

EVERETT STEEL COMPANIES

ASTM A572 STRUCTURAL SHAPES

Chemical Requirements (Heat Analysis)

Grade	Carbon max, %	Manganese max, %	Phosphorus max, %	Sulfur, max, %
42 [290]	0.21	1.35	0.04	0.05
50 [345]	0.23	1.35	0.04	0.05
55 [380]	0.25	1.35	0.04	0.05
60 [415]	0.26	1.35	0.04	0.05
65 [450]	0.23	1.65	0.04	0.05

Silicon

Grade	Shapes to 426 lb/ft [634 kg/m] Sheet Piling, Bars, Zees, and Rolled Tees	Shapes Over 426 lb/ft [634 kg/m]
	max %	range %
42 [290]	0.40	0.15-0.40
50 [345]	0.40	0.15-0.40
55 [380]	0.40	0.15-0.40
60 [415]	0.40	N/A
65 [450]	0.40	N/A

Alloy Content

Elements	Heat Analysis, %
Columbium	0.005-0.05
Vanadium	0.01-0.15

Tensile Requirements

Grade	Yield Point, min		Tensile Strength, min		Minimum Elongation, %	
	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

EVERETT STEEL COMPANIES

ASTM A-992 STRUCTURAL SHAPES

This designation was implemented in 1998 to cover beam sections for use in building frames, bridges or for general structural purposes to allow engineering closer tensile and yield design criteria than ASTM A-36.

Chemical Requirements (Heat Analysis)

Element	Composition, %
Carbon, max	0.23
Manganese	0.50 to 1.50 ^A
Silicon, max	0.40
Vanadium, max	0.11 ^{B,C}
Columbium, max	0.05 ^B
Phosphorus, max	0.035
Sulfur, max	0.045
Copper, max	0.60
Nickel, max	0.45
Chromium, max	0.35
Molybdenum, max	0.15

^AProvided that the ratio of manganese to sulfur is not less than 20 to 1, the minimum limit for manganese for Group 1 shapes shall be 0.30%.

^BThe sum of columbium and vanadium shall not exceed 0.15%.

^CWhen vanadium is added as the only nitrogen-binding element, nitrogen shall be reported and the ratio of vanadium to nitrogen shall be 4 to 1 or higher if the nitrogen content is greater than 0.012%.

Tensile Requirements

Tensile strength, min kis [MPa]	65 [450]
Yield point, ksi [MPa]	50 to 65 [345 to 450]
Yield to tensile ratio, max	0.85
Elongation in 8 in. [200 mm], min, %	18
Elongation in 2 in. [50 mm], min, %	21
