

API 5L Line Pipe

Specification API 5L covers seamless and welded pipe suitable for use in conveying gas, water, oil and other liquefied media.

Chemical Requirements

Specification	Grade	Cb	Mnb	P	S	Si	Cr	Mo	Ni	V	Cb	Ti
API 5L 44th Ed (PSL 1) Seamless	A25	.21	.60	.030	.030	-	-	-	-	-	-	-
	A	.22	.90	.030	.030	-	-	-	-	-	-	-
	B	.28	1.20	.030	.030	-	-	-	-	c,d	c,d	d
	X42	.28	1.30	.030	.030	-	-	-	-	d	d	d
	X46	.28	1.40	.030	.030	-	-	-	-	d	d	d
	X52	.28	1.40	.030	.030	-	-	-	-	d	d	d
	X56	.28	1.40	.030	.030	-	-	-	-	d	d	d
	X60	.28 ^e	1.40 ^e	.030	.030	-	-	-	-	f	f	f
	X65	.28 ^e	1.40 ^e	.030	.030	-	-	-	-	f	f	f
	X70	.28 ^e	1.40 ^e	.030	.030	-	-	-	-	f	f	f
API 5L 44th Ed (PSL 1) Welded	A25	.21	.60	.030	.030	-	-	-	-	-	-	-
	A	.22	.90	.030	.030	-	-	-	-	-	-	-
	B	.26	1.20	.030	.030	-	-	-	-	c,d	c,d	d
	X42	.26	1.30	.030	.030	-	-	-	-	d	d	d
	X46	.26	1.40	.030	.030	-	-	-	-	d	d	d
	X52	.26	1.40	.030	.030	-	-	-	-	d	d	d
	X56	.26	1.40	.030	.030	-	-	-	-	d	d	d
	X60	.26 ^e	1.40 ^e	.030	.030	-	-	-	-	f	f	f
	X65	.26 ^e	1.40 ^e	.030	.030	-	-	-	-	f	f	f
	X70	.26 ^e	1.65 ^e	.030	.030	-	-	-	-	f	f	f

a. .50% max Cu, Ni, Cr and .15 max Mo. For grades up to and including X52, Cu, Cr and Ni shall not be added intentionally.

b. For each reduction of .01% below the max C, and increase of .05% Mn is permitted up to a max of 1.65% for grades B, X42 and X52, up to 1.75% for grades >X52 and < X70, and 2.0% for X70.

c. Unless otherwise agreed $Cb + V \leq .15\%$.

d. $Cb + V + Ti \leq .15\%$.

e. Unless otherwise agreed.

f. Unless otherwise agreed the sum of $Cb + V + Ti \leq .15\%$.

Specification	Grade	Cond	Cb	Mnb	P	S	Si	V	Cb	Ti	Other	IIW	Pcm
API 5L 44th Ed (PSL 2) (Seamless & Welded)	B	R or N	.24	1.20	.025	.015	.40	c	c	.04	e	.43	.25
	X42	R or N	.24	1.20	.025	.015	.40	.06	.05	.04	e	.43	.25
	X46	N	.24	1.40	.025	.015	.40	.07	.05	.04	d, e	.43	.25
	X52	N	.24	1.40	.025	.015	.45	.10	.05	.04	d, e	.43	.25
	X56	N	.24	1.40	.025	.015	.45	.10 ^f	.05	.04	d, e	.43	.25
	X60	N	.24 ^f	1.40 ^f	.025	.015	.45 ^f	.10 ^f	.05 ^f	.04 ^f	d, h	as agreed to	
API 5L 44th Ed (PSL 2) (Seamless & Welded)	B	Q	.18	1.40	.025	.015	.45	.05	.04	.04	e	.43	.25
	X42	Q	.18	1.40	.025	.015	.45	.06	.05	.04	e	.43	.25
	X46	Q	.18	1.40	.025	.015	.45	.07	.05	.04	e	.43	.25
	X52	Q	.18	1.50	.025	.015	.45	.10	.05	.04	e	.43	.25
	X56	Q	.18	1.50	.025	.015	.45	.10	.05	.04	d, e	.43	.25
	X60	Q	.18 ^f	1.70 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]		e	.4	.25	
	X65	Q	.18 ^f	1.70 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]		h	.43	.25	
	X70	Q	.18 ^f	1.80 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]		h	.43	.25	
X80	Q	.18 ^f	1.90 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]		i, j	as agreed to			

Chemical Requirements (cont)

Specification	Grade	Cond	Cb	Mnb	P	S	Si	V	Cb	Ti	Other	IIW	Pcm
API 5L 44th Ed (PSL 2) (Welded Only)	B	M	.22	1.20	.025	.015	.45	.05	.05	.04	e	.43	.25
	X42	M	.22	1.30	.025	.015	.45	.05	.05	.04	e	.43	.25
	X46	M	.22	1.30	.025	.015	.45	.05	.05	.04	e	.43	.25
	X52	M	.22	1.40	.025	.015	.45	[V + Cb + Ti <= .15]			e	.43	.25
	X56	M	.22	1.40	.025	.015	.45	[V + Cb + Ti <= .15]			e	.43	.25
	X60	M	.12 ^f	1.60 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			h	.43	.25
	X65	M	.12 ^f	1.60 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			h	.43	.25
	X70	M	.12 ^f	1.70 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			h	.43	.25
	X80	M	.12 ^f	1.85 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			l	.43 f	.25
	X90	M	.12 ^f	1.85 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			l	-	.25
	X100	M	.12 ^f	1.85 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			i, j	-	.25
X120	M	.12 ^f	1.85 ^f	.025	.015	.45 ^f	[V + Cb + Ti <= .15]			i, j	-	.25	

b. For Seamless pipe wall thickness > .787" CE shall be by agreement.

c. For each reduction of .01% below the max C, and increase of .05% Mn is permitted up to a max of 1.65% for grades B, X42 and X52, up to 1.75% for grades >X52 and < X70, and 2.0% for grades X70 and X80, 2.20 for grade > X80.

d. Unless otherwise agreed Cb + V <= .06%.

e. Cb + V + Ti <= .15%.

f. Unless otherwise agreed, .50% max Cu, .30% max Ni, .30% max CR and .15% max Mo.

g. Unless otherwise agreed.

h. Unless otherwise agreed the sum of Cb + V + Ti <= .15%.

i. Unless otherwise agreed .50% max Cu, Ni, Cr and Mo.

j. Unless otherwise agreed .50% max Cu, Cr, Mo and 1.00% max Ni.

k. .004% max B.

Tensile Properties – Tensile Requirements Seamless and Welded Pipe

Specification	Grade	Yield		Tensile		Y/T Ratio
		Min.	Max.	Min.	Max.	Max.
API 5L 44th ed PSL-1	A25	25,400	-	45,000	-	-
	A	30,500	-	48,600	-	-
	B	35,500	-	60,200	-	-
	X42	42,100	-	60,200	-	-
	X46	46,400	-	63,100	-	-
	X52	52,200	-	66,700	-	-
	X56	56,600	-	71,100	-	-
	X60	60,200	-	75,400	-	-
	X65	65,300	-	77,600	-	-
	X70	70,300	-	82,700	-	-
	PSL-2	B	35,500	65,300	60,200	110,200
X42		42,100	71,800	60,200	100,200	.93
X46		46,400	76,100	63,100	110,200	.93
X52		52,200	76,900	66,700	110,200	.93
X56		56,600	79,000	71,100	110,200	.93
X60		60,200	81,900	75,400	110,200	.93
X65		65,300	87,000	77,600	110,200	.93
X70		70,300	92,100	82,700	110,200	.93
X80		80,500	102,300	90,600	119,700	.93
X90		90,600	112,400	100,800	132,700	.95
X100		100,100	121,800	110,200	143,600	.97
X120*	120,400	152,300	132,700	166,100	.99	

*Only available as DSAW