ASTM A 572/A 572M - 07

Chemical Composition

Diameter, Thickness, or Distance Between Parallel Faces, in. [mm] Plates and Bars	Structural Shape Flange or Leg Thickness, in. [mm]	Grade	Carbon, max, %	Manganese, B max, %	Phosphorus, max, %	Sulfur, max, %	Silicon	
							Plates to 1 1/2 in. [40mm] Thick, Shapes with Flange or Leg Thickness to 3 in. [75 mm] inclusive, Sheet Piling, Bars, Zees, and Rolled Tees[C]	Plates Over 1 1/2 in. [40mm] Thick and Shapes with Flange Thickness Over 3 in [75 mm]
							max, %	range, %
6 [150]	all	42 [290]	0.21	1.35[D]	0.04	0.05	0.40	0.15–0.40
4 [100][E]	all	50 [345]	0.23	1.35[D]	0.04	0.05	0.40	0.15–0.40
2 [50][F]	all	55 [380]	0.25	1.35[D]	0.04	0.05	0.40	0.15-0.40
1 1/4 [32][F]	≤2 [50]	60 [415]	0.26	1.35[D]	0.04	0.05	0.40	G
>1/2 – 1 1/4 [13–32]	>1-2 [25-50]	65 [450]	0.23	1.65	0.04	0.05	0.40	G
≤1/2 [13][H]	≤1[H]	65 [450]	0.26	1.35	0.04	0.05	0.40	G

A Copper when specified shall have a minimum content of 0.20 % by heat analysis (0.18 % by product analysis).

B Manganese, minimum, by heat analysis of 0.80 % (0.75 % by product analysis) shall be required for all plates over 3/8 in. [10 mm] in thickness; a minimum of 0.50 % (0.45 % by product analysis) shall be required for plates 3/8 in. [10 mm] and less in thickness, and for all other products. The manganese to carbon ratio shall not be less than 2 to 1.

C Bars over 1 1/2 in. [40 mm] in diameter, thickness, or distance between parallel faces shall be made by a killed steel practice.

D For each reduction of 0.01 percentage point below the specified carbon maximum, an increase of 0.06 percentage point manganese above the specified maximum is permitted, up to a maximum of 1.60 %.

E Round bars up to and including 11 in. [275 mm] in diameter are permitted.

F Round bars up to and including 3 1/2 in. [90 mm] in diameter are permitted.

G The size and grade is not described in this specification.

H An alternative chemical requirement with a maximum carbon of 0.21 % and a maximum manganese of 1.65 % is permitted, with the balance of the elements as shown in Table 2

Tensile Test

Grade	Yield Point, min		Tensile Strength, min		Minimum Elongation, % [B,C,D]	
	ksi	[MPa]	ksi	[MPa]	in 8 in. [200 mm]	in 2 in. [50 mm]
42 [290]	42	[290]	60	[415]	20	24
50 [345]	50	[345]	65	[450]	18	21
55 [380]	55	[380]	70	[485]	17	20
60 [415]	60	[415]	75	[520]	16	18
65 [450]	65	[450]	80	[550]	15	17

A See specimen Orientation under the Tension Tests section of Specification A 6/A 6M.

B Elongation not required to be determined for floor plate.

C For wide flange shapes over 426 lb/ft [634 kg/m], elongation in 2 in. [50 mm] of 19 % minimum applies.

D For plates wider than 24 in. [600 mm], the elongation requirement is reduced two percentage points for Grades 42, 50, and 55 [290, 345, and 380], and three percentage points for Grades 60 and 65 [415 and 450]. See elongation requirement adjustments in the Tension Tests section of Specification A 6/A 6M.