

Specifications of ASTM A333/ASME SA333 Seamless Welded Steel Pipe

1. Chemical Composition

Standard	Grade	Chemical Composition (%)										
		C	Si	Mn	P	S	Cr	Ni	Cu	Mo	V	Al
ASTM A333	Grade 1	≤ 0.30		0.40-1.06	≤ 0.025	≤ 0.025						
	Grade 3	≤ 0.19	0.18-0.37	0.31-0.64	≤ 0.025	≤ 0.025		3.18-3.82				
	Grade 4	≤ 0.12	0.18-0.37	0.50-1.05	≤ 0.025	≤ 0.025	0.44-1.01	0.47-0.98	0.40-0.75			0.04-0.30
	Grade 6	≤ 0.30	≥ 0.10	0.29-1.06	≤ 0.025	≤ 0.025						
	Grade 7	≤ 0.19	0.13-0.32	≤ 0.90	≤ 0.025	≤ 0.025		2.03-2.57				
	Grade 8	≤ 0.13	0.13-0.32	≤ 0.90	≤ 0.025	≤ 0.025		8.40-9.60				
	Grade 9	≤ 0.20		0.40-1.06	≤ 0.025	≤ 0.025		1.60-2.24	0.75-1.25			
	Grade 10	≤ 0.20	0.10-0.35	1.15-1.50	≤ 0.03	≤ 0.015	≤ 0.15	≤ 0.25	≤ 0.015	≤ 0.50	≤ 0.12	≤ 0.06
	Grade 11	≤ 0.10	≤ 0.35	≤ 0.6	≤ 0.025	≤ 0.025	≤ 0.50	35.0-37.0		≤ 0.50		

2. Mechanical Properties of Low-Temperature Carbon Steel Pipe

Standard	Grade	Tensile Strength (MPa)	Yield Point (MPa)	Elongation (%)	
				Y	X
ASTM A333	Grade 1	≥ 380	≥ 205	≥ 35	≥ 25
	Grade 3	≥ 450	≥ 240	≥ 30	≥ 20
	Grade 4	≥ 415	≥ 240	≥ 30	≥ 16.5
	Grade 6	≥ 415	≥ 240	≥ 30	≥ 16.5
	Grade 7	≥ 450	≥ 240	≥ 30	≥ 22
	Grade 8	≥ 690	≥ 515	≥ 22	
	Grade 9	≥ 435	≥ 315	≥ 28	
	Grade 10	≥ 550	≥ 450	≥ 22	
	Grade 11	≥ 450	≥ 240	≥ 18	

3. Impact Temperature of Seamless and Welded Steel Pipe

Strike Temperature Condition

Grade	The Lowest Temperature for Strike Test	
	°F	°C
Grade 1	-50	-45
Grade 3	-150	-100
Grade 4	-150	-100
Grade 6	-50	-45
Grade 7	-100	-75
Grade 8	-320	-195
Grade 9	-100	-75
Grade 10	-75	-60

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