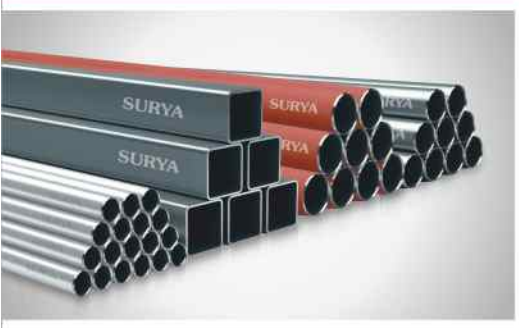


SURYA

STEEL TUBES & PIPES

ERW & SPIRAL WELDED PIPES



www.suryaglobalsteeltube.com



Director's Message



B.Raju

The pipe & tube industry is a significant component of the country's infrastructure. At Surya Global Steel Tube Ltd., we ensure that these arteries of the country's infrastructure continue to remain robust and strong. The Indian steel pipe & tube industry has experienced rapid growth in the last several years. This is mainly due to demand for pipes in the oil & gas sector, irrigation sector as well the real estate industry. Infrastructure development, urbanization and development of residential and industrial corridors are facilitating the growth of the pipe & tube industry in India.

Steel pipes are manufactured from the finest quality steel and high grade zinc at our three state-of-the-art plants. The production process combines technologically advanced machinery and equipment and is further strengthened by quality assurance at every stage. The brand is respected globally and considered among the most trusted and largest preferred brands in the steel pipe industry. The wide acceptance and admiration of our steel pipes is evident from our exponentially increasing market share & brand preference.

Our technologically advanced products are being sold by 25,000 Dealers across India and are also being exported to more than 50 countries across the globe, to include Europe, Middle East & the USA. Quality is the hallmark of our products.

It is our continuous thirst to strive. We always have been challenging our standard to excel so as to surpass the client expectation. Thus, making us the largest exporter from India.



About us

From a beginning in 1973, the Surya Group has emerged today as a vast conglomerate with the largest pipe manufacturing plants with installed capacity of 8,00,000 MT per annum. It also has a large cold rolling strip mill at Bahadurgarh (Haryana), two lighting units one each at Kashipur (Uttarakhand) and Gwalior (MP).

In order to meet the growing demand of Large Diameter Pipes (SAWH), the group set up a new facility under its subsidiary named - Surya Global Steel Tubes Ltd. in west coast of India at Anjar in the state of Gujarat, near International sea port, Mundra & Kandla.

There are regular expansions of capacity to meet the growing demand in both Steel & Lighting segments. The plant has certifications from API and ISO 9001:2008. It has been supplying material to all leading names in the oil and gas sector besides being a reliable supplier in the export market that covers developed and developing countries.

ONE OF THE **LARGEST** PIPE **MANUFACTURING** PLANT WITH **CAPACITY** ABOUT **8,00,000 MT** PER ANNUM.

FIRM COMMITMENT TO **EXCELLENCE** IN **QUALITY**, A BRAND LEADER IN BOTH **STEEL PIPE** AND **LIGHTING INDUSTRY**.

THE COMPANY HAS A **WIDE MARKETING** NETWORK WITH ITS **BRANCHES**, **DEALER** AND **RETAILER** NETWORK SPREAD **ALL** OVER THE **COUNTRY**.

A **TURNOVER** OVER **INR. 4000 CRORES** (US $ 600 MILLIONS), THE GROUP'S QUEST FOR **GROWTH** IS NEVER ENDING.

ONE OF THE **BIGGEST** INDIAN CORPORATE **EXPORTING** TO OVER **50 COUNTRIES**

SURYA GROUP IS TAKING **BIG STRIDES** IN ITS CHOSEN AREAS WITH TESTED **SKILLS**, **COMMITMENT**, **WORKFORCE**, VAST EXPERIENCE AND MATURE **LEADERSHIP**.

Our Manufacturing Plants



SURYA
STEEL TUBES & PIPES

Exports To Over 50 Countries




USA


UNITED KINGDOM


AUSTRALIA


EUROPE


CANADA


U.A.E.


MALAYSIA


MAURITIUS


OMAN


KUWAIT


SAUDI ARABIA


SINGAPORE


QATAR


GHANA


JORDAN


BAHRAIN


TANZANIA


SEYCHELLES


UGANDA


SRI LANKA


ETHIOPIA


CYPRUS


MYANMAR


EGYPT





ERW PIPES

SPECIFICATIONS & APPLICATIONS

The products conform to the
following National & International specifications

Water Pipe Lines

Water Mains, Plumbing, Sewerage Systems.
Industrial Water Lines, Plant Piping.
IS:1239, IS:3589, ASTM A 53, JIS G 3452,
EN 10255, EN 10217-1, AS : 1074,
ASNZ: 1163:2009,

Oil Pipe Lines

Oil Refinery Piping, Crude Oil Piping.
Cross Country Pipe Line.
API 5L (PSL 1 & PSL 2), IS/ISO 3183

Gas Pipe Lines

Pipe Lines for Natural Gas, LPG
and other Non-Toxic Gases.
API 5L (PSL 1 & PSL 2), IS/ISO 3183
JIS G 3452





Construction Industries

Scaffolding & Structural Purposes.
IS:1161, IS:4923, EN 39,
EN 10219- Part 1 & 2, AS NZ 1163 : 2009
ASTM A 500
Electrical Poles & Telecom Tower (IS:1161)

Power Projects

Ash Handling System. LP Piping. API 5L,
IS:3589, IS:1239

Agriculture & Irrigation

Deep Tube-Wells & Casing Pipes. IS:4270

Fire Fighting System

ASTM A 53, ASTM A 795
HVAC (Heating Ventilation Air-Conditioning)
IS:3589, IS:1239

Sugar Industries

Steel Tubes for Mechanical & General
Engineering Purposes.
(IS:3601, BS:1775)

Other Purposes

Supply of Exhaust Piping. Cold Storage Industry,
LPG Cylinder Supporting Rings. (IS:1239)
Steel Tubes for Idlers & Belt Conveyers (IS:9295),
Electrical Poles & Telecom Tower (IS:1161)





ERW PIPE PLANT

ERW pipes are extensively used in agriculture, industry and construction activities like scaffolding and casing in bore wells. These are used for conveying water, gas, crude oil and chemicals at various pressures and densities over long distances. Considering the challenging and varied applications, the pipes are produced to meet very high standards of both national and international specifications .

Quality assurance begins at the raw material stage and continues right through all the manufacturing operations, till the Pipes are packed for dispatch. The quality assurance department is fully backed by a modern laboratory for various metallurgical and chemical tests, and a test house for testing physical properties. It has been awarded the prestigious ISO 9001:2008 certificate by DNV GL Business Assurance for its quality systems.

Surya Group has installed capacity of 6,00,000 MT per annum to manufacture ERW pipes from OD ½" to 16" according to various National & International specifications including API5L upto Grade X80 PSL2. The Group has entered in manufacturing of Oil Country Tubular Goods (OCTG) as per API 5CT Gr H40, J55, K55 PSL 1 & have supplied successfully to USA market. We are also supplying pipes conforming to AS 1074/ AS NZ 1163 and EN 10219. Besides above, our plant is supplying BLACK, RED PAINTED, GALVANIZED & ROLL-GROOVED PIPES.

QUALITY

TESTING & QUALITY CONTROL

The trained and committed work force ensures high quality of pipes made to various national and international standards, including the demanding API specifications.







Our Credentials To Quality Supremacy

Surya's relentless pursuit and quest for success is unmatched. Many such International accreditations and certifications have been awarded to Surya from governing bodies for meeting the best of quality standards. The special grades that have graced SURYA and made it one of the biggest Indian companies includes API 5L grade A, API 5L grade B as well as API 5L grade X42 to X80. The state-of-the-art plants have certifications from API and ISO 9001:2008 by DNV GL.

Product Profile : ERW Pipes

NPS	Thickness	Capacity (MT per annum)	Length	Specifications	Pipe Ends
½" to 16"	1.6 mm to 12.7 mm	6,00,000 (0.6 Million)	300 mm to 12900 mm	All National / International specifications including API5L upto X-80 PSL2, API 5CT H40, J55, K55 PSL1, EN : 10255/10219, EN : 10217-1, AS : 1074, AS NZ 1163: 2009, ASTM A 53. BS EN - 39, ASTM A 500 ASTM A 252, ASTM A 795	Plain / Bevelled/ Roll-Grooved

Testimony To Our Capability

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 70121-2010-AQ-IND-RvA | Initial certification date: 22, January, 2010 | Valid: 22, January, 2016 - 15, September, 2018

This is to certify that the management system of

Surya Global Steel Tubes Ltd.
Survey No. 188, Anjar - Mundra Highway, Village: Bhuvad, Taluk: Anjar - 370 130, District: Kutch, Gujarat, India

has been found to conform to the Quality Management System standard:
ISO 9001:2008

This certificate is valid for the following scope:
Manufacture and supply of HSAW (helical submerged arc welded) pipes, ERW (black & GI) pipes & tubes for oil and gas, water & structural purpose

Place and date: **Chennai, 07, January, 2016**

The RvA is a signatory to the IAF MLA

For the issuing office:
DNV GL – Business Assurance
ROMA, 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 9001:2008
70121-2010-AQ-IND-RvA

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 177047-2015-AE-IND-RvA | Initial certification date: 03, May, 2012 | Valid: 03, May, 2015 - 02, May, 2018

This is to certify that the management system of

Surya Global Steel Tubes Limited
Survey No. 188, Anjar Mundra Highway, Village: Bhuvad - 370 130, District: Kutch, Gujarat, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2004

This certificate is valid for the following scope:

Manufacture and supply of helical submerged arc welded & electric resistance welded (black and galvanized) pipes & tubes for oil, gas, water and structural purposes

Place and date: **Chennai, 21, April, 2015**

The RvA is a signatory to the IAF MLA

For the issuing office:
DNV GL – Business Assurance
ROMA, 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: +31102922689. www.dnvba.com

ISO 14001:2004
177047-2015-AE-IND-RvA

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 177048-2015-HSO-IND-DNV | Initial certification date: 03, May, 2012 | Valid: 03, May, 2015 - 02, May, 2018

This is to certify that the management system of

Surya Global Steel Tubes Limited
Survey No. 188, Anjar Mundra Highway, Village: Bhuvad - 370 130, District: Kutch, Gujarat, India

has been found to conform to the Occupational Health and Safety Management System standard:
OHSAS 18001:2007

This certificate is valid for the following scope:

Manufacture and supply of helical submerged arc welded & electric resistance welded (black and galvanized) pipes & tubes for oil, gas, water and structural purposes

Place and date: **Chennai, 21, April, 2015**

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

OHSAS 18001:2007
177048-2015-HSO-IND-DNV

Certificate of Compliance

Certificate Number: 20100301 – EX15061 | Page 1 of 2
Report Reference: EX15061, 2006 September 21
Issue Date: 2010 March 01

Underwriters Laboratories Inc.®

Issued to: SURYA ROSHNI LTD

PRAKASH NAGAR, BAHADURGARH
JHAJJAR, HR 124507 INDIA

This is to certify that representative samples of: Metallic Sprinkler Pipe

Refer to Addendum page

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

Standard(s) for Safety: The basic standard used to investigate products in this category is UL 852, "Metallic Sprinkler Pipe for Fire Protection Service."

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

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

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark, [UL] may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory pertaining the recognitions or under "Marking" for the individual recognitions.

Look for the UL Recognized Component Mark on the product

Issued by: Vidya Bhat
Vidya Bhat, Customer Service Professional
UL India Pvt. Ltd

Reviewed by: William R Carney
William R Carney, Director of the North American Certification Program
UL Inc. Division Office

UL CERTIFICATE
No. : 20100301-EX15061

Testimony To Our Capability

DNV BUSINESS ASSURANCE

CERTIFICATE OF FACTORY PRODUCTION CONTROL

Certificate No. 90926-2010-CPD-IND Rev. 02
This Certificate consists of 2 pages

In compliance with the Construction Product Regulation 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of Construction Products, it has been stated that the construction product

Structural Steel
characterised in
EN 10255:2004+A1:2007 Non-alloy steel tubes suitable for welding and threading

Produced by the manufacturer
Surya Global Steel Tubes Limited
In the factory located at
Survey No. 188, Anjar Mundra Highway, Vill: Bhuvad, Tal: Anjar, Distt: Kutch, PIN-370130, India

is submitted by the manufacturer to initial type testing of the products and factory production control and that the Det Norske Veritas As has performedthe initial inspection of the factory and of the factory production control and performs the continuous surveillance, assessment and approval of thefactory production control.
This certificate attests that all provisions concerning the attestation of factory production control described in Annex ZA of the standards listed aboveand in accordance with the procedures given were applied. The Declaration of Performance and CE Marking as stated in the CPR 35/2011/EU andAnnex ZA of EN 10255:2004 + A1:2007 will be under the responsibility of 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 in accordance with the Council Directive, as amended

Initial Certificate date: **2010-12-29**
Place and date: Chennai, 2014-01-03
for Det Norske Veritas AS

This Certificate is valid until: 2016-12-29

The audit has been performed under the supervision of:
Balwant Rai
Lead Auditor

Hariharan Sundareswara Iyer
Manager Product Certification

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
This Certificate has been digitally signed. See www.dnv.com/digitalsignatures for more info.
DNV CERTIFICATION AB, Box 6046, 171 06 Solna, Sweden, TEL: +46 8 587 940 00 - www.dnv.com | www.dnvnorskeveritas.se
Page 1 of 2

CE CERTIFICATE
EN 10255:2004+A1:2007
90926-2010-CPD-IND Rev.02

DNV BUSINESS ASSURANCE

CERTIFICATE OF CONFORMITY OF THE FACTORY PRODUCTION CONTROL

Certificate No. **1162-CPR-0513** Rev. 0.0
This Certificate consists of 2 pages

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation), this certificate applies to the construction product

Cold formed welded structural hollow sections of non-alloy steels

Type:	CFCHS – Cold formed circular hollow sections, black and galvanized				
Steel grade & Quality:	S235JRH	Thickness:	2 - 10 mm	Size Ø:	21.3 – 273.0 mm
Type:	CFRHS – Cold formed rectangular hollow sections, black and galvanized				
Steel grade & Quality:	S235JRH S355J2H	Thickness:	2 - 10 mm	Size:	40 x 20 mm to 400 x 200 mm
Type	CFSHS – Cold formed square hollow sections, black and galvanized				
Steel grade & Quality:	S235JRH S355J2H	Thickness:	2 - 10 mm	Size:	20 x 20 mm to 300 x 300 mm
Intended use:	To be used in metal structures or in composite metal and concrete structures				

produced by or for
Surya Global Steel Tubes Ltd.
Survey No: 188/1, Anjar Mundra Highway, Vill: Bhuvad, Tal: Anjar Dist. Kutch, PIN- 370130, Gujarat, India
and produced in the manufacturing plant(s)
Surya Global Steel Tubes Ltd.
Survey No: 188/1, Anjar Mundra Highway, Vill: Bhuvad, Tal: Anjar Dist. Kutch, PIN- 370130, Gujarat, 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 fulfils all the prescribed requirements set out above.
This certificate remains valid during a three year period as long as the test methods and/or factory production control requirements included in the harmonised standard, used to assess the performance of the declared characteristics, do not change, and the product, and the manufacturing conditions in the factory or the plant are not modified significantly.

Initial Certification date: **2014-03-31**
Place and date: **Solna, 2014-05-28**

This Certificate is valid until: **2017-03-31**
for the Notified Body 1162:
DNV CERTIFICATION AB,
SWEDEN

The audit has been performed under the supervision of:
Balwant Rai
Lead Auditor

Bengt-Olov Andin
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
This certificate has been digitally signed. For more info, see www.dnv.com/digitalsignatures
DNV CERTIFICATION AB, Box 6046, 171 06 Solna, Sweden, TEL: +46 8 587 940 00 - www.dnv.com | www.dnv.se
Page 1 of 2

CE CERTIFICATE
EN 10219-1:2006
1162-CPR-0513

FM APPROVED

Certificate of Compliance

This certificate is issued for the following:

Schedule 40 Steel Sprinkler Pipe
(see attached sheet)

Prepared for:
Surya Global Steel Tubes Ltd.
Survey No. 188, Anjar Mundra Highway
Village - Bhuvad, Dist – Kutch, P.C. 370130
India

Manufactured at:
Surya Global Steel Tubes Ltd.
Survey No. 188, Anjar Mundra Highway
Village - Bhuvad, Dist – Kutch, P.C. 370130
India

FM Approvals Class: 1630, dated March 2011

Approval Identification: 0003047635 Approval Granted: May 15, 2013

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the construction as shown in the Approval Guide, an online resource of FM Approvals.

Richard B. Dunne
Group Manager – Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062

FM Approvals
Member of the FM Global Group

FM CERTIFICATE
No. : 0003047635

SRI LANKA STANDARDS INSTITUTION
Permit for the Use of SLS Certification Mark

1. By virtue of the powers derived under the provisions of Section 16 of the Sri Lanka Standards Institution Act. No. 6 of 1984, the Institution hereby grants to SURYA ROSHNI LTD.
(Name of the Permit Holder)
of PADMA TOWER 1, 5 - RAJENDRA PLACE, NEW DELHI - 110008, INDIA (hereinafter
(Address)
called "the permit holder" this permit to use the Certification Mark set out in the first column of the Schedule hereto upon or in respect of the article(s)/Process set out in the second column of the said Schedule and manufactured/ processed/operated at the premises located at SURYA GLOBAL STEEL TUBES LTD., SURVEY NO. 188, ANJAR MUNDRA HIGHWAY, VILLAGE-BHUVAD, DIST. KUTCH-370130, GUJARAT, INDIA
(Address)
and which are in conformity with the relevant Sri Lanka Standard(s) referred to in the third column of the said schedule as amended or revised from time to time.
2. This permit carries the rights and obligations stipulated in the rules and regulations made under the above mentioned Act.
3. This permit is subject to the General Conditions and Specific Conditions issued as annexes to this permit.
4. The Institution reserves the right to change or add to any of the said conditions as and when required, with prior notice.
5. This permit is valid for the period upto the stipulated date of expiry, subject to the validity of the relevant Standards including the amendments and revisions if any, or until it is cancelled by the Director General or the Officer authorized on that behalf by the Director General or surrendered by the permit holder.

Permit No: 1148 Date of Issue: 2015-04-23 Date of Expiry: 2016-04-22

THE SCHEDULE

(1) Certification Mark	(2) Article(s)/Process	(3) Sri Lanka Standard(s)
SLS 829	"PRAKASH - SURYA" BRAND GALVANIZED STEEL PIPES (PLEASE SEE SPECIFIC PERMIT CONDITIONS FOR THE SCOPE)	SLS 829 : 2009 SPECIFICATION FOR GALVANIZED STEEL PIPES & SOCKETS

Director General/Authorized Officer
SRI LANKA STANDARDS INSTITUTION

SLS CERTIFICATE
SLS 829:2009

CSIRO

ACTIVFIRE
ACTIVE FIRE PROTECTION – PRODUCT CERTIFICATION

CSIRO Verification Services
Highett, Victoria, Australia
+61 (0)3 9252 6000
http://www.activfire.gov.au

Certificate of Conformity

Certificate num.	Registration date	Version Number	Version Issue date	Valid until	Page 1 of 3
afp - 2977	12-Jun-2015	2	21-Sep-2015	30-Apr-2016	

Product designation

Surya, AS 1074 Series, steel fire protection pipe

(Refer to the Schedule/enclosures for further specified details)

Agent/distributor

Marubeni-Itochu Steel Oceania Pty Ltd
Level 25, 570 Bourke Street, MELBOURNE, VIC, AUSTRALIA, 8001

Registrant

Surya Global Steel Tubes Ltd
Survey No. 188, Anjar Mundra Highway, Bhuvad, Anjar, KUTCH, Gujarat, INDIA, 370130

Producer

Surya Global Steel Tubes Ltd
Survey No. 188, Anjar Mundra Highway, Bhuvad, Anjar, KUTCH, Gujarat, INDIA, 370130

Conformance criteria and evaluation

The Surya, AS 1074 Series, steel fire protection pipe has been evaluated and verified as conforming with the relevant requirements of the following criteria.

1. Australian Standard AS 1074-1989, 'Steel tubes and tubulars for ordinary service'.

Limitations/conditions of conformance

Limitations/conditions of conformance, where identified on this certificate, are derived from qualifications from evaluation(s) for conformity and/or other related technical documentation. All details with respect to design, assembly and installation instructions and restrictions should be checked against the producer's current technical manual/data sheets and the requirements of the Authority having Jurisdiction.

Specified limitations/conditions, determined from the evaluation for conformity, include the following.

i. System design and installation shall be determined and verified in accordance with the performance and prescribed requirements of the regulations, standards and criteria as specified by the building code and authorities having jurisdiction.

ii. System design and installation requirements may specify a minimum wall thickness that precludes the use of some of the scheduled pipe sizes for certain applications and locations.

iii. The dimensional and mechanical compatibility of pipes must be verified with the sizes of components by which they are connected or to which they connect.

Issued by

David Whittaker
Executive Officer – ActivFire Scheme

ACTIVFIRE CERTIFIED

This certification is issued within the scope of CSIRO Verification Services – Rules governing ActivFire Scheme and is valid only for the product(s) as submitted for evaluation and verification of conformity, subject to the following conditions.

- Reference to details, limitations and requirements, where documented as a schedule/enclosure with this certificate.
- The Registrant is responsible for their attestation of conformity and ensuring that on-going production complies with the conformance criteria defined in this certificate.
- This certificate will not be valid if any changes or modifications are made to the product which have not been notified and validated by CSIRO Verification Services.
- This certificate is subject to periodical re-validation upon verification that all requirements, as determined by the conformity assessment body, continue to be satisfactorily met by the Registrant.
- This certificate may only be reproduced in its published form, without modification and inclusive of all schedules/enclosures.
- Any changes, errors or omissions, must be submitted in writing and if necessary or requested, substantiated with relevant evidence.
- Any representations, such as advertising or other marketing related activities or articles shall reflect the correct contents of this certificate and conform with all relevant trade practices and consumer protection legislation and regulations.
- Any terms or conditions of use as applicable to content and documentation as published or accessed through web sites administered by the CSIRO Verification Services.

© CSIRO Australia, 2015
This certificate remains the property of CSIRO and may be subject to amendment, suspension or withdrawal at any time.
The validity and authenticity of this certificate can be verified by the certification register located at http://www.activfire.gov.au

Schedule to Certificate of Conformity

Certificate num.	Registration date	Version Number	Version Issue date	Valid until	Page 2 of 3
afp - 2977	12-Jun-2015	2	21-Sep-2015	30-Apr-2016	

Producer's description

The production and physical characteristics of Surya, AS 1074 Series, steel fire protection pipe are summarised as follows:

- The pipe is produced as ERW tube from Hot Rolled steel strip.
- The individual lengths of pipe are HDG (Inner surface as well as outer surface).
- Steel is processed in accordance with AS1074.
- The HDG coating conforms to AS/NZS 4792 – coating class HDG300 (300 g/m^2 min coating mass).

Technical specification

The following details are a representative extract of the technical specification for the Surya, AS 1074 Series, steel fire protection pipe and may be subject to change. Complete and current details should be determined from the designated producer's technical manual/data sheets.

Schedule of variant designations

The following is a schedule of validated variant designations of the certified/listed equipment.

DN	Inch	Class	OD min	OD max	Thickness	Surface finish options	End finish options
15	½"	Light	21.0 mm	21.4 mm	2.00 mm	Black/painted/HDG	PE/RG/Threaded
20	¾"	Light	26.4 mm	26.9 mm	2.30 mm	Black/painted/HDG	PE/RG/Threaded
25	1"	Light	33.2 mm	33.8 mm	2.60 mm	Black/painted/HDG	PE/RG/Threaded
32	1¼"	Light	41.9 mm	42.5 mm	2.60 mm	Black/painted/HDG	PE/RG/Threaded
40	1½"	Light	47.8 mm	48.4 mm	2.90 mm	Black/painted/HDG	PE/RG/Threaded
50	2"	Light	59.6 mm	60.2 mm	2.90 mm	Black/painted/HDG	PE/RG/Threaded
65	2½"	Light	75.2 mm	76.0 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
80	3"	Light	87.9 mm	88.7 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
100	4"	Light	113.0 mm	113.9 mm	3.60 mm	Black/painted/HDG	PE/RG/Threaded
150	6"	Light	165.1 mm	165.1 mm	3.50 mm	Black/painted/HDG	PE/RG/Threaded
200*	8"	Light	219.1 mm	219.1 mm	4.80 mm	Black/painted/HDG	PE/RG/Threaded
15	½"	Medium	21.1 mm	21.7 mm	2.60 mm	Black/painted/HDG	PE/RG/Threaded
20	¾"	Medium	26.6 mm	27.2 mm	2.60 mm	Black/painted/HDG	PE/RG/Threaded
25	1"	Medium	33.4 mm	34.2 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
32	1¼"	Medium	42.1 mm	42.9 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
40	1½"	Medium	48.0 mm	48.8 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
50	2"	Medium	59.8 mm	60.8 mm	3.60 mm	Black/painted/HDG	PE/RG/Threaded
65	2½"	Medium	75.4 mm	76.6 mm	3.60 mm	Black/painted/HDG	PE/RG/Threaded
80	3"	Medium	88.1 mm	89.5 mm	4.00 mm	Black/painted/HDG	PE/RG/Threaded
100	4"	Medium	113.3 mm	114.9 mm	4.50 mm	Black/painted/HDG	PE/RG/Threaded
125	5"	Medium	138.7 mm	140.6 mm	5.00 mm	Black/painted/HDG	PE/RG/Threaded
150	6"	Medium	164.1 mm	166.1 mm	5.00 mm	Black/painted/HDG	PE/RG/Threaded
15	½"	Heavy	21.1 mm	21.7 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
20	¾"	Heavy	26.6 mm	27.2 mm	3.20 mm	Black/painted/HDG	PE/RG/Threaded
25	1"	Heavy	33.4 mm	34.2 mm	4.00 mm	Black/painted/HDG	PE/RG/Threaded
32	1¼"	Heavy	42.1 mm	42.9 mm	4.00 mm	Black/painted/HDG	PE/RG/Threaded
40	1½"	Heavy	48.0 mm	48.8 mm	4.00 mm	Black/painted/HDG	PE/RG/Threaded
50	2"	Heavy	59.8 mm	60.8 mm	4.50 mm	Black/painted/HDG	PE/RG/Threaded
65	2½"	Heavy	75.4 mm	76.6 mm	4.50 mm	Black/painted/HDG	PE/RG/Threaded
80	3"	Heavy	88.1 mm	89.5 mm	5.00 mm	Black/painted/HDG	PE/RG/Threaded
100	4"	Heavy	113.3 mm	114.9 mm	5.40 mm	Black/painted/HDG	PE/RG/Threaded
125	5"	Heavy	138.7 mm	140.6 mm	5.40 mm	Black/painted/HDG	PE/RG/Threaded
150	6"	Heavy	164.1 mm	166.1 mm	5.40 mm	Black/painted/HDG	PE/RG/Threaded

* 200 DN materials and manufacturing process conform to AS 1074 but 200 mm exceeds the range of diameters prescribed by this product standard.

PE: Plain End
RG: Rolled Groove
HDG: Hot-dipped Galvanising

Schedule to Certificate of Conformity

Certificate num.	Registration date	Version Number	Version Issue date	Valid until	Page 3 of 3
afp - 2977	12-Jun-2015	2	21-Sep-2015	30-Apr-2016	

Schedule of properties/characteristics

The following schedule is an extract of physical and operational properties/characteristics of the certified/listed equipment.

Yield strength (min)	195 MPa
Ultimate Tensile Strength	320 to 460 MPa
Minimum elongation	20%
Galvanising, if specified	Hot-dip galvanized coating conforms with AS/NZS 4792, coating class HDG300. Minimum average coating mass of 300 g/m^2 of pipe surface.
Threading	AS 1722.1

Supplementary information

Schedule of relevant articles

The following schedule is an extract of articles significant and/or related as evidence of conformity.

Reference		Title / description	Date issued (or date validated)	Source
Ident. type	Ident.			
Extract	Section 01	AS 1074-1989 Steel tubes and tubulars for ordinary service (surya_SpecExtract_Section01_1-Jun-2015.pdf)	1-Jun-2015	Surya Global Steel Tubes Ltd
Test certificate	2015/E/53	Mill/material/manufacture's test certificate (surya_certOftest_14-May-2015.pdf)	20-May-2015	
	2015/E/3	Mill/material/manufacture's test certificate (surya_certOftest_20-May-2015.pdf)	14-May-2015	



Certificate of Authority to use the Official API Monogram

License Number: 5CT-1378 **ORIGINAL**

The American Petroleum Institute hereby grants to

SURYA GLOBAL STEEL TUBES LIMITED
Survey #188, Village Bhuvad
Anjar Mundra Highway
Taluka Anjar, Gujarat
India

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API Spec 5CT** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: **5CT-1378**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: **Manufacturer of Electric-Welded Casing or Tubing Plain End** at Group 1, H40/PSL 1, J55/PSL 1, K55/PSL 1

QMS Exclusions: Section 7.3, Design and Development

American Petroleum Institute

Effective Date: MAY 10, 2013
Expiration Date: MAY 10, 2016

To verify the authenticity of this license, go to www.api.org/compositelist.

Director of Global Industry Services

API 5CT
(License No. 1378)



Certificate of Authority to use the Official API Monogram

License Number: 5L-0794 **ORIGINAL**

The American Petroleum Institute hereby grants to

SURYA GLOBAL STEEL TUBES LIMITED
Survey #188, Village Bhuvad
Anjar Mundra Highway
Taluka Anjar, Gujarat
India

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API Spec 5L** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: **5L-0794**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: **Manufacturer of Line Pipe Plain End at PSL 1:** Type of Pipe: HFW, SAWH / Delivery Condition: R, N, M / Highest Grade: X70; **Manufacturer of Line Pipe Plain End at PSL 2:** Type of Pipe: HFW, SAWH / Delivery Condition: N, M / Highest Grade: X80 / Service Annex: H, J

QMS Exclusions: Section 7.3, Design and Development

American Petroleum Institute

Effective Date: SEPTEMBER 4, 2013
Expiration Date: MAY 10, 2016

To verify the authenticity of this license, go to www.api.org/compositelist.

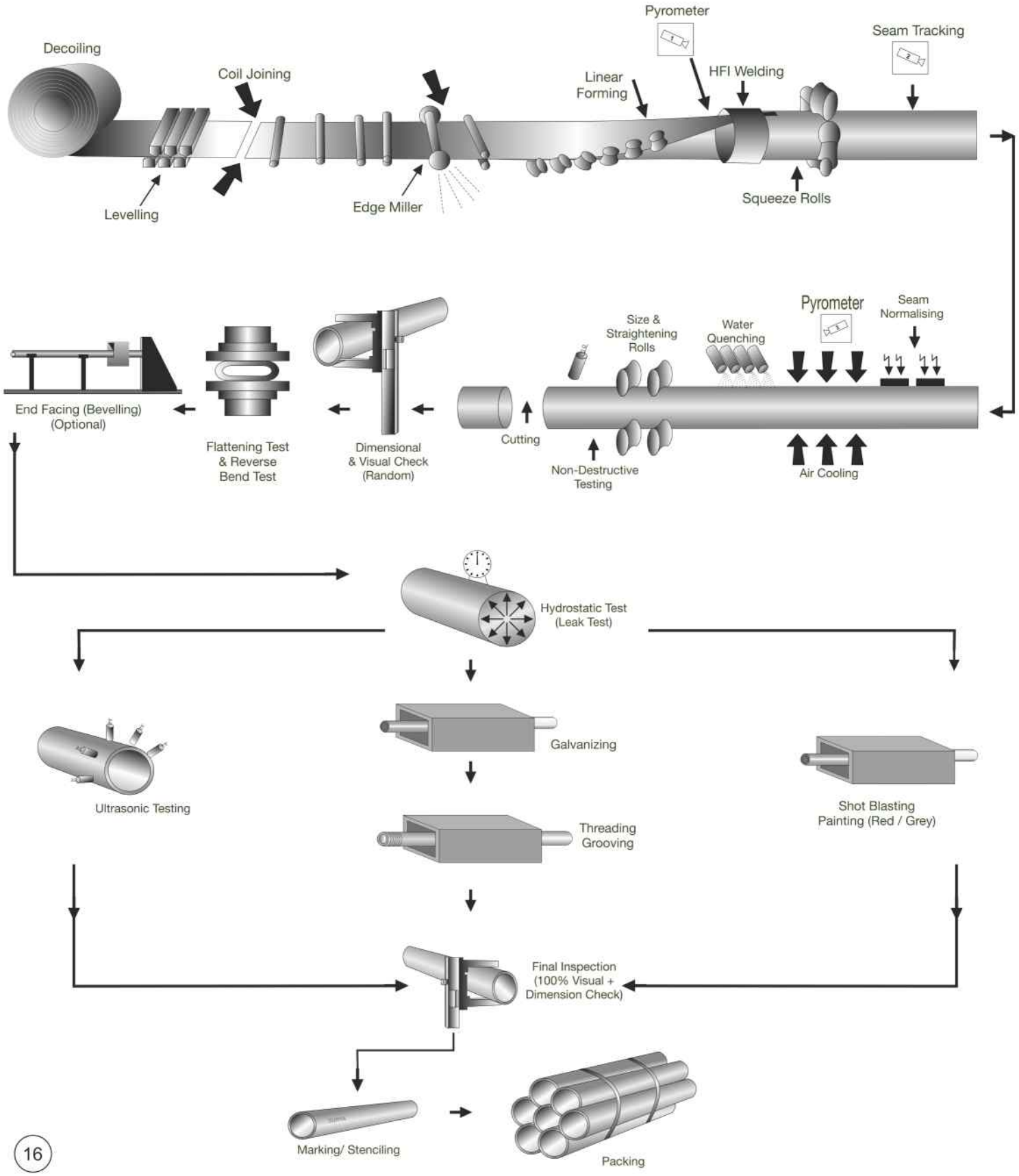
Director of Global Industry Services

API 5L
(License No. 0794)


FLOW FROM LOADING PUMPS
RECYCLE FROM INJ. PUMPS
VAPOR LINE
PROPANE TO STORAGE

SURYA
STEEL TUBES & PIPES

FLOW CHART : ERW





TECHNICAL DATA OF PIPES CONFORMING TO **ASTM A-53 GR. A & B**

NPS Designator	DN Designator	Outside Diameter		Schedule No	Wall Thickness		Mass of Plain end Pipe		Test Pressure		Pieces/ bundle
									Grade A	Grade B	
		Inch	mm		inch	mm	Kg/Mtr	lb/ft	Mpa	Mpa	
½	15	0.840	21.3	40	0.109	2.77	1.27	0.85	4.8	4.8	120
¾	20	1.050	26.7	40	0.113	2.87	1.69	1.13	4.8	4.8	84
1	25	1.315	33.4	40	0.133	3.38	2.50	1.68	4.8	4.8	60
1¼	32	1.660	42.2	40	0.140	3.56	3.39	2.27	8.3	9	42
1½	40	1.900	48.3	40	0.145	3.68	4.05	2.72	8.3	9	36
2	50	2.375	60.3	40	0.154	3.91	5.44	3.66	15.9	17.2	26
2½	65	2.875	73.0	40	0.203	5.16	8.63	5.80	17.2	17.2	18
3	80	3.500	88.9	40	0.216	5.49	11.29	7.58	15.3	17.2	14
3½	90	4.000	101.6	40	0.226	5.74	13.57	9.12	14.0	16.3	12
4	100	4.500	114.3	40	0.237	6.02	16.07	10.80	13.1	15.2	10
5	125	5.563	141.3	40	0.258	6.55	21.77	14.63	11.5	13.4	7
6	150	6.625	168.3	40	0.280	7.11	28.26	18.99	10.5	12.3	7
8	200	8.625	219.1	40	0.322	8.18	42.55	28.58	9.2	10.8	—
10	250	10.750	273.0	20	0.250	6.35	41.75	28.06	5.8	6.8	—
10	250	10.750	273.0	40	0.365	9.27	60.29	40.52	8.4	9.9	—
12	300	12.750	323.8	20	0.250	6.35	49.71	33.41	4.9	5.7	—
12	300	12.750	323.8	30	0.330	8.38	65.18	43.81	6.4	7.5	—
12	300	12.750	323.8	STD	0.375	9.52	73.78	49.61	7.3	8.5	—
12	300	12.750	323.8	40	0.406	10.31	79.70	53.57	7.9	9.2	—
14	350	14.000	355.6	10	0.250	6.35	54.69	36.75	4.4	5.2	—
14	350	14.000	355.6	30	0.375	9.52	81.25	54.62	6.6	7.7	—
14	350	14.000	355.6	40	0.438	11.13	94.55	63.50	7.8	9	—
16	400	16.000	406.4	10	0.250	6.35	62.64	42.09	3.9	4.5	—
16	400	16.000	406.4	30	0.375	9.52	93.17	62.64	5.8	6.8	—
16	400	16.000	406.4	40	0.500	12.70	123.30	82.85	7.7	9	—

Tolerances

Outside Diameter	Pipe Size upto & including DN 40	+/- 0.4 mm of OD
	Pipe size DN 50 or larger	+/- 1% of OD
Thickness	- 12.5% (max) / + Not specified	
Weight	+/- 10%	

Testing

Online NDT	For Pipes NPS 2 (DN 50) or larger	
	Weld seam of each pipe shall be tested by Eddy Current Test	
Bend Test	For pipes upto & including DN 50	
	Bending angle	90°
	Bending radius	12 times to the OD of Tube (no crack in body & weld)
Flattening (0° & 90°)	For pipes over DN 50	
	1. Flatten upto 2/3 of OD for ductility of weld	
	2. Flatten upto 1/3 of OD for ductility of steel	
	3. Full Flattening for testing of lamination or Unsound material	

Mechanical Properties

	Grade A	Grade B
Yield Strength	205 Mpa (Min)	240 Mpa (Min)
Tensile Strength	330 Mpa (Min)	415 Mpa (Min)
Elongation	As per ASTM A-53	

Chemical Composition (Max %)

	Carbon	Manganese	Phosphorus	Sulphur	Copper	Nickel	Chromium	Molybdenum	Vanadium
Grade A	0.25	0.95	0.05	0.045	0.4	0.4	0.4	0.15	0.08
Grade B	0.3	1.2	0.05	0.045	0.4	0.4	0.4	0.15	0.08

Cu + Ni + Cr + Mb + V < 1%

Galvanizing **(As per ASTM A-53 with test method ASTM A 90/A90M)**

Minimum of any surface of specimen	0.400 Kg/Mtr^2 (55 microns approx)
Average of one specimen	0.490 Kg/Mtr^2 (70 microns approx)
Average of two specimen	0.550 Kg/Mtr^2 (79 microns approx)

Marking: Online stenciling as per the standard & client requirements.

TECHNICAL DATA OF PIPES CONFORMING TO **EN:10255**

Nominal Size		Class	Outside Diameter (mm)		Thick. (mm)	Weight (Plain End) (Kg/mtr.)	Weight (Socketed) (Kg/mtr.)	Pcs per Bundle
MM	Inch		Min	Max				
15mm	1/2	L1	21.0	21.7	2.30	1.08	1.09	160
20mm	3/4	L1	26.4	27.1	2.30	1.39	1.40	110
25mm	1	L1	33.2	34.0	2.90	2.20	2.22	80
32mm	1 1/4	L1	41.9	42.7	2.90	2.82	2.85	61
40mm	1 1/2	L1	47.8	48.6	2.90	3.24	3.28	51
50mm	2	L1	59.6	60.7	3.20	4.49	4.56	37
65mm	2 1/2	L1	75.2	76.3	3.20	5.73	5.85	27
80mm	3	L1	87.9	89.4	3.60	7.55	7.72	24
100mm	4	L1	113.0	114.9	4.00	10.80	11.10	16
15mm	1/2	L2	21.0	21.4	2.00	0.947	0.956	160
20mm	3/4	L2	26.4	26.9	2.30	1.380	1.390	110
25mm	1	L2	33.2	33.8	2.60	1.98	2.00	80
32mm	1 1/4	L2	41.9	42.5	2.60	2.540	2.570	61
40mm	1 1/2	L2	47.8	48.4	2.90	3.230	3.270	51
50mm	2	L2	59.6	60.2	2.90	4.08	4.15	37
65mm	2 1/2	L2	75.2	76.0	3.20	5.710	5.830	27
80mm	3	L2	87.9	88.7	3.20	6.720	6.890	24
100mm	4	L2	113.0	113.9	3.60	9.75	10.00	16
15mm	1/2	L	21.0	21.7	2.30	1.08	1.09	160
20mm	3/4	L	26.4	27.1	2.30	1.40	1.41	110
25mm	1	L	33.2	34.0	2.90	2.20	2.22	80
32mm	1 1/4	L	41.9	42.7	2.90	2.82	2.85	61
40mm	1 1/2	L	47.8	48.6	2.90	3.25	3.29	51
50mm	2	L	59.6	60.7	3.20	4.51	4.58	37
65mm	2 1/2	L	75.2	76.0	3.20	5.75	5.87	27
80mm	3	L	87.9	88.7	3.20	6.76	6.93	24
100mm	4	L	113.0	113.9	3.60	9.83	10.10	16
125mm	5	L	138.5	140.8	4.50	15.00	15.50	10
150mm	6	L	163.9	166.5	4.50	17.80	18.40	7
15mm	1/2	M	21.0	21.8	2.60	1.21	1.22	130
20mm	3/4	M	26.5	27.3	2.60	1.56	1.57	100
25mm	1	M	33.3	34.2	3.20	2.41	2.43	65
32mm	1 1/4	M	42.0	42.9	3.20	3.10	3.13	51
40mm	1 1/2	M	47.9	48.8	3.20	3.56	3.60	44
50mm	2	M	59.7	60.8	3.60	5.03	5.10	30
65mm	2 1/2	M	75.3	76.6	3.60	6.42	6.54	24
80mm	3	M	88.0	89.5	4.00	8.36	8.53	19
100mm	4	M	113.1	115.0	4.50	12.20	12.50	14
125mm	5	M	138.5	140.8	5.00	16.60	17.10	10
150mm	6	M	163.9	166.5	5.00	19.80	20.40	7
15mm	1/2	H	21.0	21.8	3.20	1.44	1.45	110
20mm	3/4	H	26.5	27.3	3.20	1.87	1.88	80
25mm	1	H	33.3	34.2	4.00	2.93	2.95	55
32mm	1 1/4	H	42.0	42.9	4.00	3.79	3.82	44
40mm	1 1/2	H	47.9	48.8	4.00	4.37	4.41	37
50mm	2	H	59.7	60.8	4.50	6.19	6.26	27
65mm	2 1/2	H	75.3	76.6	4.50	7.93	8.05	20
80mm	3	H	88.0	89.5	5.00	10.30	10.50	16
100mm	4	H	113.1	115.0	5.40	14.50	14.80	12
125mm	5	H	138.5	140.8	5.40	17.90	18.40	10
150mm	6	H	163.9	166.5	5.40	21.30	21.90	7

Tolerances

Outside Diameter as per above table

Thickness

Medium	Heavy	Light L	Light L1	Light L2
±10%	±10%	±10%	-8%	-8%

Weight ±7.5% for M, H & L series (on lot) and +10%/-8% for L1 & L2 series

Mechanical Properties		Chemical Properties	
		Carbon	0.20 % Max
Yield Strength	195 MPa (Minimum)	Manganese	1.40 % Max
Tenslie Strength	320 to 520 Mpa	Phosphorus	0.035 % Max
%Elongation	20% Minimum	Sulphur	0.030 % Max

Bend Test

For Tubes upto & including 2"

Black Tube	Bending Angle	90˚
	Bending Radius	As per EN 10255
	Weld Position	outside of the bend
Galvanized Tube	Bending angle	90˚
	Bending radius	8 times to the OD of Tube
	Weld Position	outside of the bend

Flattening Test

For Tubes above 2"

1. Flatten upto 75% of tube dia for weld test (Weld at 12 or 3 O'clock position)
2. Flatten upto 60% of tube dia for Base metal test

Leak Tightness Test 100% Hydrotesting at 50 bar or online eddy current testing

Galvanizing Test As per EN 10240 / EN ISO 1461

Threading As per EN 10226-1

TECHNICAL DATA OF PIPES CONFORMING TO **EN : 10217-1**

SIZE OD (mm)	* WALL THICKNESS (mm)																	
	1.8	2	2.3	2.6	2.9	3.2	3.6	4	4.5	5	5.6	6.3	7.1	8	8.8	10	11	12.5
21.3																		
26.9																		
33.7																		
42.4																		
48.3																		
60.3																		
76.1																		
88.9																		
114.3																		
139.7																		
168.3																		
219.1																		
244.5																		
273.0																		
323.9																		
355.6																		
406.4																		

* Preferred thickness are as per shaded area with blue color.

Tolerances on dimensions

Outside Diameter	For ≤ 219.1: ±1% or ±0.5 mm whichever is greater; For > 219.1: ±0.75% or ± 6 mm whichever is smaller
Thickness	For T ≤ 5mm: ±10% or ± 0.3mm whichever is greater; for 5< T ≤ 40 mm: ± 8% or ± 2 mm whichever is smaller
Height of weld seam	Outside trimmed and inside 1.5 mm max.
Straightness	0.15% of total length and 3 mm over any 1 m length

MECHANICAL PROPERTIES

Grade	YS Min MPa		TS Min MPa	%El Minimum	
	T ≤ 16	16 < T ≤ 40		long.	trans.
P195TR1	195	185	320-440	27	25
P235TR1	235	225	360-500	25	23
P265TR1	265	255	410-570	21	19

CHEMICAL COMPOSITION (%)

Grade	C (Max)	Si (Max)	Mn (Max)	P (Max)	S (Max)	Cr (Max)	Mo (Max)	Ni (Max)	Al (Min)	Cu (Max)	Nb (Max)	Ti (Max)	V (Max)	Cr+Cu+Mo+Ni (Max)
P195TR1	0.130	0.350	0.700	0.025	0.020	0.300	0.080	0.300	--	0.300	0.010	0.040	0.020	0.700
P235TR1	0.160	0.350	1.200	0.025	0.020	0.300	0.080	0.300	--	0.300	0.010	0.040	0.020	0.700
P265TR1	0.200	0.400	1.400	0.025	0.020	0.300	0.080	0.300	--	0.300	0.010	0.040	0.020	0.700

Drift Expanding Test : For sizes D≤150mm & T≤10

Grade	P195TR1	P235 TR1	P265 TR1
	% increase in diameter		
For d/D≤0.8	10	10	8
For d/D>0.8	12	12	10

Flattening Test — Flatten untill the distance (H) between plates reaches the value calculated by formula:

$$H = \frac{(1 + C)}{C + (T / D)} \times T$$

C - 0.9 for steel grade P195TR1 & P235TR1

C - 0.7 for steel grade P265TR1

D - Diameter of the tube; T - Thickness of the tube; C - Constant

Leak Tightness Test — 100% Hydrotesting at 70 bar or Electromagnetic testing

Non Destructive Test — Full length of weld seam shall be subjected to non destructive test for the detection of longitudinal imperfections

TECHNICAL DATA OF PIPES CONFORMING TO **BS EN 39**

(Non alloy steel tube for use with EN74 couplers in the construction of false work and working scaffolds)

DESIGNATION OF THREAD	NOMINAL DIAMETER	TYPE	OUTSIDE DIMETER (MM)			STANDARD	WEIGHT (KG/MTR)	PCS/ BUNDLE
INCH	DN		STANDARD	MINIMUM	MAXIMUM	THICKNESS (MM)		
1½"	40	3	48.3	47.8	48.8	3.20	3.56	61
1½"	40	4	48.3	47.8	48.8	4.00	4.37	61
--	--	--	38.1	37.5	38.5	3.20	2.75	61
--	--	--	38.1	37.5	38.5	4.00	3.36	61

CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES

STEEL GRADE		CHEMICAL COMPOSITION						MECHANICAL PROPERTIES		
STEEL NAME	STEEL NUMBER	C % max	Mn % max	P % max	S % max	Si %max	Al % (MIN.)	YIELD STRENGTH (Mpa) MIN.	TENSILE STRENGTH (MPa)	% ELONGATION (MIN)
S235GT	1.0106	0.200	1.400	0.040	0.045	0.040	0.020	235	340 - 520	24

* The steel shall be killed.

TECHNICAL DETAILS

Characteristics	**Tolerances & Technical details**
Thickness	-10% on standard wall thickness
Straightness	0.20% of total length
Mass per unit length	Not less than 7.5% the specified mass on individual lengths
Inside diameter of tube	Shall allow insertion of a gauge of diameter 37.7mm for a minimum length of 200mm from both pipe ends.
Flattening Test	Keep the weld at 90˚ and flatten upto 75% of OD, No cracks or flaws are allowed on the weld. Further flatten upto 60% of OD, No cracks or flaws are allowed in the material elsewhere than in the weld.
Galvanizing Coating	As per EN 10240 B2 (40Microns minimum)
Marking	(a) Embossing " BS EN 39 - 3 or 4 and PRAKASH SURYA at every meter on pipe as per customer requirement.
	(b) Stencilling " BS EN 39 - 3 or 4 and PRAKASH SURYA at every meter on pipe as per customer requirement.
End Uses	(a) 48.3mm (1½") pipes are used for Standard and Ledgers of different lengths. (b) 38.1mm pipes used for Universal Jack.

Note:- In addition to the above, we can manufacture the pipes related to Scaffolding in other sizes & higher grades like:- S275J0H, S275J2H, S355J0H & S355J2H etc as per the customer requirement.



TECHNICAL DATA OF PIPES CONFORMING TO **AS:1074**

Size		Class	O.D. (mm)		Thick. (mm)	Weight (Plain End) (Kg/mtr.)	Weight (Socketed) (Kg/mtr.)	Pcs per Bundle
Inch	MM		Min	Max				
½"	15	L	21.0	21.4	2.00	0.947	0.956	**217**
¾"	20	L	26.4	26.9	2.30	1.380	1.390	**127**
1"	25	L	33.2	33.8	2.60	1.980	2.000	**91**
1¼"	32	L	41.9	42.5	2.60	2.540	2.570	**61**
1½"	40	L	47.8	48.4	2.90	3.230	3.270	**61**
2"	50	L	59.6	60.2	2.90	4.080	4.150	**37**
2½"	65	L	75.2	76.0	3.20	5.710	5.830	**37**
3"	80	L	87.9	88.7	3.20	6.720	6.890	**19**
4"	100	L	113.0	113.9	3.60	9.750	10.000	**19**
½"	15	M	21.1	21.7	2.60	1.210	1.220	**217**
¾"	20	M	26.6	27.2	2.60	1.560	1.570	**127**
1"	25	M	33.4	34.2	3.20	2.410	2.430	**91**
1¼"	32	M	42.1	42.9	3.20	3.100	3.130	**61**
1½"	40	M	48.0	48.8	3.20	3.570	3.610	**61**
2"	50	M	59.8	60.8	3.60	5.030	5.100	**37**
2½"	65	M	75.4	76.6	3.60	6.430	6.550	**37**
3"	80	M	88.1	89.5	4.00	8.370	8.540	**19**
4"	100	M	113.3	114.9	4.50	12.200	12.500	**19**
5"	125	M	138.7	140.6	5.00	16.600	17.100	**13**
6"	150	M	164.1	166.1	5.00	19.700	20.300	**10**
½"	15	H	21.1	21.7	3.20	1.440	1.450	**217**
¾"	20	H	26.6	27.2	3.20	1.870	1.880	**127**
1"	25	H	33.4	34.2	4.00	2.940	2.960	**91**
1¼"	32	H	42.1	42.9	4.00	3.800	3.830	**61**
1½"	40	H	48.0	48.8	4.00	4.380	4.420	**61**
2"	50	H	59.8	60.8	4.50	6.190	6.260	**37**
2½"	65	H	75.4	76.6	4.50	7.930	8.050	**37**
3"	80	H	88.1	89.5	5.00	10.300	10.500	**19**
4"	100	H	113.3	114.9	5.40	14.500	14.800	**19**
5"	125	H	138.7	140.6	5.40	17.900	18.400	**13**
6"	150	H	164.1	166.1	5.40	21.300	21.900	**10**

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

Yield Strength	195 Mpa (Minimum)
Tensile Strength	320 to 460 Mpa
%Elongation	20% Minimum

Chemical Properties

Phosphorus	0.045 % Max
Sulphur	0.045 % Max
Carbon Equivalent	0.40 % Max

Ductility Test — For Tubes upto & including 2"

Black Tube
- Bending angle 180°
- Bending radius 6 times to the OD of Tube
- Weld Position 3 O'clock

Galvanized Tube
- Bending angle 90°
- Bending radius 8 times to the OD of Tube
- Weld Position 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 Base metal test

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

Mass of Zinc Coating — 300 gm / meter^2 as per AS/NZS 4792- 2006

Galvanizing Test
1. Bore test (for tubes upto 1")
2. Copper Sulphate Test

Threading — As per AS 1722-1

TECHNICAL DATA OF PIPES CONFORMING TO **EN : 10219 - 1 & 2** CIRCULAR HOLLOW SECTION

SIZE OD (mm)	WALL THICKNESS (mm)										
	2	2.5	3	4	5	6	6.3	8	10	12	12.5
	Mass per unit length (Kg/mtr)										
21.3	0.95	1.16	1.35								
26.9	1.23	1.50	1.77								
33.7	1.56	1.92	2.27								
42.4	1.99	2.46	2.91	3.79							
48.3	2.28	2.82	3.35	4.37	5.34						
60.3	2.88	3.56	4.24	5.55	6.82						
76.1	3.65	4.54	5.41	7.11	8.77	10.40	10.80				
88.9	4.29	5.33	6.36	8.38	10.30	12.30	12.80				
101.6	4.91	6.11	7.29	9.63	11.90	14.10	14.80				
114.3		6.89	8.23	10.90	13.50	16.00	16.80	21.00			
139.7			10.10	13.40	16.60	19.80	20.70	26.00	32.00		
168.3			12.20	16.20	20.10	24.00	25.20	31.60	39.00		
219.1				21.20	26.40	31.50	33.10	41.60	51.60	61.30	63.70
244.5					29.50	35.30	37.00	46.70	57.80	68.80	71.50
273.0					33.00	39.50	41.40	52.30	64.90	77.20	80.30

Tolerances on dimensions

Characteristics	Tolerances
Outside Dimensions	±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm
Thickness	For D ≤ 406.4 mm, T ≤ 5mm : ±10%, T > 5 mm ± 0.5mm, For D > 406.4 mm; ±10% with a maximum of ± 2mm
Out-of-Roundness	2% for hollow sections having a diameter to thickness ratio not exceeding 100
Straightness	0.20% of total length and 3mm over any 1 m length
Mass per unit length	± 6% on individual delivered lengths

MECHANICAL PROPERTIES

Grade	YS Min MPa T≤16mm	TS Min MPa		%El Min	Minimum impact energy J		
		T < 3mm	3≤T≤40mm	T≤40	-20° C	0° C	20° C
S235 JRH	235	360-510	360-510	24	--	--	27
S275 J0H	275	430-580	410-560	20	--	27	--
S275 J2H					27	--	--
S355 J0H	355	510-680	470-630	20	--	27	--
S355 J2H					27	--	--
S355 K2H					40	--	--

CHEMICAL COMPOSITION (%) Max.

Grade	C	Si	Mn	P	S	N	CEV
S235 JRH	0.170	--	1.400	0.040	0.040	0.009	0.350
S275 J0H	0.200	--	1.500	0.035	0.035	0.009	0.400
S275 J2H	0.200	--	1.500	0.030	0.030	--	0.400
S355 J0H	0.220	0.550	1.600	0.035	0.035	0.009	0.450
S355 J2H	0.220	0.550	1.600	0.030	0.030	--	0.450
S355 K2H	0.220	0.550	1.600	0.030	0.030	--	0.450

TECHNICAL DATA OF PIPES CONFORMING TO AS / NZS : 1163

SIZE	WALL THICKNESS (mm)																				
CHS OD	**2.30**	**2.60**	**3.00**	**3.20**	**3.50**	**3.60**	**4.00**	**4.50**	**4.80**	**4.90**	**5.00**	**5.40**	**5.50**	**5.90**	**6.00**	**6.40**	**7.10**	**8.20**	**9.30**	**9.50**	**12.70**
(mm)	Mass per unit length (Kg/mtr)																				
21.3		1.20		1.43		1.57															
26.9		1.56		1.87			2.26														
33.7				2.41			2.93	3.24													
42.4				3.09			3.79			4.53											
48.3				3.56			4.37					5.71									
60.3						5.03		6.19				7.31									
76.1	4.19			5.75		6.44		7.95						10.20							
88.9		5.53		6.76			8.38		9.96		10.30		11.30	12.10							
101.6		6.35		7.77			9.63				11.90										
114.3				8.77		9.83		12.20	13.00			14.50			16.00						
139.7			10.10		11.80						16.60	17.90									
165.1			12.00		13.90						19.70	21.30									
168.3									19.40							25.60	28.20				
219.1									25.40							33.60		42.60			
273.1									31.80							42.10			60.50		
323.9																50.10				73.70	97.50
355.6																55.10				81.10	107.00
406.4																63.10				93.00	123.00

Tolerances on dimensions

Characteristics	Tolerances
External Dimensions	±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm
Thickness	For $d_o \leq 406.4$ mm: ±10%; For $d_o > 406.4$ mm: ±10% with a max of ±2 mm
Out-of-roundness	2% for hollow sections having a diameter to thickness ratio not exceeding 100
Straightness	0.20% of total length
Mass per unit length	Not less than 0.96 times the specified mass on individual lengths

MECHANICAL PROPERTIES

Grade	YS Min	TS Min	%El Min			Minimum Absorbed Energy, Joules					
			d_o/t			Avg. of 3 tests			Individual tests		
	MPa	MPa	≤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
C450, C450L0	450	500	12	14	16	27	22	18	20	16	13

CHEMICAL COMPOSITION (%) Max.

Grade	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	Al	V+Nb	CE
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	0.25
C350, C350L0	0.200	0.45	1.60	0.03	0.03	0.25	0.25	0.30	0.10	0.10	0.01	0.04	0.10	0.11	0.43
C450, C450L0	0.200	0.45	1.70	0.03	0.03	0.25	0.25	0.50	0.35	0.10	0.01	0.04	0.10	0.11	0.43

Manipulation (Bend Test)

For Galvanized Tubes upto & including 60.3 mm

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

TECHNICAL 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)**
6"	152.4	150.88 (5.940")	153.92 (6.059")	3.40	0.134	12.51	8.40
				3.58	0.141	13.14	8.83
				3.96	0.156	14.50	9.75
				4.17	0.164	15.23	10.23
				4.37	0.172	15.95	10.72
8⅝"	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
				8.74	0.344	45.33	30.46
				9.53	0.375	49.23	33.08
				11.13	0.438	57.06	38.34
				12.70	0.500	64.64	43.43
10¾"	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
				11.13	0.438	71.84	48.27
				12.70	0.500	81.52	54.78
12¾"	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
				9.53	0.375	73.82	49.60
				11.13	0.438	85.78	57.64
				12.70	0.500	97.43	65.47

TECHNICAL 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)
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	48.02	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
				9.53	0.375	81.29	54.62
				11.13	0.438	94.51	63.50
				11.91	0.469	100.96	67.84
				12.70	0.500	107.39	72.16
16"	406.40	402.34 (15.840")	410.46 (16.159")	4.78	0.188	47.29	31.78
				5.16	0.203	51.02	34.28
				5.56	0.219	54.98	36.95
				5.84	0.230	57.71	38.77
				6.35	0.250	62.64	42.09
				7.14	0.281	70.27	47.22
				7.92	0.312	77.87	52.32
				8.74	0.344	85.68	57.57
				9.53	0.375	93.22	62.64
				11.13	0.438	108.44	72.86
				11.91	0.469	115.89	77.87
				12.70	0.500	123.30	82.85

Chemical Properties :- Phosphorus = 0.050% (Max.)

Mechanical Properties :-

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

* For nominal wall thicknesses less than 7.90 mm, the deduction from the basic minimum elongation in 2 in. (50.08 mm) for each 0.8 mm decrease in nominal wall thickness below 7.9 mm, in percentage points.

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) or Bevel End (30˚ -0/+5˚).
Surface Protection	Black & Galvanized coating as per Customer requirement.
Marking (Stencilling)	" PRAKASH SURYA, Specification designation, Grade, Outside diameter, Thickness, Process of manufacturing & Heat No." on pipe and any thing specific as per the customer requirement.

TECHNICAL DATA OF PIPES CONFORMING TO **ASTM A795**

(This specification covers Black and Zinc-Coated (Hot-Dipped Galvanized) welded steel pipe in use for fire protection systems.)

Dimensions, Weights, and Test Pressure For Light-Weight Fire Protection Pipe—Schedule 10A

NPS DESIGNATOR	OUTSIDE DIAMETER	DIAMETER TOLERANCE		STANDARD THICKNESS		SCHEDULE	WEIGHT		TEST PRESSURE	
	(mm)	(Min)	(Max)	(mm)	(Inch)		(Kg/mtr)	(lb/ft)	(psi)	(kPa)
3/4	26.7	26.30	27.10	2.11	0.083	10	1.28	0.86	700	4800
1	33.4	33.00	33.80	2.77	0.109	10	2.09	1.41	700	4800
1¼	42.2	41.80	42.60	2.77	0.109	10	2.69	1.81	1000	6900
1½	48.3	47.90	48.70	2.77	0.109	10	3.11	2.09	1000	6900
2	60.3	59.70	60.90	2.77	0.109	10	3.93	2.64	1000	6900
2½	73.0	72.27	73.73	3.05	0.120	10	5.26	3.53	1000	6900
3	88.9	88.01	89.79	3.05	0.120	10	6.46	4.34	1000	6900
3½	101.6	100.58	102.62	3.05	0.120	10	7.41	4.98	1200	8300
4	114.3	113.16	115.44	3.05	0.120	10	8.37	5.62	1200	8300
5	141.3	139.89	142.71	3.40	0.134	10	11.58	7.78	1200	8300
6	168.3	166.62	169.98	3.40	0.134	10	13.85	9.30	1000	6900
8	219.1	216.91	221.29	4.78	0.188	10	25.26	16.96	800	5500
10	273.0	270.27	275.73	4.78	0.188	10	31.62	21.23	700	4800

Dimensions, Weights, Test Pressures For Standard-Weight Fire Protection Pipe—Schedule 40

NPS DESIGNATOR	OUTSIDE DIAMETER	DIAMETER TOLERANCE		STANDARD THICKNESS		SCHEDULE	WEIGHT		TEST PRESSURE	
	(mm)	(Min)	(Max)	(mm)	(Inch)		(Kg/mtr)	(lb/ft)	(psi)	(kPa)
1/2	21.3	20.90	21.70	2.77	0.109	40	1.27	0.85	700	4800
3/4	26.7	26.30	27.10	2.87	0.113	40	1.69	1.13	700	4800
1	33.4	33.00	33.80	3.38	0.133	40	2.50	1.68	700	4800
1¼	42.2	41.80	42.60	3.56	0.140	40	3.39	2.27	1000	6900
1½	48.3	47.90	48.70	3.68	0.145	40	4.05	2.72	1000	6900
2	60.3	59.70	60.90	3.91	0.154	40	5.45	3.66	1000	6900
2½	73.0	72.27	73.73	5.16	0.203	40	8.64	5.80	1000	6900
3	88.9	88.01	89.79	5.49	0.216	40	11.29	7.58	1000	6900
3½	101.6	100.58	102.62	5.74	0.226	40	13.58	9.12	1200	8300
4	114.3	113.16	115.44	6.02	0.237	40	16.09	10.80	1200	8300
5	141.3	139.89	142.71	6.55	0.258	40	21.79	14.63	1200	8300
6	168.3	166.62	169.98	7.11	0.280	40	28.29	18.99	1200	8300

Dimensions, Weights, Test Pressures For Standard-Weight Fire Protection Pipe—Schedule 30

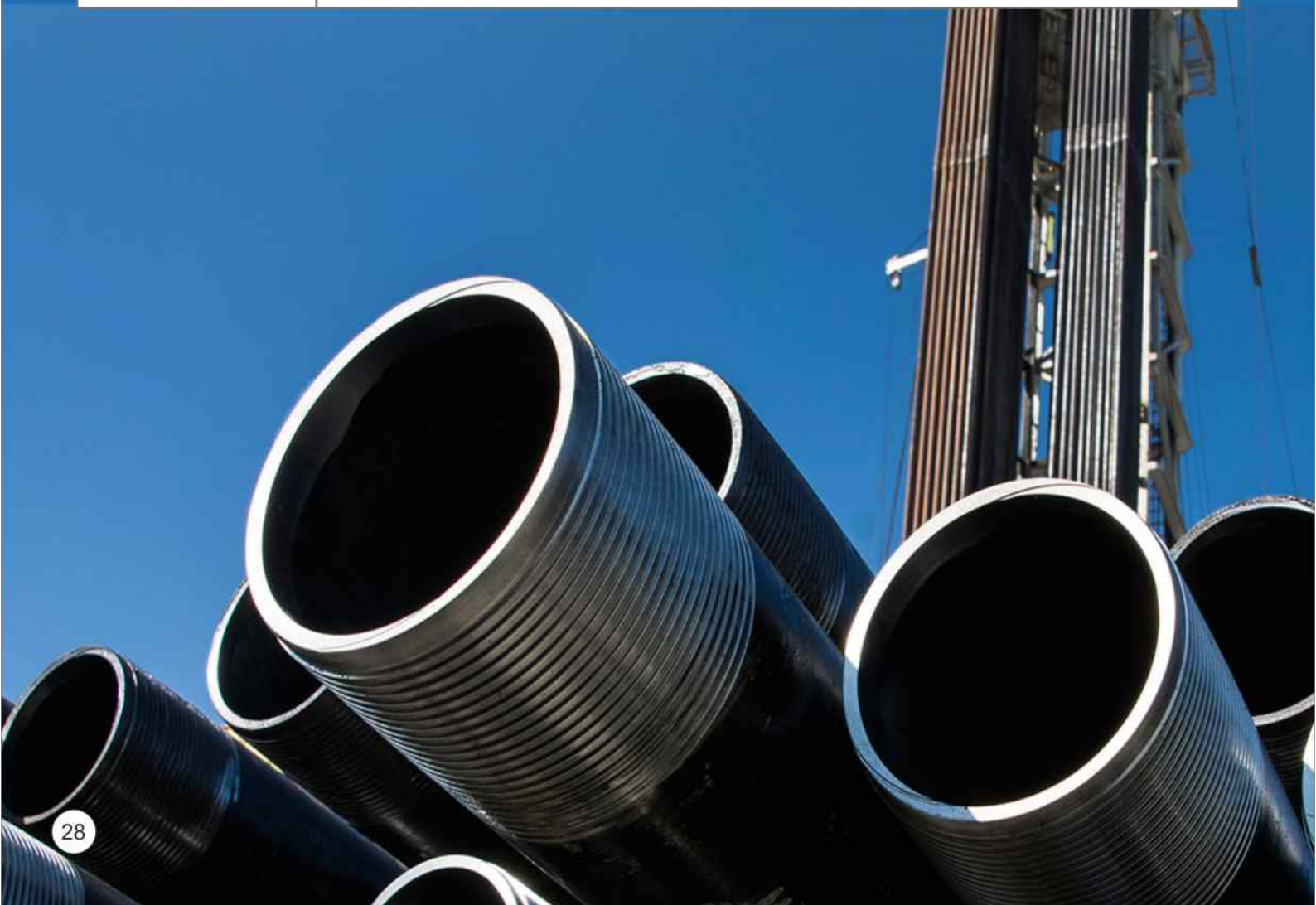
NPS DESIG-NATOR	OUTSIDE DIAMETER	DIAMETER TOLERANCE		STANDARD THICKNESS		SCHEDULE	WEIGHT		TEST PRESSURE	
	(mm)	(Min)	(Max)	(mm)	(Inch)		(Kg/mtr)	(lb/ft)	(psi)	(kPa)
8	219.1	216.91	221.29	7.04	0.277	30	36.82	24.72	1200	8300
10	273.0	270.27	275.73	7.80	0.307	30	51.05	34.27	1000	6900

CHEMICAL COMPOSITION

GRADE	CHEMICAL COMPOSITION (Maximum)			
	C %	Mn %	P %	S %
A	0.250	0.950	0.035	0.035
B	0.300	1.200	0.035	0.035

TECHNICAL DETAILS

Characteristics	Tolerances & Technical details
Outside Diameter	NPS 1½ [DN 40] and under ± 0.016 inch [0.41 mm] & NPS 2 [DN 50] and over ± 1 % of OD.
Thickness	-12.5% of specific wall thickness.
Weight	For each tube ± 5% of standard weight.
Length	Pipe shall be furnished in single random lengths of 16 to 22 ft [4.9 to 6.7 m] or in uniform length as per the customer requirement.
Straightness	The finished pipe shall be reasonably straight.
Heat Treatment	The weld seam of pipe in Grade B shall be heat treated after welding to a minimum of 1000 °F [540 °C] so that no untempered martensite remains.
Flattening Test	Keep the weld at 0° or 90° from the line of direction of force and flatten upto 66% of OD, No cracks or breaks are allowed on the weld. Further flatten upto 33% of OD, No cracks or breaks are allowed in the material and during third step, Evidence of laminated or unsound material or of incomplete weld that is revealed during the entire flattening test shall be cause for rejection.
Hydro Test	Each length of pipe shall be tested by hydrostatic test without leakage through the pipe wall.
Nondestructive Test	Each length of pipe, size 2NPS (50DN) and larger shall be tested by non destructive electric test (Ultrasonic Test & Eddy-Current Test) in accordance with Practice E213 and Practice E309 as per customer requirements.
Mass of Zinc Coating	Average of two specimens 460 gm/mtr² & Individual specimen not less than 400 gm/mtr².
Surface Protection	Black & Galvanized coating as per Customer requirement.
End	Pipe shall be finished with Square cut (plain End), Bevel End (30° -0/+5°), Roll Groove & Threading.
Threading	All threads shall be in accordance with the gauging practice and tolerances of ASME B1.20.1.
Marking (Stencilling)	" PRAKASH SURYA, Specification designation, Grade, Outside diameter, Thickness, Process of manufacturing & Heat No." on pipe and any thing specific as per customer requirement.



TECHNICAL DATA OF 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.)

SQUARE HOLLOW SECTIONS

NOMINAL SIZE	WALL THICKNESS		WEIGHT	
(MM)	(MM)	(INCH)	(KG/MTR)	(KG/FT)
19.0 X 19.0	1.50	0.059	0.779	0.238
19.0 X 19.0	1.80	0.071	0.907	0.277
19.0 X 19.0	2.00	0.079	0.987	0.301
25.0 X 25.0	1.50	0.059	1.061	0.323
25.0 X 25.0	1.60	0.063	1.124	0.343
25.0 X 25.0	1.80	0.071	1.246	0.380
25.0 X 25.0	2.00	0.079	1.364	0.416
25.0 X 25.0	2.60	0.102	1.692	0.516
25.0 X 25.0	3.00	0.118	1.891	0.577
30.0 X 30.0	1.50	0.059	1.297	0.395
30.0 X 30.0	1.80	0.071	1.528	0.466
30.0 X 30.0	2.00	0.079	1.678	0.512
30.0 X 30.0	2.60	0.102	2.100	0.640
30.0 X 30.0	3.00	0.118	2.630	0.802
38.0 X 38.0	1.50	0.059	1.674	0.510
38.0 X 38.0	1.80	0.071	1.981	0.604
38.0 X 38.0	2.00	0.079	2.180	0.665
38.0 X 38.0	2.60	0.102	2.753	0.839
38.0 X 38.0	3.00	0.118	3.115	0.950
38.0 X 38.0	3.80	0.150	3.789	1.155
38.0 X 38.0	4.00	0.157	3.947	1.203
40.0 X 40.0	1.50	0.059	1.768	0.539
40.0 X 40.0	1.80	0.071	2.094	0.638
40.0 X 40.0	2.00	0.079	2.306	0.703
40.0 X 40.0	2.80	0.110	3.112	0.949
40.0 X 40.0	3.00	0.118	3.304	1.007
50.0 X 50.0	1.50	0.059	2.239	0.683
50.0 X 50.0	1.80	0.071	2.659	0.811
50.0 X 50.0	2.00	0.079	2.934	0.895
50.0 X 50.0	2.60	0.102	3.733	1.138
50.0 X 50.0	2.80	0.110	3.991	1.217
50.0 X 50.0	3.00	0.118	4.246	1.295
50.0 X 50.0	3.80	0.150	5.221	1.592
50.0 X 50.0	4.00	0.157	5.454	1.663
50.0 X 50.0	4.80	0.189	6.347	1.935
50.0 X 50.0	5.00	0.197	6.560	2.000
60.0 X 60.0	2.00	0.079	3.562	1.086
60.0 X 60.0	2.60	0.102	4.550	1.387
60.0 X 60.0	2.80	0.110	4.871	1.485
60.0 X 60.0	3.00	0.118	5.188	1.582
60.0 X 60.0	3.80	0.150	6.414	1.955
60.0 X 60.0	4.00	0.157	6.710	2.046

SQUARE HOLLOW SECTIONS

NOMINAL SIZE	WALL THICKNESS		WEIGHT	
(MM)	(MM)	(INCH)	(KG/MTR)	(KG/FT)
60.0 X 60.0	4.80	0.189	7.854	2.395
60.0 X 60.0	5.00	0.197	8.130	2.479
75.0 X 75.0	2.00	0.079	4.504	1.373
75.0 X 75.0	2.60	0.102	5.770	1.759
75.0 X 75.0	2.80	0.110	6.189	1.887
75.0 X 75.0	3.00	0.118	6.601	2.013
75.0 X 75.0	3.80	0.150	8.204	2.501
75.0 X 75.0	4.00	0.157	8.594	2.620
75.0 X 75.0	4.80	0.189	10.115	3.084
75.0 X 75.0	5.00	0.197	10.485	3.197
80.0 X 80.0	2.60	0.102	6.182	1.885
80.0 X 80.0	2.80	0.110	6.629	2.021
80.0 X 80.0	3.00	0.118	7.072	2.156
80.0 X 80.0	3.80	0.150	8.800	2.683
80.0 X 80.0	4.00	0.157	9.222	2.812
80.0 X 80.0	4.80	0.189	10.869	3.314
80.0 X 80.0	5.00	0.197	11.270	3.436
80.0 X 80.0	5.50	0.217	12.255	3.736
90.0 X 90.0	2.60	0.102	6.999	2.134
90.0 X 90.0	2.80	0.110	7.508	2.289
90.0 X 90.0	3.00	0.118	8.014	2.443
90.0 X 90.0	3.80	0.150	9.994	3.047
90.0 X 90.0	4.00	0.157	10.478	3.195
90.0 X 90.0	4.80	0.189	12.376	3.773
90.0 X 90.0	5.00	0.197	12.840	3.915
90.0 X 90.0	5.50	0.217	13.982	4.263
100.0 X 100.0	2.60	0.102	7.815	2.383
100.0 X 100.0	2.80	0.110	8.387	2.557
100.0 X 100.0	3.00	0.118	8.956	2.730
100.0 X 100.0	3.80	0.150	11.187	3.411
100.0 X 100.0	4.00	0.157	11.734	3.577
100.0 X 100.0	4.80	0.189	13.883	4.233
100.0 X 100.0	5.00	0.197	14.410	4.393
100.0 X 100.0	5.50	0.217	15.709	4.789
125.0 x 125.0	4.50	0.177	16.620	5.067
125.0 x 125.0	5.00	0.197	18.330	5.588
125.0 x 125.0	6.00	0.236	21.690	6.613
132.0 x 132.0	4.80	0.189	18.710	5.704
132.0 x 132.0	5.40	0.213	20.880	6.366
132.0 x 132.0	6.00	0.236	23.010	7.015
150.0 x 150.0	5.00	0.197	22.260	6.787
150.0 x 150.0	6.00	0.236	26.400	8.049

TECHNICAL DATA OF 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.)

RECTANGULAR HOLLOW SECTIONS

NOMINAL SIZE	WALL THICKNESS		WEIGHT	
(MM)	(MM)	(INCH)	(KG/MTR)	(KG/FT)
40.0 X 50.0	1.50	0.059	1.297	0.395
40.0 X 50.0	1.80	0.071	1.528	0.466
40.0 X 50.0	2.00	0.079	1.678	0.512
40.0 X 50.0	2.60	0.102	2.100	0.640
40.0 X 50.0	2.80	0.110	2.233	0.681
40.0 X 50.0	3.00	0.118	2.362	0.720
50.0 X 25.0	1.50	0.059	1.650	0.503
50.0 X 25.0	1.80	0.071	1.952	0.595
50.0 X 25.0	2.00	0.079	2.149	0.655
50.0 X 25.0	2.60	0.102	2.713	0.827
50.0 X 25.0	2.80	0.110	2.892	0.882
50.0 X 25.0	3.00	0.118	3.068	0.935
60.0 X 30.0	1.50	0.059	2.003	0.611
60.0 X 30.0	1.80	0.071	2.376	0.724
60.0 X 30.0	2.00	0.079	2.620	0.799
60.0 X 30.0	2.60	0.102	3.325	1.014
60.0 X 30.0	2.80	0.110	3.552	1.083
60.0 X 30.0	3.00	0.118	3.775	1.151
60.0 X 40.0	1.50	0.059	2.775	0.846
60.0 X 40.0	2.00	0.079	2.934	0.895
60.0 X 40.0	2.60	0.102	3.733	1.138
60.0 X 40.0	2.80	0.110	3.991	1.217
60.0 X 40.0	3.00	0.118	4.246	1.295
60.0 X 40.0	3.80	0.150	5.221	1.592
60.0 X 40.0	4.00	0.157	5.454	1.663
80.0 X 40.0	1.50	0.059	2.710	0.826
80.0 X 40.0	1.80	0.071	3.224	0.983
80.0 X 40.0	2.00	0.079	3.562	1.086
80.0 X 40.0	2.60	0.102	4.550	1.387
80.0 X 40.0	2.80	0.110	4.871	1.485
80.0 X 40.0	3.00	0.118	5.188	1.582
80.0 X 40.0	3.80	0.150	6.414	1.955
80.0 X 40.0	4.00	0.157	6.710	2.046
80.0 X 40.0	4.80	0.189	7.854	2.395
80.0 X 40.0	5.00	0.197	8.130	2.479
100.0 X 50.0	2.00	0.079	4.504	1.373
100.0 X 50.0	2.60	0.102	5.774	1.760
100.0 X 50.0	2.80	0.110	6.189	1.887
100.0 X 50.0	3.00	0.118	6.601	2.013
100.0 X 50.0	3.80	0.150	8.204	2.501
100.0 X 50.0	4.00	0.157	8.594	2.620
100.0 X 50.0	4.80	0.189	10.552	3.217

RECTANGULAR HOLLOW SECTIONS

NOMINAL SIZE	WALL THICKNESS		WEIGHT	
(MM)	(MM)	(INCH)	(KG/MTR)	(KG/FT)
100.0 X 50.0	5.00	0.197	10.485	3.197
100.0 X 50.0	5.50	0.217	11.391	3.473
100.0 X 75.0	2.60	0.102	6.795	2.072
100.0 X 75.0	2.80	0.110	7.288	2.222
100.0 X 75.0	3.00	0.118	7.778	2.371
100.0 X 75.0	3.80	0.150	9.695	2.956
100.0 X 75.0	4.00	0.157	10.164	3.099
100.0 X 75.0	4.80	0.189	11.999	3.658
100.0 X 75.0	5.00	0.197	12.447	3.795
100.0 X 75.0	5.50	0.217	12.550	3.826

ROUND HOLLOW TUBES

(MM)	(INCH)	(MM)	(INCH)	(KG/MTR)	(KG/FT)
21.3	½	2.77	0.109	1.270	0.387
26.7	¾	2.87	0.113	1.690	0.515
33.4	1	3.38	0.133	2.500	0.762
42.2	1¼	3.56	0.140	3.390	1.034
48.3	1½	3.68	0.145	4.050	1.235
60.3	2	3.91	0.154	5.440	1.659
73.0	2½	5.16	0.203	8.630	2.631
88.9	3	5.49	0.216	11.290	3.442
114.3	4	6.02	0.237	16.070	4.899
141.3	5	6.55	0.258	21.770	6.637
168.3	6	7.11	0.280	28.260	8.616
219.1	8	6.35	0.250	33.310	10.155
219.1	8	7.04	0.277	36.310	11.070
219.1	8	8.18	0.322	42.550	12.973
273.0	10	6.35	0.250	41.750	12.729
273.0	10	7.80	0.307	51.010	15.552
273.0	10	9.27	0.365	60.290	18.381
273.0	10	12.70	0.500	81.520	24.854
323.8	12	6.35	0.250	49.710	15.155
323.8	12	8.38	0.330	65.180	19.872
323.8	12	9.52	0.375	73.780	22.494
323.8	12	10.31	0.406	79.700	24.299
323.8	12	12.70	0.500	97.430	29.704
355.6	14	6.35	0.250	54.690	16.674
355.6	14	7.92	0.312	67.900	20.701
355.6	14	9.52	0.375	81.250	24.771
355.6	14	11.13	0.438	94.550	28.826
355.6	14	12.70	0.500	107.390	32.741
406.4	16	6.35	0.250	62.640	19.098
406.4	16	7.92	0.312	77.830	23.729
406.4	16	9.52	0.375	93.170	28.405
406.4	16	12.70	0.500	123.300	37.591

Chemical Compositions (%)				
Elements	**Grade A & B**		**Grade C**	
	Heat Analysis	**Product Analysis**	**Heat Analysis**	**Product Analysis**
Carbon (Maximum) [A]	0.260	0.300	0.230	0.270
Manganese (Maximum)	1.350	1.400	1.350	1.400
Phosphorus (Maximum)	0.035	0.045	0.035	0.045
Sulfur (Maximum)	0.035	0.045	0.035	0.045
Copper (Minimum)	0.200	0.180	0.200	0.180

[A] 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, up to a maximum of 1.50 % by heat analysis and 1.60 %by product analysis.

Mechanical Properties			
Round Structural Tubing			
	Grade A	**Grade B**	**Grade C**
Tensile Strength (Mpa) minimum	310	400	425
Yield Strength (Mpa) minimum	230	290	315
%Elongation in (50mm) minimum	25	23	21

Shaped Structural Tubing			
	Grade A	**Grade B**	**Grade C**
Tensile Strength (Mpa) minimum	310	400	425
Yield Strength (Mpa) minimum	270	315	345
%Elongation in (50mm) minimum	25	23	21

TECHNICAL DETAILS

Characteristics	**Tolerances & Technical details**
Outside Diameter (OD)	For Round Pipes, OD 1.90 Inch (48.3mm) and smaller ± 0.50 % & OD 2.00 Inch (60.3mm) and larger ± 0.75 % For Square & Rectangular Section 2½ Inch [65mm] or under ± 0.020 Inch (0.50 mm) Over 2½ to 3½ [65mm to 90mm] ± 0.025 Inch (0.60 mm) Over 3½ to 5½ [90mm to 140mm] ± 0.030 Inch (0.80 mm) Over 5½ [140mm] ± 1.0 % of OD
Thickness	± 10% of specific 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 1½ Inch [40mm] and under = 0.050 Inch [1.3mm] Over 1½ to 2½ Inch [40mm to 65mm] = 0.062 Inch [1.6mm] Over 2½ to 4 Inch [65mm to 100mm] = 0.075 Inch [1.9mm] Over 4 to 6 Inch [100mm to 150mm] = 0.087 Inch [2.2mm] Over 6 to 8 Inch [150mm to 200mm] = 0.100 Inch [2.5mm] Over 8 Inch [200mm] = 0.112 Inch [2.8mm]
Flattening Test	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 requirement.
Marking (Stencilling)	" PRAKASH SURYA , Specification designation and Grade" on pipe and any thing specific as per customer requirement.

TECHNICAL DATA OF PIPES CONFORMING TO API 5L- (Latest Edition)

Size	Outside Diameter		Wall Thickness		Mass of Plain end Pipe		Standard Test Pressure								
							Gr A	Gr B	Gr X 42	Gr X 46	Gr X 52	Gr X 56	Gr X 60	Gr X 65	Gr X 70
	mm	inch	mm	inch	Kg/Mtr.	Lb/Ft.	MPa	MPa	MPa	MPa	MPa	MPa	MPa	MPa	MPa
3½	88.9	3.500	2.10	0.083	4.50	3.03	6.0	7.0	8.2	9.1	10.2	11.1	11.8	12.8	13.7
	88.9		2.80	0.109	5.95	3.95	8.0	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	88.9		3.20	0.125	6.76	4.51	9.1	10.6	12.5	13.8	15.6	16.8	17.9	19.4	20.9
	88.9		3.60	0.141	7.57	5.06	10.2	11.9	14.1	15.6	17.5	19.0	20.2	21.9	23.6
	88.9		4.00	0.156	8.37	5.58	11.3	13.2	15.7	17.3	19.4	21.1	22.4	24.3	26.2
	88.9		4.40	0.172	9.17	6.12	12.5	14.6	17.2	19.0	21.4	23.2	24.6	26.7	28.8
	88.9		4.80	0.188	9.95	6.66	13.6	15.9	18.8	20.7	23.3	25.3	26.9	29.2	31.4
	88.9		5.50	0.216	11.31	7.58	15.6	18.2	21.5	23.8	26.7	29.0	30.8	33.4	36.0
4	101.6	4.000	2.10	0.083	5.15	3.48	5.2	6.1	7.2	7.9	8.9	9.7	10.3	11.2	12.0
	101.6		2.80	0.109	6.82	4.53	6.9	8.1	9.6	10.6	11.9	12.9	13.7	14.9	16.0
	101.6		3.20	0.125	7.76	5.18	7.9	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	101.6		3.60	0.141	8.70	5.82	8.9	10.4	12.3	13.6	15.3	16.6	17.6	19.1	20.6
	101.6		4.00	0.156	9.63	6.41	9.9	11.6	13.7	15.1	17.0	18.4	19.6	21.3	22.9
	101.6		4.40	0.172	10.55	7.04	10.9	12.7	15.1	16.6	18.7	20.3	21.6	23.4	25.2
	101.6		4.80	0.188	11.46	7.66	11.9	13.9	16.4	18.1	20.4	22.1	23.5	25.5	27.5
	101.6		5.70	0.226	13.48	9.12	14.1	16.5	19.5	21.5	24.2	26.3	27.9	30.3	32.7
4½	114.3	4.500	2.10	0.083	5.81	3.92	4.6	5.4	6.4	7.1	7.9	8.6	9.1	9.9	10.7
	114.3		3.20	0.125	8.77	5.85	7.1	8.2	9.7	10.8	12.1	13.1	13.9	15.1	16.3
	114.3		3.60	0.141	9.83	6.57	7.9	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	114.3		4.00	0.156	10.88	7.24	8.8	10.3	12.2	13.4	15.1	16.4	17.4	18.9	20.4
	114.3		4.40	0.172	11.92	7.96	9.7	11.3	13.4	14.8	16.6	18.0	19.2	20.8	22.4
	114.3		4.80	0.188	12.96	8.67	10.6	12.3	14.6	16.1	18.1	19.7	20.9	22.7	24.4
	114.3		5.20	0.203	13.99	9.32	11.5	13.4	15.8	17.5	19.7	21.3	22.7	24.6	26.5
	114.3		5.60	0.219	15.01	10.02	12.3	14.4	17.0	18.8	21.2	22.9	24.4	26.5	28.5
	114.3		6.00	0.237	16.02	10.80	13.2	15.4	18.3	20.2	22.7	24.6	26.1	28.3	30.6
	114.3		6.40	0.250	17.03	11.36	14.1	16.5	19.5	21.5	24.2	26.2	27.9	30.2	32.6
	114.3		7.10	0.280	18.77	12.59	15.7	18.3	21.6	23.9	26.8	29.1	30.9	33.5	36.2
5-9/16	141.3	5.563	2.10	0.083	7.21	4.86	3.7	4.4	5.2	5.7	6.4	7.0	7.4	8.0	8.6
	141.3		3.20	0.125	10.90	7.27	5.7	6.7	7.9	8.7	9.8	10.6	11.3	12.2	13.2
	141.3		4.00	0.156	13.54	9.02	7.1	8.3	9.9	10.9	12.2	13.2	14.1	15.3	16.5
	141.3		4.80	0.188	16.16	10.80	8.6	10.0	11.8	13.0	14.7	15.9	16.9	18.3	19.8
	141.3		5.60	0.219	18.74	12.51	10.0	11.7	13.8	15.2	17.1	18.5	19.7	21.4	23.1
	141.3		6.60	0.258	21.92	14.63	11.8	13.7	16.3	17.9	20.2	21.9	23.3	25.2	27.2
6-5/8	168.3	6.625	2.10	0.083	8.61	5.80	3.1	4.6	5.4	6.0	6.7	7.3	7.8	8.4	9.1
	168.3		2.80	0.109	11.43	7.59	4.2	6.1	7.2	8.0	9.0	9.7	10.4	11.2	12.1
	168.3		3.20	0.125	13.03	8.69	4.8	7.0	8.3	9.1	10.3	11.1	11.8	12.8	13.8
	168.3		3.60	0.141	14.62	9.77	5.4	7.9	9.3	10.3	11.6	12.5	13.3	14.4	15.6
	168.3		4.00	0.156	16.21	10.79	6.0	8.7	10.3	11.4	12.8	13.9	14.8	16.0	17.3
	168.3		4.40	0.172	17.78	11.87	6.6	9.6	11.4	12.5	14.1	15.3	16.3	17.6	19.0
	168.3		4.80	0.188	19.35	12.94	7.2	10.5	12.4	13.7	15.4	16.7	17.8	19.3	20.7
	168.3		5.20	0.203	20.91	13.94	7.8	11.4	13.4	14.8	16.7	18.1	19.2	20.9	22.5
	168.3		5.60	0.219	22.47	15.00	8.4	12.2	14.5	16.0	18.0	19.5	20.7	22.5	24.2
	168.3		6.40	0.250	25.55	17.04	9.6	14.0	16.5	18.3	20.5	22.2	23.7	25.7	27.7
	168.3		7.10	0.280	28.22	18.99	10.6	15.5	18.4	20.2	22.8	24.7	26.3	28.5	30.7
	168.3		7.90	0.312	31.25	21.06	11.8	17.3	20.4	22.5	25.3	27.5	29.2	31.7	34.1
	168.3		8.70	0.344	34.24	23.10	13.0	19.0	22.5	24.8	27.9	30.2	32.2	34.9	37.6
8-5/8	219.1	8.625	3.20	0.125	17.04	11.36	3.7	5.4	6.4	7.0	7.9	8.5	9.1	9.9	10.6
	219.1		4.00	0.156	21.22	14.12	4.6	6.7	7.9	8.8	9.9	10.7	11.4	12.3	13.3
	219.1		4.80	0.188	25.37	16.96	5.5	8.1	9.5	10.5	11.8	12.8	13.6	14.8	15.9
	219.1		5.20	0.203	27.43	18.28	6.0	8.7	10.3	11.4	12.8	13.9	14.8	16.0	17.3
	219.1		5.60	0.219	29.48	19.68	6.4	9.4	11.1	12.3	13.8	15.0	15.9	17.3	18.6
	219.1		6.40	0.250	33.57	22.38	7.4	10.7	12.7	14.0	15.8	17.1	18.2	19.7	21.3
	219.1		7.00	0.277	36.61	24.72	8.1	11.7	13.9	15.3	17.3	18.7	19.9	21.6	23.2
	219.1		7.90	0.312	41.14	27.73	9.1	13.3	15.7	17.3	19.5	21.1	22.4	24.3	26.2
	219.1		8.20	0.322	42.65	28.58	9.4	13.8	16.3	18.0	20.2	21.9	23.3	25.3	27.2
	219.1		8.70	0.344	45.14	30.45	10.0	14.6	17.3	19.1	21.4	23.2	24.7	26.8	28.9
	219.1		9.50	0.375	49.10	33.07	10.9	15.9	18.9	20.8	23.4	25.4	27.0	29.3	31.5
10¾	273.1	10.750	4.00	0.156	26.54	17.67	5.2	6.1	7.2	8.0	9.0	9.7	10.3	11.2	12.1
	273.1		4.80	0.188	31.76	21.23	6.3	7.3	8.7	9.6	10.8	11.7	12.4	13.4	14.5
	273.1		5.20	0.203	34.35	22.89	6.8	7.9	9.4	10.4	11.7	12.6	13.4	14.6	15.7
	273.1		5.60	0.219	36.94	24.65	7.3	8.5	10.1	11.2	12.5	13.6	14.5	15.7	16.9
	273.1		6.40	0.250	42.09	28.06	8.4	9.8	11.6	12.7	14.3	15.5	16.5	17.9	19.3
	273.1		7.10	0.279	46.57	31.23	9.3	10.8	12.8	14.1	15.9	17.2	18.3	19.9	21.4
	273.1		7.80	0.307	51.03	34.27	10.2	11.9	14.1	15.5	17.5	18.9	20.1	21.8	23.5
	273.1		8.70	0.344	56.72	38.27	11.4	13.3	15.7	17.3	19.5	21.1	22.5	24.4	26.3
	273.1		9.30	0.365	60.50	40.52	12.2	14.2	16.8	18.5	20.8	22.6	24.0	26.1	28.1
	273.1		11.10	0.438	71.72	48.28	14.5	16.9	20.0	22.1	24.9	26.9	28.7	31.1	33.5

TECHNICAL DATA OF PIPES CONFORMING TO API 5L- (Latest Edition)															
12¾	323.9	12.750	4.40	0.172	34.67	23.13	4.8	5.7	6.7	7.4	8.3	9.0	9.6	10.4	11.2
	323.9		4.80	0.188	37.77	25.25	5.3	6.2	7.3	8.1	9.1	9.8	10.5	11.3	12.2
	323.9		5.20	0.203	40.87	27.23	5.7	6.7	7.9	8.7	9.8	10.6	11.3	12.3	13.2
	323.9		5.60	0.219	43.96	29.34	6.2	7.2	8.5	9.4	10.6	11.5	12.2	13.2	14.3
	323.9		6.40	0.250	50.11	33.41	7.1	8.2	9.7	10.7	12.1	13.1	13.9	15.1	16.3
	323.9		7.10	0.281	55.47	37.46	7.8	9.1	10.8	11.9	13.4	14.5	15.5	16.8	18.1
	323.9		7.90	0.312	61.56	41.48	8.7	10.2	12.0	13.3	14.9	16.2	17.2	18.7	20.1
	323.9		8.40	0.330	65.35	43.81	9.3	10.8	12.8	14.1	15.9	17.2	18.3	19.8	21.4
	323.9		8.70	0.344	67.62	45.62	9.6	11.2	13.2	14.6	16.4	17.8	18.9	20.5	22.1
	323.9		9.50	0.375	73.65	49.61	10.5	12.2	14.5	16.0	17.9	19.4	20.7	22.4	24.2
	323.9		10.30	0.406	79.65	53.57	11.4	13.2	15.7	17.3	19.5	21.1	22.4	24.3	26.2
	323.9		11.10	0.438	85.62	57.65	12.2	14.3	16.9	18.6	21.0	22.7	24.2	26.2	28.3
14	355.6	14.000	4.80	0.188	41.52	27.76	4.8	5.6	6.7	7.3	8.3	8.9	9.5	10.3	11.1
	355.6		5.20	0.203	44.93	29.94	5.2	6.1	7.2	8.0	8.9	9.7	10.3	11.2	12.1
	355.6		5.30	0.210	45.78	30.96	5.3	6.2	7.3	8.1	9.1	9.9	10.5	11.4	12.3
	355.6		5.60	0.219	48.33	32.26	5.6	6.6	7.8	8.6	9.6	10.4	11.1	12.0	13.0
	355.6		6.40	0.250	55.11	36.75	6.4	7.5	8.9	9.8	11.0	11.9	12.7	13.8	14.8
	355.6		7.10	0.281	61.02	41.21	7.1	8.3	9.8	10.9	12.2	13.2	14.1	15.3	16.5
	355.6		7.90	0.312	67.74	45.65	7.9	9.3	11.0	12.1	13.6	14.7	15.7	17.0	18.3
	355.6		8.70	0.344	74.42	50.22	8.7	10.2	12.1	13.3	15.0	16.2	17.3	18.7	20.2
	355.6		9.50	0.375	81.08	54.62	9.5	11.1	13.2	14.5	16.3	17.7	18.8	20.4	22.0
	355.6		10.30	0.406	87.71	59.00	10.3	12.1	14.3	15.8	17.7	19.2	20.4	22.2	23.9
	355.6		11.10	0.438	94.30	63.50	11.1	13.0	15.4	17.0	19.1	20.7	22.0	23.9	25.7
16	406.4	16.000	4.80	0.188	47.54	31.78	4.2	4.9	5.8	6.4	7.2	7.8	8.3	9.0	9.7
	406.4		5.20	0.203	51.45	34.28	4.6	5.3	6.3	7.0	7.8	8.5	9.0	9.8	10.5
	406.4		5.60	0.219	55.35	36.95	4.9	5.7	6.8	7.5	8.4	9.1	9.7	10.5	11.4
	406.4		6.40	0.250	63.13	42.09	5.6	6.6	7.8	8.6	9.6	10.4	11.1	12.0	13.0
	406.4		7.10	0.281	69.91	47.22	6.2	7.3	8.6	9.5	10.7	11.6	12.3	13.4	14.4
	406.4		7.90	0.312	77.63	52.32	6.9	8.1	9.6	10.6	11.9	12.9	13.7	14.9	16.0
	406.4		8.70	0.344	85.32	57.57	7.6	8.9	10.6	11.6	13.1	14.2	15.1	16.4	17.7
	406.4		9.50	0.375	92.98	62.64	8.3	9.7	11.5	12.7	14.3	15.5	16.5	17.9	19.3
	406.4		10.30	0.406	100.61	67.68	9.0	10.6	12.5	13.8	15.5	16.8	17.9	19.4	20.9
	406.4		11.10	0.438	108.2	72.86	9.8	11.4	13.5	14.9	16.7	18.1	19.3	20.9	22.5

Tolerances :-

1) Outside diameter of Body & Ends :

Specified OD (mm)	Body Tolerance	Ends Tolerance (mm)	Out-of-roundness tolerances (mm)	
			Pipe except the end	Pipe end
≥ 88.9 to 168.3	±0.0075 D	-0.40, +1.60		
>168.3 to 610	±0.0075 D but max. of ±3.20 mm	±0.005 D, but max. of ±1.60 mm	0.020 D	0.015 D
> 610 to 1422	±0.005 D but max. of ±4.0 mm	±1.60 mm		
>1422	As agreed			

2) Thickness :

≤5.0 mm = ±0.5 mm

>5.0 to <15.0 = ±0.1t

≥15.0 mm = ± 1.5 mm

(where t = wall thickness)

3) Mass :

+10%, -3½% of standard weight

Mechanical properties :

PSL 1	Gr.A	Gr.B	Gr.X42	Gr.X46	Gr.X52	Gr.X56	Gr.X60	Gr.X65	Gr.X70
Yield strength MPa (min.)	210	245	290	320	360	390	415	450	485
Tensile strength MPa (min.)	335	415	415	435	460	490	520	535	570
Elongation (% Min.)	Min. elong. Shall be determined by $A_f=1940\ A^{0.2}/U^{0.9}$ (Where A=Area of test specimen, U=Min. specified tensile strength)								

PSL 2	Gr.A	Gr.B	Gr.X42	Gr.X46	Gr.X52	Gr.X56	Gr.X60	Gr.X65	Gr.X70
Yield strength MPa (min.)	-	245-450e	290-495	320-525	360-530	390-545	415-565	450-600	485-635
Tensile strength MPa (min.)	-	415-655	415-655	435-655	460-760	490-760	520-760	535-760	570-760
Elongation (% Min.)	Min. elong. Shall be determined by $A_f=1940\ A^{0.2}/U^{0.9}$ (Where A=Area of test specimen, U=Min. specified tensile strength)								
Ratio (YS/TS) Max.	0.93								

e = For pipe with D<219.1 mm, the maximum yield strength shall be ≤495 MPa

TECHNICAL DATA OF PIPE CONFORMING TO API 5L

CHEMICAL COMPOSITION FOR PSL 1 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	Mass fraction based upon heat and product analysis %			
	C max	Mn max	P max	S max
L 210 or Grade A	0.22	0.90	0.030	0.030
L 245 or Grade B	0.26	1.20	0.030	0.030
L 290 or X 42	0.26	1.30	0.030	0.030
L 320 or X 46	0.26	1.40	0.030	0.030
L 360 or X 52	0.26	1.40	0.030	0.030
L 390 or X 56	0.26	1.40	0.030	0.030
L 415 or X 60	0.26	1.40	0.030	0.030
L 450 or X 65	0.26	1.45	0.030	0.030
L 485 or X 70	0.26	1.65	0.030	0.030

CHEMICAL COMPOSITION FOR PSL 2 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	Mass fraction based upon heat and product analysis % maximum								Carbon Equivalent (% Maximum)	
	C	Si	Mn	P	S	V	Nb	Ti	CE (IIW)	CE (PCM)
L 245 or Grade B	0.22	0.45	1.20	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 290 or X 42	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 320 or X 46	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 360 or X 52	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 390 or X 56	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 415 or X 60	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 450 or X 65	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 485 or X 70	0.12	0.45	1.70	0.025	0.015	*	*	*	0.43	0.25
L 555 or X 80	0.12	0.45	1.85	0.025	0.015	*	*	*	0.43	0.25

*This is as per API Specification 5L

Destructive & Non-Destructive Testing

Hydrostatic Testing 100% of pipe shall be tested at a pressure specified in above table

NDT

PSL-1 Weld seam of each pipe shall be tested by online Eddy Current Test

PSL-2 Pipe body and weld seam shall be tested by Ultrasonic Test (after hydro test)

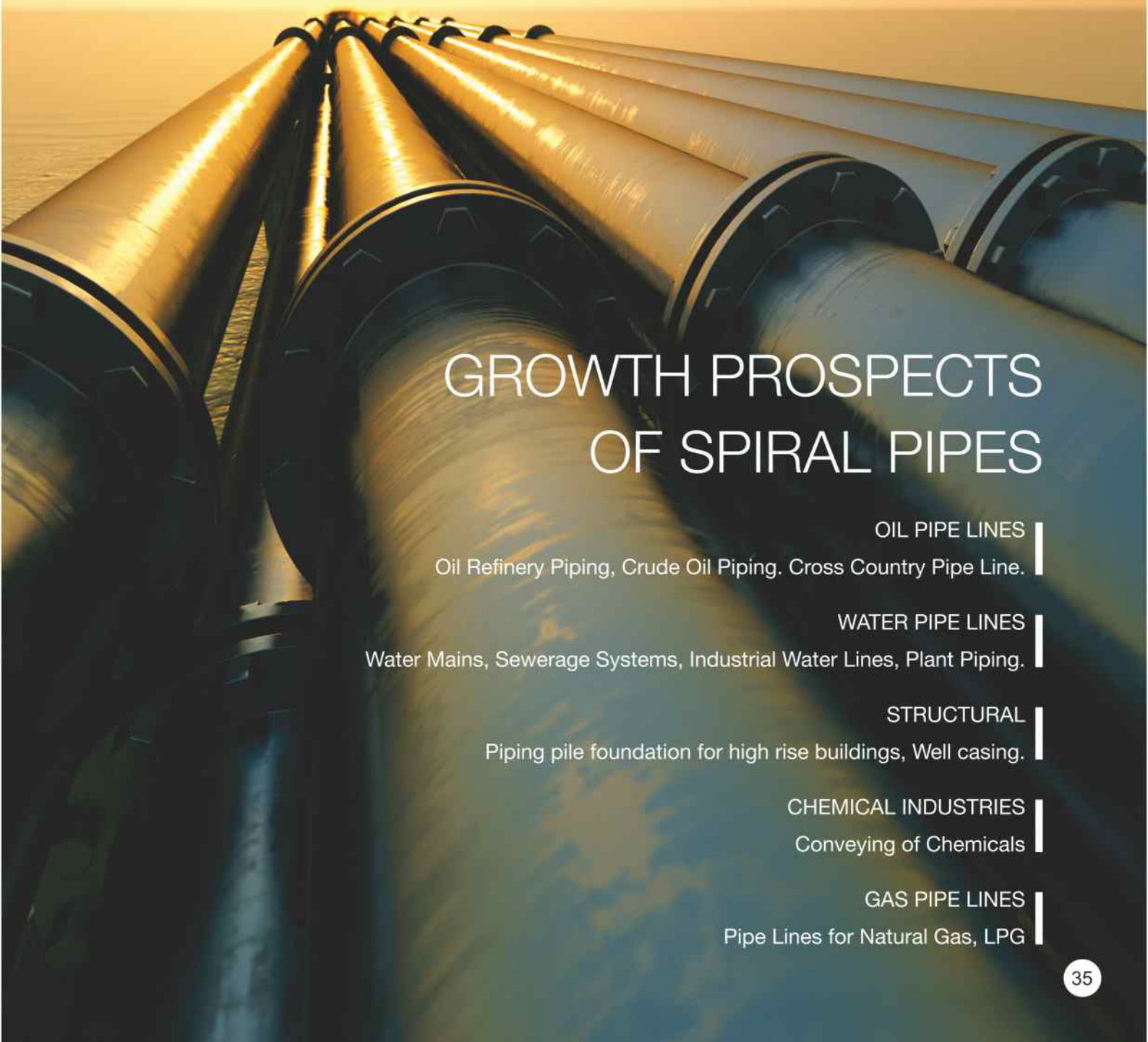
Flattening (0^0 & 90^0) For pipes over size 2.375"
1. Flatten upto 1/2 of OD (no crack in weld) 2. Flatten upto 1/3 of OD (no cracks or breaks other than in weld)
3. Full Flattening (no Lamination or burnt metal)

Reverse Bend Test as per API 5L or Customer Specification to determine strength of weld

Metallography For Grain size and Grain Structure

Impact Testing For PSL-2 Pipes only (at 0°C) Min value for one sample = 22 J, Min Avg. value of 3 samples = 27 J

SPIRAL WELDED PIPES



GROWTH PROSPECTS OF SPIRAL PIPES

OIL PIPE LINES
Oil Refinery Piping, Crude Oil Piping. Cross Country Pipe Line.

WATER PIPE LINES
Water Mains, Sewerage Systems, Industrial Water Lines, Plant Piping.

STRUCTURAL
Piping pile foundation for high rise buildings, Well casing.

CHEMICAL INDUSTRIES
Conveying of Chemicals

GAS PIPE LINES
Pipe Lines for Natural Gas, LPG



SURYA
STEEL TUBES & PIPES

SPIRAL WELDED PIPE PLANT

The plant situated in an area of about 100 acres and located on the National Highway at Bhuvad village (Anjar) in Kutch district of Gujarat State producing Spiral Welded Pipes in the range from 18" to 104" with maximum wall thickness of 1" (25.4mm). The pipes are produced to meet high standards of specifications both, national and international, including that of API(American Petroleum Institute), conforming to API/ASTM specifications up to Spec.5L, Gr.X80. This plant has capacity of 200,000 MT per annum.

All the machines for manufacturing of Spiral Welded Pipes are imported from Byard Malaysia and Germany, who are world class manufacturers of Spiral Pipe Plant machinery. It is taking advantage of the strategic location in close proximity to the ports at Kandla (22km) and Mundra (35km) that have facilities for handling heavy cargo.





FOCUS ON QUALITY

Customer satisfaction drives Surya in everything that it does. No wonder, its commitment to the high quality of its pipes commences right from the selection of raw material and continues at every stage of manufacturing process till the finished product.

MODERN LABORATORY

To ensure product reliability through process control, Surya has a fully equipped mechanical, Chemical and metallurgical laboratory with all the tools essential for comprehensive product quality testing and evaluation to withstand reactive processes. Hydro testing of pipes is undertaken to detect leaks and fissures. Destructive testing of pipes entails performance examination of the weld, as well as their tensile and compressive strength.

TESTING AND QUALITY CONTROL FACILITIES

Besides the numerous quality assurance measures during the manufacturing process and at various inspection points, the following facilities are also utilized for ensuring stringent quality standards.





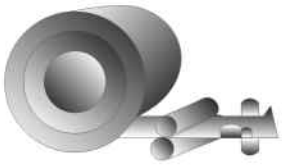
• Universal Testing Machines (Digital)	For material testing (mechanical properties)
• Ultrasonic Testing Machine (NDT) (Parent Metal / Welds)	For checking strip laminations and flaw detection on welds on pipes in auto mode
• Metallurgical Microscope	For checking and evaluating the grain size & grain structure of material, heat affected and weld zones
• Vickers Hardness Tester (Digital)	For checking micro & macro hardness on weld, heat affected zone and base metal
• Digital Ultrasonic Thickness Gauge	For checking thickness of pipes
• Mandrels and Fixtures	Guided bend test (GBT)
• Impact Test Machine (Charpy v notch)	For Evaluating toughness in base metal, weld and HAZ of pipes
• Drop weight tear test	For evaluating the % shear area of material for Ductility
• Spectroscope	For checking chemical composition of raw material & product

Apart from the above important testing machines, we have digital temperature recorders for measuring welding temperature, auto pressure recorder for measuring hydraulic test pressure and many other sophisticated measuring instruments.

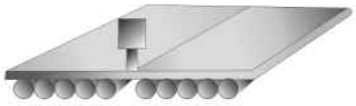
The trained and committed work force ensures high quality of pipes made to various national and international standards, including the requirement of API specifications. The quality control system is audited time to time by the various certification bodies including API to verify the effectiveness of the system.

SURYA
STEEL TUBES & PIPES

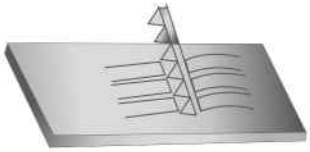
FLOW CHART: SAWH



DECOILING



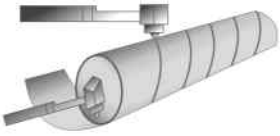
SUBMERGED ARC WELDING FOR COIL TO COIL JOINING



COIL ULTRASONIC TESTING



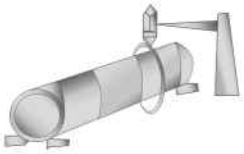
EDGE MILLING



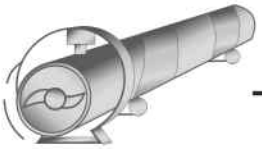
PIPE FORMING AND SUBMERGED ARC WELDING (INSIDE & OUTSIDE)



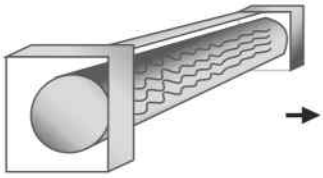
PLASMA ARC CUTTING



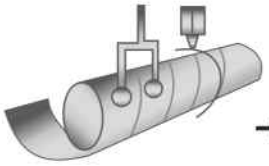
REAL TIME RADIOGRAPHY (RTR) / FLUOROSCOPY



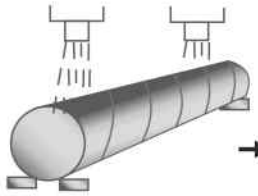
BEVELLING OF ENDS



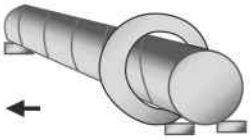
HYDROSTATIC TESTING



ULTRASONIC TESTING OF THE WELD AND HAZ



X-RAY INSPECTION OF PIPE ENDS



MAGNETIC PARTICLE INSPECTION (MPI) / RESIDUAL MAGNETISM

WEIGHT MEASUREMENT



FINAL INSPECTION (100% VISUAL + DIMENSION CHECK)

MARKING

LOADING & DISPATCHING

ISO 9001:2008
70121-2010-AQ-IND-RvA

ISO 14001:2004
177047-2015-AE-IND-RvA

OHSAS 18001:2007
177048-2015-HSO-IND-DNV

EN 10219-1:2006
1162-CPR-0513

EN 10255:2004+A1:2007
90926-2010-CPD-IND Rev.02

Product Profile : SAWH Pipes

Outside Diameter	Thickness	Capacity (MT per annum)	Length	Grade	Pipe Ends
18" (457 mm) to 104" (2641.6 mm)	5 mm to 25 mm	200,000 (0.2 Million)	Upto 13000 mm	API 5L GR upto X80, ASTM A 252, ASTM A 139, IS 3589, IS 5504.	Plain / Bevelled

API 5L : 0794

API 5CT : 1378

Certificate No.
0003047635

Certificate No.
20100301-EX15061

Activ Fire
afp - 2977

TECHNICAL DATA OF PIPE CONFORMING TO API 5L

CHEMICAL COMPOSITION FOR PSL 1 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	Mass fraction based upon heat and product analysis %			
	C max	Mn max	P max	S max
L 210 or Grade A	0.22	0.90	0.030	0.030
L 245 or Grade B	0.26	1.20	0.030	0.030
L 290 or X 42	0.26	1.30	0.030	0.030
L 320 or X 46	0.26	1.40	0.030	0.030
L 360 or X 52	0.26	1.40	0.030	0.030
L 390 or X 56	0.26	1.40	0.030	0.030
L 415 or X 60	0.26	1.40	0.030	0.030
L 450 or X 65	0.26	1.45	0.030	0.030
L 485 or X 70	0.26	1.65	0.030	0.030

PIPE TENSILE TEST REQUIREMENT FOR PSL 1 WELDED PIPES
(Delivery Condition - R, N & M)

Pipe Grade	Yield Strength (Y.S.) MPa (psi) Minimum	Tensile Strength MPa (psi) Minimum
L 210 or Grade A	210 (30500)	335 (48600)
L 245 or Grade B	245 (35500)	415 (60200)
L 290 or X 42	290 (42100)	415 (60200)
L 320 or X 46	320 (46400)	435 (63100)
L 360 or X 52	360 (52200)	460 (66700)
L 390 or X 56	390 (56600)	490 (71100)
L 415 or X 60	415 (60200)	520 (75400)
L 450 or X 65	450 (65300)	535 (77600)
L 485 or X 70	485 (70300)	570 (82700)

TECHNICAL DATA OF PIPE CONFORMING TO API 5L

CHEMICAL COMPOSITION FOR PSL 2 WELDED PIPES UPTO 25 mm WALL THICKNESS

Steel Grade (Steel Name)	Mass fraction based upon heat and product analysis % maximum								Carbon Equivalent (% Maximum)	
	C	Si	Mn	P	S	V	Nb	Ti	CE (IIW)	CE (PCM)
L 245 or Grade B	0.22	0.45	1.20	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 290 or X 42	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 320 or X 46	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	0.43	0.25
L 360 or X 52	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 390 or X 56	0.22	0.45	1.40	0.025	0.015	*	*	*	0.43	0.25
L 415 or X 60	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 450 or X 65	0.12	0.45	1.60	0.025	0.015	*	*	*	0.43	0.25
L 485 or X 70	0.12	0.45	1.70	0.025	0.015	*	*	*	0.43	0.25
L 555 or X 80	0.12	0.45	1.85	0.025	0.015	*	*	*	0.43	0.25

*This is as per API Specification 5L

PIPE TENSILE TEST REQUIREMENT FOR PSL 2 WELDED PIPES
(Delivery Condition - N & M)

Pipe Grade	Yield Strength (Y.S.) MPa (psi)		Tensile Strength MPa (psi)		Ratio (YS/UTS)
	Minimum	Maximum	Minimum	Maximum	Maximum
L 245 or Grade B	245 (35500)	450 (65300)	415 (60200)	655 (95000)	0.93
L 290 or X 42	290 (42100)	495 (71800)	415 (60200)	655 (95000)	0.93
L 320 or X 46	320 (46400)	525 (76100)	435 (63100)	655 (95000)	0.93
L 360 or X 52	360 (52200)	530 (76900)	460 (66700)	760 (110200)	0.93
L 390 or X 56	390 (56600)	545 (79000)	490 (71100)	760 (110200)	0.93
L 415 or X 60	415 (60200)	565 (81900)	520 (75400)	760 (110200)	0.93
L 450 or X 65	450 (65300)	600 (87000)	535 (77600)	760 (110200)	0.93
L 485 or X 70	485 (70300)	635 (92100)	570 (82700)	760 (110200)	0.93
L 555 or X 80	555 (80500)	705 (102300)	625 (90600)	825 (119700)	0.93



- These are used for casing and tubing application in Oil & Gas industry.
- Electric Resistance Welded Tubing & Casing manufactured by SURYA, fully comply with API 5CT requirement .
- Product Standard / Material Quality – API 5CT – H40,J55,K 55 PSL 1

OCTG

OIL COUNTRY TUBULAR GOODS



- Pipes produced by SURYA are with tight tolerance on product including roundness, straightness with length up to 12.90 meter (42 feet), besides sourcing reliable high quality steel .

- Most popular range in Tubing & casing is covered. The range for Tubing is from OD 2 -3/8 to 4-1/2 Inch & for casing it is from OD 4 -1/2 to 16 Inch .

ACHIEVEMENTS & ACCREDITATIONS

The success quotient of SURYA is unmatched. We thrive hard to cater brilliance at every pedestal. SURYA has achieved many accreditations and certificates from various governing bodies to guarantee the best of quality and next generation technology inculcated in every product. We are certified from the authority to use the Official API monogram which is a mark of sheer trust and reliability. ERW Welded pipes from Surya have bagged many certifications that ensures longevity and quality of the pipes.



VALUES WE NURTURE

We shall endeavour to maintain leadership through quality products and cost control, explore new avenues in product development, marketing and exports, create a stronger bond with our stakeholders, contribute to social development and constantly strive for excellence in all spheres of our global activities.

INTEGRITY
We do the right thing For the right reason.

EXCELLENCE
We strive to deliver the highest quality standards through simple, easy and relevant solutions.

INSPIRATION
We inspire each other to explore ideas that can make the world a better place.

CARING
We listen and respect our customers and each other so we can act with insight, understanding and compassion.



Delivering Trust...
...across the Globe !



SURYA GLOBAL STEEL TUBES LTD.

Survey No 188, 189 & 190/1, Village Bhuvad
Taluka - Anjar, District Kutch, Gujarat, India

REGISTERED OFFICE & HEAD OFFICE :
Padma Tower-1, Rajendra Place, New Delhi - 110008
Ph. : +91-11-47108000, +91-11-25810093-96
Fax : +91-11-25789560

www.suryaglobalsteeltube.com