

### API 5L Line Pipe

1. Scope

1.1 This specification covers seamless and welded steel line pipe. It includes standard-weight and extra-strong threaded line pipe. It includes standard-weight and extra-strong threaded line pipe; and standard-weight plain-end, regular-weight plain-end, special plain-end, extra-strong plain-end, special plain-end, extra-strong plain-end pipe; as well as bell and spigot and through-the-flow line (TFL) pipe.

The purpose of this specification is to provide standards for pipe suitable for use in conveying gas, water, and oil in both the oil and natural gas industries.

1.2 Dimensional requirements on threads and thread gauges, stipulations on gauging practice, gauge specifications and certification, as well as instruments and methods for inspection of threads are given in API Standard 5B and are applicable to products covered by this specification.

Grades covered by this specification are A25, A, B, X42, X46, X52, X56, X60, X65, X70, and X80 and grades intermediate to the Grades X42 and higher listed (see note). The chemical composition and mechanical properties of intermediate grades that are subject to agreement between the purchaser and the manufacturer must be consistent with the corresponding requirements for the grades to which the material is intermediate.

Note: The grade designations used herein for Grades A and B do not include reference to the specified minimum yield strength. Other grade designations used herein comprise the letter A or X followed by the first two digits of the specified minimum yield strength.

1.3 Pipe manufactured as Grade X60 or higher shall not be substituted for pipe ordered for Grade X52 or lower with-out purchaser approval.

1.4 Although plain-end line pipe meeting this specification is primarily intended for field makeup by circumferential welding, the manufacturer will not assume responsibility for field welding.

1.5 For regular-weight and special plain-end pipe(special weight) shown in Tables 6A, 6B, and 6C and for standard weight threaded pipe larger than nominal size 12, the size designations used herein are outside diameter sizes. For all other pipe, the size designations are nominal pipe sizes. In the text of this specification, pipe size limits (or size ranges) are outside diameter sizes except where stated to be nominal. These outside diameter size limits and ranges also apply to the corresponding nominal sizes.

1.6 Class II steel is rephosphorized and probably has better threading properties than Class I. Because Class II has higher chemical properties than Class I, it may be somewhat more difficult to bend.

1.7 U.S. customary units are used in this specification; metric (SI) units are shown in parenthese in the text and in many tables. See Appendix J for specific information about rounding procedures and conversion factors.

2. Chemical Composition

Grade	Mfg. Process	Chemical composition (%)								
		C	Si	Mn	P	S	Ni	Cr	Mo	Others
A25C1 I	S	0.21Max	-	0.30-0.60	0.045Max	0.06Max	-	-	-	-
A25C1 II		0.21Max	-	0.30-0.60	0.045-0.80	0.06Max	-	-	-	-

A		0.21Max	-	0.90Max	0.04Max	0.05Max	-	-	-	-
B		0.27Max	-	1.15Max	0.04Max	0.05Max	-	-	-	-
X42(Non-expanded)		0.29Max	-	1.25Max	0.04Max	0.05Max	-	-	-	-
X42(Cold expanded)		0.29Max	-	1.25Max	0.04Max	0.05Max	-	-	-	-
X46(Non expanded)		0.31Max	-	1.35Max	0.04Max	0.05Max	-	-	-	-
X46(Cold expanded)		0.29Max	-	1.25Max	0.04Max	0.05Max	-	-	-	-
X52(Non expanded)		0.31Max	-	1.35Max	0.04Max	0.05Max	-	-	-	-
X52(Cold expanded)		0.29Max	-	1.25Max	0.04Max	0.05Max	-	-	-	-
X56		0.26Max	-	1.35Max	-	0.05Max	-	-	Cb 0.005Max	V 0.005Max Ti 0.005Max
X60		0.26Max	-	1.35Max	-	0.05Max	-	-	Cb 0.005Max	V 0.005Max Ti 0.005Max
X65		-	-	-	-	-	-	-	-	-
X70		-	-	-	0.045Max	-	-	-	-	-
X80		-	-	-	0.045-0.080	-	-	-	-	-
A25C1 I	W	0.21Max	-	-	0.04Max	0.06Max	-	-	-	-
A25C1 II		0.21Max	-	-	0.04Max	0.06Max	-	-	-	-
A		0.21Max	-	-	0.04Max	0.05Max	-	-	-	-
B		0.26Max	-	-	0.04Max	0.05Max	-	-	-	-
X42		0.28Max	-	-	0.04Max	0.05Max	-	-	-	-
X46(Non expanded)		0.30Max	-	-	0.04Max	0.05Max	-	-	-	-
X46(Cold expanded)		0.28Max	-	-	0.04Max	0.05Max	-	-	-	-
X52(Non expanded)		0.30Max	-	-	0.04Max	0.05Max	-	-	-	-
X52(Cold expanded)		0.28Max	-	-	0.04Max	0.05Max	-	-	-	-
X56		0.26Max	-	-	0.04Max	0.05Max	-	-	-	-
X60		0.26Max	-	-	0.04Max	0.05Max	-	-	-	-
X65		0.26Max	-	-	0.04Max	0.05Max	-	-	-	-

X70	0.23Max	-	0.04Max	0.05Max	-	-	-	-
X80	0.18Max	-	0.030Max	0.018Max	-	-	-	-

3. Mechanical Properties

Grade	Tensile Test MPa or N/mm <sup>2</sup>		Remarks (Similar to JIS)
	Min Yield point	Tensile Strength	
A25C1 I	172	310Min	-
A25C1 II	1772	310Min	-
A	207	331Min	(STPG370)
B	241	413Min	(STPG410)
X42(Non-expanded)	289	413Min	-
X42(Cold expanded)	289	413Min	-
X46(Non expanded)	317	434Min	-
X46(Cold expanded)	317	413Min	-
X52(Non expanded)	358	455Min	-
X52(Cold expanded)	358	455Min	-
X56	386	489Min	-
X60	413	517Min	-
X65	448	530Min	-
X70	482	565Min	-
X80	551	620 – 827	-
A25C1 I	172	310Min	-
A25C1 II	172	310Min	-
A	207	331Min	-
B	241	413Min	-
X42	289	413Min	-
X46(Non expanded)	289	413Min	-
X46(Cold expanded)	317	434Min	-

X52(Non expanded)	358	455Min	-
X52(Cold expanded)	358	455Min	-
X56	386	489Min	-
X60	413	517Min	-
X65	448	530Min	-
X70	482	565Min	-
X80	551	620Min	-