	15,680
	22.2	488.18	869.6	2,218,800	15,260	4,870	12,560	2,385,670	16,410	4,870	13,500	2,558,720	17,600	4,870	14,480	2,768,860	19,040	4,870	15,670	2,985,180	20,530	4,870	16,890
	23.8	522.43	866.4	2,374,440	16,360	6,030	13,460	2,553,020	17,590	6,030	14,470	2,738,210	18,870	6,030	15,520	2,963,090	20,410	6,030	16,800	3,194,580	22,010	6,030	18,110
	25.4	556.54	863.2	2,529,510	17,460	7,280	14,370	2,719,750	18,770	7,340	15,450	2,917,040	20,130	7,350	16,570	3,156,610	21,790	7,350	17,930	3,403,220	23,490	7,350	19,330
	27.0	590.54	860.0	2,684,010	18,560	8,530	15,270	2,885,870	19,950	8,680	16,420	3,095,210	21,400	8,790	17,610	3,349,410	23,160	8,850	19,060	3,611,080	24,970	8,860	20,550
28.6	624.40	856.8	2,837,930	19,660	9,780	16,180	3,051,370	21,140	10,020	17,390	3,272,710	22,670	10,220	18,650	3,541,490	24,530	10,410	20,190	3,818,170	26,450	10,520	21,760	
30.2	658.14	853.6	2,991,280	20,760	11,040	17,080	3,216,260	22,320	11,370	18,370	3,449,560	23,940	11,660	19,700	3,732,860	25,900	11,960	21,320	4,024,490	27,930	12,200	22,980	
31.8	691.76	850.4	3,144,060	21,860	12,290	17,990	3,380,520	23,500	12,710	19,340	3,625,740	25,210	13,090	20,740	3,923,510	27,280	13,520	22,450	4,230,030	29,410	13,880	24,200	
38.1	822.88	837.8	3,740,040	26,190	18,030	21,550	4,021,320	28,160	18,580	23,170	4,313,030	30,200	19,060	24,850	4,667,240	32,680	19,640	26,890	5,031,860	35,230	20,480	28,990	
1219	6.4	191.36	1,206.2	869,750	3,300	50	2,710	935,160	3,550	50	2,920	1,003,000	3,800	50	3,130	1,085,370	4,120	50	3,390	1,170,160	4,440	50	3,650
	7.1	212.17	1,204.8	964,320	3,660	60	3,010	1,036,850	3,930	60	3,240	1,112,060	4,220	60	3,470	1,203,390	4,570	60	3,760	1,297,400	4,920	60	4,050
	7.9	235.92	1,203.2	1,072,270	4,070	90	3,350	1,152,910	4,380	90	3,600	1,236,540	4,700	90	3,860	1,338,100	5,080	90	4,180	1,442,640	5,480	90	4,510
	8.7	259.64	1,201.6	1,180,070	4,480	120	3,690	1,268,830	4,820	120	3,970	1,360,860	5,170	120	4,250	1,472,630	5,600	120	4,600	1,587,680	6,030	120	4,960
	9.5	283.33	1,200.0	1,287,730	4,900	160	4,030	1,384,580	5,260	160	4,330	1,485,020	5,650	160	4,650	1,606,980	6,110	160	5,030	1,732,520	6,590	160	5,420
	10.3	306.98	1,198.4	1,395,250	5,310	200	4,370	1,500,190	5,710	200	4,700	1,609,010	6,120	200	5,040	1,741,150	6,620	200	5,450	1,877,180	7,140	200	5,880
	11.1	330.61	1,196.8	1,502,630	5,720	250	4,710	1,615,640	6,150	250	5,060	1,732,830	6,600	250	5,430	1,885,140	7,140	250	5,870	2,021,640	7,700	250	6,330
	11.9	354.20	1,195.2	1,609,860	6,130	310	5,050	1,730,930	6,590	310	5,430	1,856,490	7,070	310	5,820	2,008,960	7,650	310	6,300	2,165,910	8,250	310	6,790
	12.7	377.76	1,193.6	1,716,940	6,550	370	5,390	1,846,070	7,040	370	5,790	1,979,980	7,550	370	6,210	2,142,590	8,170	370	6,720	2,309,980	8,810	370	7,250
	14.3	424.79	1,190.4	1,930,690	7,370	540	6,060	2,075,890	7,920	540	6,520	2,226,470	8,500	540	6,990	2,409,320	9,200	540	7,570	2,597,550	9,920	540	8,160
	15.9	471.69	1,187.2	2,143,860	8,190	740	6,740	2,305,090	8,810	740	7,250	2,472,300	9,450	740	7,780	2,675,340	10,230	740	8,410	2,884,350	11,030	740	9,070
	17.5	518.47	1,184.0	2,356,450	9,020	990	7,420	2,533,680	9,700	990	7,980	2,717,470	10,400	990	8,560	2,940,640	11,260	990	9,260	3,170,380	12,130	990	9,980
	19.1	565.12	1,180.8	2,568,470	9,840	1,290	8,100	2,761,650	10,580	1,290	8,710	2,961,970	11,350	1,290	9,340	3,205,230	12,280	1,290	10,110	3,455,630	13,240	1,290	10,900
	20.6	608.74	1,177.8	2,766,720	10,620	1,620	8,740	2,974,810	11,420	1,620	9,390	3,190,590	12,240	1,620	10,070	3,452,620	13,250	1,620	10,900	3,722,360	14,280	1,620	11,750
	22.2	655.14	1,174.6	2,977,630	11,440	2,030	9,410	3,201,580	12,300	2,030	10,120	3,433,820	13,190	2,030	10,860	3,715,820	14,280	2,030	11,750	4,006,120	15,390	2,030	12,670
	23.8	701.42	1,171.4	3,187,970	12,270	2,510	10,090	3,427,730	13,190	2,510	10,850	3,676,380	14,150	2,510	11,640	3,978,300	15,310	2,510	12,600	4,289,110	16,500	2,510	13,580
	25.4	747.57	1,168.2	3,397,730	13,090	3,050	10,770	3,653,270	14,080	3,050	11,580	3,918,280	15,100	3,050	12,420	4,240,070	16,340	3,050	13,440	4,571,320	17,610	3,050	14,490
	27.0	793.60	1,165.0	3,606,920	13,920	3,680	11,450	3,878,190	14,960	3,680	12,310	4,159,510	16,050	3,680	13,200	4,501,120	17,370	3,680	14,290	4,852,770	18,720	3,680	15,410
	28.6	839.50	1,161.8	3,815,540	14,740	4,380	12,130	4,102,500	15,850	4,380	13,040	4,400,090	17,000	4,380	13,990	4,761,450	18,390	4,380	15,140	5,133,440	19,830	4,380	16,320
30.2	885.27	1,158.6	4,023,580	15,560	5,180	12,810	4,326,190	16,740	5,180	13,770	4,640,000</												