

# HSS Producing Members



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## About Steel Tube Institute

The Steel Tube Institute was formed in 1930 when a group of manufacturers joined forces to promote and market steel tubing. Their goal was to mount a cooperative effort that would improve manufacturing techniques and inform customers about their products' utility, versatility and competitive advantages. This, along with providing a forum for the discussion of issues impacting the industry, remains the focus of the Institute's efforts. [www.steeltubeinstitute.org](http://www.steeltubeinstitute.org)

Steel Tube Institute's HSS Committee includes the majority of the leading producers of HSS in the United States and Canada. The group has been active as an Institute committee for more than 20 years, providing technical and design help for the industry, and promoting the features, benefits and uses of steel hollow structural sections (HSS). [www.steeltubeinstitute.org/hss/](http://www.steeltubeinstitute.org/hss/)



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# ASTM A1085 Specification for HSS



# ASTM A1085: Specification for Hollow Structural Sections (HSS)

This newer specification provides for enhanced performance to make designing with HSS easier and more efficient for structural engineers.

	ASTM A500-10 (Grade B)		ASTM A1085	
Scope	Cold-formed welded & seamless		Cold-formed welded	
Max Perimeter	88"		88"	
Thickness Range	t<0.875"		0.148"<t<0.875"	
Yield Stress	Round Sq/Rect	42 ksi min 46 ksi min	All Shapes All Shapes	50 ksi min 70 ksi max
Tensile Stress	Round Sq/Rect	58 ksi min 58 ksi min	All Shapes	65 ksi min
Wall Thickness	-10%		-5%	
Mass Tolerance	N/A		-3.5%	
Corner Radii (Rectangular and Square HSS)	r<3t		t<0.400" t>0.400"	1.6t to 3.0t 1.8t to 3.0t
CVN	N/A		25ft-lbs@40° F	
Supplemental Requirements	N/A		Optional heat-treating Optional varying CVN	



## Benefits of ASTM A1085

### Tighter material tolerances and a single minimum yield stress of 50 ksi

- More stringent wall tolerances and the addition of a mass tolerance mean the full nominal wall thickness can be used for design of HSS. No longer do you need to reduce the nominal wall thickness by 0.93 as prescribed in the AISC Specification for both member selection and connection design.
- More area available for design and a higher minimum yield means that HSS are more economical and more efficient.

### Maximum specified yield stress of 70 ksi

- The maximum yield will result in a lower expected yield strength ( $R_yF_y$ ) and reduce capacity design requirements and column required strengths in seismic designs.
- $R_y$  takes into account the variability of a material. A1085 reduces variability, lowers member strength and connection requirements, and, therefore, will improve an engineer's ability to specify HSS in seismic applications.
- This is the only specification used in North America or Europe that limits the maximum yield stress in HSS.

### Standard requirement for Charpy V-notch toughness

- A1085 will require all HSS to meet a minimum CVN value of 25 ft-lb @ 40°F, which corresponds to AASHTO Zone 2.
- Having the minimum CVN required makes HSS more suitable for use in dynamically loaded structures.

### Corner radius

- A range has now been specified with a lower and upper bound.

