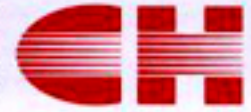




## Tubular Products Specification

A = Arc Welding  
 H = High frequency Welding  
 S = Seamless  
 B = Butt Welding

Specification	Title	Manufacturing Method			
		A	H	S	B
API 5L	Line pipe	0	0	0	0
ASTM A53	Welded and Seamless Steel Pipe		0	0	0
A106	Seamless Carbon Steel Pipe for high-Temperature Service			0	
A134	Electric-Fusion (Arc)-Welded Steel Plate Pipe	0			
A135	Electric-Resistance-Welded Steel Pipe		0		
A139	Electric-Fusion (Arc)-Welded Steel Pipe	0			
A333	Seamless and Welded Steel Pipe for Low-Temperature Service		0	0	
A334	Seamless and Welded Carbon and Alloy-Steel Tubes for low-Temperature Service		0	0	
A335	Seamless-Ferritic Alloy Steel Pipe for High-Temperature Service			0	
A671	Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperature	0			
A672	Electric-Fusion-Welded Steel Pipe for High Pressure Service at Moderate Temperature	0			
BS 1387	Steel Tubes and Tubulars Suitable for Screwing to BS21 Pipe Thread		0		0
3601	Steel Pipes and Tubes for Pressure Purpose Carbon Steel; Ordinary Duties	0	0	0	0
3602	Steel Pipes and Tubes for Pressure Purpose Carbon Steel High Duties	0	0	0	
3603	Steel Pipes and Tubes for Pressure Purpose Carbon and Alloy Steel: Low Temperature Duties		0	0	
3604	Steel Pipes and tubes for Pressure Purpose Low and Medium-alloy Steel	0	0	0	
DIN 2440	Steel Tubes Medium weight Type Suitable for Screwing		0		0
1626	Welded Circular Unalloyed Steel tubes Subject to special requirement	0	0	0	
1628	High performance Welded Circular Unalloyed Steel Tube	0	0		
1629	Seamless Circular Unalloyed Steel Tubes Subject to special requirement			0	
17172	Steel Pipes for Pipe lines for the Transport of Combustible Fluids and Gases Technical Conditions of Delivery	0	0	0	
JIS G3452	Carbon Steel Pipes for Ordinary Piping		0		0
G3454	Carbon Steel Pipes for Pressure Service		0	0	
G3455	Carbon Steel Pipes for High Pressure Service			0	
G3456	Carbon Steel Pipes for High Temperature Service		0	0	
G3457	Electric-Arc-Welded Carbon Steel Pipe	0			
G3458	Alloy Steel Pipes			0	
G3460	Steel Pipes for low Temperature service		0	0	
CSA Z245.1	General Requirements for Plain-End Welded and Seamless Steel Line Pipe	0	0	0	
AWWA C200	Steel Water Pipe 6 Inches and Larger	0	0	0	
Gost 10704	Electric-Welded Steel Tubes	0	0		
8731	Seamless Hot-Rolled steel Tubes. Technical Requirement			0	
8732	Seamless Hot-Rolled steel Tubes. Range			0	
ISO 3183-1	Petroleum and natural gas industries-steel pipe for pipelines-Technical delivery condition Part1: Pipe of requirement class A	0	0	0	0
3183-2	Petroleum and natural gas industries-steel pipe for pipelines-Technical delivery condition Part2: Pipe of requirement class B	0	0	0	
3183-3	Petroleum and natural gas industries-steel pipe for pipelines-Technical delivery condition Part3: Pipe of requirement class C	0	0	0	
DNV OS-F101	Submarine Pipeline Systems	0	0	0	



## Chemical and Physical Requirements

API (American Petroleum Institute)

Specification	Grade	PSL (Product Specification Level)	Process of manufacture S : Seamless W : Weld	Chemical requirements %						Tensile Requirements				
				C'	Mn'	P	S	Ti	Other	Yield Strength, min	Tensile Strength, min	Elongation, % min.		
				Max.	Max.	Max.	Max.	Max.	Max.	psi	MPa	psi	MPa	GL=2in. (50.8mm)
A25	Class I Class II	PSL 1	S, W	0.21	0.6	0.030	0.030	-	-	25,000	172	45,000	310	U.S. Customary Unit Equation e = 625,000 $\frac{A^{0.2}}{U^{0.5}}$ SI Unit Equation e = 1,944 $\frac{A^{0.2}}{U^{0.5}}$ e = minimum elongation in 2in. (50.8mm) in per cent rounded to nearest per cent A = cross sectional area of the tensile test specimen (in. <sup>2</sup> ) (mm <sup>2</sup> ) U = specified tensile strength (psi) (MPa)
				0.045-0.080										
A		PSL 1	S, W	0.22	0.90	0.030	0.030	-	-	30,000	207	48,000	331	
				0.28		0.030	0.030			35,000	241	60,000	414	
				0.26	1.20	0.025	0.015	0.04	bcd	35,000-65,000	241-448	60,000-110,000	414-758	
				0.24		0.030	0.030			42,000	290	60,000	414	
B		PSL 1	S	0.28	1.30	0.030	0.030	0.04		42,000-72,000	290-496	60,000-110,000	414-758	
				0.26		0.025	0.015			46,000	317	63,000	434	
				0.24		0.030	0.030			46,000-76,000	317-524	63,000-110,000	434-758	
				0.22		0.025	0.015		cd	52,000	359	66,000	455	
X42		PSL 1	S	0.28	1.40	0.030	0.030	0.04		52,000-77,000	359-531	66,000-110,000	455-758	
				0.26		0.030	0.030			56,000	386	71,000	490	
				0.24		0.025	0.015			56,000-79,000	386-544	71,000-110,000	490-758	
				0.22		0.030	0.030			60,000	414	75,000	517	
X46		PSL 1	S	0.28	1.40	0.030	0.030	0.04		60,000-82,000	414-565	75,000-110,000	517-758	
				0.26		0.025	0.015			65,000	448	77,000	531	
				0.24		0.030	0.030			65,000-87,000	448-600	77,000-110,000	531-758	
				0.22		0.030	0.030			70,000	483	82,000	565	
X52		PSL 1	S	0.28	1.40	0.030	0.030	0.04		70,000-90,000	483-621	82,000-110,000	565-758	
				0.26		0.025	0.015			80,000-100,000	552-690	90,000-120,000	621-827	
				0.24		0.030	0.030							
				0.22		0.025	0.015							
X56		PSL 1	S	0.28	1.40	0.030	0.030	0.04						
				0.26		0.030	0.030							
				0.24		0.025	0.015							
				0.22		0.030	0.030							
X60		PSL 1	S'	0.28	1.40	0.030	0.030	0.04						
				0.26		0.025	0.015							
				0.24		0.030	0.030							
				0.22		0.025	0.015							
X65		PSL 1	S'	0.28	1.40	0.030	0.030	0.06						
				0.26		0.030	0.030							
				0.24		0.025	0.015							
				0.22		0.030	0.030							
X70		PSL 1	S'	0.28	1.40	0.030	0.030	0.06						
				0.26		0.025	0.015							
				0.24		0.030	0.030							
				0.22		0.025	0.015							
X80		PSL 2	W'	0.24	1.40	0.025	0.015	0.06						
				0.26		0.030	0.030							
				0.24		0.025	0.015							
				0.22		0.030	0.030							

Notes: a. For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.05% above the specified maximum manganese content is permissible up to a maximum of 1.50% for grades X42 through X52 and up to a maximum of 1.65% for grades higher than X52 but less than X70, and up to 2.00% for Grade X70 and higher.  
 b. The sum of Columbium (niobium) and vanadium contents shall not exceed 0.03%, except that, by agreement between the purchaser and manufacturer, an alternative maximum may be established.  
 c. Columbium (niobium), vanadium, titanium, or combinations thereof may be used at the discretion of the manufacturer.  
 d. The sum of the columbium (niobium), vanadium, and the titanium contents shall not exceed 0.15%.  
 e. The sum of Columbium (niobium) and vanadium contents shall not exceed 0.05%, except that, by agreement between the purchaser and manufacturer, an alternative maximum may be established.  
 f. Other chemical compositions may be furnished by agreement between purchaser and manufacturer, providing that limits of Footnotes d. and the tabular limits for phosphorus and sulfur are met.



## Dimensional Tolerances

Item		API 5L (2004)	ISO 3183-3 (1999)	DNV OS-F101 (2000)
Outside Diameter	Pipe Body	OD <math>\leq 2^{1/2}</math> in. (60.3mm)	$\pm 0.016$ in. (+0.41mm) - 0.031 in. (-0.8mm)	$\pm 0.5$ mm or $\pm 0.75\%$ D but max. $\pm 3$ mm
	Welded Pipe	$\geq 2^{1/2}$ in. (60.3mm) and $\leq 20$ in. (508.0mm) $\geq 20$ in. (508.0mm) and $\leq 36$ in. (914.0mm) $> 36$ in. (914.0mm)	$\pm 0.75\%$ $\pm 0.75\%$ , -0.25% 1/4 in. (+6.4mm), -1/8 in. (-3.2mm)	$\pm 0.5\%$ D but max. $\pm 4$ mm by agreement
Pipe Body	Pipe Body	OD <math>\leq 2^{1/2}</math> in. (60.3mm)	$\pm 0.016$ in. (+0.41mm) - 0.031 in. (-0.8mm)	$\pm 0.5$ mm or $\pm 0.75\%$ D
	Seamless Pipe	$\geq 2^{1/2}$ in. (60.3mm) and $\leq 20$ in. (508.0mm) $\geq 20$ in. (508.0mm)	$\pm 0.75\%$ $\pm 1.00\%$	$\pm 1\%$ D by agreement
Pipe Ends (a)	OD $\leq 20$ in. (with diame tape)	OD $\leq 10^{3/4}$ in. (273.1mm) $> 10^{3/4}$ in. (273.1mm) and $\leq 20$ in. (508.0mm) $> 20$ in. (508.0mm) and $\leq 42$ in. (1067.0mm) $> 42$ in. (1067mm)	+1/16 in. (1.6mm), -1/8 in. (0.4mm) +3/32 in. (2.4mm), -1/32 in. (0.8mm) +3/32 in. (2.4mm), -1/32 in. (0.8mm) +3/32 in. (2.4mm), -1/32 in. (0.8mm)	$\pm 0.5$ mm or $\pm 0.5\%$ D but max. $\pm 1.6$ mm welded pipe $\pm 1.6$ mm; seamless pipe: $\pm 2.0$ mm by agreement
	Welded Pipe	OD $\leq 27^{1/2}$ in. (73.0mm) $> 27^{1/2}$ in. (73.0mm) and $\leq 20$ in. (508.0mm) $\geq 20$ in. (508.0mm)	Grade B or Lower Grade X42 or Higher +20.0%, 12.5% +15.0%, 12.5% +15.0%, 12.5% +15.0%, 12.5% +17.5%, 12.5% +19.5%, 8.0%	$\pm 0.5$ mm $\pm 0.75$ mm $\pm 1.00$ mm $\pm 1.50$ mm -1.00mm
Wall Thickness	Seamless Pipe	OD $\leq 27^{1/2}$ in. (73.0mm) $> 27^{1/2}$ in. (73.0mm) and $\leq 20$ in. (508.0mm) $\geq 20$ in. (508.0mm)	+20.0%, 12.5% +15.0%, 12.5% +15.0%, 12.5% +15.0%, 12.5% +15.0%, 12.5% +17.5%, 10.0%	$\pm 12.5\%$ $\pm 12.5\%$ 10% but max. $\pm 3$ mm
	Welded Pipe	Special plain-and pipe or A25 pipe Other pipes	+10.0%, -5.0% +10.0%, -3.5%	$\pm 10\%$ -3.5%
Weight	Carloads	Grade A25, 40,000lb (18144kg) or more Other than Grade A25, 40,000lb (18144kg) or more All grade, less than 40,000 (18145kg)	-2.5% -1.75% -3.5%	
	Single length	OD $\geq 4$ in (114.3mm)	max. 0.2% of the length	$\pm 0.15\%$ L
Straightness	Diameter, Axis Tolerance	OD $\leq 20$ in. (508.0mm)	$\pm 1\%$	
	Max. Differential between Min. and Max. diameter (Applies only to pipe with D/TS $\geq 75$ )	$\geq 20$ in. (508.0mm) and $\leq 42$ in. (1067.0mm) $> 42$ in. (1067mm)	$\leq 0.500$ in. (12.7mm) $\leq 0.625$ in. (15.9mm)	Greatest difference in pipe diameter between pipe ends local out-of-roundness $\leq 0.55$ D but max. 2.5mm
Out of Roundness	pipe end;	pipe except the end;	1.5% (offshore pipeline: 1.0%) 2.0% (offshore pipeline: 1.5%)	pipe end; pipe body
	pipe except the end;	pipe except the end;	1.0% for D/T $\leq 75$ (offshore pipeline: 0.75%) 1.5% for D/T $> 75$ (offshore pipeline: by agreement)	D/TS $\geq 75$ mm pipe end; pipe body
Out of Roundness	pipe end;	pipe except the end;	1.5% but max. 15mm (offshore pipeline: 1% but max 5mm)	1.0% D but max. 7.5mm 1.5% D but max. 15.0mm
	pipe except the end;	pipe except the end;	2.0% for D/T $> 75$ (offshore pipeline: by agreement)	1.5% D but max. 7.5mm 2.0% D but max. 15.0mm
Pipe End Preparation	Bevel angle	$30^\circ$ , $+5^\circ$ - $0^\circ$	$30^\circ$ , $+5^\circ$ - $0^\circ$	
	Root face	1/16 in. (1.6mm), $\pm 1/32$ in. (0.8mm) max. 1/16 in. (1.6mm)	1/16 in. +0.8mm max. 1.6mm	1.6mm from true $90^\circ$
Length	Squareness			
			+100mm, -0mm	purchase order

Note (a) The average diameter (as measured with a diameter tape) of one end of pipe shall not differ by more than 3/32 in. (2.4mm) from that of the other end.







## API PIPES (Continued)

Size						Weight			Hydrostatic Test Pressure								
Outside Diameter			Wall Thickness			lb/ft	kg/m	kg/ft	API 5L				API 5LX				
Nominal Size	in	mm	Sch. No.	in	mm				A		B		X42	X46	X52	X56	
									Std.	Alt.	Std.	Alt.					
10	10 3/4	273.0	20	0.156	3.96	17.65	26.29	8.01	520	650	610	760	1040	1130	1280	1380	
				0.188	4.78	21.21	31.59	9.63	630	790	730	920	1250	1370	1550	1660	
				0.203	5.16	22.87	34.06	10.38	.....	.....	.....	.....	1350	1480	1670	1800	
				0.219	5.56	24.63	36.69	11.18	730	920	860	1070	1450	1590	1800	1940	
				0.250	6.35	28.04	41.77	12.73	840	1050	980	1220	1660	1820	2060	2210	
				0.279	7.09	31.20	46.47	14.16	930	1170	1090	1360	1850	2030	2290	2470	
				0.307	7.80	34.24	51.00	15.54	1030	1290	1200	1500	2040	2230	2520	2720	
				0.344	8.74	38.23	56.94	17.36	1150	1440	1340	1680	2280	2500	2830	3000	
				40(Std)	0.365	9.27	40.48	60.29	18.38	1220	1530	1430	1780	2420	2600	3000	3000
				60(XS)	0.438	11.13	48.24	71.85	21.90	1470	1830	1710	2140	2910	3000	3000	3000
				80	0.500	12.70	54.74	81.54	24.85	1670	2090	1950	2440	3000	3000	3000	3000
				100	0.562	14.27	61.15	91.08	27.76	1880	2350	2200	2740	3000	3000	3000	3000
				120	0.594	15.09	64.43	95.97	29.25	.....	.....	.....	.....	.....	.....	.....	.....
				140	0.625	15.88	67.58	100.66	30.68	2090	2620	2440	2800	3000	3000	3000	3000
	0.719	18.26	77.03	114.74	34.97	2410	2800	2800	2800	3000	3000	3000	3000				
	0.812	20.62	86.18	128.37	39.13	2720	2800	2800	2800	.....	.....	.....	.....				
	0.844	21.44	89.29	133.00	40.54	.....	.....	.....	.....	.....	.....	.....	.....				
	1.000	25.40	104.13	155.10	47.28	.....	.....	.....	.....	.....	.....	.....	.....				
12	12 3/4	323.8	20	0.172	4.37	23.11	34.42	10.49	490	610	570	710	960	1050	1190	1280	
				0.188	4.78	25.22	37.57	11.45	530	660	620	770	1050	1150	1300	1400	
				0.203	5.16	27.20	40.51	12.35	.....	.....	.....	.....	1140	1250	1410	1520	
				0.219	5.56	29.31	43.66	13.31	620	770	720	900	1230	1340	1520	1640	
				0.250	6.35	33.38	49.72	15.15	710	880	820	1030	1400	1530	1730	1870	
				0.281	7.14	37.42	55.74	16.99	790	990	930	1160	1570	1720	1950	2100	
				0.312	7.92	41.45	61.74	18.82	880	1100	1030	1280	1750	1910	2160	2330	
				30	0.330	8.38	43.77	65.20	19.87	930	1160	1090	1360	1850	2020	2290	2460
				(Std)	0.344	8.74	45.58	67.89	20.69	970	1210	1130	1420	1930	2110	2390	2570
				40	0.375	9.52	49.56	73.82	22.50	1060	1320	1240	1540	2100	2300	2600	2800
				(XS)	0.406	10.31	53.52	79.72	24.30	.....	.....	.....	.....	2270	2490	2810	3000
				60	0.438	11.13	57.59	85.78	26.15	1240	1550	1440	1800	2450	2690	3000	3000
				80	0.500	12.70	65.42	97.44	29.70	1410	1760	1650	2060	2800	3000	3000	3000
				100	0.562	14.27	73.15	108.96	33.21	1590	1980	1850	2310	3000	3000	3000	3000
120	0.625	15.88	80.93	120.55	36.74	1760	2210	2060	2570	3000	3000	3000	3000				
	0.688	17.48	88.63	132.01	40.24	1940	2430	2270	2800	3000	3000	3000	3000				
	0.750	19.05	96.12	143.17	43.64	2120	2650	2470	2800	3000	3000	3000	3000				
	0.812	20.62	103.53	154.21	47.00	2290	2800	2670	2800	3000	3000	3000	3000				
	0.844	21.44	107.32	159.85	48.72	.....	.....	.....	.....	.....	.....	.....	.....				
	0.875	22.22	110.97	165.29	50.38	2470	2800	2800	2800	3000	3000	3000	3000				
	1.000	25.40	125.49	186.92	56.97	.....	.....	.....	.....	.....	.....	.....	.....				
14	14	355.6	10	0.188	4.78	27.73	41.30	12.59	480	600	560	700	960	1050	1190	1280	
				0.203	5.16	29.91	44.55	13.58	520	650	610	760	.....	.....	.....	.....	
				0.210	5.33	30.93	46.07	14.04	.....	.....	.....	.....	1070	1170	1330	1430	
				0.219	5.56	32.23	48.01	14.63	.....	.....	.....	.....	1120	1220	1380	1490	
				0.250	6.35	36.71	54.68	16.67	640	800	750	940	1280	1400	1580	1700	
				0.281	7.14	41.17	61.32	18.69	720	900	840	1050	1430	1570	1770	1910	
				0.312	7.92	45.61	67.94	20.71	800	1000	940	1170	1590	1740	1970	2120	
				30(Std)	0.344	8.74	50.17	74.73	22.78	880	1110	1030	1290	1750	1920	2170	2340
				40	0.375	9.52	54.57	81.28	24.77	960	1210	1120	1410	1910	2090	2370	2550
				(XS)	0.406	10.31	58.94	87.79	26.76	.....	.....	.....	.....	2070	2270	2560	2760
				60	0.438	11.13	63.44	94.49	28.80	1130	1410	1310	1640	2230	2450	2770	2980
				80	0.469	11.91	67.78	100.96	30.77	.....	.....	.....	.....	2390	2620	2960	3000
				100	0.500	12.70	72.09	107.38	32.73	1290	1610	1500	1880	2550	2790	3000	3000
					0.562	14.27	80.66	120.14	36.62	1450	1810	1690	2110	2870	3000	3000	3000
	0.594	15.09	85.05	126.68	38.61	.....	.....	.....	.....	.....	.....	.....	.....				
	0.625	15.88	89.28	132.98	40.53	1610	2010	1880	2340	3000	3000	3000	3000				
	0.688	17.48	97.81	145.69	44.41	1770	2210	2060	2580	3000	3000	3000	3000				
	0.750	19.05	106.13	158.08	48.18	1930	2410	2250	2800	3000	3000	3000	3000				
	0.812	20.62	114.37	170.35	51.92	2090	2610	2440	2800	3000	3000	3000	3000				
	0.875	22.22	122.65	182.69	55.68	2250	2800	2620	2800	3000	3000	3000	3000				
	0.938	23.83	130.85	194.90	59.41	2410	2800	2800	2800	3000	3000	3000	3000				
	1.000	25.40	138.84	206.80	63.03	.....	.....	.....	.....	.....	.....	.....	.....				
16	16	406.4	10	0.188	4.78	31.75	47.29	14.40	420	530	490	620	840	920	1040	1120	
				0.203	5.16	34.25	51.02	15.54	460	570	530	670	910	990	1120	1210	
				0.219	5.56	36.91	54.98	16.74	490	620	570	720	980	1070	1210	1300	
				0.250	6.35	42.05	62.63	19.07	560	700	660	820	1120	1220	1380	1490	
				0.281	7.14	47.17	70.26	21.40	630	790	740	920	1250	1370	1550	1670	
				20	0.312	7.92	52.27	77.86	23.71	700	880	820	1020	1390	1520	1720	1860
				30(Std)	0.344	8.74	57.52	85.68	26.09	770	970	900	1130	1540	1680	1900	2050
					0.375	9.52	62.58	93.21	28.39	840	1050	980	1230	1670	1830	2070	2230
					0.406	10.31	67.62	100.72	30.67	.....	.....	.....	.....	1810	1980	2240	2420

# API PIPES



## API PIPES (Continued)

Size						Weight			Hydrostatic Test Pressure								
Outside Diameter			Wall Thickness			lb/ft	kg/m	kg/ft	API 5L				API 5LX				
Nominal Size	in	mm	Sch. No.	in	mm				A		B		X42	X46	X52	X56	
									Std.	Alt.	Std.	Alt.					
16	16	406.4	40(XS)	0.438	11.13	72.80	108.44	33.02	990	1230	1150	1440	1950	2140	2420	2610	
				0.469	11.91	77.79	115.87	35.29	.....	.....	.....	.....	2090	2290	2590	2790	
				0.500	12.70	82.77	123.29	37.54	1120	1410	1310	1640	2230	2440	2760	2980	
				0.562	14.27	92.66	138.02	42.03	1260	1580	1480	1840	2510	2750	3000	3000	
				0.625	15.88	102.63	152.87	46.55	1410	1760	1540	2050	2790	3000	3000	3000	
				0.656	16.66	107.50	160.12	48.80	.....	.....	.....	.....	.....	.....	.....	.....	
			60	0.688	17.48	112.51	167.58	51.03	1550	1940	1810	2260	3000	3000	3000	3000	
				0.750	19.05	122.15	181.94	55.41	1690	2110	1970	2460	3000	3000	3000	3000	
				0.812	20.62	131.71	196.18	59.74	1830	2280	2130	2660	3000	3000	3000	3000	
				0.844	21.44	136.61	203.48	62.02	.....	.....	.....	.....	.....	.....	.....	.....	
				0.875	22.22	141.34	210.53	64.11	1970	2460	2300	2800	3000	3000	3000	3000	
				0.938	23.83	150.89	224.75	68.44	2110	2640	2460	2800	3000	3000	3000	3000	
				1.000	25.40	160.20	238.62	72.67	2250	2800	2620	2800	3000	3000	3000	3000	
				1.062	26.97	169.43	252.37	76.85	2390	2800	2790	2800	3000	3000	3000	3000	
				1.125	28.58	178.72	266.20	81.07	2530	2800	2800	2800	3000	3000	3000	3000	
				18	18	457.2	10	0.188	4.78	35.76	53.26	16.22	380	470	440	550	750
0.219	5.56	41.59	61.95					18.87	440	550	510	640	870	950	1080	1160	
0.250	6.35	47.39	70.59					21.50	500	620	580	730	990	1090	1230	1320	
0.281	7.14	53.18	79.21					24.12	560	700	660	820	1110	1220	1380	1490	
20	0.312	7.92	58.94				87.79	26.74	620	780	730	910	1240	1360	1530	1650	
	0.344	8.74	64.87				96.62	29.43	690	860	800	1000	1360	1490	1690	1820	
	0.375	9.52	70.59				105.14	32.02	750	940	880	1090	1490	1630	1840	1980	
	0.406	10.31	76.29				113.63	34.61	.....	.....	.....	.....	1610	1760	1990	2150	
	0.438	11.13	82.15				122.36	37.26	880	1100	1020	1280	1740	1900	2150	2320	
	0.469	11.91	87.81				130.79	39.83	.....	.....	.....	.....	1860	2040	2300	2480	
30	0.500	12.70	93.45				139.19	42.39	1000	1250	1170	1460	1980	2170	2460	2640	
	0.562	14.27	104.67				155.91	47.48	1120	1400	1310	1640	2230	2440	2760	2970	
	0.625	15.88	115.98				172.75	52.61	1250	1560	1460	1820	2480	2720	3000	3000	
	0.688	17.48	127.21				189.48	57.70	1380	1720	1610	2010	2730	2990	3000	3000	
	0.750	19.05	138.17				205.80	62.67	1500	1880	1750	2190	2980	3000	3000	3000	
	0.812	20.62	149.06				222.02	67.61	1620	2030	1890	2370	3000	3000	3000	3000	
	0.875	22.22	160.03				238.36	72.59	1750	2190	2040	2550	3000	3000	3000	3000	
	0.938	23.83	170.92				254.59	77.53	1880	2340	2190	2740	3000	3000	3000	3000	
60	1.000	25.40	181.56				270.43	82.36	2000	2500	2330	2800	3000	3000	3000	3000	
	1.062	26.97	192.11				286.15	87.14	2120	2660	2480	2800	3000	3000	3000	3000	
	1.125	28.58	202.75	302.00	91.97	2250	2800	2620	2800	3000	3000	3000	3000				
	1.187	30.15	213.14	317.47	96.68	2370	2800	2770	2800	.....	.....	.....	.....				
	1.188	30.18	213.31	317.73	96.76	.....	.....	.....	.....	3000	3000	3000	3000				
	1.250	31.75	223.61	333.07	101.43	2500	2800	2800	2800	3000	3000	3000	3000				
	20	20	508.0	10	0.219	5.56	46.27	68.92	20.99	390	490	460	570	830	910	1020	1100
					0.250	6.35	52.73	78.54	23.92	450	560	520	660	940	1040	1170	1260
0.281					7.14	59.18	88.15	26.84	510	630	590	740	1060	1160	1320	1420	
0.312					7.92	65.60	97.71	29.76	560	700	660	820	1180	1290	1460	1570	
20				0.344	8.74	72.21	107.56	32.75	620	770	720	900	1300	1420	1610	1730	
				0.375	9.52	78.60	117.07	35.65	680	840	790	980	1420	1550	1760	1890	
				0.406	10.31	84.96	126.55	38.54	.....	.....	.....	.....	1530	1680	1900	2050	
				0.438	11.13	91.51	136.30	41.51	790	990	920	1150	1660	1810	2050	2210	
				0.469	11.91	97.83	145.72	44.38	.....	.....	.....	.....	1770	1940	2190	2360	
				0.500	12.70	104.13	151.10	47.23	900	1120	1050	1310	1890	2070	2340	2520	
60				0.562	14.27	116.67	173.78	52.92	1010	1260	1180	1480	2120	2330	2630	2750	
				0.625	15.88	129.33	192.64	58.66	1120	1410	1310	1640	2360	2590	2750	2750	
				0.688	17.48	141.90	211.36	64.37	1240	1550	1440	1810	2600	2750	2750	2750	
				0.750	19.05	154.19	229.67	69.94	1350	1690	1580	1970	2750	2750	2750	2750	
				0.812	20.62	166.40	247.85	75.48	1460	1830	1710	2130	2750	2750	2750	2750	
				0.875	22.22	179.72	266.20	81.07	1580	1970	1840	2300	2750	2750	2750	2750	
				0.938	23.83	190.96	284.43	86.62	1690	2110	1970	2460	2750	2750	2750	2750	
				1.000	25.40	202.92	302.25	92.04	1800	2250	2100	2620	2750	2750	2750	2750	
				1.062	26.97	214.80	319.94	97.43	1910	2390	2230	2750	2750	2750	2750	2750	
				1.125	28.58	226.78	337.79	102.87	2020	2530	2360	2750	2750	2750	2750	2750	
				1.187	30.15	238.50	355.25	108.18	2140	2670	2490	2750	.....	.....	.....	.....	
				1.188	30.15	238.68	.....	.....	.....	.....	.....	.....	2750	2750	2750	2750	
				1.250	31.75	250.31	372.84	113.54	2250	2750	2620	2750	2750	2750	2750	2750	
				1.312	33.32	261.86	390.04	118.78	2360	2750	2750	2750	2750	2750	2750	2750	
1.375	34.92	273.51	407.39	124.06	2480	2750	2750	2750	2750	2750	2750	2750					
22	22	558.8	10	0.219	5.56	50.94	75.88	23.11	360	450	420	520	750	820	930	1000	
				0.250	6.35	58.07	86.50	26.34	410	510	480	600	860	940	1060	1150	
				0.281	7.14	65.18	97.09	29.57	460	570	540	670	970	1060	1200	1290	
				0.312	7.92	72.27	107.65	32.78	510	640	600	740	1070	1170	1330	1430	
				0.344	8.74	79.56	118.50	36.09	560	700	660	820	1180	1290	1460	1580	
				0.375	9.52	86.61	129.01	39.29	610	770	720	890	1290	1410	1600	1720	



## API PIPES (Continued)

Size						Weight			Hydrostatic Test Pressure							
Outside Diameter			Wall Thickness			lb/ft	kg/m	kg/ft	API 5L				API 5LX			
Nominal Size	in	mm	Sch No.	in	mm				A		B		X42	X46	X52	X56
									Std	Alt	Std	Alt				
22	22	558.8	30	0.406	10.31	93.63	139.46	42.47	.....	.....	.....	.....	1400	1530	1730	1860
				0.438	11.13	100.86	150.23	45.75	720	900	840	1050	1510	1650	1860	2010
				0.469	11.91	107.85	160.64	48.92	.....	.....	.....	.....	1610	1770	2000	2150
				0.500	12.70	114.81	171.01	52.08	820	1020	950	1190	1720	1880	2130	2290
				0.562	14.27	128.67	191.65	58.36	920	1150	1070	1340	1930	2120	2390	2500
				0.625	15.88	142.68	212.52	64.72	1020	1280	1190	1490	2150	2350	2500	2500
			0.688	17.48	156.60	233.26	71.03	1130	1410	1310	1640	2360	2500	2500	2500	
			0.750	19.05	170.21	253.53	77.21	1230	1530	1430	1790	2500	2500	2500	2500	
			0.812	20.62	183.75	273.70	83.35	1330	1660	1550	1940	2500	2500	2500	2500	
			0.875	22.22	197.41	294.04	89.55	1430	1790	1670	2090	2500	2500	2500	2500	
			0.938	23.83	211.00	314.28	95.71	1530	1920	1790	2240	2500	2500	2500	2500	
			1.000	25.40	224.28	334.07	101.73	1640	2050	1910	2390	2500	2500	2500	2500	
			1.062	26.97	237.48	353.73	107.72	1740	2170	2030	2500	2500	2500	2500	2500	
			1.125	28.58	250.81	373.58	113.77	1840	2300	2150	2500	2500	2500	2500	2500	
			1.188	30.15	263.85	393.00	119.68	1940	2430	2270	2500	2500	2500	2500	2500	
			1.250	31.75	277.01	412.61	125.65	2050	2500	2390	2500	2500	2500	2500	2500	
			1.312	33.32	289.88	431.78	129.22	2150	2500	2500	2500	2500	2500	2500	2500	
			1.375	34.92	302.88	451.14	137.39	2250	2500	2500	2500	2500	2500	2500	2500	
1.437	36.50	315.58	470.06	143.15	2350	2500	2500	2500	.....	.....	.....	.....				
1.438	36.53	.....	.....	.....	.....	.....	.....	.....	2500	2500	2500	2500				
1.500	38.10	328.41	489.17	148.97	2450	2500	2500	2500	2500	2500	2500	2500				
24	24	609.6	10	0.250	6.35	63.41	94.45	28.76	380	470	440	550	790	860	980	1050
				0.281	7.14	71.18	106.02	32.29	420	530	490	610	890	970	1100	1180
				0.312	7.92	78.93	117.57	35.80	470	580	550	680	980	1080	1220	1310
			20	0.344	8.74	86.91	129.45	39.42	520	640	600	750	1080	1190	1340	1440
				0.375	9.52	94.62	140.94	42.92	560	700	660	820	1180	1290	1460	1580
				0.406	10.31	102.31	152.39	46.41	.....	.....	.....	.....	1280	1400	1580	1710
			30	0.438	11.13	110.22	164.17	50.00	660	820	770	960	1380	1510	1710	1840
				0.469	11.91	117.86	175.55	53.46	.....	.....	.....	.....	1480	1620	1830	1970
				0.500	12.70	125.49	186.92	56.92	750	940	880	1090	1580	1720	1950	2100
			40	0.562	14.27	140.68	209.54	63.81	840	1050	980	1230	1770	1940	2190	2300
				0.625	15.88	156.03	232.41	70.78	940	1170	1090	1370	1970	2160	2300	2300
				0.688	17.48	171.29	255.14	77.70	1030	1290	1200	1500	2170	2300	2300	2300
			0.750	19.05	186.23	277.39	84.47	1120	1410	1310	1640	2300	2300	2300	2300	
			0.812	20.62	201.09	299.52	91.21	1220	1520	1420	1780	2300	2300	2300	2300	
			0.875	22.22	216.10	321.88	98.02	1310	1640	1530	1910	2300	2300	2300	2300	
			0.938	23.83	231.03	344.12	104.80	1410	1760	1640	2050	2300	2300	2300	2300	
			1.000	25.40	245.64	365.88	111.42	1500	1880	1750	2190	2300	2300	2300	2300	
			1.062	26.97	260.17	387.52	118.01	1590	1990	1860	2300	2300	2300	2300	2300	
1.125	28.58	274.84	409.37	124.65	1690	2110	1970	2300	2300	2300	2300	2300				
1.187	30.15	289.20	430.76	131.18	1780	2230	2080	2300	.....	.....	.....	.....				
1.188	30.18	289.44	.....	.....	.....	.....	.....	.....	2300	2300	2300	2300				
1.250	31.75	303.71	452.38	137.76	1880	2300	2190	2300	2300	2300	2300	2300				
1.312	33.32	317.91	473.53	144.20	1970	2300	2300	2300	2300	2300	2300	2300				
1.375	34.92	332.25	494.89	150.71	2060	2300	2300	2300	2300	2300	2300	2300				
1.437	36.50	346.28	515.78	157.07	2160	2300	2300	2300	.....	.....	.....	.....				
1.438	36.53	346.50	.....	.....	.....	.....	.....	.....	2300	2300	2300	2300				
1.500	38.10	360.45	536.89	163.50	2250	2300	2300	2300	2300	2300	2300	2300				
1.562	39.67	374.31	557.53	169.79	2300	2300	2300	2300	2300	2300	2300	2300				
26	26	660.4	10	0.250	6.35	68.75	102.40	31.19	350	430	400	500	730	800	900	970
				0.281	7.14	77.18	114.96	35.01	390	490	450	570	820	890	1010	1090
				0.312	7.92	85.60	127.50	38.83	430	540	500	630	910	990	1120	1210
			20	0.344	8.74	94.26	140.40	42.76	480	600	560	690	1000	1100	1240	1330
				0.375	9.52	102.63	152.87	46.55	520	650	610	760	1090	1190	1350	1450
				0.406	10.31	110.98	165.30	50.34	.....	.....	.....	.....	1180	1290	1460	1570
			0.438	11.13	119.57	178.10	54.24	610	760	710	880	1270	1390	1580	1700	
			0.469	11.91	127.88	190.48	58.01	.....	.....	.....	.....	1360	1490	1690	1820	
			0.500	12.70	136.17	202.83	61.77	690	870	810	1010	1450	1590	1800	1940	
			0.562	14.27	152.68	227.42	69.26	780	970	910	1130	1630	1790	2000	2000	
			0.625	15.88	169.38	252.29	76.83	870	1080	1010	1260	1820	1990	2000	2000	
			0.688	17.48	185.99	277.03	84.37	950	1190	1110	1390	2000	2000	2000	2000	
			0.750	19.05	202.25	301.25	91.74	1040	1300	1210	1510	2000	2000	2000	2000	
			0.812	20.62	218.43	325.35	99.08	1120	1410	1310	1640	2000	2000	2000	2000	
			0.875	22.22	234.79	349.72	106.50	1210	1510	1410	1770	2000	2000	2000	2000	
			0.938	23.83	251.07	373.97	113.89	1300	1620	1520	1890	2000	2000	2000	2000	
			1.000	25.40	267.00	397.70	121.11	1380	1730	1620	2000	2000	2000	2000	2000	
			28	28	711.2	10	0.250	6.35	74.09	110.36	33.61	320	400	370	470	680
0.281	7.14	83.19					123.91	37.73	360	450	420	530	760	830	940	1010
0.312	7.92	92.26					137.42	41.85	400	500	470	580	840	920	1040	1120





## API PIPES (Continued)

Size			Weight			Hydrostatic Test Pressure											
Outside Diameter			Wall Thickness			lb/ft	kg/m	kg/ft	API 5L				API 5LX				
Nominal Size	in	mm	Sch No	in	mm				A		B		X42	X46	X52	X56	
									Std.	Alt.	Std.	Alt.					
28	28	711.2	20	0.344	8.74	101.61	151.35	46.09	.....	.....	.....	.....	930	1020	1150	1240	
				0.375	9.52	110.64	164.80	50.19	480	600	560	700	1010	1110	1250	1350	
				0.406	10.31	119.65	178.22	54.27	.....	.....	.....	.....	1100	1200	1360	1460	
				0.438	11.13	128.93	192.04	58.48	560	700	660	820	1180	1300	1460	1580	
				0.469	11.91	137.90	205.40	62.55	.....	.....	.....	.....	1270	1390	1570	1690	
				0.500	12.70	146.85	218.73	66.61	640	800	750	940	1350	1480	1670	1800	
				0.562	14.27	164.69	245.31	74.70	720	900	840	1050	1520	1660	1880	2020	
				0.625	15.88	182.73	272.18	82.89	800	1000	940	1170	1690	1850	2090	2250	
				0.688	17.48	200.68	298.91	91.03	880	1100	1030	1290	1860	2030	2300	2480	
				0.750	19.05	218.27	325.11	99.01	960	1210	1120	1410	2020	2220	2510	2700	
				0.812	20.62	235.78	351.19	106.95	1040	1300	1220	1520	2190	2400	2710	2920	
				0.875	22.22	253.48	377.56	114.98	1120	1410	1310	1640	2360	2590	2920	3000	
				0.938	23.83	271.10	403.80	122.97	1210	1510	1410	1760	2530	2770	3000	3000	
				1.000	25.40	288.36	429.51	130.80	1290	1610	1500	1880	2700	2960	3000	3000	
30	30	762.0	10	0.250	6.35	79.43	118.31	36.03	300	370	350	440	630	690	780	840	
				0.281	7.14	89.19	132.85	40.46	340	420	390	490	710	780	880	940	
				0.312	7.92	98.93	147.36	44.87	370	470	440	550	790	860	970	1050	
				0.344	8.74	108.95	162.28	49.42	.....	.....	.....	.....	870	950	1070	1160	
				0.375	9.52	118.65	176.73	53.82	450	560	520	660	940	1040	1170	1260	
				0.406	10.31	128.32	191.13	58.21	.....	.....	.....	.....	1020	1120	1270	1360	
			20	0.438	11.13	138.29	205.98	62.73	530	660	610	770	1100	1210	1370	1470	
				0.469	11.91	147.92	220.33	67.10	.....	.....	.....	.....	1180	1290	1460	1580	
				0.500	12.70	157.53	234.64	71.46	600	750	700	880	1260	1380	1560	1680	
				0.562	14.27	176.69	263.18	80.15	670	840	790	980	1420	1550	1750	1890	
				0.625	15.88	196.08	292.06	88.94	750	940	880	1090	1580	1720	1950	2100	
				0.688	17.48	215.38	320.81	97.70	830	1030	960	1200	1730	1900	2150	2310	
			30	0.750	19.05	234.29	348.97	106.27	900	1120	1050	1310	1890	2070	2340	2520	
				0.812	20.62	253.12	377.02	114.82	970	1220	1140	1420	2050	2240	2530	2730	
				0.875	22.22	272.17	405.40	123.46	1050	1310	1220	1530	2200	2420	2730	2940	
				0.938	23.83	291.14	433.65	132.06	1130	1410	1310	1640	2360	2590	2930	3000	
				1.000	25.40	309.72	461.33	140.49	1200	1500	1400	1750	2520	2760	3000	3000	
				1.062	26.97	328.22	488.88	148.88	1270	1590	1490	1860	2680	2930	3000	3000	
30	1.125	28.58	346.93	516.75	157.37	1350	1690	1580	1970	2840	3000	3000	3000				
	1.188	30.18	365.56	544.50	165.82	1430	1780	1660	2080	2990	3000	3000	3000				
	1.250	31.75	383.81	571.68	174.10	1500	1880	1750	2190	3000	3000	3000	3000				
	32	32	812.8	10	0.250	6.35	84.77	126.26	38.45	280	350	330	410	590	650	730	790
					0.281	7.14	95.19	141.79	43.18	320	400	370	460	660	730	820	890
					0.312	7.92	105.59	157.28	47.90	350	440	410	510	740	810	910	980
0.344					8.74	116.30	173.23	52.75	.....	.....	.....	.....	810	890	1010	1080	
0.375					9.52	126.66	188.66	57.45	420	530	490	620	890	970	1100	1180	
0.406					10.31	136.99	204.05	62.14	.....	.....	.....	.....	960	1050	1190	1280	
20				0.438	11.13	147.64	219.91	66.97	490	620	570	720	1030	1130	1280	1380	
				0.469	11.91	157.94	235.25	71.64	.....	.....	.....	.....	1110	1210	1370	1480	
				0.500	12.70	168.21	250.55	76.30	560	700	660	820	1180	1290	1460	1580	
				0.562	14.27	188.70	281.07	85.59	630	790	740	920	1330	1450	1640	1770	
				0.625	15.88	209.43	311.95	95.00	700	880	820	1030	1480	1620	1830	1970	
				0.688	17.48	230.08	342.70	104.36	770	970	900	1130	1630	1780	2010	2170	
30				0.750	19.05	250.31	372.84	113.54	840	1050	980	1230	1770	1940	2190	2360	
				0.812	20.62	270.47	402.87	122.69	910	1140	1070	1330	1920	2100	2380	2560	
				0.875	22.22	290.86	433.24	131.93	980	1230	1150	1440	2070	2260	2560	2760	
				0.938	23.83	311.17	463.49	141.15	1060	1320	1230	1540	2220	2430	2740	2950	
				1.000	25.40	331.08	493.14	150.18	1120	1410	1310	1640	2360	2590	2920	3000	
				1.062	26.97	350.90	522.74	159.17	1190	1490	1390	1740	2510	2750	3000	3000	
40	1.125	28.58	370.96	552.54	168.27	1270	1580	1480	1850	2660	2910	3000	3000				
	1.188	30.18	390.94	582.31	177.33	1340	1670	1560	1950	2810	3000	3000	3000				
	1.250	31.75	410.51	611.45	186.21	1410	1760	1640	2050	2950	3000	3000	3000				
	34	34	863.6	10	0.250	6.35	90.11	134.22	40.87	260	330	310	390	560	610	690	740
					0.281	7.14	101.19	150.72	45.90	300	370	350	430	620	680	770	830
					0.312	7.92	112.25	167.20	50.92	330	410	390	480	690	760	860	920
0.344					8.74	123.65	184.18	56.09	.....	.....	.....	.....	760	840	950	1020	
0.375					9.52	134.67	200.59	61.09	400	500	460	580	830	910	1030	1110	
0.406					10.31	145.67	216.98	66.08	.....	.....	.....	.....	900	990	1120	1200	
20				0.438	11.13	157.00	233.85	71.22	460	580	540	680	970	1070	1210	1300	
				0.469	11.91	167.95	250.16	76.18	.....	.....	.....	.....	1040	1140	1290	1390	
				0.500	12.70	178.89	266.46	81.14	530	660	620	770	1110	1220	1380	1480	
				0.562	14.27	200.70	298.94	91.04	600	740	690	870	1250	1370	1550	1670	
				0.625	15.88	222.78	331.83	101.05	660	830	770	970	1390	1520	1720	1850	
				0.688	17.48	244.77	364.58	111.03	730	910	850	1060	1530	1680	1890	2040	
30				0.750	19.05	266.33	396.70	120.81	790	990	930	1160	1670	1830	2060	2220	
				0.812	20.62	287.81	428.69	130.55	860	1070	1000	1250	1810	1980	2240	2410	