TABLE 2 Tensile Requirements

	Grade A (Explanatory Note 2)		Grade B		Grade C	
Tensile strength, min, psi (MPa)	48 000 (330)		60 000 (415)		70 000 (485)	
Yield strength, min, psi (MPa)	30 000 (205)		35 000 (240)		40 000 (275)	
	Longitudinal	Transverse	Longitudinal	Transverse	Longitudinal	Transverse
Elongation in 2 in. or 50 mm, min, %:						
Basic minimum elongation transverse strip tests, and for all small sizes tested in full section	35	25	30	16.5	30	16.5
When standard round 2-in. or 50-mm gage length test specimen is used	28	20	22	12	20	12
For longitudinal strip tests	[A,B]		[A,B]		[A,B]	
For transverse strip tests, a deduction for each 1/32-in. (0.8-mm) decrease in wall thickness below 5/16 in. (7.9 mm) from the basic minimum elongation of the following percentage shall be made		1.25[C]		1.00[C]		1.00[C]

[A]The minimum elogation in 2 in. (50.8 mm) shall be determined by the following equation:

$$e = 625\,000A^{0.2} / U^{0.9}$$

where:

e = minimum elongation in 2 in. (50.8 mm), %, rounded to the nearest 0.5%

A = cross-sectional area of the tension test specimen, in.^{2}, based on specified outside diameter or nominal specimen width and specified wall thickness rounded to the nearest 0.01 in.^{2}(if the area thus caluclated is greater than the value 0.75 in.^{2} shall be used), and

U = specified tensile strength, psi.

[B]See Table 4 for minimum elongation values for various size tension specimens and grades.

[C]Table 3 gives the computed minimum values:

TABLE 3 Computed Transverse Elongation[A]

Wall Thickness		Elongation in 2 in. or 50 mm, min, %	
in.	mm	Grade A, Transverse	Grades B and C, Transverse
5/16 (0.312)	7.9	25.00	16.50
9/32 (0.281)	7.1	23.75	15.50
1/4 (0.250)	6.4	22.50	14.50

[A]This table gives the computed minimum elongation values for each 1/32-in. (0.8-mm) decrease in wall thickness. Where the wall thickness lies between two values shown above, the minimum elongation value is determined by the following equation:

Grade	Direction of Test	Equation
A	Transverse	$E = 40t + 12.50$
B and C	Transverse	$E = 32t + 6.50$

where:

E = elongation in 2 in. or 50 mm, %, and

t = actual thickness of specimen, in.

TABLE 4 Elongation Values

	Tension Test Specimen Wall Thickness, in.[B]				Elongation in 2 in. min., Specified Tensile Strength, psi		
					Grade A	*Grade B*	*Grade C*
Area, in.^{2}[A]	1/2 in. Specimen	3/4 in. Specimen	1 in. Specimen	1 1/2 in. Specimen	48 000	60 000	70 000
≥ 0.75	≥ 1.491	≥ 0.994	≥ 0.746	≥ 0.497	36.0	29.5	25.5
0.74	1.470–1.490	0.980–0.993	0.735–0.745	0.490–0.496	36.0	29.5	25.5
0.73	1.451–1.469	0.967–0.979	0.726–0.734	0.484–0.489	36.0	29.5	25.5
0.72	1.430–1.450	0.954–0.966	0.715–0.725	0.477–0.483	36.0	29.5	25.5
0.71	1.411–1.429	0.941–0.953	0.706–0.714	0.471–0.476	35.5	29.0	25.5
0.70	1.390–1.410	0.927–0.940	0.695–0.705	0.464–0.470	35.5	29.0	25.5
0.69	1.371–1.389	0.914–0.926	0.686–0.694	0.457–0.463	35.5	29.0	25.5
0.68	1.350–1.370	0.900–0.913	0.675–0.685	0.450–0.456	35.5	29.0	25.0
0.67	1.331–1.349	0.887–0.899	0.666–0.674	0.444–0.449	35.5	29.0	25.0
0.66	1.310–1.330	0.874–0.886	0.655–0.665	0.437–0.443	35.0	29.0	25.0
0.65	1.291–1.309	0.861–0.873	0.646–0.654	0.431–0.436	35.0	28.5	25.0
0.64	1.270–1.290	0.847–0.860	0.635–0.645	0.424–0.430	35.0	28.5	25.0
0.63	1.251–1.269	0.834–0.846	0.626–0.634	0.417–0.423	35.0	28.5	25.0
0.62	1.230–1.250	0.820–0.833	0.615–0.625	0.410–0.416	35.0	28.5	25.0

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