



SA-203 Steel Plates

Overview SA 203 Grades A, B, D, E, F

This mid range carbon / manganese grade has a 3.5% nickel content as it's only alloying element and offers excellent impact resistance for more extreme environments down to -150° F. Most applications for this grade are in pressure vessels, tanks, and components where good ductility and impact resistance in needed for low temperature ranges.

Chemical Requirements

*Elements represented in percentage

Elements	Composition %			
	SA 203 Grade A	SA 203 Grade B	SA 203 Grade D	SA 203 Grade E and F
Carbon, max:				
up to 2 in. (50 mm) in thickness	0.17	0.21	0.17	0.20
over 2 to 4 in. (100 mm) incl. in thickness	0.20	0.24	0.20	0.23
over 4 in. (100 mm) incl. in thickness	0.23	0.25	...	...
Manganese, max				
Heat analysis:				
2 in. (50 mm) and under over 2 in. (50 mm)	0.70	0.70	0.70	0.70
and under over 2 in. (50 mm)	0.80	0.80	0.80	0.80
Product analysis:				
Â 2 in. (50 mm) and under	0.78	0.78	0.78	0.78
Â over 2 in. (50 mm)	0.88	0.88	0.88	0.88
Phosphorus, max	0.025	0.025	0.025	0.025
Sulfur, max	0.025	0.025	0.025	0.025
Silicon:				
Heat analysis	0.15-0.40	0.15-0.40	0.15-0.40	0.15-0.40
Product analysis	0.13-0.45	0.13-0.45	0.13-0.45	0.13-0.45



Elements	Composition %			
	SA 203 Grade A	SA 203 Grade B	SA 203 Grade D	SA 203 Grade E and F
Nickel:				
Heat analysis	2.10-2.50	2.10-2.50	3.25-3.75	3.25-3.75
Product analysis	2.03-2.57	2.03-2.57	3.18-3.82	3.18-3.82

Tensile Requirements

	SA 203 Grade A & D		SA 203 Grade B and E		SA 203 Grade F	
	ksi	[MPa]	ksi	[MPa]	ksi	[MPa]
Tensile strength						
2 in. (50 mm) & under	65-85	[450-585]	70-90	[485-620]	80-100	[550-690]
over 2 in. (50 mm)	65-85	[450-585]	70-90	[485-620]	75-95	[515-655]
Yield strength, min.						
2 in. (50 mm) & under	37	[255]	40	[275]	55	[380]
over 2 in. (50 mm)	37	[255]	40	[275]	50	[345]
Elongation in 8 in. (200 mm), min, %	19		17			
Elongation in 2 in. (50 mm), min, %	23		21		20	