

# ASTM A500 – G40.21-13 Comparison



**IndependenceTube**  
CORPORATION  
a NUCOR® company

## ASTM A500 / A500M-13

ASTM A500 / A500M - 13 covers cold-formed welded and seamless carbon steel round, square, rectangular, or special shape structural tubing for welded, riveted, or bolted construction of bridges and buildings, and for general structural purposes.

## G40.21-13

G40.21-13 outlines the requirements that apply, unless otherwise specified in a purchase order or individual standard, to structural quality steel plates, shapes, sheet, sheet piling, cold-formed channels, hollow sections, Z sections, and bars conforming to the requirements of CSA G40.21.

	ROUND STRUCTURAL TUBING			
		Grade C	50W	
<b>Strength Levels</b>	Yield Strength	46,000 psi min.	50,000 psi min.	
	Tensile Strength	62,000 psi min.	65-90,000 psi	
	Elongation % in 2"	21 min *	22 min *	
		SHAPED STRUCTURAL TUBING		
		Grade C	50W	
	Yield Strength	50,000 psi min.	50,000 psi min.	
Tensile Strength	62,000 psi min.	65,000-90,000 psi		
Elongation % in 2"	21 min *	22 min *		
<b>Chemistry Levels</b>		Grade C	50W	
	Carbon	.23 max	.23 max	
	Manganese	1.35 max	.50 - 1.50	
	Phosphorus	.035 max	.040 max	
	Sulphur	.035 max	.050 max	
	Silicon	N/A	.40 max *	
<b>Tolerances</b>		ROUND STRUCTURAL TUBING		
		Grade C	50W	
	O.D. Size	± .75%	±.020"	
	>1.9 to 2.5 incl.	± .75%	±.030"	
	Over 2.5 - 3.5 incl.	± .75%	±.040"	
	Over 3.5 - 5.5 incl.	± .75%	±1%	
	Over 5.5	± .75%		
		SHAPED STRUCTURAL TUBING		
		Grade C	50W	
	To 2.5 incl.	±.020"	±.020"	
	Over 2.5 - 3.5 incl.	± .025"	± .030"	
	Over 3.5 - 5.5 incl.	± .030"	± .040"	
	Over 5.5	± 1%	± 1%	
	(Largest Outside Diameter)	<b>NOTE:</b> Tolerances includes allowance for convexity and concavity. For rectangular sections, the tolerance calculated for the larger flat dimension shall also apply to the dimension. This tolerance shall be increased by 50% when applied to the smaller dimension for rectangular sections whose ratio of cross-sectional dimensions is between 1.5 and 3.0, and by 100% when this ratio exceeds 3.0.		
<b>Wall Thickness</b>		± 10%	+ 10% / -5%	
		(Deviation from Nominal)		
<b>Mass</b>		N/A	+ 10% / -3.5%	
<b>Straightness</b>		1/8" x length (in feet) divided by 5		1/8" x length (in feet) divided by 5
		Max Allowed		
<b>Twist</b>	1.5 and under	.050"	.050"	
	Over 1.5 - 2.5 incl.	.062"	.062"	
	Over 2.5 - 4.0 incl.	.075"	.075"	
	Over 4.0 - 6.0 incl.	.087"	.087"	
	Over 8.0	.112"	.112"	
			Max. per 3 feet of length	
<b>Corner Radii:</b>	To .109 incl.	3 times wall thickness max	Perimeter to 24" incl.	Perimeter over 24" incl.
	Over .109 - .134 incl.	3 times wall thickness max	.218"	-
	Over .134 - 1.56 incl.	3 times wall thickness max	.268"	-
	Over .156 - .188 incl.	3 times wall thickness max	.312"	-
	Over .188 - .250 incl.	3 times wall thickness max	.312"	-
	Over .250 - .313 incl.	3 times wall thickness max	.470"	-
	Over .313 - .375 incl.	3 times wall thickness max	.625"	.750"
	Over .375 - .500 incl.	3 times wall thickness max	.785"	.940"
	Over .500	3 times wall thickness max	.938"	1.125"
	(Wall thickness in inches)	3 times wall thickness max	1.250"	1.500"

**NOTE:** 1) The above is provided for information purposes only as a general comparison. For more detail, please consult the actual specification.  
2) \*Other restrictions may apply. Please refer to the complete specification for details.

**NOTE:** 1) The above is provided for information purposes only as a general comparison of the specifications listed and in no way should be considered as a complete version of each specification. For more detailed information, the actual specification should be consulted.  
2) \*Other restrictions may apply. Please refer to complete specification for details.  
3) Consult the Steel Tube Institute of North America publication "Recommended Methods to Check Dimensional Tolerances On HSS" for the industry recognized measurement methods.  
4) The above comparison also applies to the metric version of the CSA Specification G40.21 350W.

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