

TECHNICAL DATA

TECHNICAL DATA OF PIPES CONFORMING TO ASTM A53 GRADE A & B

SCOPE : ERW Black & Galvanized Steel Pipes in NPS 1" (33.4mm) to 4" (114.3mm) Conforming to the Nominal Wall Thicknesses, SCH-10, SCH-30, SCH-40.

NPS	DN	DIAMETER		THICKNESS		SCH NO	WEIGHT (PE)			WEIGHT (TC)			LENGTH (PE)		LENGTH (TC)		TEST PRESSURE (GRADE A)		TEST PRESSURE (GRADE B)	
		Inch	mm	Inch	mm		Kg/ Mtr	Kg/ ft	lbs/ft	Kg/Mtr	Kg/ ft		lbs/ft Mtr/Ton ft/Ton	Ton Mtr/Ton ft/Ton	PSI	Kpa	PSI	Kpa		
1	25	1.315	33.40	0.109	2.77	10	2.09	0.637	1.410	2.09	0.637	1.410	478.5	1569.8	478.5	1569.8	700	4800	700	4800
				0.114	2.90	30	2.18	0.664	1.460	2.18	0.664	1.460	458.7	1505.0	458.7	1505.0	700	4800	700	4800
				0.133	3.38	40	2.50	0.762	1.680	2.50	0.762	1.690	400.0	1312.3	400.0	1312.3	700	4800	700	4800
1 1/4	32	1.660	42.20	0.109	2.77	10	2.69	0.820	1.810	2.69	0.820	1.810	371.7	1219.6	371.7	1219.6	1000	6900	1000	6900
				0.117	2.97	30	2.87	0.875	1.930	2.87	0.875	1.930	348.4	1143.1	348.4	1143.1	1000	6900	1000	6900
				0.140	3.56	40	3.39	1.033	2.270	3.40	1.036	2.280	295.00	967.8	294.1	965.0	1200	8300	1300	9000
1 1/2	40	1.900	48.30	0.109	2.77	10	3.11	0.948	2.090	3.11	0.948	2.090	321.5	1054.9	321.5	1054.9	1000	6900	1000	6900
				0.125	3.18	30	3.53	1.076	2.370	3.53	1.076	2.370	283.3	929.4	283.3	929.4	1000	6900	1000	6900
				0.145	3.68	40	4.05	1.234	2.720	4.04	1.231	2.740	246.9	810.1	247.5	812.1	1200	8300	1300	9000
2	50	2.375	60.30	0.109	2.77	10	3.93	1.198	2.640	3.93	1.198	2.640	254.5	834.8	254.5	834.8	1640	11300	1920	13300
				0.125	3.18	30	4.48	1.366	3.010	4.48	1.366	3.010	223.2	732.3	223.2	732.3	1880	13000	2200	15200
				0.154	3.91	40	5.44	1.658	3.680	5.46	1.664	3.680	183.8	603.1	183.2	600.9	2300	15900	2500	17200
2 1/2	65	2.875	73.00	0.120	3.05	10	5.26	1.603	3.530	5.26	1.603	3.530	190.1	623.7	190.1	623.7	1490	10300	1750	12100
				0.188	4.78	30	8.04	2.451	5.400	8.04	2.451	5.400	124.4	408.1	124.4	408.1	2340	16200	2500	17200
				0.203	5.16	40	8.63	2.630	5.800	8.67	2.643	5.850	115.9	380.2	115.3	378.4	2500	17200	2500	17200
3	80	3.500	88.90	0.120	3.05	10	6.46	1.969	4.340	6.46	1.969	4.340	154.8	507.9	154.8	507.9	1230	8500	1440	9900
				0.188	4.78	30	9.92	3.024	6.660	9.92	3.024	6.660	100.8	330.7	100.8	330.7	1930	13330	2260	15600
				0.216	5.49	40	11.29	3.441	7.580	11.35	3.459	7.680	88.6	290.6	88.1	289.1	2220	15300	2500	17200
3 1/2	90	4.000	101.60	0.120	3.05	10	7.41	2.259	4.980	7.41	2.259	4.980	135.0	442.8	135.0	442.8	1080	7400	1270	8700
				0.188	4.78	30	11.41	3.478	7.660	11.41	3.478	7.660	87.6	287.5	87.6	287.5	1690	11700	1970	13600
				0.226	5.74	40	13.57	4.136	9.120	13.71	4.179	9.270	72.9	239.3	72.9	239.3	2030	14000	2370	16300
4	100	4.500	114.30	0.120	3.05	10	8.37	2.551	5.620	8.37	2.551	5.620	119.5	392.0	119.5	392.0	970	6600	1130	7700
				0.188	4.78	30	12.91	3.935	8.670	12.91	3.935	8.670	77.5	254.1	77.5	254.1	1500	10300	1750	12100
				0.237	6.02	40	16.07	4.898	10.80	16.23	4.947	10.920	62.2	202.1	61.6	202.1	1900	13100	2210	15200

TOLERANCE

OUTSIDE DIAMETER : $\pm 1/64"$ (0.40mm) for size upto & including NPS 1-1/2" and $\pm 1\%$ of the specified O.D for NPS 2" & above.
 THICKNESS : Minimum wall thickness 12.5% max under the specified wall thicknesses and not specified on positive side.
 WEIGHT : $\pm 10\%$ of specified weight.

IN-PROCESS TESTING

ON LINE NDT : Tested by Eddy Current Test Machine.
 HYDROSTATIC TEST : All Pipes are Hydrostatically tested at specified pressure for holding time 5 seconds minimum.
 BEND TEST : For upto NPS 2" Bending Angle 90° and Bending Diameter 12 times the O.D. of pipe (No crack on body and weld)
 FLATTENING TEST : For Above NPS 2" (Weld located either 0° or 90° from the direction of force)
 Flatten upto 2/3 of O.D. for weld, upto 1/3 of O.D. for body and full flattening for lamination.

GRADE	CHEMICAL COMPOSITION (%) Max.										MECHANICAL PROPERTIES (Mpa) Min.		
	C	Mn	P	S	Cr	Cu	Ni	Mo	V	Cr+Cu+Ni+Mo+V	YS	UTS	%El
A	0.250	0.950	0.045	0.045	0.400	0.400	0.400	0.150	0.080	1.00	20	330	To be calculated as per formula
B	0.300	1.200	0.045	0.045	0.400	0.400	0.400	0.150	0.080	1.00	5	415	

WORKMANSHIP : **As per ASTM A53, all pipes are finished with Black Lacquer coating or Galvanized as per (ASTM A90)**

THREADING : **As per ANSI B1.20.1**

MARKING : **Each Pipes Shall be Stenciled as per ASTM A53/Client Requirement SEASHORE ASTM A53 Gr.A/B DN--- SCH NO----NDE; HEAT NO.----- QATAR**

Value Addition : **We supply pipes conforming to ASTM A795(G.r A&B) and ASTM 135 pipes in Scheduled 10,30&40**

TECHNICAL DATA OF TUBES CONFORMING TO EN 10255

SCOPE : Circular non alloy steel tubes suitable for welding and threading of specified outside diameter 33.7mm to 114.3mm.

Nominal Size			Class	Outside Diameter (mm)		Thick (mm)	Weight (PE) (Kg/Mtr)	Weight (PE) (Kg/FT)	Weight (TS) (Kg/Mtr)	Weight (TS) (Kg/FT)	Length (PE) (Mtr/Ton)	Length (PE) (FT/Ton)	Length (TS) (Mtr/Ton)	Length (TS) (FT/Ton)
OD	DN	inch		Min	Max									
33.7	25	1	L1	33.2	34	2.90	2.200	0.671	2.220	0.677	454.5	1491.3	450.5	1477.9
42.4	32	1 1/4	L1	41.9	42.7	2.90	2.820	0.860	2.850	0.869	354.6	1163.4	350.9	1151.2
48.3	40	1 1/2	L1	47.8	48.60	2.90	3.240	0.988	3.280	1.000	308.6	1012.6	304.9	1000.3
60.3	50	2	L1	59.6	60.7	3.20	4.490	1.369	4.560	1.390	222.7	730.7	219.3	719.5
76.1	65	2 1/2	L1	75.2	76.3	3.20	5.730	1.747	5.850	1.783	174.5	572.6	170.9	560.8
88.9	80	3	L1	87.9	89.4	3.60	7.550	2.301	7.720	2.353	132.5	434.500	129.5	425.0
114.3	100	4	L1	113	114.9	4.00	10.880	3.292	11.100	3.383	92.6	303.8	90.1	295.6
33.7	25	1	L2	33.2	33.8	2.60	1.980	0.604	2.000	0.610	505.100	1657.0	500.0	1640.4
42.4	32	1 1/4	L2	41.9	42.5	2.60	2.540	0.774	2.570	0.783	393.7	1291.7	389.1	1276.6
48.3	40	1 1/2	L2	47.8	48.40	2.90	3.230	0.985	3.270	0.997	309.6	1015.7	305.8	1003.3
60.3	50	2	L2	59.6	60.2	2.90	4.080	1.244	4.150	1.265	245.1	804.1	241.0	790.6
76.1	65	2 1/2	L2	75.2	76	3.20	5.710	1.740	5.830	1.777	175.1	574.6	171.5	562.8
88.9	80	3	L2	87.9	88.7	3.20	6.720	2.048	6.890	2.100	148.8	488.2	145.1	476.2
114.3	100	4	L2	113	113.9	3.60	9.750	2.972	10.000	3.048	102.6	336.5	100.0	328.1
33.7	25	1	L	33.2	34	2.90	2.200	0.671	2.220	0.677	454.5	1491.3	450.5	1477.9
42.4	32	1 1/4	L	41.9	42.7	2.90	2.820	0.860	2.850	0.869	354.6	1163.4	350.9	1151.2
48.3	40	1 1/2	L	47.8	48.6	2.90	3.250	0.991	3.290	1.003	307.7	1009.5	304.0	997.2
60.3	50	2	L	59.6	60.7	3.20	4.510	1.375	4.580	1.396	221.7	727.5	218.3	716.3
76.1	65	2 1/2	L	75.2	76	3.20	5.750	1.753	5.870	1.789	173.9	570.6	170.4	558.9
88.9	80	3	L	87.9	88.7	3.20	6.760	2.060	6.930	2.112	147.9	485.3	144.3	473.4
114.3	100	4	L	113	113.9	3.60	9.830	2.996	10.100	3.078	101.7	333.8	99.0	324.8
33.7	25	1	M	33.3	34.2	3.20	2.410	0.735	2.430	0.741	414.9	1361.3	411.5	1350.1
42.4	32	1 1/4	M	42	42.9	3.20	3.100	0.945	3.130	0.954	322.6	1058.3	319.5	1048.2
48.3	40	1 1/2	M	47.9	48.8	3.20	3.560	1.085	3.600	1.097	280.9	921.6	277.8	911.3
60.3	50	2	M	59.7	60.8	3.60	5.030	1.533	5.100	1.554	198.8	652.3	196.1	643.3
76.1	65	2 1/2	M	75.3	76.6	3.60	6.420	1.957	6.540	1.993	155.8	511.0	152.9	501.7
88.9	80	3	M	88	89.5	4.00	8.360	2.548	8.530	2.600	119.600	392.400	117.200	384.600
114.3	100	4	M	113.1	115	4.50	12.200	3.719	12.500	3.810	82.0	268.9	80.0	262.5
33.7	25	1	H	33.3	34.2	4.00	2.930	0.893	2.950	0.899	341.3	1119.7	339.0	1112.1
42.4	32	1 1/4	H	42	42.9	4.00	3.790	1.155	3.820	1.164	263.9	865.7	261.8	858.9
48.3	40	1 1/2	H	47.9	48.80	4.00	4.370	1.332	4.410	1.344	228.8	750.8	226.8	744.0
60.3	50	2	H	59.7	60.8	4.50	6.190	1.887	6.260	1.908	161.6	530.0	159.7	524.1
76.1	65	2 1/2	H	75.3	76.6	4.50	7.930	2.417	8.050	2.454	126.1	413.7	124.2	407.6
88.9	80	3	H	88	89.5	5.00	10.300	3.139	10.500	3.200	97.1	318.5	95.2	312.5
114.3	100	4	H	113.1	115	5.40	14.500	4.420	14.800	4.511	69.0	226.3	67.6	221.7

TOLERANCE:

Outside Diameter as per dimension table

Thickness	Medium ±10%	Heavy 10%	±	Light L 10%	±	Light L1 10%	±	Light L2 10%	±										
Weight ± 7.5% for M,H & L Series (on lot) and +10%/-8% for L1 and L2 Series										Flattening Test		For Tubes above 2"							
												1. Flatten upto 75% of tube dia for weld test (Weld at 12 or 3 O' Clock position)							
Mechanical Properties										Chemical Properties									
Yield Strength 195 Mpa (Minimum)										Carbon 0.20% Max									
Tensile Strength 320 to 520 Mpa										Manganese 1.40% Max									
%Elongation 20% Minimum										Phosphorous 0.035% Max									
										Sulphur 0.030% Max									
Bend Test For tubes upto & including 2"										Galvanizing Test					As per EN 10240 / EN ISO 1461				
Black Tube										Galvanized Tube									
Bending angle : 90°										Bending angle : 90°									
Bending Radius : As per EN 10255										Bending Radius : 8 times to the OD of Tube									
Weld Position : Outside of the bend										Weld Position: Out side of the bend									

WORKMANSHIP : All tubes are finished with Bare, Black Lacquer Coated or Galvanizing (EN 10240 / EN ISO 1461)

MARKING : Each Pipe shall be Stencilled with as per EN 10255 / Client Requirement

Value Addition : We are limiting the out-of-roundness upto 0.5%D and straightness 1mm per meter.

PIPES AND TUBES							CIRCULAR								
Size OD (mm)															
	1.5	1.8	2.0	2.5	2.8	3.0	3.2	3.5	3.8	4.0	4.5	4.8	5.0	5.5	6.0
33.7		1.416	1.564	1.924	2.134	2.271	2.407	2.607	2.802	2.930					
42.4		1.802	1.993	2.460	2.734	2.915	3.094	3.358	3.617	3.788					
48.3		2.064	2.284	2.824	3.142	3.351	3.559	3.867	4.170	4.370					
60.3		2.597	2.876	3.564	3.971	4.239	4.506	4.903	5.295	5.554	6.193				
63.5		2.739	3.033	3.761	4.191	4.476	4.759	5.179	5.595	5.869	6.548				
73.0		3.161	3.502	4.347	4.847	5.179	5.508	5.999	6.485	6.807	7.602	8.073	8.385		
76.1		3.298	3.655	4.538	5.062	5.408	5.753	6.266	6.776	7.112	7.946				
88.9		3.866	4.286	5.327	5.945	6.355	6.763	7.371	7.975	8.375	9.366	9.955	10.345	11.312	
101.6		4.430	4.913	6.110	6.822	7.295	7.765	8.468	9.165	9.628	10.776	11.459	11.912	13.035	14.146
114.3		4.994	5.539	6.893	7.699	8.234	8.768	9.564	10.355	10.881	12.185	12.962	13.478	14.757	16.025

PIPES AND TUBES						SQUARE							
Size DIMENSION (mm)													
	1.5	1.8	2.0	2.5	2.8	3.0	3.5	4.0	4.5	4.8	5.0	5.5	6.0
25x25		1.246	1.364	1.640	1.794								
30x30		1.528	1.678	2.033	2.233	2.362							
40x40		2.094	2.306	2.818	3.112	3.304	3.764	4.199					
50x50		2.659	2.934	3.603	3.992	4.246	4.863	5.455	6.020	6.347	6.560		
60x60		3.224	3.562	4.388	4.871	5.188	5.962	6.711	7.433	7.855	8.130		
75x75		4.072	4.504	5.565	6.190	6.601	7.611	8.595	9.553	10.115	10.485		
80x80		4.354	4.818	5.958	6.629	7.072	8.160	9.223	10.259	10.869	11.270		

PIPES AND TUBES						RECTANGULAR							
Size DIMENSION (mm)													
	1.5	1.8	2.0	2.5	2.8	3.0	3.5	4.0	4.5	4.8	5.0	5.5	6.0
50x25		1.952	2.149	2.621									
60x30		2.376	2.620	3.210	3.552	3.775	4.314	4.827					
60x40		2.659	2.934	3.603	3.992	4.246	4.863	5.455	6.020	6.347	6.560		
80x40		3.224	3.562	4.388	4.871	5.188	5.962	6.711	7.433	7.855	8.130		
100x50		4.072	4.504	5.565	6.190	6.601	7.611	8.595	9.553	10.115	10.485		
120x60		4.920	5.446	6.743	7.508	8.014	9.259	10.479	11.672	12.376	12.840		

TECHNICAL DATA OF NON ALLOY AND FINE GRAINE STEEL HOLLOW SECTIONS CONFORMING TO EN 10219 1&2

SCOPE : Cold-formed Welded Structural Hollow Sections of Non-Alloy and Fine Grain Steel of Circular, Square or Rectangular forms and applies to Structural Hollow sections formed cold without subsequent heat treatment.

SIZE RANGE : CHS: Size 33.7 -114.3 & Thickness 1.5 to 6mm, SHS: Size 25x25 - 80x80mm; RHS: Size 50x25-120x60mm & Thickness 1.5 to 6mm.

TOLERANCE :

CIRCULAR SECTION TOLERANCES ON DIMENSIONS	SQUARE/RECTANGULAR SECTION - TOLERANCE ON DIMENSIONS
<u>Characteristics Tolerances</u>	<u>Characteristics Tolerances</u>
External Dimensions (D) : ±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm	External Dimensions (H/B) : For H, B < 100 ±1%, with a minimum of ±0.5 mm 100 ≤ H, B ≤ 200 : ± 0.8%;
Thickness (T) : For od ≤ 406.4 mm, T ≤ 5mm :±10%, T>5mm±0.5mm; For od>406.4mm:±10%	Thickness (T) : For T ≤ 5mm : ±10%, T > 5mm ± 0.5mm
Out-of-roundness : 2% for hollow sections having d/t ≤ 100	Concavity/convexity (x1/x2) : Max. 0.8% with a minimum of 0.5 mm
Straightness : 0.20% of total length and 3 mm over any 1 m length	External Corner Profile (R) : For T ≤ 6mm:1.6T to 2.40T, For 6 < T ≤ 6mm:2.0T to 3.0T
Mass per unit length : ± 6% on individual delivered lengths	Squareness of side (θ) : 90° ± 1°
	Twist (v) : 2mm plus 0.5mm/m length
	Straightness (e) : 0.15% of total length and 3 mm over any 1 m length
	Mass per unit length : ± 10% on individual delivered lengths

Grade	CHEMICAL COMPOSITION(%) Max							MECHANICAL PROPERTIES (Mpa)				Minimum Impact Energy J		
	C	Si	Mn	P	S	N	CEV	YS Min	UTS		%El Min	-2 0° C	0°C	20°C
									t'	t<3mm				
S235 JRH	0.170	--	1.400	0.040	0.040	0.009	0.350	235	360-510	360-510	24	--	--	27
S275 JOH	0.200	--	1.500	0.035	0.035	0.009	0.400	275	430-580	410-560	20	--	27	--
S275 J2H	0.200	--	1.500	0.030	0.030	--	0.400					27	--	--
S355 JOH	0.220	0.550	1.600	0.035	0.035	0.009	0.450	355	510-680	470 -63 0	20	--	27	--
S355 J2H	0.220	0.550	1.600	0.030	0.030	--	0.450					27	--	--
S355 K2H	0.220	0.550	1.600	0.030	0.030	--	0.450					40	--	--

IN-LINE NDT : Full body for NPS 1/2" to 4" and weld seam for NPS 3" to 8" tested by Eddy Current Testing Machine

WORKMANSHIP : All sections are finished with Bare, Black Lacquer Coated or Galvanizing (EN 10240/EN ISO 1461)

MARKING : Each Pipe shall be stencilled as per EN 10219 / Client Requirement.

Value Addition : We are limiting the out-of-roundness for CHS section upto 0.75%D. For SHS/RHS section, side tolerances ±0.5%, Concavity/convexity 0.50mm max, External Corner Profile 2T average, Twist 2mm/6mtr max and Straightness 1 mm per meter.

TECHNICAL DATA OF STRUCTURAL TUBING IN ROUND & SHAPES CONFIRMING TO ASTM A500/A500 M

SCOPE : ERW Steel Tubes in Round, Square and Rectangular Shapes.

SIZE RANGE : CHS: Size 33.4-114.3 mm & Thickness 1.5-5.6 mm, SHS: Size 25x25-80x80 mm; RHS: Size 50x25-120x60 mm & Thickness 1.5-5.6mm

Round Tubes - Tolerance on dimensions	Shaped Tubes Tolerance on dimensions
<u>Characteristics / Tolerances</u>	<u>Characteristics / Tolerances</u>
External Dimensions (D) : ± 0.50% for 48.30mm & Smaller and +/- 0.75% for 50.0 mm and Above	External Dimensions (B/H): ± 0.50mm for 65mm or Under, ± 60mm for 65-90mm including, ± 80 mm for 90-140mm including and ± 1% for over 140mm.
Wall Thickness (T) : ± 10% of specified wall thickness	Wall Thickness (T) : ±10% of specified wall thickness.
Straightness (e) : 2.0mm times of total length	Concavity / Convexity (x1/x2) : Include the flat dimension tolerance
	Squareness of sides (θ) : 90°± 2°
Flattening Test : a) Flattening upto 2/3 of O.D. For Weld Ductility ; b) Flattening upto 1/2 of O.D Parent Metal and	Radius of Corners (R) : Shall not exceed more than 3 times of Specified Wall Thickness
	Twist (v)/mtr : 1.3mm for 40mm or under, 1.6mm for 40-65mm, 1.8mm for 65 -100mm , 2.2mm for 100 -150mm and 2.5 mm for 150 - 200mm.
c) Full flattening for lamination	Straightness (e) : 2.0 mm times of total length.

GRADE	CHEMICAL COMPOSITION (%)					MECHANICAL PROPERTIES-ROUND			MECHANICAL PROPERTIES-SHAPE		
	C Max.	Mn Max.	P Max.	S Max.	Cu Min.	YS (MPa) Min	UTS (Mpa) Min	% EL Min.	YS (MPa) Min	UTS (Mpa) Min	% EL Min.
A (Heat)	0.260	1.350	0.035	0.035	0.200	230	310	25	270	310	25
A (Product)	0.300	1.400	0.045	0.045	0.180						
B (Heat)	0.260	1.350	0.035	0.035	0.200	290	415	23	315	400	23
B (Product)	0.300	1.400	0.045	0.045	0.180						
C (Heat)	0.230	1.350	0.035	0.035	0.200	315	425	21	345	425	21
C (Product)	0.270	1.400	0.045	0.045	0.180						

WORKMANSHIP : All Tubing are finished with Bare, Black Laqure Coated or Galvanized

MARKING : Each Pipes Shall be Stencilled as per ASTM A500/Client Requirement

Value Addition : We are limiting the out-of roundness for CHS section upto 0.50% D. For SHS/RHS Section, Side tolerances ±0.5%,Concavity/Convexity 0.50mm max, External Corner Profile 2.5T average, Twist 2mm/6mtr max and Straightness 1mm per meter.

TECHNICAL DATA OF NON ALLOY AND FINE GRAINE STEEL HOLLOW SECTIONS CONFORMING TO AS/NZS 1163

TOLERANCE

CIRCULAR SHAPE TOLERANCES ON DIMENSIONS		SQUARE/RECTANGULAR SHAPE - TOLERANCE ON DIMENSIONS	
<u>Characteristics Tolerances</u>		<u>Characteristics Tolerances</u>	
External Dimensions : ±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm		External Dimensions : ±1%, with a minimum of ±0.5 mm	
Thickness :	For od ≤ 406.4 mm: ±10%	Thickness :	±10%
Out-of-roundness :	2% for hollow sections having d/t ≤ 100	Concavity/convexity :	Max. 0.8% or 0.5 mm; whichever is greater
Straightness :	0.20% of total length	External Corner Profile (R) :	For T ≤ 6mm:1.6T to 2.40T, For 6 < T ≤ 6mm:2.0T to 3.0T
		Squareness of side :	90° ± 1°
		Twist :	2mm plus 0.5mm/m length
		Straightness :	0.15% of total length

Manipulation (Bend Test)

For Galvanized Tubes upto & including 60.3mm

Bending angle 90°

Bending radius 6 times to the OD of Tube

Flattening Test

1. Flatten upto 75% of tube dia for weld test (weld at 45° position for od ≤ 60mm)

2. Flatten upto 75% of tube dia for weld test (weld at 90° position for od >60mm)

MECHANICAL PROPERTIES

Grade	YS (Min)	TS (Min)	%EL (Min)			Minimum Absorbed Energy, Joules					
						Avg. of 3 tests			Individual Tests		
			≤15	>15≤30	>30	10x10	10x7.5	10x5.0	10x10	10x7.5	10x5.0
C250, C250L0	250	320	18	20	22	27	22	18	20	16	13
C350, C350L0	350	430	16	18	20	27	22	18	20	16	13

CHEMICAL COMPOSITION (%) Max.

Grade	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti		
C250, C250L0	0.120	0.05	0.50	0.03	0.03	0.25	0.25	0.15	0.10	0.02	0.01	0.04	0.10	0.03
C250, C250L0	0.120	0.05	0.50	0.03	0.03	0.25	0.25	0.15	0.10	0.02	0.01	0.04	0.10	0.25

TECHNICAL DATA OF TUBES CONFORMING TO EN39

Type	Size			Outside Diameter (mm)		Thickness (mm)	Weight (Plain End) (Kg/mtr.)
	DN	Inch	OD	Min	Max		
Type-3	40	1 1/2	48.3	47.8	48.8	3.20	3.56
Type-4	40	1 1/2	48.3	47.8	48.8	4.00	4.37
			38.1	37.5	38.5	3.20	2.75
			38.1	37.5	38.5	4.00	3.36
Characteristics	OD		Thickness	Weight	Straightness		Insertion of ID gauge
Tolerances	+/-0.50mm		-10%	-7.5%	0.002 of Length		37.7mm

CHEMICAL PROPERTIES (%)

MECHANICAL PROPERTIES (Mpa)

C (Max)	Mn (Max)	P (Max)	S (Max)	Si (Max)	Al (Min)	YS (Min)	TS (Min)	%EL (Min)
0.200	1.400	0.040	0.045	0.040	0.020	235	340-520	24

Flattening Test

Flatten upto 75% of tube diameter (Weld 3 or 9 O' clock position)

Galvanizing Test

As per EN 10240 B2/ EN ISO 1461

These pipes can also manufactured as per the client requirement with reference to the specification EN 39:2001

With reference to this specification 27mm, 38mm, 42mm, 63mm OD pipes are also manufactured which are used for scaffoldings.

- Length we can cut : 3 m to 8 m

TECHNICAL DATA OF TUBES CONFORMING TO AS: 1074

Size		Class	O.D. (mm)		Thickness (mm)	Weight (Plain End)	Weight (Socketed)
DN	Inch		Min	Max			
25	1"	L	33.2	33.8	2.60	1.980	2.000
32	1 1/4"	L	41.9	42.5	2.60	2.540	2.570
40	1 1/2"	L	47.8	48.4	2.90	3.230	3.270
50	2"	L	59.6	60.2	2.90	4.080	4.150
65	2 1/2"	L	75.2	76	3.20	5.710	5.830
80	3"	L	87.9	88.7	3.20	6.720	6.890
100	4"	L	113	113.9	3.60	9.750	10.000
25	1"	M	33.4	34.2	3.20	2.410	2.430
32	1 1/4"	M	42.1	42.9	3.20	3.100	3.130
40	1 1/2"	M	48	48.8	3.20	3.570	3.610
50	2"	M	59.8	60.8	3.60	5.030	5.100
65	2 1/2"	M	75.4	76.6	3.60	6.430	6.550
80	3"	M	88.1	89.5	4.00	8.370	8.540
100	4"	M	113.3	114.9	4.50	12.200	12.500
25	1"	H	33.4	34.2	4.00	2.940	2.960
32	1 1/4"	H	42.1	42.9	4.00	3.800	3.830
40	1 1/2"	H	48	48.8	4.00	4.380	4.420
50	2"	H	59.8	60.8	4.50	6.190	6.260
65	2 1/2"	H	75.4	76.6	4.50	7.930	8.050
80	3"	H	88.1	89.5	5.00	10.300	10.500
100	4"	H	113.3	114.9	5.40	14.500	14.800

TOLERANCES

Outside Diameter as per above table

Thickness	Light	Medium	Heavy
	-8%	-10%	-10%
	+unlimited	+unlimited	+unlimited
Weight	-8% & +10% (for single tube)		

Mechanical Properties		Chemical Properties	
Yield Strength	195 Mpa (Minimum)	Phosphorus	0.045% Max
Tensile Strength	320 to 460 Mpa	Sulphur	0.045% Max
%Elongation	20% Minimum	Carbon	0.40% Max
		Equivalent	

Ductility Test For Tubes upto & include 2"

Black Tubes	Galvanized Tube
Bending angle	Bending angle
180°	90°
Bending radius	Bending radius
6 times to the OD of Tube Bending Radius	8 times to the OD of Tube
Weld Position	Weld Position
3 o'clock	3 o'clock

Ductility Test

For Tubes above 2"

1. Flatten upto 75% of tube dia for weld test (weld at 3 o'clock position)
2. Flatten upto 60% of tube dia for raw material test

Leak Tightness Test 100% Hydrotesting at 5 Mpa or online eddy current testing or ultrasonic testing

Galvanizing Test As per AS 1650

Threading As per AS 1722-1