Technical Data of Pipes

Pipes Conforming to ASTM A500

(Cold-formed welded carbon steel round ,square & rectangular shape structural tubing for welded, riveted,or bolted construction of bridges and buildings, and for general structural purposes)

RECTANGLE HOLLOW SECTIONS	
Nominal Size	Thickness Range
30x20	1.2mm - 2.5 mm
40x20	1.2 mm - 2.9 mm
40x25	1.2 mm - 3.0 mm
40x30	1.2mm - 2.5 mm
50x25	1.2mm - 3.2 mm
50x30	1.2mm - 3.5mm
60x30	1.6mm - 3.5mm
50x40	1.6mm - 3.5mm
60x40	1.6mm - 4.0 mm
75x25	1.6mm - 2.5 mm
80x40	1.6mm - 4.0 mm
80x50	1.8mm - 4.0 mm
90x50	2.0mm - 3.8mm
96x48	2.0mm - 3.8mm
100x50	2.0mm - 3.8mm
120x60	2.3mm - 5.0mm

SQUARE HOLLOW SECTIONS	
Nominal Size	Thickness Range
20x20	1mm - 2.5mm
25x25	1.2 mm - 3.0 mm
30x30	1.2mm - 3.5mm
31.75x31.75	1.2mm - 3.5mm
40x40	1.2mm - 3.5mm
50x50	1.6mm - 4.0 mm
60x60	1.6mm - 4.0 mm
70x70	2.0mm - 3.8mm
80x80	2.3mm - 4.0mm
90x90	2.3mm - 5.0mm
101.6x101.6	2.5mm - 3.0mm

CIRCULAR HOLLOW SECTIONS	
Nominal Size	Thickness Range
21.3	1 mm - 2.5 mm
22.2	1 mm - 2.5 mm
25.4	1 mm - 3.5 mm
26.9	1 mm - 3.5 mm
28.6	1 mm - 3.5 mm
31.8	1 mm - 3.5 mm
33.7	1.2 mm - 4.0 mm
38.1	1.2 mm - 4.0 mm
40.0	1.2 mm - 4.0 mm
42.4	1.2 mm - 4.0 mm
44.5	1.2 mm - 4.0 mm

CIRCULAR HOLLOW SECTIONS	
Nominal Size	Thickness Range
48.3	1.2 mm - 4.5 mm
50.8	1.2 mm - 4.5 mm
60.3	1.6 mm - 5.0 mm
63.5	1.6 mm - 5.0 mm
69.9	1.8 mm - 5.0 mm
73.0	1.8 mm - 5.0 mm
76.1	1.8 mm - 5.0 mm
88.9	1.8 mm - 5.0 mm
101.6	2.0 mm - 5.0 mm
114.3	2.3 mm - 5.0 mm

Chemical Composition (Maximum)

ELEMENTS	GRADE A & B		GRADE C	
	HEAT ANALYSIS	PRODUCT ANALYSIS	HEAT ANALYSIS	GRADE A & B
Carbon(Maximum)	0.26	0.3	0.23	0.27
Manganese(Maximum)	1.35	1.4	1.35	1.4
Phosphorus(Maximum)	0.035	0.045	0.035	0.045
Sulfur(Maximum)	0.035	0.045	0.035	0.045
Copper(Minimum)	0.2	0.18	0.2	0.18

For each reduction of 0.01 percentage point below the specified maximum for carbon, an increase of 0.06 percentage point above the specified maximum for manganese is permitted, upto a maximum of 1.50% by heat analysis and 1.60% by product analysis.

Mechanical Properties

ELEMENTS	ROUND STRUCTURAL TUBING			ROUND STRUCTURAL TUBING		
	GRADE A	GRADE B	GRADE C	GRADE A	GRADE B	GRADE C
Tensile Strength (MPa) min.	310	400	425	310	400	425
Yield Strength (MPa) min.	230	290	315	270	315	345
% Elongation in (50 mm) min.	25	25	21	25	23	21

Technical Details

Characteristics	Tolerances & Technical details
Outside Diameter (OD)	For Round Pipes, OD 1.90 Inch (48.3mm) and smaller (OD) ± 0.50 % & OD 2.00 Inch (60.3mm) and larger ± 0.75% For Square & Rectangular Section 2½ Inch [65mm] or under ± 0.020 Inch (0.50mm) Over 2½ to 3½ [65 mm to 90 mm] ± 0.025 Inch (0.60mm) Over 3½ to 5½ [90 mm to140 mm ± 0.030 Inch (0.80 mm) Over 5½ [140 mm] ± 1.0 % of OD
Thickness	±10% ofspecific wall thickness.
Length	Pipe shall be furnished in single random length, double random length or in uniform length as per the customer requirement.
Straightness	2 mm/mtr
Squareness (Square & rectangular)	90˚±2˚max.
Radius	3 times of thickness maximum
Twist	For Square & Rectangular Section 1½Inch [40mm] and under= 0.050 Inch [1.3mm] Over 1½ to 2½ Inch [40 mm to65 mm]= 0.062 Inch[1.6mm] Over 2½ to 4 Inch [65 mm to 100 mm] =0.075 Inch [1.9mm Over 4 to 6 Inch [100 mm to 150 mm] = 0.087 Inch [2.2mm] Over 6 to 8 Inch [150 mm to 200 mm] = 0.100 Inch [2.5mm] Over 8 Inch [200mm] = 0.112 Inch [2.8mm]
FlatteningTest	Keep the weld at 90˚and flatten upto 66% of OD, No cracks or breaks are allowed on the weld. Further flatten upto 50% of OD, No cracks or breaks are allowed in the material and during third step full flatten for soundness or lamination.
Surface Protection	Black & Galvanized coating as per customer requirements
Marking (Stencilling)	METPRO, Specification designation and Grade on pipe and anything specific as per customer requirement.