

# STEEL GRADE COMPARISON & FACT SHEET

# STEEL STANDARDS

## ASTM A1085-15

## ASTM A500-13

## ASTM A53-12

DESCRIPTION	ASTM A1085-15	ASTM A500-13	ASTM A53-12
DESCRIPTION	Standard specification for cold-formed welded carbon steel hollow structural sections (HSS)	Standard specification for cold-formed welded and seamless carbon steel structural tubing in rounds and shapes	Standard specification for pipe, steel, black and hot-dipped, zinc-coated, welded and seamless
INTENDED USE	Welded or bolted construction of buildings, bridges, towers, cranes, sign supports and poles, off-shore production and drilling platforms, roll-over protective structures (ROPS), falling object protective structures (FOPS), and amusement rides	Welded, riveted or bolted construction of bridges and buildings, and for general structural purposes	Mechanical and pressure applications; also acceptable for ordinary uses in steam, water, gas and air lines

## TECHNICAL INFORMATION

SPECIFICATIONS	ASTM A1085-15	ASTM A500-13	ASTM A53-12	
STRENGTH LEVELS	Grade A	Grade C	Types E and S, Grade A	Types E and S, Grade B
<b>Yield Strength</b>	50,000 psi min./70,000 psi max.	46,000 psi	30,000 psi	35,000 psi
<b>Tensile Strength Min.</b>	65,000 psi	62,000 psi	48,000 psi	60,000 psi
<b>Elongation % Min.</b>	21	21	Varies	Varies
<b>LENGTHS</b>	18'-125' (depending on the size and gauge)	18'-125' (depending on the size and gauge)	Single random lengths (16'-24') or double random lengths (36'-46')	
<b>TOLERANCES</b>	<b>Grade A</b>	<b>All Grades</b>	<b>All Grades</b>	
<b>OD Size</b>	+/- .75%	+/- .75%	+/- 1%	
<b>Wall Thickness</b>	+ 10%/- 5%	+/- 10%	- 12.5%	
<b>Chemistry</b>	Low C, Mn, P, S and residual elements, along with a maximum permissible carbon equivalent of .45%, for superior weldability	Low C, Mn, P, S and residual elements for superior weldability	Higher C, Mn, P, S and residual elements that could impact weldability	
<b>SIZE AVAILABILITY</b>	25 different sizes available from 1.900" OD to 20.000" OD	27 different sizes available from 1.315" OD to 20.000" OD	13 different sizes available from 1.900" OD to 16.000" OD	
<b>GAUGE AVAILABILITY</b>	Standard gauges available are .188", .250", .313", .375", .500" and .625"; minimums apply to NPS gauges.	Standard gauges available are .125", .188", .250", .313", .375", .438", .500" and .625", as well as all the nominal pipe gauges.	A variety of gauges are available. Some of the heavier sections are only available as a seamless product.	
<b>STRAIGHTNESS</b>	1/8" x length (in feet), divided by five	1/8" x length (in feet), divided by five	Not specified	



1855 East 122nd Street  
Chicago, IL 60633  
P 800.733.5683  
F 773.646.6128



200 Clark Street  
Harrow, ON N0R 1G0  
P 800.265.6912  
F 519.738.3537

sales@atlastube.com  
atlastube.com



# ADVANTAGES OF A500 ROUND (HSS) OVER A53

- Specifically designed for construction and structural applications
- Produced to tighter tolerances (OD, wall, straightness)
- Readily weldable by conventional methods—either in the shop or in the field
- Superior surface finish (bare—no mill lacquer coating applied)
- Higher strength-to-weight ratio
- Broader variety of OD sizes and gauges
- Readily available on a two- to three-week rolling cycle
- Specific lengths available from production 18'-125'

# ADVANTAGES OF A1085 ROUND (HSS) OVER A53

A1085 HSS have all the advantages of A500 HSS, plus:

- Standard requirement for Charpy V-notch toughness
- No section property reduction factor required
- Minimum yield stress of 50,000 psi and maximum yield stress of 70,000 psi
- Ideal for use in structures subject to fatigue and seismic loading

## HSS AVAILABILITY CHART — ROUNDS

OD	NOMINAL WALL THICKNESS																											
	.083	.100	.125	.133	.134	.140	.145	.154	.188	.203	.216	.237	.247	.250	.258	.280	.300	.313	.322	.337	.365	.375	.393	.406	.432	.437	.500	.625
1.315	1.093	—	1.590	1.679	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1.66	1.399	—	2.051	—	2.186	2.270	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1.9	—	1.924	2.372	—	2.530	—	2.780	—	3.432	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.25	—	—	2.840	—	—	—	—	—	4.144	—	—	—	—	5.340	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.375	—	—	3.007	—	3.210	—	—	3.660	4.385	—	—	—	—	5.674	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.5	—	—	3.174	—	—	—	—	—	4.646	—	—	—	—	6.013	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.875	—	—	3.675	—	—	—	—	—	5.400	5.800	—	—	—	7.015	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.0	—	—	3.842	—	—	—	—	—	5.651	—	—	—	—	7.349	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.5	—	—	4.510	—	—	—	—	—	6.656	—	7.580	—	—	8.696	—	—	10.253	—	—	—	—	—	—	—	—	—	—	—
4.0	—	—	5.178	—	—	—	—	—	7.661	—	—	—	—	10.022	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4.5	—	—	5.846	—	6.254	—	—	—	8.644	—	—	10.790	—	11.358	—	—	—	14.010	—	14.983	—	16.536	—	—	—	—	—	—
5.0	—	—	6.514	—	6.970	—	—	—	9.671	—	—	—	12.495	12.694	13.080	—	—	15.683	—	—	—	18.540	—	—	—	—	24.050	—
5.563	—	—	—	—	7.777	—	—	—	10.775	—	—	—	—	14.199	14.630	—	—	—	—	—	—	20.797	—	—	—	—	27.062	—
6.625	—	—	8.086	—	9.298	—	—	—	12.903	—	—	—	—	17.037	—	18.990	—	—	—	—	—	25.055	—	28.600	28.880	32.738	—	—
7.0	—	—	—	—	—	—	—	—	—	—	—	—	—	18.039	—	—	—	—	—	—	—	26.558	—	—	—	—	34.743	—
8.625	—	—	11.358	—	—	—	—	—	16.956	—	—	—	—	22.382	—	—	—	—	—	—	—	33.072	—	—	—	—	43.428	53.450
9.625	—	—	—	—	—	—	—	—	18.916	—	—	—	—	25.055	—	—	—	—	—	—	—	37.081	—	—	—	—	48.773	60.131
10.0	—	—	—	—	—	—	—	—	19.722	—	—	—	—	26.060	—	—	—	—	—	—	—	38.580	—	—	—	—	50.784	62.645
10.75	—	—	—	—	—	—	—	—	21.171	—	—	—	—	28.061	—	—	—	—	—	—	—	38.581	—	—	—	—	54.786	67.648
11.75	—	—	—	—	—	—	—	—	—	—	—	—	—	30.734	—	—	—	—	—	—	—	41.077	—	—	—	—	60.131	74.329
12.0	—	—	—	—	—	—	—	—	—	—	—	—	—	31.402	—	—	—	—	—	—	—	46.602	—	—	—	—	61.468	75.999
12.75	—	—	—	—	—	—	—	—	—	—	—	—	—	33.406	—	—	—	—	—	—	—	49.608	51.865	53.525	—	—	65.476	81.010
13.375	—	—	—	—	—	—	—	—	—	—	—	—	—	35.077	—	—	—	—	—	—	—	52.114	—	—	—	—	68.817	85.186
14.0	—	—	—	—	—	—	—	—	—	—	—	—	—	36.747	—	—	—	—	—	—	—	54.619	—	—	—	63.301	72.158	89.362
16.0	—	—	—	—	—	—	—	—	—	—	—	—	—	42.032	—	—	—	—	—	—	—	62.637	—	—	—	—	82.848	102.724
18.0	—	—	—	—	—	—	—	—	—	—	—	—	—	47.437	—	—	—	—	—	—	—	70.654	—	—	—	—	93.540	116.087
20.0	—	—	—	—	—	—	—	—	—	—	—	—	—	52.782	—	—	—	—	—	—	—	78.672	—	—	—	—	104.228	129.449

- Rolled every 2-6 weeks.
- Rolled every 6-12 weeks; some sizes may be subject to accumulation.
- Not rolled regularly; sizes subject to minimum orders. Inquire.

**Includes ASTM A513, ASTM A1085, ASTM A500, ASTM A252 and CSA G40. Please contact Atlas Tube for additional details on specifications or if the size you are looking for is not listed.**