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INDIA'S No.1 STRUCTURAL STEEL TUBE COMPANY

APL APOLLO® STEEL PIPES

Corporate Office
SG Centre, 37C, Block A, Sector 132, Noida, Uttar Pradesh 201304, India
T : +91-120 6918000 F : +91-120 4041444

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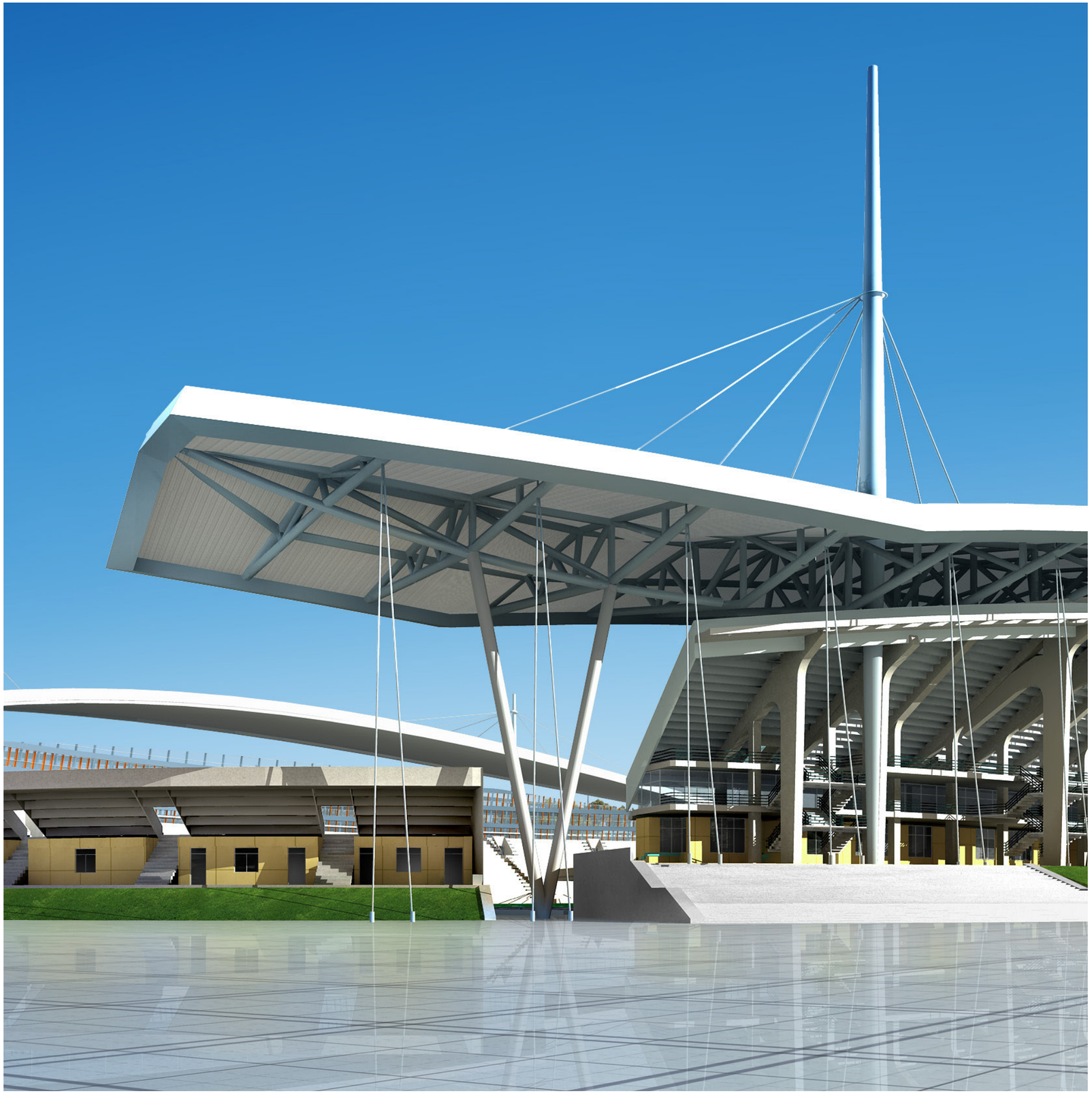
info@aplapollo.com | www.aplapollo.com

BROADENING THE CIRCLE OF INNOVATION WITH SUPERIOR STEEL SOLUTIONS

CIRCULAR PRODUCT PROFILE



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Sudesh Group

Sudesh Group is India's leading Steel Tubes and PVC Pipes manufacturer with 14 plants across different locations in the country. It's a pioneer in steel tubes of different types and shapes. For over 3 decades, SG Group has been revolutionizing the Steel Tubes manufacturing industry.

APL APOLLO®
STEEL PIPES

APL Apollo, a part of SG Group, is the country's largest manufacturer of steel pipes and tubes. Using High Frequency Induction Welding Technique (HFIW), APL Apollo has a capacity to produce 3.6 million tonnes of pipes per annum. The company is the unrivalled pioneer of Direct Forming Technology (DFT) as well as many other innovative products in the country.

OUR CONSTANT DRIVE FOR INNOVATION AND EYE FOR DETAIL HAS EARNED US MANY PRESTIGIOUS ACCREDITATIONS

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 73145-2010-AE-IND-RvA | Initial certification date: 10, March, 2010 | Valid: 10, March, 2019 - 09, March, 2022

This is to certify that the management system of

APL Apollo Tubes Limited
A-19, Industrial Area, Sikandrabad, Dist. Bulandshahar - 203 205, Uttar Pradesh, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2015

This certificate is valid for the following scope:
Manufacture of steel tubes (black & galvanized) for structural, mechanical and general engineering purposes, hollow steel sections for structural use & mild steel tubes for use in supply of water, gas, air and steam

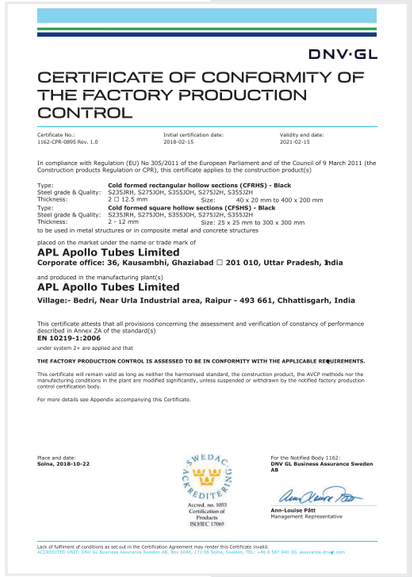
Place and date: **Chennai, 11, March, 2019**

For the issuing office: **DNV GL – Business Assurance ROHA, No. 10, GST Road, Alandur, Chennai - 600 016, India**

Sivadasan Madiyath
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., Zwolseweg 1, 2994 LB, BARENDRECHT, NETHERLANDS. TEL: +31102922689. assurance.dnvgl.com

ISO CERTIFICATE-14001-2015



DNV·GL

CERTIFICATE OF CONFORMITY OF THE FACTORY PRODUCTION CONTROL

Certificate No.: 1162-CPR-0895 Rev. 1.0 | Initial certification date: 2018-02-15 | Validity end date: 2021-02-15

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction products Regulation or CPR), this certificate applies to the construction product(s)

Type: **Cold formed rectangular hollow sections (CFRHS) - Black**
Steel grade & Quality: S235JRH, S275J0H, S355J0H, S275J2H, S355J2H
Thickness: 2 □ 12.5 mm Size: 40 x 20 mm to 400 x 200 mm
Type: **Cold formed square hollow sections (CFSHS) - Black**
Steel grade & Quality: S235JRH, S275J0H, S355J0H, S275J2H, S355J2H
Thickness: 2 - 12 mm Size: 25 x 25 mm to 300 x 300 mm
to be used in metal structures or in composite metal and concrete structures

placed on the market under the name or trade mark of
APL Apollo Tubes Limited
Corporate office: 36, Kausambhi, Ghaziabad □ 201 010, Uttar Pradesh, India

and produced in the manufacturing plant(s)
APL Apollo Tubes Limited
Village:- Bedri, Near Urla Industrial area, Raipur - 493 661, Chhattisgarh, India

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)
EN 10219-1:2006
under system 2+ are applied and that

THE FACTORY PRODUCTION CONTROL IS ASSESSED TO BE IN CONFORMITY WITH THE APPLICABLE REQUIREMENTS.

This certificate will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

For more details see Appendix accompanying this Certificate.

Place and date: **Solna, 2018-10-22**

SWEDAC ACCREDITERING
Accred. no. 1693
Certification of Products
ISO/IEC 17065

For the Notified Body 1162: **DNV GL Business Assurance Sweden AB**

Ann-Louise Pått
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance Sweden AB, Box 6043, 171 06 Solna, Sweden, TEL: +46 8 587 940 00. assurance.dnvgl.com

CE EN 10219

DNV·GL

CERTIFICATE OF FACTORY PRODUCTION CONTROL

Certificate No: 7041-2015-CE-IND | Initial certification date: 17 June, 2009 | Valid: 17 September, 2018 – 16 September, 2021
This certificate consists of 2 pages

This is to certify that

That the product(s)

Non-alloy Steel Tubes suitable for Welding and Threading

Manufactured by

APL Apollo Tubes Limited
A-19 Industrial Area, Sikandrabad, Dist. Bulandshahar, UP, India

has on a voluntary basis been assessed with respect to the conformity assessment procedure "Factory Production Control" as described in EN 10255:2004+A1:2007 annex ZA Clause 12.3 of the standard on structural steel, as amended and found to comply.

Applications/Limitations
In compliance with the Construction Product Regulation 305/2011, CE marking & provide Declaration of Performance and Attestation procedure AoC 3, which is described in the Standard EN 10255:2004 +A1:2007 according the Annex ZA; Initial Type Testing (ITT) Clause 12.2 shall meet the requirements and compliance of the same rests under responsibility of the Manufacturer.

This certificate remains valid during a three year period as long as the conditions laid down in the harmonised technical specification in reference or the manufacturing conditions in the factory or the factory production control itself are not modified significantly. The product liability rests with the manufacturer or his representative

Place and date: **Chennai, 17 September, 2018**

For the issuing office: **DNV GL – Business Assurance ROHA, No. 10, GST Road, Alandur, Chennai - 600 016, India**

Hariharan Sundareswara
Manager - Product Certification

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. Except for any liability caused by DNV GL's gross negligence or wilful misconduct, DNV GL's maximum cumulative liability arising out of or related to the use of or reliance on this document shall be limited under no circumstances exceed the amount of the fee.
Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

DNV GL BUSINESS ASSURANCE INDIA PVT LTD, 'ROHA' 10 GST Road, Chennai – 600 016, India, TEL.INT: +91 44 43980855

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CE EN 10255

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 284462-2019-AHSO-IND-RvA | Initial certification date: 11 March 2019 | Valid: 11 March 2019 – 11 March 2022

This is to certify that the management system of

APL Apollo Tubes Limited
A-19, Industrial Area, Sikandrabad, Dist. Bulandshahar - 203 205, Uttar Pradesh, India

has been found to conform to the Occupational Health and Safety Management System standard:
ISO 45001:2018

This certificate is valid for the following scope:
Manufacture of steel tubes (black & galvanized) for structural, mechanical and general engineering purposes, hollow steel sections for structural use & mild steel tubes for use in supply of water, gas, air and steam

Place and date: **Barendrecht, 11 March 2019**

For the issuing office: **DNV GL – Business Assurance Zwolseweg 1, 2994 LB, Barendrecht, Netherlands**

Erle Koek
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., ZWOLSEWEG 1, 2994 LB, BARENDRECHT, NETHERLANDS. TEL: +31102922689. assurance.dnvgl.com

ISO CERTIFICATE-45001-2018

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 148697-2014-AQ-IND-RvA | Initial certification date: 17 January 2002 | Valid: 17 January 2020 - 16 January 2023

This is to certify that the management system of

APL Apollo Tubes Limited
C.O.36, Kaushambhi, Ghaziabad – 201 010, Uttar Pradesh, India
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Manufacture & marketing of steel tubes (ERW black and galvanized) for structural, mechanical and general engineering purposes, idlers for belt conveyers, hollow steel sections for structural use, mild steel tubes for use in water (potable & wells), pneumatic, steam, gas and sewage

Place and date: **Chennai, 21 January 2020**

For the issuing office: **DNV GL – Business Assurance ROHA, No. 10, GST Road, Alandur, Chennai - PIN - 600 016, India**

Sivadasan Madiyath
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL Business Assurance B.V., Zwolseweg 1, 2994 LB, Barendrecht, Netherlands. TEL: +31(0)102922689. www.dnvgl.com/assurance

ISO CERTIFICATE-9001-2015

भारत सरकार
GOVERNMENT OF INDIA
वाणिज्य एवं उद्योग मंत्रालय
MINISTRY OF COMMERCE & INDUSTRY
कार्यालय, अपर महानिदेशक, विदेश व्यापार
OFFICE OF THE ADDITIONAL DIRECTOR GENERAL OF FOREIGN TRADE

मान्यता प्रमाण पत्र
Certificate of Recognition
स्टार निर्यात सदन
TWO STAR EXPORT HOUSE

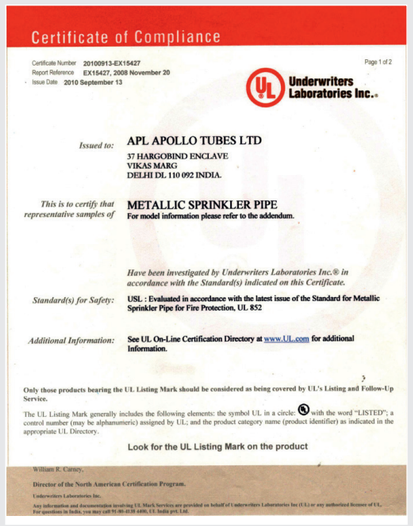
मैसर्स _____
(आई ई सी सं. _____ और आयकर पैन सं. _____)
को विदेश व्यापार नीति, 2009-2014 के प्रावधानों के अनुसार स्टार निर्यात सदन का स्तर प्रदान किया जाता है। यह प्रमाण पत्र 1 अप्रैल _____ से 31 मार्च _____ तक _____ वर्षों की अवधि के लिए वैध है।

M/s. APL APOLLO TUBES LTD., 37, HARGOVIND ENCLAVE VIKAS MARG, DELHI-110092
(IEC No. 0594024617 and Income Tax PAN No. AAACA0960G) are hereby accorded the status of Star Export House in accordance with the provisions of the Foreign Trade Policy, 2015-2020 This Certificate is valid for a period of FIVE years, effective from 1st April 05.10.2015 To 31st March 04.10.2020. "STATUS CERTIFICATE VALID BEYOND 31.03.2020 SHALL CONTINUE TO REMAIN IN FORCE, IN CASE PROVISION OF FTP 2015-2020 CONTINUES TO RECOGNIZE THE STATUS."

सं./No. AB/ 0854
तारीख/Date : 17.12.2015
स्थान/Place : NEW DELHI
(फाईल सं./File No.) 05/75/105/675/AM16/EMO/CLA

(SUMEET JERATH)
अपर महानिदेशक, विदेश व्यापार
Additional Director General of Foreign Trade

TWO STAR EXPORT HOUSE CERTIFICATE



Certificate of Compliance

Certificate Number 20100913-EX15427
Report Reference EX15427, 2008 November 20
Issue Date 2010 September 13
Page 1 of 2

Underwriters Laboratories Inc.®

Issued to: **APL APOLLO TUBES LTD**
37 HARGOBIND ENCLAVE
VIKAS MARG
DELHI DL 110 092 INDIA.

This is to certify that representative samples of **METALLIC SPRINKLER PIPE**
For model information please refer to the addendum.

Have been investigated by Underwriters Laboratories Inc.® in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: **USL : Evaluated in accordance with the latest issue of the Standard for Metallic Sprinkler Pipe for Fire Protection, UL 852**

Additional Information: **See UL On-Line Certification Directory at www.UL.com for additional information.**

Only those products bearing the UL Listing Mark should be considered as being covered by UL's Listing and Follow-Up Service.

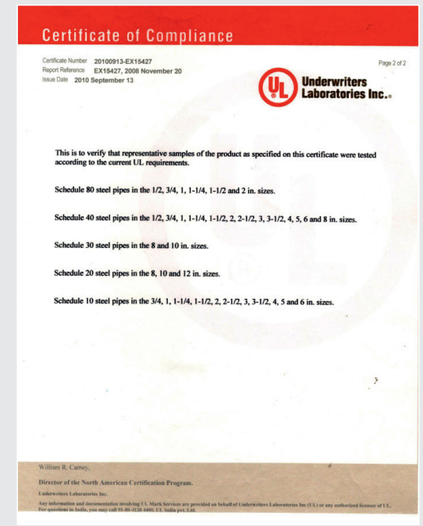
The UL Listing Mark generally includes the following elements: the symbol UL in a circle, with the word "LISTED"; a control number (may be alphanumeric) assigned by UL; and the product category name (product identifier) as indicated in the appropriate UL Directory.

Look for the UL Listing Mark on the product

William R. Carney,
Director of the North American Certification Program.
Underwriters Laboratories Inc.

Any information and documentation involving UL Mark Services are provided on behalf of Underwriters Laboratories Inc (UL) or any authorized licensee of UL. For questions in India, you may call 91-80-4130 4400, UL India pvt. Ltd.

UL CERTIFICATE



Certificate of Compliance

Certificate Number 20100913-EX15427
Report Reference EX15427, 2008 November 20
Issue Date 2010 September 13
Page 2 of 2

Underwriters Laboratories Inc.®

This is to verify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Schedule 80 steel pipes in the 1/2, 3/4, 1, 1-1/4, 1-1/2 and 2 in. sizes.

Schedule 40 steel pipes in the 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6 and 8 in. sizes.

Schedule 30 steel pipes in the 8 and 10 in. sizes.

Schedule 20 steel pipes in the 8, 10 and 12 in. sizes.

Schedule 10 steel pipes in the 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5 and 6 in. sizes.

William R. Carney,
Director of the North American Certification Program.
Underwriters Laboratories Inc.

Any information and documentation involving UL Mark Services are provided on behalf of Underwriters Laboratories Inc (UL) or any authorized licensee of UL. For questions in India, you may call 91-80-4130 4400, UL India pvt. Ltd.

UL CERTIFICATE

Size Range:

Outside Diameter:
15.88mm - 355.6mm
Thickness Range:
0.6mm - 10mm
Length:
3.0 meter to 12.0 meter

Applications:

Liquid Transmission
Idlers
Mechanical And General Engineering
Structural
Water And Sewage
Water Wells
Fire Fighting
Piling
Agriculture
Sprinkler System
Green House
Fencing & Many More

Tests Performed:

Hydrostatic Test
Eddy Current Test
Flattening/Flaring Test/Bend Test
Chemical analysis
Other tests as required by the relevant standard
NOTE: For details please refer specification sheet.

Production Standards:

IS:1239(PART-I)/2004, BS:1387-1985
DIN2439, IN2440, DIN2441, DIN2444,
EN:10255:2004, EN:10240:1998,
EN:10219:2006
IS:9295-1983
IS:3601-2006
IS:1161-2014
IS:3589/2001
IS:4270:2001
ASTM A53 GR A&B SCH 20/40/80
ASTM A795
ASTM A135
BSEN 39:2001
EN:10217-1
AS:1074
AS NZS:1163
ASTM A252
ASTM A500

Finishing Operations:

Plain End
Bevelled
Threaded and Socketed
Grooved
Cut lengths

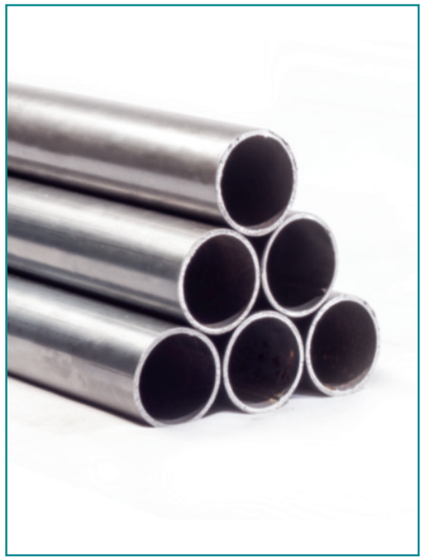
Surface Protection:

Black (self colored uncoated)
Outside protective coating oil/ varnish/Lacquered
Hot dip Galvanised
Pre-Galvanised

Oiled/Varnish

Hot Dip Galvanised

Pre-Galvanised



Black (Self colored uncoated)

Technical Data of MS Black Round Tubes

Specification 15:1239 (Part-1) 2004 - DIN 2439, DIN 2440, DIN 2441
(Equivalent BS: 1387: 1985 / EN 10255: 2004 / DIN 2444)

NB and Series		Outside Diameter		Wall Thikness		Nominal Weight			
		Min.	Max			Plain End		Screwed & Socketed	
		mm	mm	mm	SWG	Kg/M	Meters/Tonnes	Kg/M	Meters/Tonnes
15	L	210	214	2.0	14	0.947	1052	0.96	1046
	M	210	218	2.6	12	121	826	122	820
	H	210	218	3.2	10	144	694	145	690
20	L	26.4	26.9	2.3	13	138	725	139	719
	M	26.5	27.3	2.6	12	1.56	641	1.57	637
	H	26.5	27.3	3.2	10	187	535	188	532
25	L	33.2	33.8	2.6	12	1.98	505	2.00	500
	M	33.3	34.2	3.2	10	2.41	415	2.43	411.5
	H	33.3	34.2	4.0	8	2.93	341	2.95	339
32	L	41.9	42.5	2.6	12	2.54	394	2.57	389
	M	42.0	42.9	3.2	10	3.1	322	3.13	319
	H	42.0	42.9	4.0	8	3.79	264	3.82	262
40	L	47.8	48.4	2.9	11	3.23	310	3.27	306
	M	47.8	48.8	3.2	10	3.56	281	3.60	278
	H	47.9	48.8	4.0	8	4.37	229	4.41	227
50	L	59.6	60.2	2.9	11	4.08	245	4.15	241
	M	59.7	60.8	3.6	9	5.03	199	5.10	196
	H	59.7	60.8	4.5	7	6.19	161	6.26	160
65	L	75.2	76	3.2	10	5.71	175	5.83	171.5
	M	75.3	76.6	3.6	9	6.42	156	6.54	153
	H	75.3	76.6	4.5	7	7.93	126	8.05	124
80	L	87.9	88.7	3.2	10	6.72	149	6.89	145
	M	88.0	89.5	4.0	8	8.36	120	8.53	117
	H	88.0	89.5	4.8	6	9.9	101	1010	96
100	L	113.0	113.9	3.6	9	9.75	102	1000	100
	M	113.1	115	4.5	7	122	82	1250	80
	H	113.1	115	5.4	5	145	69	1480	67.5
125	M	1385	140.8	4.8	6	15.9	63	1640	61
	H	1385	140.8	5.4	5	179	56	1840	54
150	M	163.9	1665	4.8	6	189	53	1950	51
	H	163.9	1665	5.4	5	213	47	21.90	46

Thickness & Mass are applicable for Black & Galvanised Steel Tubes as per clause 8.1.1 of IS : 1239 (Part-1) 2004

This specification conforms to CE Mark conferred by Det Norske Veritas, Netherlands.

Tolerance

A - Thickness	Tolerance	B- Weight	Tolerance	Length Tolerance
1. Light Tubes	+ not limited -8%	1. Single Tube (Light Series)	+10% -8%	
2. Medium & Heavy Tubes	+ not limited -10%	2. Single Tube (Medium & Heavy Series)	±10%	Unless otherwise Specified 4 to 7 mtrs. Can also be supplied in Fix Lengths ±5cm.
		3. For quantities per load of 10 tonnes minimum (Light Series)	+7.5% - 5%	
		4. For quantities per load of 10 tonnes minimum (Medium and Heavy Series)	±7.5%	

ERW Steel tubes for idlers for Belt conveyors as per IS 9295 – 1983 Dimension and Nominal Masses

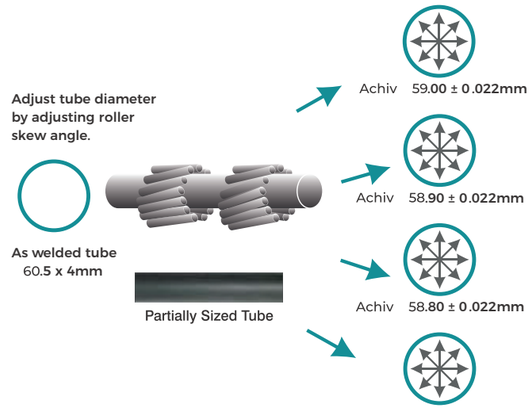
Outside Diameter	Thickness	Mass	Meters
mm	mm	Kg./mtr	Tonnes
63.50	3.65	5.39	186
	4.05	5.94	168
	4.50	6.55	153
	4.85	7.01	143
	5.40	7.74	143
	6.30	8.89	129
76.10	3.65	6.52	153
	4.05	7.20	139
	4.50	7.95	126
	4.85	8.52	117
	5.40	9.42	106
	6.30	1084	92
88.90	4.05	8.74	118
	4.50	9.37	107
	4.85	1005	99
	5.40	1112	90
	6.30	1283	78
10160	4.05	9.74	103
	4.50	1078	93
	4.85	11.57	86
11430	4.50	1219	78
	4.85	1309	76
	5.40	1450	69
	6.30	13.59	53
1270	4.50	1461	74
	4.85	1619	68
	5.40	1875	62
	6.30	1500	53
1330	4.50	1430	69.9
	4.85	1533	65.2
	5.40	1699	58.8
13970	4.50	1500	67
	4.85	1613	62
	5.40	1789	56
	6.30	20.73	48
15240	4.50	1641	61
	4.85	1765	57
	5.40	1958	51
	6.30	22.70	44
15900	4.50	1715	58
	5.40	1844	49
	4.85	20.46	42
	6.30	23.72	49
16510	4.50	1782	56
	4.85	1917	52
	5.40	2127	47
	6.30	24.67	41
16830	4.50	1818	55
	4.85	1955	51
	5.40	2169	46
	6.30	25.69	40
193.70	5.40	25.08	40
	6.30	29.12	40
21910	5.40	28.46	34
	6.30	33.06	34

a. Outside diameter	± 0.8%
b. Ovality below 168.3mm	0.5mm
c. Ovality including 168.3mm & above	1.0mm
d. Weight kg/mtr	
- Single tube	±10%
e. For truck load of 10 tonnes	±7.5%
f. Thickness	±10%
g. Grade	
- ERW grade	YST 210 & YST 240 & YST 310

Advantages of RSM Technology

- In between Non-Standard Diameter possible online
  In between Non-Standard Diameter there can be adjustment without change of tooling. Diameter accuracy and roundness achieved with Rotary sizing technology is of very high standard as compared to conventional sizing mills.

- Surface Finish Improves
  Tooling is adjustable and can manufacture all sizes within its operating range with improved dimensional accuracy. The surface finish of incoming strip is improved by 30%. Cold work is reduced & energy savings are considerable.

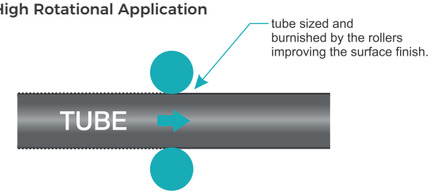


- Even and Low Residual Stress
  Typically two cages are used in RSM which are cum rotating. This is required to eliminate any torsion load which may be induced into the tube by the process. This results in even reduction on full surface of tube. Sizing the tube in only 2 passes keeps the residual stress low thereby preserving more of the material elongation test tube mill manipulation.

  Tubes that are processed through RSM have no significant change in residual stress in the traverse direction. In the longitudinal direction, there is a large reduction in the surface residual tensile stress.

END USES

- Idler Tubes for Conveyors
- Propeller Shaft Tubes
- Bobbin Tubes for Textile Industry
- High Precision Diameter
- High Rotational Application



Rotating RSM Roller and Cage

ERW steel tube for water & sewage purpose conforming to IS : 3589/2001

N. B size	Outside Diameter	Wall thickness	Plain end	
			Mass	Meters
mm	mm	mm	Kg./mtr	Tonnes
150	168.3	2.60	10.60	94
		3.20	13.00	77
		4.00	16.20	62
		4.50	18.20	55
		5.00	20.10	50
		6.30	25.20	40
175	193.7	2.60	12.30	81
		3.60	16.90	59
		4.50	21.00	48
		6.30	29.10	34
200	219.1	2.60	23.80	72
		3.60	33.10	52
		4.50	23.80	42
		6.30	33.10	30
250	273	3.60	23.90	42
		4.00	26.50	38
		5.00	33.90	30
		6.30	41.40	24
		7.10	46.57	21
		8.00	52.30	19
		10.00	64.90	15
300	323.9	4.00	31.60	32
		5.00	35.40	28
		5.60	44.00	23
		7.10	55.50	18
350	355.6	5.60	48.33	21
		6.40	55.11	18
		7.10	61.02	16
		7.90	67.74	15
		8.70	74.42	13
		9.50	81.08	12

Tolerance

A. Outside diameter of pipe	±0.75%
B. Ovality	=Max. 1%
C. Thickness	±10%
D. Length Unless other specified, length are in single random length of 4 to 7 meter.	
E . Mass per truck load of 10 tonnes of above	+7.5%

Mechanical Properties

Grade	T.S. Mpa MIN	Y.S. Mpa MIN	% age Elongation of MIN
Fe 330	330	195	20
Fe 410	410	235	18
Fe 450	450	275	15

Note: these are preferred OD & thickness. Other sizes not included may be supplied as specified by purchaser.

ERW steel tube for water walls conforming to IS : 4270/ 2001 plain end casing pipes / screwed and socketed casing pipes

N. B size	Outside Diameter	Wall thickness	Nominal weight		Socket	Socket Length (min)
mm	mm	mm	Kg/m	m/tonnes	mm	mm
100	114.3	5.0	13.48	74	130	144.3
	114.3	5.4	14.5	69	157	120.6
125	141.3	5.0	16.8	59		
	141.3	5.4	18.1	55	184	127
		7.1	23.5	42.5		
150	168.3	5.0	20.13	50	211.16	152.4
	168.3	5.4	21.6	46		
		7.1	28.2	35.5	237	152.4
175	193.7	5.4	25.1	40		
	193.7	6.4	29.6	34	291	177.8
		8.0	36.6	27		
200	219.1	5.4	28.46	35	346	177.8
	219.1	8.0	33.6	30		
		10.0	41.6	24		
250	273.1	7.1	46.57	21		
	273.1	8.0	52.3	19		
		10.0	64.9	15		
300	323.9	7.1	55.47	18		
	323.9	8.0	62.3	16		
		10.0	77.4	13		
350	355.6	5.6	48.33	21		
		6.4	55.11	18		
		7.1	61.02	16		
		7.9	67.74	15		
		8.7	74.42	13		
		9.5	81.08	12		

Tolerance

a. Outside diameter of pipe	±1%
b. Thickness Up to 406.4mm OD	(+)15% (-)12.5%
c. Weight	(+)10%
- Single tube	(-)8%
d. Length Unless otherwise specified	4 to 7 mtrs

Mechanical Properties

Grade	Y.S. (min) Mpa MIN	T.S. (min) Mpa MIN	% age MIN. Elongation on 5.65/so=GI.
Fe 410	235	410	15%
Fe 450	275	450	13%

Steel tubes for structural purposes confirming to IS:1161-2014

NB	OD	Thk	Mass	Area of Cross-Section	Internal Volume	Surface		Moment of Inertia	Modulus of Section	Radius of Gyration	Square of Radius of Gyration
						External	Internal				
mm (I)	mm (2)	mm (3)	kg/m (4)	cm2 (5)	cm3/m (6)	cm3/m (7)	cm3/m (8)	cm2/m (9)	cm3 (IO)	cm (11)	cm2 (12)
	21.3	2	0.952	1.21	235	669	543	0.57	0.54	0.69	0.47
15	21.3	2.6	1.20	1.53	204	669	506	0.68	0.64	0.67	0.45
	21.3	3.2	1.43	1.82	174	669	468	0.77	0.72	0.65	0.42
	26.9	2.3	1.40	1.78	391	845	701	1.36	1.01	0.87	0.76
20	26.9	2.6	1.56	1.98	370	845	682	1.48	1.10	0.86	0.75
	26.9	3.2	1.87	2.38	330	845	644	1.70	1.27	0.85	0.71
	33.7	2.6	1.99	2.54	638	1 1159	895	3.09	1.84	1.10	1.22
25	33.7	3.2	2.41	3.07	585	1 059	858	3.60	2.14	1.08	1.18
	33.7	4	2.93	3.73	519	1 059	807	4.19	2.49	1.06	1.12
	42.4	2.6	2.55	3.25	I 087	1 332	1 169	6.46	3.05	1.41	1.99
32	42.4	3.2	3.00	3.94	I 018	1 332	1 131	7.62	3.59	1.39	1.93
	42.4	4	3.79	4.83	929	1 332	1 081	8.99	4.24	1.36	1.86
	48.3	2.9	3.25	4.14	1419	1 517	1 335	10.70	4.43	1.61	2.59
40	48.3	3.2	3.56	4.53	I 379	1 517	1 316	11.59	4.80	1.60	2.56
	48.3	4	4.37	5.57	I 276	1 517	1 266	13.77	5.70	1.57	2.47
	60.3	2.9	4.11	5.23	2 333	1 894	1 712	21.59	7.16	2.03	4.13
50	60.3	3.6	5.03	6.41	2 215	1 894	1 668	25.87	8.58	2.01	4.03
	60.3	4.5	6.19	7.89	2067	1 894	1 612	30.90	10.25	1.98	3.92
	76.1	2.9	5.24	6.67	3 882	2 391	2 209	44.74	11.76	2.59	6.71
65	76.1	3.6	6.44	8.20	3 728	2 391	2 165	54.01	14.19	2.57	6.59
	76.1	4.5	7.95	10.12	3 536	2 391	2 108	65.12	17.11	2.54	6.43
	88.9	3.2	6.76	8.62	5 346	2 793	2 592	79.21	17.82	3.03	9.19
80	88.9	4	8.38	10.67	5 140	2 793	2 542	96.34	21.67	3.00	9.03
	88.9	4.8	9	12.68	4 939	2 793	2 491	112.49	25.31	2.98	8.87
	101.6	3.6	8.70	11.08	6 999	3 192	2 966	133.24	26.23	3.47	12.02
90	101.6	4	9.63	12.26	6 881	3192	2 941	146.28	28.8	3.45	11.93
	101.6	4.8	11.46	14.60	6 648	3192	2 890	171.39	33.74	3.43	11.74
	114.3	3.6	9.83	12.52	9 009	3591	3 365	191.98	33.59	4.33	15.33
100	114.3	4.5	12.19	15.52	8 709	3591	3 308	234.32	41.00	4.32	15.10
	114.3	5.4	14.5	18.47	8 413	3591	3 252	274.54	48.04	4.3	14.86
	127	4.5	13.59	17.32	10 936	3990	3 707	325.29	51.23	4.33	18.78
110	127	4.8	14.47	18.43	10 825	3990	3 688	344.50	54.25	4.32	18.69
	127	5.4	16.19	20.63	10 605	3990	3 651	382.04	60.16	4.3	18.52
	139.7	4.5	15.00	19.11	13 417	4 389	4 106	437.20	62.59	4.78	22.87
125	139.7	4.8	15.97	20.34	13 295	4 389	4 087	463.33	66.33	4.77	22.78
	139.7	5.4	17.89	22.78	13 050	4 389	4 050	514.50	73.66	4.75	22.58
	152.4	4.5	16.41	20.91	16 151	4 788	4 505	572.24	75.10	5.23	27.37
135	152.4	4.8	17.47	22.26	16 016	4 788	4 486	606.76	79.63	5.22	27.26
	152.4	5.4	19.58	24.94	15 748	4 788	4 448	674.51	88.52	. 5.20	27.05
	165.1	4.5	17.82	22.70	19 138	5 187	4 904	732.57	88.74	5.68	32.27
	165.1	4.8	18.98	24.17	18 991	5 187	4 885	777.13	94.14	5.67	32.15
150	165.1	5.4	21.27	27.09	18 699	5 187	4 847	864.70	104.75	5.65	31.92
	165.1	5.9	23.20	29.50	18 465	5 189	4 818	970.00	113.40	5.63	31.72
	165.1	6.3	24.67	31.43	18 265	5 187	4 791	992.28	120.20	5.62	31.57
	168.3	4.5	18.18	23.16	19 931	5 287	5 005	777.22	92.36	5.79	33.56
150	168.3	4.8	19.35	24.66	19 781	5 287	4 986	824.57	97.99	5.78	33.44
	168.3	5.4	21.69	27.64	19 483	5 287	4 948	917.69	109.05	5.76	33.21
	168.3	6.3	25.17	32.06	19 040	5 287	4 891	1053.42	125.18	5.73	32.85
	193.7	4.8	22.36	28.49	26 619	6 085	5 784	1271.39	131.27	6.68	44.63
175	193.7	5.4	25.08	31.94	26 273	6 085	5 746	1416.97	146.31	6.66	44.36
	193.7	5.9	27.33	34.81	25 987	6 085	5 715	1536.13	158.61	6.64	44.13
	193.7	6.3	29.12	37.09	25 759	6 085	5 689	1630.05	168.31	6.63	43.95

Steel tubes for Structural purposes conforming to IS:1161-2014

NB	OD	Thk	Mass	Area of Cross-Section	Internal Volume	Surface		Moment of Inertia	Modulus of Section	Radius of Gyration	Square of Radius of Gyration
mm (I)	mm (2)	mm (3)	kg/m (4)	cm2 (5)	cm3/m (6)	External cm3/m (7)	Internal cm3/m (8)	cm2/m (9)	cm3 (IO)	cm (11)	cm2 (12)
	219.1	4.8	25.37	32.32	34471	6 883	6 582	1856.03	169.42	7.58	57.43
	219.1	5.6	29.49	37.56	33 947	6 883	6531	2141.61	195.49	7.55	57.02
	219.1	5.9	31.02	39.52	33 751	6 883	6 513	2247.01	205.11	7.54	56.86
200	219.1	6.3	33.06	42.12	33 491	6 883	6 487	2386.14	217.81	7.53	56.65
	219.1	8	41.65	53.06	32 397	6 883	6 381	2959.63	270.16	7.47	55.78
	219.1	10	51.57	65.69	31 134	6 883	6 255	3598.44	328.47	7.40	54.78
	273	5.9	38.86	49.51	53 584	8 577	8 206	4417.18	323.60	9.45	89.22
250	273	6.3	41.44	52.79	53 256	8 577	8 181	4695.82	344.02	9.43	88.96
	273	8	52.28	66.60	51 875	8 577	8 074	5851.71	428.70	9.37	87.86
	273	10	64.86	82.62	50 273	8 577	7 948	7154.09	524.11	9.31	86.59
	323.9	6.3	49.34	62.86	76111	10 176	9 780	7928.90	489.59	11.23	126.14
300	323.9	8	62.32	79.39	74 458	10 176	9 673	9910.08	611.92	11.17	124.82
	323.9	10	77.41	98.61	72 536	10 176	9 547	12158.34	750.75	11.10	123.29
	355.6	8	68.58	87.36	90 579	11 172	10 669	13201.37	742.48	12.29	151.11
350	355.6	10	85.23	108.57	88 457	11 172	10 543	16223.50	912.46	12.22	149.42

*254 mm OD is available on demand.

Mechanical Properties

Grade	Y.S. (min) Mpa	T.S. (min) Mpa	% age Elongation on
YST- 210	210	330	20
YST- 240	240	410	17
YST- 310	310	450	14
YST- 355	355	490	10

Weight Tolerance

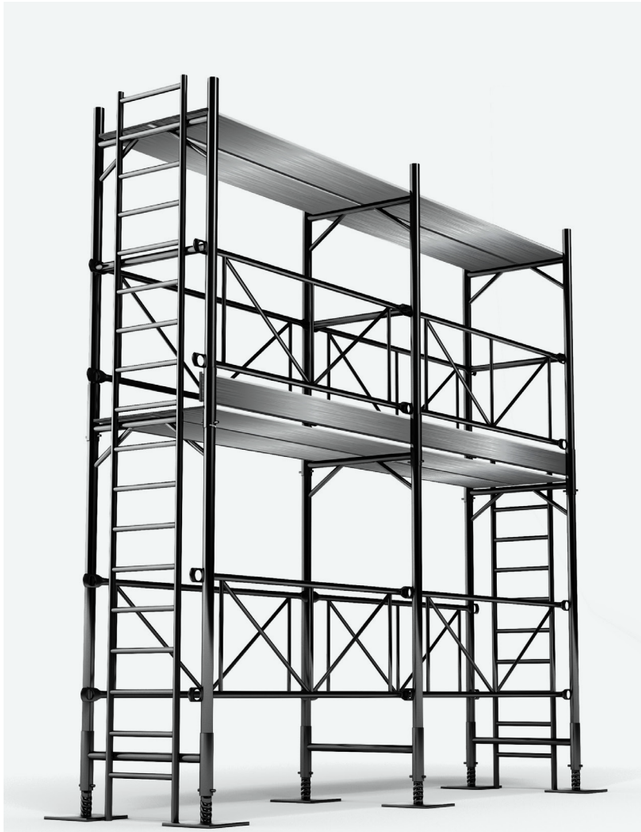
Single Tube	±10%
10 ton lot	±7.5%

Tolerance

1. On outside diameter up to & including 48.3= +0.4mm/-0.8mm
2. Over 48.3mm=+/-1%

Thickness Tolerance

For all size	±10%
Welded tubes	±10%



APL Apollo Tubes Limited offers a broad range of high quality Scaffolding Components. The product range includes SCAFFOLD TUBES as per EN-39. Scaffolding Components includes cuplock scaffolding, wedgelock scaffolding & support tubes, fittings (couplers) and framework components and accessories as well as a vast range of other components.

Tube Scaffoldings are widely used for supporting men and material, tools and tackles during construction, alteration demolition and maintenance work because of their several advantages over conventional type of timber bamboo scaffolding.

We offer Scaffolding Tubes which also include complete range of components that are strong, durable and economical. These items are ideally suited for wide application in construction and building structures.

Scaffolding Tubes

Size		Thickness		Ovality		Weight	
Inches	mm	Inches	mm	Inches	mm	Inches	mm
1½	48.3	0.126	3.2	0.02	0.5	2.392	3.56
1½	48.3	0.157	4.0	0.02	0.5	2.937	4.37

Tolerance

Outside Diameter	Thickness	Weight
0.5	±/-10%	±7.5% On Single Tube

Steel Grade : S235JRH
Mechanical Properties
Yield Strength : 235 MPA MIN
Tensile Strength : 340/520 MPA

Chemical Composition
Carbon : 0.20% Max
Silicon : 0.05% Max
Manganese : 0.40% Max
Phosphorous : 0.40% Max
Sulphur : 0.45% Max
Aluminium : 0.02% Max

End Finish : Square Cut
Straightness : 1mm In 600mm
Flattening Test : Two stages
Flatten Upto 75% Of Tube Dia For Weld
Flatten Upto 60^ Of Tube Dia For Material
Bend Test Also Available

Zinc Coating : 45 Microns Minimum Outside

Marking : En 39 Aplapollo Tubes -3.2/4.0
Delivery Condition : a) As Rolled Condition
- (Without Protection)
b) Hot Dip Calvanised

Techincal data of IS:3601 2006 tubes for Mechanical & General Engg. Purpose

N.B size		Approx O.D (mm)	Thicknes mm	Wt.kg/mtr	Meters per tonnes
Mm	In				
15	½”	21.3	1.8	0.866	1155
			2.0	0.952	1050
			2.6	1.2	833
			3.2	1.43	699
			4.0	1.71	585
20	¾”	26.9	1.8	1.11	901
			2.0	1.23	813
			2.3	1.4	714
			2.6	1.56	641
			3.2	1.87	535
			4.0	2.26	442
25	1”	33.7	2.0	1.56	641
			2.3	1.78	562
			2.6	1.99	503
			3.2	2.41	415
			4.0	2.93	341
			4.5	3.24	309
32	1.25”	42.4	2.3	2.27	441
			2.6	2.55	392
			3.2	3.09	324
			3.6	3.44	291
			4.0	3.79	264
			5.0	4.61	217
			5.4	4.93	203
40	1.5”	48.3	2.3	2.61	383
			2.6	2.93	341
			2.9	3.25	308
			3.2	3.56	281
			4.0	4.37	229
			4.9	5.23	191
			5.0	5.34	187
			5.6	5.900	170
			5.9	6.160	162
50	2”	60.3	2.3	3.29	304
			2.6	3.7	270
			2.9	4.11	243
			3.2	4.51	222
			3.6	5.03	199
			4.0	5.55	180
			4.5	6.19	162
			5.0	6.82	147
			5.6	7.55	133
			6.3	8.39	119
65	2.5”	76.1	2.6	5.24	191
			3.2	5.75	174
			3.6	6.44	155
			4.0	7.11	141
			4.5	7.95	126
			5.0	8.777	114
80	3”	88.9	5.4	9.42	106
			6.3	10.8	93
			7.1	12.1	83
			2.9	6.15	163
			3.2	6.76	148
			4.0	8.38	119
			5.0	10.3	97
			5.4	11.1	90
			5.6	11.5	87
			6.3	12.8	78

Grade: ERW-WP- 100

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Techincal data of pipes conforming to ASTM A-53 Gr. A&B Sch. 20/40/80

Nominal Bore		Outside Diameter		Schedule	Wall Thickness		Weight of Pipes Plain End		No. of Pcs per Bundle
Mm	Inch	Mm	Inch		Mm	Inch	Kg/Mtr.	Lbs/Ft	
15	½	21.3	0.84	40	2.77	0.109	1.27	0.85	120
				80	3.73	0.147	1.62	1.09	
20	¾	26.7	1.05	40	2.87	0.113	1.69	1.13	90
				80	3.91	0.154	2.2	1.48	
25	1	33.4	1.315	40	3.38	0.133	2.5	1.68	60
				80	4.55	0.179	3.24	2.17	
32	1 ¼	42.2	1.66	40	3.56	0.14	3.39	2.27	42
				80	4.85	0.191	4.47	3	
40	1 ½	48.3	1.9	40	3.68	0.145	4.05	2.72	36
				80	5.08	0.2	5.41	3.63	
50	2	60.3	2.375	40	3.91	0.154	5.44	3.66	26
				80	5.54	0.218	7.48	5.03	
65	2 ½	73	2.875	40	5.16	0.203	8.63	5.8	18
				80	7.01	0.276	11.41	7.67	
80	3	88.9	3.5	40	5.49	0.216	11.29	7.58	14
				80	7.62	0.3	15.27	10.26	
90	3 ½	101.6	4	40	5.74	0.226	13.57	9.12	12
				80	8.08	0.318	18.63	12.52	
100	4	114.3	4.5	40	6.02	0.237	16.07	10.8	10
				80	8.56	0.337	22.32	15	
125	5	141.3	5.56	40	6.55	0.258	21.77	14.63	8
150	6	168.3	6.625	40	7.11	0.028	28.26	18.99	7
200	8	219.1	8.625	20	6.35	0.25	33.31	22.38	5
				30	7.04	0.277	36.31	24.72	3
				40	8.18	0.322	42.55	28.58	3
250	10	273	10.748	20	6.35	0.25	41.75	28.06	3
				30	7.8	0.307	51.01	34.27	3
				40	9.27	0.365	60.29	40.52	3
300	12	323.8	12.748	20	6.35	0.25	49.71	33.41	3
				30	8.38	0.33	65.18	43.1	3
				STD	9.52	0.375	73.78	49.61	3
				40	10.31	0.406	79.70	53.57	3
350	14	355.6	14	10	6.35	0.25	54.69	36.75	3
				20	7.92	0.312	67.9	45.65	3
				30	9.52	0.375	81.25	54.62	3

Chemical Properties

Composition, Max%

	Carbon	Manganese	Phosphorus	Sulphur	Copper	Nickel	Chromium A	Molybdeneum A	Vanadium A
Grade A	0.25	0.95	0.05	0.045	0.4	0.4	0.4	0.15	0.08
				80	3.37	0.147	1.62	1.09	20230
Grade B	0.3	1.2	0.05	0.045	0.4	0.4	0.4	0.15	0.08

Tolerance

Outside Diameter	Pipe Size upto & including Dn40 Pipe Size DN 50 or longer	±0.4mm +1-1% Thickness -12.5max Weight ±10%

Mechanical Properties

	Grade A	Grade B
Yield Strength	205Mpa(min)	240Mpa(min)
Tensile Strength	330Mpa(min)	415Mpa(min)
Elongation%	As per ATSM A-%53 table 4.1 4.2	

*This specification conform to UL certification conferred by underwriters laboratories, USA.
ASTM A53 SCH.40 pipes are approved by Dubai, Sharjah & Abu Dhabi civil defence & also from Qatar civil defence.

Techincal data of pipes conforming to ASTM A252

OUTSIDE DIAMETER		DIAMETER TOLERANCE (mm) (Inch)		STANDARD THICKNESS		WEIGHT	
(Inch)	(mm)	(Min)	(Max)	(mm)	(Inch)	(Kg/mtr)	(lb/ft)
8 ⅝"	219.1	216.91 (8.539")	221.29 (8.712")	4.37	0.172	23.13	15.54
				4.78	0.188	25.24	16.96
				5.16	0.203	27.20	18.28
				5.56	0.219	29.29	19.68
				6.35	0.250	33.31	22.38
				7.04	0.277	36.79	24.72
				7.92	0.312	41.27	27.73
				8.18	0.322	42.54	28.58
10 ¾"	273.0	270.27 (10.640")	275.73 (10.855")	4.17	0.164	27.62	18.56
				4.37	0.172	28.94	19.45
				4.55	0.179	30.10	20.22
				4.78	0.188	31.59	21.22
				5.16	0.203	34.06	22.88
				5.56	0.219	36.69	24.65
				5.84	0.230	38.49	25.86
				6.35	0.250	41.75	28.06
				7.09	0.279	46.47	31.22
				7.80	0.307	51.00	34.27
				8.74	0.344	56.94	38.26
				9.27	0.365	60.29	40.51
12 ¾"	323.8	320.56 (12.620")	327.04 (12.875")	4.78	0.188	37.57	25.24
				5.16	0.203	40.52	27.22
				5.56	0.219	43.65	29.33
				6.35	0.250	49.71	33.40
				7.14	0.281	55.74	37.45
				7.92	0.312	61.73	41.48
				8.38	0.330	65.20	43.81
				8.74	0.344	67.89	45.61
				9.52	0.375	73.78	49.61
				10.31	0.406	79.73	53.52
14"	355.6	352.04 (13.859")	359.156 (14.140")	4.78	0.188	41.31	27.76
				5.16	0.203	44.56	29.94
				5.56	0.219	48.20	32.26
				5.84	0.230	50.39	33.86
				6.35	0.250	54.69	36.75
				7.14	0.281	61.33	41.21
				7.92	0.312	67.94	45.65
				8.74	0.344	74.74	50.22
				9.52	0.375	81.25	54.62

Chemical Poperties: Phosphorus = 0.050% (Max.)

Mechanical Properties

	Grade 1	Grade 2	Grade 3
Tensile Strength (Mpa)	345	415	455
Yield Strength (Mpa)	205	240	310
% Elongation in (50mm)	30	25	20
*Deduction	1.50	1.25	1.00

Technical Details

Characteristics	Tolerances & Technical details
Outside Diameter (OD)	For Round Pipes ± 1 % of OD
Thickness	-12.5% of specific wall thickness.
Weight	For each tube – 5 % & + 15% of standard weight (Calculated Weight)
Length	Pipe shall be furnished in single random length, double random length or in uniform length as per the customer requirement.
Straightness	The finished pipe shall be reasonably straight.
End	Pipe shall be finished with Square cut (plain End) of Bevel End (30° - 0/+5°)
Surface Protection	Black & Galvanized coating as per Customer requirement
Marking (Stencilling)	APL APOLLO TUBES, Specification designation, Grade, Outside diameter, Thickness, Process of manufacturing & Heat No." on pipe and any thin specific as per the customer requirement.

ASTM A-795* (Black & Galvanised Steel Pipes for Fire Protection)

Nominal Bore		Outside Diameter		SCH-10				No. of piece per Bundle	SCH 40/30*				No. of piece per Bundle
				Wall Thickness		Weight Plain End			Wall Thickness		Weight Plain End		
Mm	Inch	Mm	Inch	Mm	Inch	Mm	Inch		Mm	Inch	Mm	Inch	
20	¾	26.7	1.050	2.11	0.083	1.28	0.96	90	2.87	0.113	1.69	1.13	90
25	1	33.4	1.315	2.77	0.109	2.09	1.41	90	3.38	0.133	2.50	1.68	60
32	1¼	42.2	1.660	2.77	0.109	2.69	1.81	61	3.56	0.14	3.39	2.27	42
40	1½	48.3	1.900	2.77	0.109	3.11	2.09	61	3.68	0.145	4.05	2.72	36
50	2	60.3	2.375	2.77	0.109	3.93	2.64	37	3.91	0.154	5.45	3.66	26
65	2½	73.0	2.875	3.05	0.120	5.26	3.53	29	5.16	0.205	8.68	5.80	18
80	3	88.9	3.500	3.05	0.120	6.46	4.34	24	6.49	0.216	11.29	7.58	14
90	3½	101.6	4.000	3.05	0.120	7.41	4.98	21	5.74	0.226	13.58	9.12	12
100	4	114.3	4.500	3.05	0.120	8.37	5.62	19	6.02	0.237	16.09	10.8	10
125	5	141.3	5.563	3.4	0.134	11.58	7.78	10	6.55	0.258	21.79	14.63	8
150	6	168.3	6.625	3.4	0.134	13.85	9.30	10	7.11	0.280	28.29	18.99	7
200	8	219.1	8.625	4.78	0.188	25.26	16.96	5	7.04*	0.277	36.82	24.72	5

*The specification conforms to UL conferred by underwriters laboratories USA

ASTM A-135 GRADE A&B (Black and Galvanised Steel Pipe)

Nominal Bore		Outside Diameter		SCH-10				No. of piece per Bundle
				Wall Thickness		Weight Plain End		
Mm	Inch	Mm	Inch	Mm	Inch	Mm	Inch	
20	¾	26.7	1.050	2.11	0.083	1.28	0.96	90
25	1	33.4	1.315	2.77	0.109	2.09	1.41	90
32	1¼	42.2	1.66	2.77	0.109	2.69	1.81	61
40	1½	48.3	1.900	2.77	0.109	3.11	2.09	61
50	2	60.3	2.375	2.77	0.109	3.93	2.64	37
65	2½	73.0	2.875	3.05	0.120	5.26	3.53	29
80	3	88.9	3.500	3.05	0.120	6.46	4.34	24
90	3½	101.6	4.000	3.05	0.120	7.41	4.98	21
100	4	114.3	4.500	3.05	0.120	8.37	5.62	19
125	5	141.3	5.563	3.40	0.134	11.58	7.78	14

Tolerance

Outside Diameter	Pipe Size upto & including DN 40 Pipe Size DN 50 or longer	+ 1-0.4mm +1=1% Thickness -12.5(max) Weight +10%

Mechanical Properties

	Grade A	Grade B
Yield Strength	205Mpa(min)	240Mpa(min)
Tensile Strength	330Mpa(min)	415Mpa(min)
Elongation %	35	30

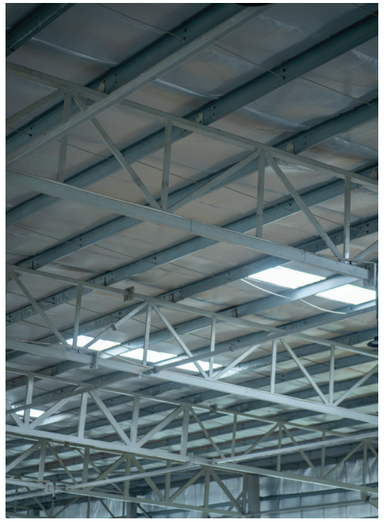
Chemical Properties

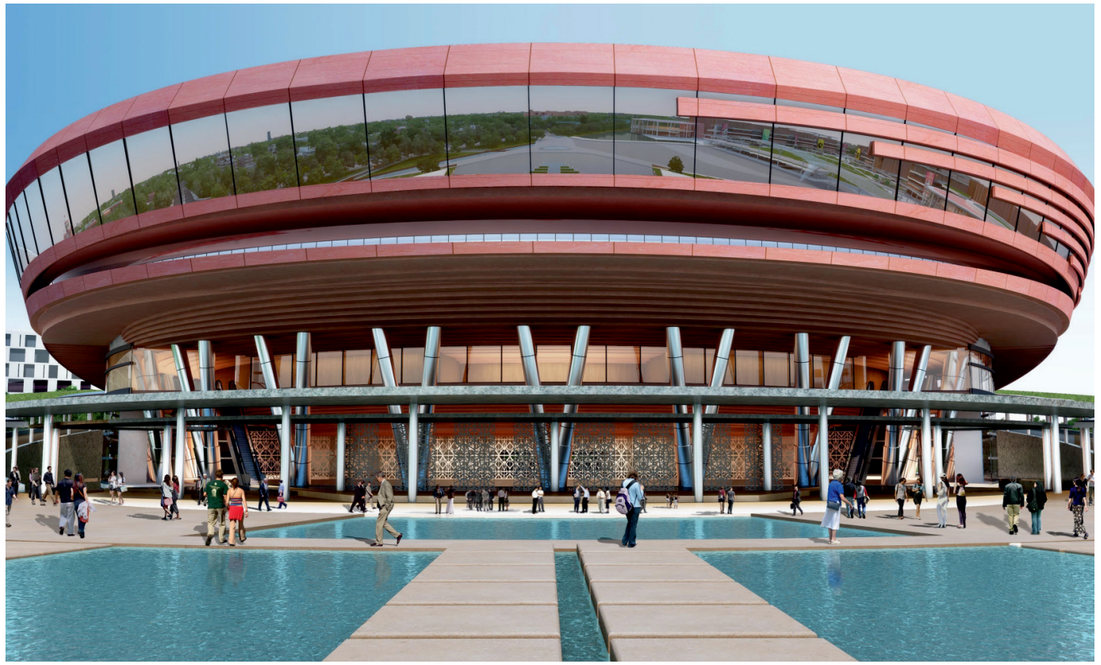
	Carbon	Manganese	Phosphorus	Sulphur
Grade A	0.25	0.05	0.035	0.35
Grade B	0.3	1.2	0.35	0.35

Galvanising

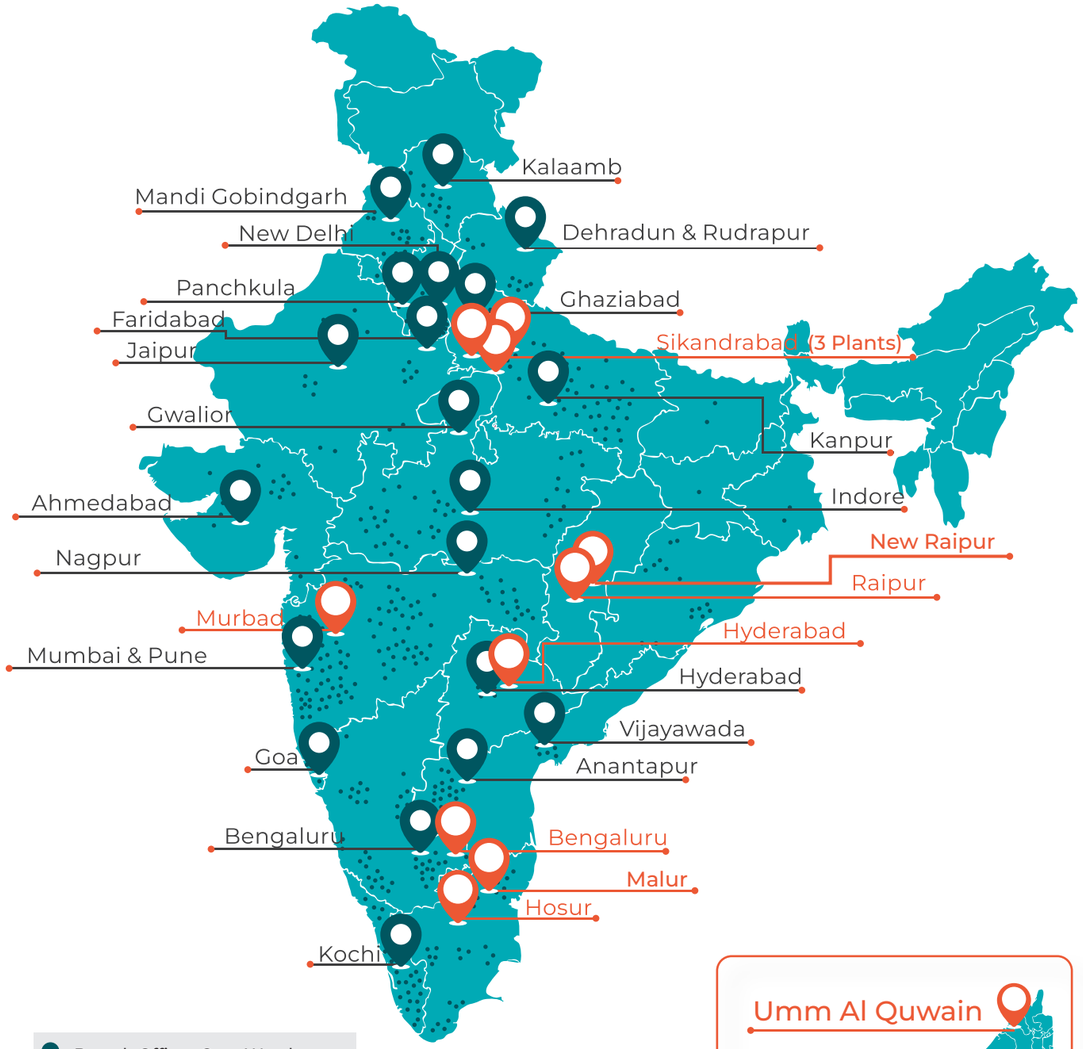
Minimum	0.49 0kg/Sq Mtr
Average	0.550kg/Sq Mtr

APPLICATIONS





OUR NETWORK OF INNER STRENGTH



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