Jazeera Steel حديد الجزيرة

Tube & Pipe Mill (TM)
&
Merchant Bar Mill (MBM)

SUHAR - OMAN

ABBREVIATIONS USED

- m : Meter
- Kg : Kilogram
- ft : Feet
- lbs : Pounds
- MT : Metric Tonne
- psi : Pounds Per Square inch
- kPa : Kilo Pascal
- MPa : Mega Pascal
- GSM : Grams Per Square Meter

AL JAZEERA STEEL PRODUCTS CO. SAOG

Pioneering Steel Manufacturing in the Sultanate of Oman

With over 25 years of excellence, Al Jazeera Steel Products Co. SAOG (Jazeera Steel) is a regional leader in world-class steel products—from electric resistance welded (ERW) pipes to merchant bars and medium sections.

The company operates two state-of-the-art manufacturing facilities - Tube Mill (TM) and Merchant Bar Mill (MBM), with a product portfolio spanning across black pipes, galvanized pipes, hollow sections, merchant bar mill products and rebars. Jazeera Steel is publicly listed on the Muscat Stock Exchange. A majority stake is held by Sheikha Amal Bahwan, daughter of Sheikh Suhail Bahwan—a Doyen of the Omani business world.

Our product offerings include:

- **Mild Steel ERW Tubes** – Black & Galvanized, Plain End / Threaded & Coupled
- **Hot-Rolled Merchant Bars –** In As-Rolled & Galvanized Conditions

Our products conform to various international standards such as **API ,ASTM, BS, DIN, EN, JIS, AS/NZS, CSA** and more.

WORLD-CLASS FACILITIES & MACHINERY

Today, our products are manufactured to international specifications and delivered to both domestic and global markets. Our state-of-the-art manufacturing facilities in Oman include :

- 4 Tube Production Lines
- 3 Galvanizing Lines
- Hot Rolling Mill

Jazeera Steel ,Oman has a combined capacity of 600,000 MT per annum.

Our operations are driven by modern production systems and supported by a rigorous quality management framework. In-house testing and automation ensure every product meets the required standards before leaving the plant. Our products have been approved by region's most respected entities such as PDO , Saudi Aramco and ADNOC.

DRIVEN BY VISION, BACKED BY EXPERTISE

Led by a proactive management team, Jazeera Steel fosters a safe, collaborative environment where every level of the workforce contributes toward shared goals and stakeholder expectations. Transparency, respect, and performance are at the core of this culture. With a team that thrives on cultural harmony, continuous training and access to industry knowledge ensure our people stay sharp, skilled, and future-ready.

Integrated Quality Assurance

- Our advanced quality control includes:
- HIC and SSC Testing
- Online & Offline UT Machine
- Online Eddy Current Testing
- Universal Testing Machine
- Hardness Testing Machine
- Inverted Metallurgical Microscope with CCD Camera
- Optical Spectrometer
- Bend Test Machine
- Low-Temperature Charpy Impact Test Machine

CUSTOMER-CENTRIC APPROACH

One of Jazeera Steel's most notable achievements lies in its unwavering focus on customer service. The company continuously strives to improve order turnaround times and improve OTIF. Our team ensures every product is delivered with precision, aligning closely with each customer's specifications and expectations.

SERVING A DIVERSE MARKET WITH GLOBAL REACH

Jazeera Steel manufactures tubes and merchant bars that meet a broad range of international standards and steel grades. Our products cater to diverse segments such as oil & gas, Power Transmission ,Construction sector , Agriculture , Irrigation , Plumbing , Firefighting , standard industrial and general engineering needs, enhancing the diversity and strength of our portfolio. Jazeera Steel's products are exported to over 25 destinations, including the MENA , Far East, Europe , Australia and the Americas. Our clients include EPC firms, oil and gas companies, steel fabricators , distributors, and developers across construction, energy, irrigation, and water sectors. We take pride in these global partnerships and continually strive to fulfill and exceed customer expectations at every stage.

QUALITY POLICY

Al Jazeera Steel Products Co SAOG, based in Oman, is one of the leading manufacturers & supplier of High-Quality Steel Pipes & Hot Rolled Steel Products complying with various International Standards.

Al Jazeera Steel Products Co SAOG, established in 1996, is having annual production capacity of more than 650,000 MT. Al Jazeera Steel Products Co SAOG is working on manufacturing of tubulars for Oil, Gas and Petroleum Industries.

Al Jazeera Steel Products Co SAOG, is committed to achieving and maintaining excellence in Quality Management System complying to Oil and Gas and all other sectors in Oman and other market in which we operate. We will conduct our business in a manner that consistently strives to exceed the needs and expectations of our customers. Our aim is to continuously provide high quality products in a timely manner in full compliance with applicable standards and requirements in all sectors of the markets we operate.

MISSION STATEMENT

We pursue excellence in all facets of our business, striving to produce the best products with uncompromising quality and service to achieve the highest customer satisfaction and maximize shareholder value. Innovation and continuous improvement, coupled with environmentally sustainable practices, are our guiding principles.

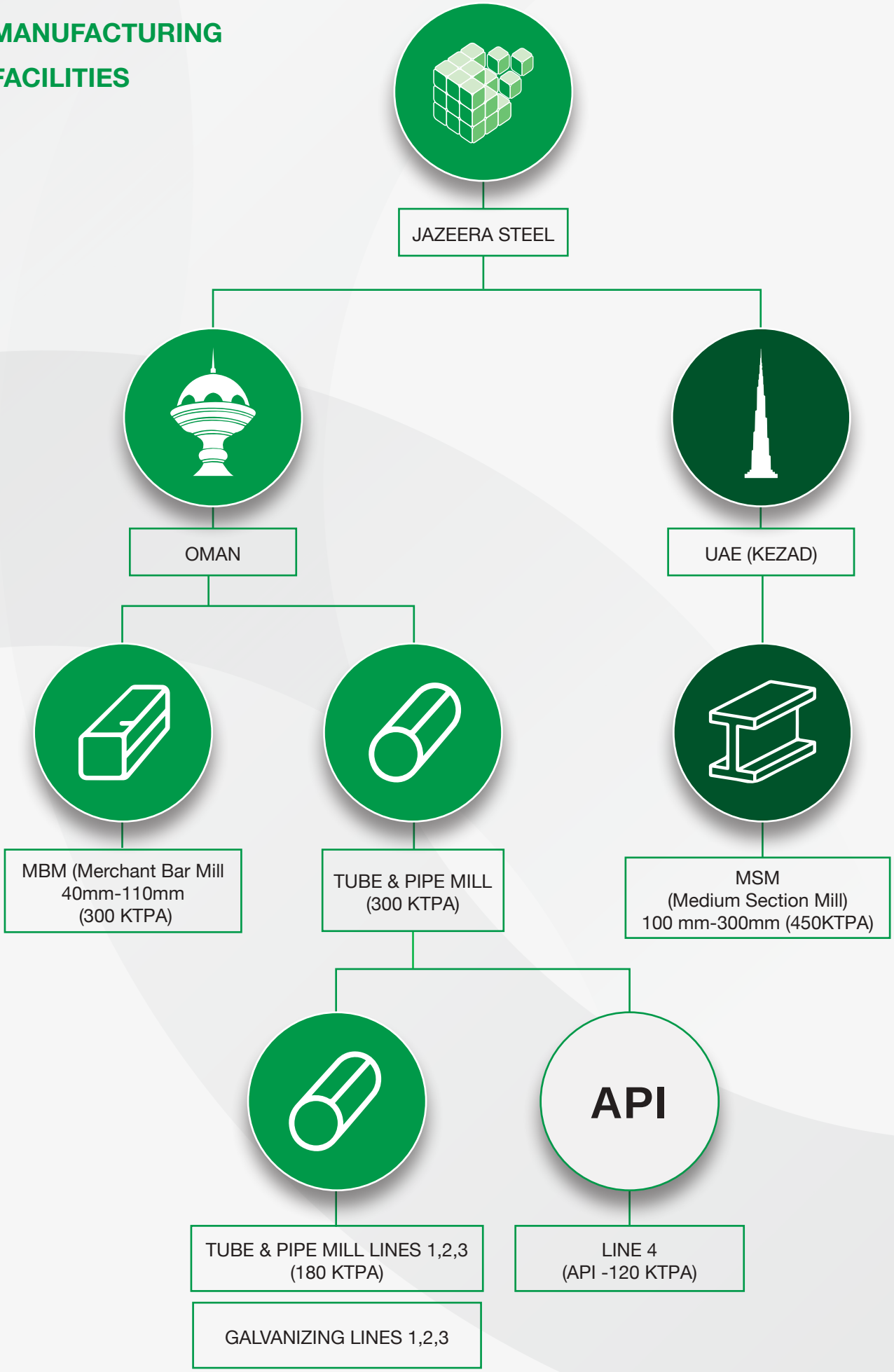
COMMITMENTS

Al Jazeera Steel Products Co SAOG is committed to:

- Provide a safe and healthy working environment.
- Establish and maintain Quality Management System complying with Oil and Gas sector and other market sectors in which we operate.
- Implement effective Management Systems to meet the needs and expectations of our customers to enhance their satisfaction.
- Provide Quality Management System Awareness among all employees, subcontractors and stakeholders through participative culture and periodic reviews.
- Comply with all applicable legal and other requirements related to business needs.
- Upgrade skills, processes and strive continually for improvement of process effectiveness, customer satisfaction.
- Adhere to codes of best practice and comply with our own Standards and Procedures and all applicable International Laws and Standards.

Jazeera Steel

MANUFACTURING FACILITIES



CERTIFICATIONS AND QUALITY ASSURANCE

RAISING THE BAR IN QUALITY STANDARDS

In its pursuit of excellence and commitment to high-quality manufacturing, Jazeera Steel has achieved QMS as per API Q1 10th Edition from API and ISO 9001 :2015 Certification from TÜV SÜD, Germany.

CERTIFICATIONS & APPROVALS

API 5L License

Jazeera Steel has secured API 5L License for the manufacturer of API 5L pipe up to X52 grade PSL1 and PSL2 (including Sour service and Offshore service)

UL Certification (USA)

Certified by Underwriters Laboratories (UL) for the production of Metallic Sprinkler Steel Tubes used in fire protection systems.

CE Mark (European Union)

Holds the CE Mark certification under the Construction Products Directive (CPD 89/106/EEC) for supplying products in the European construction sector.

FM APPROVALS (USA)

Approved by FM APPROVALS for the manufacture of steel pipes used in automatic fire sprinkler systems.

PDO, SAUDI ARAMCO, APPROVALS

Jazeera Steel has been approved by major entities such as PDO, Saudi Aramco, ADNOC.

OMAN,UAE,QATAR,BAHRAIN Civil Defense Approval

Authorized to supply products to various projects under the Civil Defense Authorities in the GCC.

UK CARES & DCL Certification

Certified for the production of BS 4449:2005 Grade B500B Reinforcement Bars (REBAR).

SASO Quality Mark (Saudi Arabia)

Certified to manufacture ASTM A53 & ASTM A500 pipes and tubes, and ASTM A6 merchant bar products, in compliance with Saudi standards.

SIRIM (Malaysia)

Jazeera Steel Merchant Bar Products are certified by SIRIM Malaysia

ISO 14001:2015 Environmental Management System

Certified by SGS, Switzerland for environmentally responsible operations.

ISO 45001:2018 Occupational Health & Safety Management

Certified by SGS, Switzerland for maintaining international standards in workplace health and safety.

REGISTRATION NO. Q1-5441

Certificate of Registration

The American Petroleum Institute certifies that the quality management system of

AL JAZEERA STEEL PRODUCTS CO. SAOG
Road No. 3 Sohar Industrial Estate
Sohar
Sultanate of Oman

has been assessed by the American Petroleum Institute and found to be in conformance with the following:

API Spec Q1, 10th Edition

The scope of this registration and the approved quality management system applies to the

Manufacturer of Line Pipe Plain End for the Oil and Gas Industry

API approves the organization's justification for excluding

Design

Effective Date: DECEMBER 30, 2024
Expiration Date: DECEMBER 30, 2027
Registered Since: DECEMBER 30, 2024

Senior Vice President of Global Industry Services

API Spec Q1 Registered

ZERTIFIKAT • CERTIFICATE • CERTIFICADO • CERTIFICAT • CERTIFICAAT • CERTIFICATE • ZERTIFIKAT

CERTIFICATE

Certificate Registration No.: **12 100 62788 TMS** / Order No.: **724828219**

The Certification Body
of TÜV SÜD Management Service GmbH

certifies that the organization

Al Jazeera Steel Products Co. SAOG
Road Number-3, Suhar Industrial Area
327 Suhar
Sultanate of Oman

for the scope

Manufacturing of Black and Galvanized Steel Tubes and Pipes in Circular, Square and Rectangular Hollow Sections. Manufacturing of Hot Rolled Structural Steel Products such as Angles, Channels, Squares, Flat & Round Bars and Thermo-mechanically Treated Bars

has established and applies a Quality Management System.

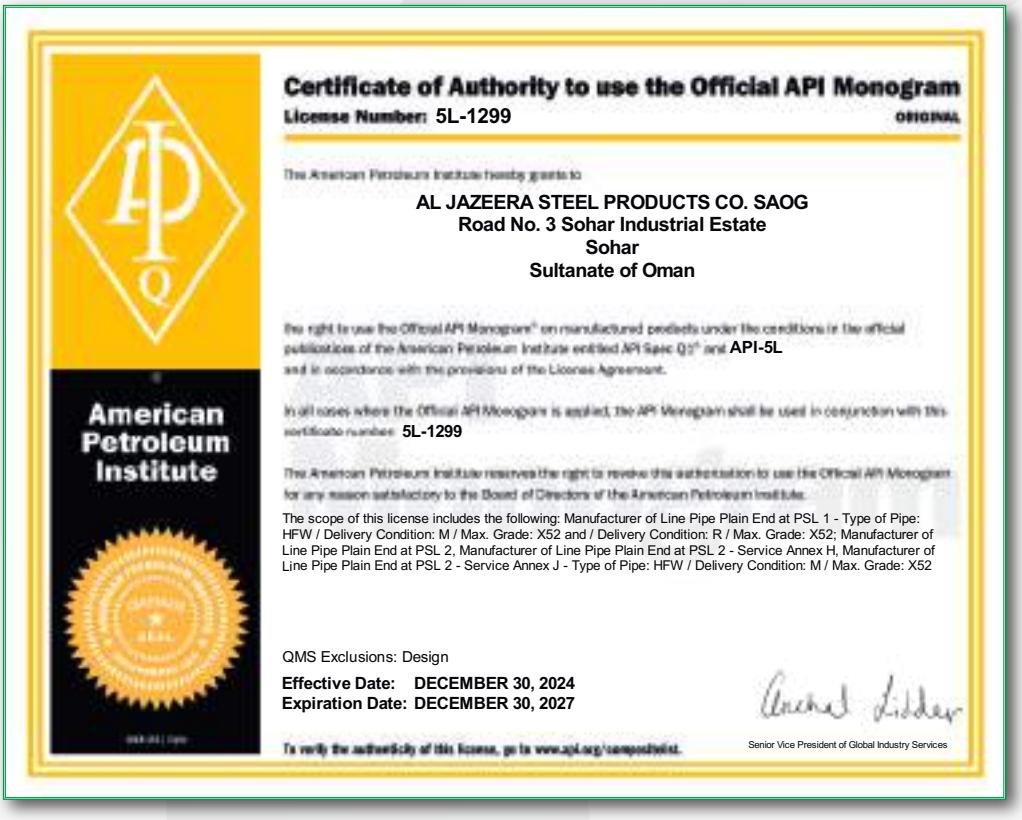
An audit was performed and has furnished proof
that the requirements according to

DIN EN ISO 9001:2015

are fulfilled.

The certificate is valid from **2024-09-29** until **2027-09-28**.

Fred Wenke
Head of Certification Body
Munich, 2024-09-23



Certificate of Authority to use the Official API Monogram

License Number: 5L-1299 **ORIGINAL**

The American Petroleum Institute hereby grants to

AL JAZEERA STEEL PRODUCTS CO. SAOG
Road No. 3 Sohar Industrial Estate
Sohar
Sultanate of Oman

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-5L** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number **5L-1299**

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 / Delivery Condition: M / Max. Grade: X52 and / Delivery Condition: R / Max. Grade: X52; Manufacturer of Line Pipe Plain End at PSL 2, Manufacturer of Line Pipe Plain End at PSL 2 - Service Annex H, Manufacturer of Line Pipe Plain End at PSL 2 - Service Annex J - Type of Pipe: HFW / Delivery Condition: M / Max. Grade: X52

QMS Exclusions: Design

Effective Date: DECEMBER 30, 2024
Expiration Date: DECEMBER 30, 2027

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

Senior Vice President of Global Industry Services

American Petroleum Institute

Certificate of Compliance

Certificate Number:
UL-US-L15200-571011-90307002-1

Report Reference:
EX15200-20070309

Issue Date:
2024-11-08

Issued to:

AL JAZEERA STEEL PRODUCTS CO SAOG
Po Box 40
Sohar Industrial Estate Sultanate Of Oman 327
Oman

This certificate confirms that representative samples of:
VIZY - Metallic Sprinkler Pipe

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.

UL 852, Edition 2, Issue Date 2008-10-01, Revision Date 2023-03-07

Additional Information:
See UL Product iQ® at https://iq.ulprospector.com for additional information.

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

David Piecuch
UL Mark Certification Program Owner

Certificate AE24/000008

SGS

AL JAZEERA STEEL PRODUCTS CO SAOG

ISO 45001:2018

For the following activities

IAF

File EX15200 Vol. 1 Sec. 1 Page 1 Issued: 2007-03-09
Revised: 2024-11-07

DESCRIPTION

PRODUCT COVERED:

USL -

Schedule 40 (black or galvanized) steel pipe in the 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6 and 8 in. sizes as per ASTM A53, Grade A, Type E.

Schedule 40 (black or galvanized) steel pipe in the **1/2, 3/4,** 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6 and 8 in. sizes as per ASTM A53, Grade B, Type E.

Schedule 10 (black or galvanized) steel pipe in the 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. sizes as per ASTM A53 and ASTM A795, Grade A, Type E.

Schedule 10 (black or galvanized) steel pipe in the 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, and 8 in. sizes as per ASTM A53 and ASTM A795, Grade B, Type E.

Schedule 80 (black or galvanized) steel pipe in the 1-1/2, 2, 2-1/2, 3, and 4 in. sizes as per ASTM A53, Grade A, Type E.

Schedule 80 (black or galvanized) steel pipe in the 1-1/2, 2, 2-1/2, 3, and 4 in. sizes as per ASTM A53, Grade B, Type E.

Pipes are intended for use in wet, dry, preaction and deluge type sprinkler systems with threaded ends or unthreaded ends intended to be joined by welding or Listed Rubber Gasketed Fittings when installed in accordance with the fitting manufacturer's specifications.
*

ENGINEERING CONSIDERATIONS:

USL – Indicates investigation to U.S. requirements.

FM APPROVED

Certificate of Compliance

FM Approvals

CERTIFICATE OF APPROVAL

Quality Management System Certification — Page 1 of 2

This is to certify that

Al Jazeera Steel Products Co. S.A.O.G (Oman)

at its establishment at

Sohar Industrial Estate, Sohar, 327, Oman

has been approved by the Authority to the following management system standard using the processes and procedures registered with the Authority:

BS EN ISO 9001: 2015

Scope of certification:
Quality Management System Certification as stated on the attached appendix

This certificate remains the property of the Authority and is issued subject to the Regulations of the Authority. This certificate is uncontrolled when printed. To check the validity of this certificate please scan the above Static QR Code with the CARES Cloud App or contact us on +44 1732 450000.

CERTIFICATE NUMBER	FIRST APPROVAL	ISSUE DATE	EXPIRY DATE
1480	**December 2016**	**28 May 2024**	**27 May 2027**

SIGNED FOR UK CERTIFICATION AUTHORITY FOR REINFORCING STEELS

Lee Brankley,
Chief Executive Officer

The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the accreditation certificate number 0002.
UK Certification Authority for Reinforcing Steels, Pembroke House, 21 Pembroke Road, Sevenoaks, Kent, TN13 1XR, UK.
A Company Limited by Guarantee. Registered in England No. 1762648.
Cert. Ref: AIC112010 64101 1264-s05

PRINTED ON 03/09/2024 FROM CARESCERTIFICATION.COM

APPENDIX TO CARES CERTIFICATE NO. 1480

AL JAZEERA STEEL PRODUCTS CO. S.A.O.G (OMAN)
SOHAR INDUSTRIAL ESTATE, SOHAR
327, OMAN

Quality Management System Certification — Page 2 of 2

CPAS - ISO 9001:2015 QMS only

Scope of certification:
Production of hot rolled steel bar for the reinforcement of concrete

This certificate remains the property of the Authority and is issued subject to the Regulations of the Authority. This certificate is uncontrolled when printed. To check the validity of this certificate please scan the above Static QR Code with the CARES Cloud App or contact us on +44 1732 450000.

CERTIFICATE NUMBER	FIRST APPROVAL	ISSUE DATE	EXPIRY DATE
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A Company Limited by Guarantee. Registered in England No. 1762648.
Cert. Ref: AIC112010 64101 1264-s05

PRINTED ON 03/09/2024 FROM CARESCERTIFICATION.COM

Certificate of Conformity of the Factory Production Control
1029 – CPR – AE22/0000003

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

Hot rolled products of structural steels, described in annex.

placed on the market under the name or trade mark of

AL JAZEERA STEEL PRODUCTS CO. SAOG
Road No. 3, P.O. Box 40, Sohar Industrial Area, Sohar, Postal Code 327, Sultanate of Oma

and produced in the manufacturing plant

AL JAZEERA STEEL PRODUCTS CO. SAOG
Road No. 3, P.O. Box 40, Sohar Industrial Area, Sohar, Postal Code 327, Sultanate of Oma

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 10025-1:2004

under system 2+ are applied and that the factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 02 August 2023 until 11 May 2025
and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body.

Issue 3. Certified with SGS since 12 May 2022

Authorised by
Luis Neves
Certification Management

Authorised by
Luis Santos
Certification Management

SGS ICS – Serviços Internacionais de Certificação, Lda., Notified Body 1029
Polo Tecnológico de Lisboa, Rua Cesina Actles Bermudes, lote 11, nº 1, 1600-604 Lisboa – Portugal
t +351 217104200 Email: pt.info@sgs.com - www.sgs.pt

Certificate of Conformity of the Factory Production Control
1029 – CPR – AE22/0000003

Annex 1

Product(s): Hot rolled products of structural steels.

Product Description	Hot Rolled Structural Steel Products using Steel Billets as Raw Material
Shapes and Dimensions	Equal Leg Angles (Leg Length x Leg Length) 40 mm x 40 mm to 110 mm x 110 mm Channels (Section Height x Flange Width x Web Thickness x Flange Thickness) 125 mm x 65 mm x 5.5 mm x 9.5 mm 100 mm x 50 mm x 6 mm x 8.5 mm 100 mm x 50 mm x 5 mm x 8.5 mm 100 mm x 50 mm x 5 mm x 7.5 mm 100 mm x 50 mm x 3.86 mm x 6 mm 75 mm x 40 mm x 5 mm x 7 mm 75 mm x 40 mm x 3.86 mm x 5.2 mm Flat bars (Width) 38 mm to 100 mm Round bars (Diameter) 16 mm to 50 mm Square bars (Square size) 12 mm to 50 mm
Steel Grades	S235JR, S235J0, S235J2 S275JR, S275J0, S275J2 S355JR, S355J0, S355J2 (according to standard EN 10025-2)

This document is an authentic electronic certificate for Clients' business purposes use only. Printed version of the electronic certificate are permitted and will be considered as a copy. This document is issued by the Company subject to SGS General Conditions of certification services available on Terms and Conditions | SGS. Attention is drawn to the limitation of liability, indemnification and jurisdictional clauses contained therein. This document is copyright protected and any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful.

Certificate of Conformity of the Factory Production Control 1029 – CPR – AE22/0000004

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

Cold formed welded structural hollow sections of non-alloy and fine grain steels, described in annex.

placed on the market under the name or trademark of
AL JAZEERA STEEL PRODUCTS CO. SAOG
Road No. 3, P.O. Box 40, Sohar Industrial Area, Sohar, Postal Code 327, Sultanate of Oman

and produced in the manufacturing plant
AL JAZEERA STEEL PRODUCTS CO. SAOG
Road No. 3, P.O. Box 40, Sohar Industrial Area, Sohar, Postal Code 327, Sultanate of Oman

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the standard(s)

EN 10219-1:2006

under system 2+ are applied and that

The factory production control is assessed to be in conformity with the applicable requirements

This certificate is valid from 06 June 2022 until 11 May 2025
and will remain valid as long as neither the designated standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified factory production control certification body

Issue 2. Certified with SGS since 12 May 2022

Authorised by

Luis Neves
Certification Management

SGS ICS – Serviços Internacionais de Certificação, Lda Notified Body 1029
Polo Tecnológico de Lisboa, Rua Cesina Adães Bermudes, lote 11, nº 1, 1600-604 Lisboa – Portugal
T: +351 217104200;
e-mail pt.info@sgs.com www.sgs.pt

Certificate of Conformity of the Factory Production Control 1029 – CPR – AE22/0000004

Annex 1

Product(s): Cold formed welded structural hollow sections of non-alloy and fine grain steels.

Product Description	Dimensions	Steel Grade
Electric Welded Steel Hollow Sections (using Hot Rolled Steel Coils as Raw Material)	Circular Hollow Sections (Diameter) ½" to 8"	S235JRH S275J0H S275J2H S355J0H S355J2H
	Square Hollow Sections (Outside dimensions) 12 mm x 12 mm to 125 mm x 125 mm	
	Rectangular Hollow Sections (Outside dimensions) 40 mm x 20 mm to 150 mm x 100 mm	

Certificate AE24/0000086

AL JAZEERA STEEL PRODUCTS CO SAOG

ISO 45001:2018

Certificate AE24/0000085

AL JAZEERA STEEL PRODUCTS CO SAOG

ISO 14001:2015

CERTIFICATE OF COMPLIANCE

Certificate Number 20140911&MH49792
Report Reference MH49792&20140905
Issue Date 2014&SEPTEMBER&11

Issued to: AL JAZEERA STEEL PRODUCTS CO SAOG
PO BOX 40
SOHAR INDUSTRIAL ESTATE
SULTANATE OF OMAN
327 OMAN

This is to certify that representative samples of: LEAD CONTENT VERIFICATION OF PRODUCTS IN CONTACT WITH POTABLE WATER
"USC, CNC" Galvanised Steel Pipes, size range ½" to 8"

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: NSF 372 &DRINKING WATER SYSTEM COMPONENTS & LEAD CONTENT

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Classification Mark for the U.S. and Canada should be considered as being covered by UL's Classification and Follow&Up Service and meeting the appropriate U.S. and Canadian requirements.

The UL Classification Mark includes: the UL in a circle symbol: Ⓡ with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and the product category name (product identity) as indicated in the appropriate UL Directory. The UL Classification Mark for Canada includes: the UL Classification Mark for Canada: Ⓡ with the word "CLASSIFIED" (as shown); a control number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of the product; and the product category name (product identity) in English, French, or English/French as indicated in the appropriate UL Directory.

Look for the UL Classification Mark on the product.

William R. Carney, Director, North American Certification Programs
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contacts

Page 1 of 1

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FM Approvals

Certificate of Compliance

This certificate is issued for the following:

Steel Pipe for Automatic Fire Sprinkler Systems

Model	Product Type	Sizes, NPS	Rated Working Pressure	
			psi	kPa
Schedule 10	ASTM A795/A795M	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6	175	1205
0.188 inch (4.76 mm) Wall	ASTM A795 / A795M 0.188 inch (4.78 mm) Wall	4, 5, 6	175	1205

Prepared for:

Al Jazeera Steel Products Co SOAG
Road No-3 Sohar Industrial Estate, PO Box 40, Sohar 327
Oman

Approval Standard: FM 1630 (June 2021)

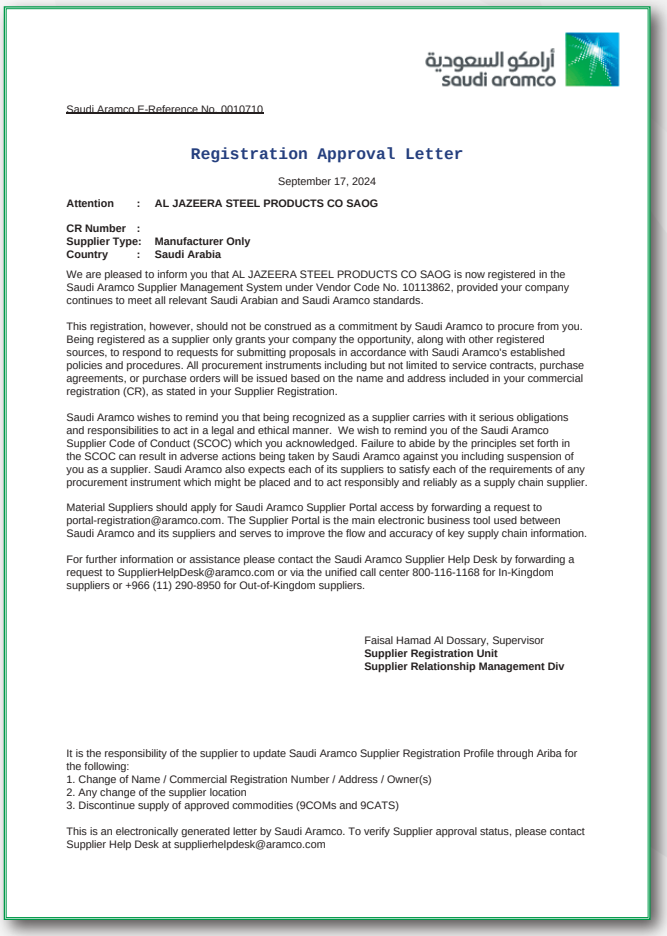
Approval Identification: PR495019 Approval Granted: 15 January 2025

To verify the availability of the Approved product, please refer to www.approvalguide.com

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

FM APPROVED

David B. Fuller
VP, Manager – Fire Protection
FM Approvals
One Technology Way
Norwood, MA 02062



أرامكو السعودية
saudi aramco

Saudi Aramco E-Reference No. 0010710

Registration Approval Letter

September 17, 2024

Attention : AL JAZEERA STEEL PRODUCTS CO SAOG

CR Number :
Supplier Type: Manufacturer Only
Country : Saudi Arabia

We are pleased to inform you that AL JAZEERA STEEL PRODUCTS CO SAOG is now registered in the Saudi Aramco Supplier Management System under Vendor Code No. 10113862, provided your company continues to meet all relevant Saudi Arabian and Saudi Aramco standards.

This registration, however, should not be construed as a commitment by Saudi Aramco to procure from you. Being registered as a supplier only grants your company the opportunity, along with other registered sources, to respond to requests for submitting proposals in accordance with Saudi Aramco's established policies and procedures. All procurement instruments including but not limited to service contracts, purchase agreements, or purchase orders will be issued based on the name and address included in your commercial registration (CR), as stated in your Supplier Registration.

Saudi Aramco wishes to remind you that being recognized as a supplier carries with it serious obligations and responsibilities to act in a legal and ethical manner. We wish to remind you of the Saudi Aramco Supplier Code of Conduct (SCOC) which you acknowledged. Failure to abide by the principles set forth in the SCOC can result in adverse actions being taken by Saudi Aramco against you including suspension of you as a supplier. Saudi Aramco also expects each of its suppliers to satisfy each of the requirements of any procurement instrument which might be placed and to act responsibly and reliably as a supply chain supplier.

Material Suppliers should apply for Saudi Aramco Supplier Portal access by forwarding a request to portal-registration@aramco.com. The Supplier Portal is the main electronic business tool used between Saudi Aramco and its suppliers and serves to improve the flow and accuracy of key supply chain information.

For further information or assistance please contact the Saudi Aramco Supplier Help Desk by forwarding a request to SupplierHelpDesk@aramco.com or via the unified call center 800-116-1168 for In-Kingdom suppliers or +966 (11) 290-8950 for Out-of-Kingdom suppliers.

Faisal Hamad Al Dossary, Supervisor
Supplier Registration Unit
Supplier Relationship Management Div

It is the responsibility of the supplier to update Saudi Aramco Supplier Registration Profile through Ariba for the following:
1. Change of Name / Commercial Registration Number / Address / Owner(s)
2. Any change of the supplier location
3. Discontinue supply of approved commodities (9COMs and 9CATS)

This is an electronically generated letter by Saudi Aramco. To verify Supplier approval status, please contact Supplier Help Desk at supplierhelpdesk@aramco.com

SASO

الهيئات السعودية
Saudi Standards

شهادة ترخيص باستعمال علامة الجودة
License For Use of The Quality Mark

Vice Governor, Operations and Conformity

Eng. Saud R. Al-Attar

1 / 3

API 5L WELDED PIPE PRODUCTION

Jazeera Steel has a world class API-5L welded pipe production facility.

API -5L Process Flow Chart

TECHNICAL DATA OF BLACK & BARE STEEL HFW PIPES CONFORMING TO API 5L STEEL G RADE UPTO X52 PSL 1 & PSL 2

Manufacturing of HFW Black Tubes and Pipes as per API Spec Q1: 2023 10th Edition and API 5L specification; Steel Grade up to X52 PSL-1 and Steel Grade up to X52M PSL-2, X 52 MS PSL-2, X 52 MO PSL-2 and the product is intended for use in the petroleum and natural gas industry.

Nominal Pipe Size: 88.9 to 219.1 MM OD
Wall thickness from 3.18 mm Minimum to 8.18 mm Maximum.
Length range is 6.00 to 13.5 meters.

SIZING DETAIL MANUFACTURE IN OUR FACILITY

SR. NO.	SIZE (NB)	OD (mm)	MILL-4 (API 5L, PSL-1 & 2)	
			Grade B, X-42, 46, 52	
			Minimum Thickness	Maximum Thickness
			mm	mm
1	3”	88.9	3.00	6.50
2	31/2”	101.6	3.00	6.50
3	4”	114.3	3.00	6.50
4	5”	141.3	3.40	6.55
5	6”	168.3	3.40	7.11
6	8”	219.1	3.76	8.18

Chemical Property:

Chemical composition for PSL-1 pipe

Steel Grade (Steel Name)	Mass Fraction, Based on Heat and Product Analyses [a,g] %							
	C	Mn	P		S	V	Nb	Ti
	max [b]	max [b]	min	max	max	max	max	max
Welded Pipe								
L175 or A25	0.21	0.60	—	0.030	0.030	—	—	—
L175P or A25P	0.21	0.60	0.045	0.080	0.030	—	—	—
L210 or A	0.22	0.90	—	0.030	0.030	—	—	—
L245 or B	0.26	1.20	—	0.030	0.030	c,d	c,d	d
L290 or X42	0.26	1.30	—	0.030	0.030	d	d	d
L320 or X46	0.26	1.40	—	0.030	0.030	d	d	d
L360 or X52	0.26	1.40	—	0.030	0.030	d	d	d

[a] Cu ≤ 0.50 %; Ni ≤ 0.50 %; Cr ≤ 0.50 % and Mo ≤ 0.15 %.

[b] For each reduction of 0.01 % below the specified maximum concentration for carbon, an increase of 0.05 % above the specified maximum concentration for Mn is permissible, up to a maximum of 1.65 % for grades ≥ L245 or B, but ≤ L360 or X52; up to a maximum of 1.75 % for grades > L360 or X52, but ≤ L485 or X70; and up to a maximum of 2.00 % for Grade L485 or X70.

[c] Unless otherwise agreed, Nb + V ≤ 0.06 %.

[d] Nb + V + Ti ≤ 0.15 %.

[e] Unless otherwise agreed.

[f] Unless otherwise agreed, Nb + V + Ti ≤ 0.15 %.

Chemical composition for PSL-2 pipe

Steel Grade (Steel Name)	Mass Fraction, Based on Heat and Product Analyses % max									Carbon Equivalent [a] % max	
	C [b]	Si	Mn [b]	P	S	V	Nb	Ti	Other	CE_{IIW}	CE_{Pcm}
Welded Pipe											
L245M or BM	0.22	0.45	1.20	0.025	0.015	0.05	0.05	0.04	e,l	0.43	0.25
L290M or X42M	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	e,l	0.43	0.25
L320M or X46M	0.22	0.45	1.30	0.025	0.015	0.05	0.05	0.04	e,l	0.43	0.25
L360M or X52M	0.22	0.45	1.40	0.025	0.015	d	d	d	e,l	0.43	0.25

[e] Unless otherwise agreed, Cu ≤ 0.50 %; Ni ≤ 0.30 %; Cr ≤ 0.30 % and Mo ≤ 0.15 %.

[d] Nb + V + Ti ≤ 0.15 %.

Mechanical Property:

Requirements for the results of tensile test for PSL 1 pipe

Pipe Grade	Pipe Body of Seamless and Welded Pipe			Weld Seam of EW, LW, SAW, and COW Pipe
	Yield Strength [a] $R_{t0.5}$ MPa (psi)	Tensile Strength [a] R_m MPa (psi)	Elongation (on 50 mm or 2 in.) A_f %	Tensile Strength [b] R_m MPa (psi)
	min	min	min	min
L175 or A25	175 (25,400)	310 (45,000)	[c]	310 (45,000)
L175P or A25P	175 (25,400)	310 (45,000)	[c]	310 (45,000)
L210 or A	210 (30,500)	335 (48,600)	[c]	335 (48,600)
L245 or B	245 (35,500)	415 (60,200)	[c]	415 (60,200)
L290 or X42	290 (42,100)	415 (60,200)	[c]	415 (60,200)
L320 or X46	320 (46,400)	435 (63,100)	[c]	435 (63,100)
L360 or X52	360 (52,200)	460 (66,700)	[c]	460 (66,700)

Requirements for the results of Tensile test for PSL 2 pipe

Pipe Grade	Pipe Body of Seamless and Welded Pipe						Weld Seam of HFW, SAW and COW Pipe
	Yield Strength [a] $R_{t0.5}$ MPa (psi)		Tensile Strength [a] R_m MPa (psi)		Ratio [a,c] $R_{t0.5}/R_m$	Elongation (on 50 mm or 2 in.) A_f %	Tensile Strength [d] R_m MPa (psi)
	min	max	min	max	max	min	min
L245R or BR L245N or BN L245Q or BQ L245M or BM	245 (35,500)	450 (65,300) [e]	415 (60,200)	655 (95,000)	0.93	[f]	415 (60,200)
L290R or X42R L290N or X42N L290Q or X42Q L290M or X42M	290 (42,100)	495 (71,800)	415 (60,200)	655 (95,000)	0.93	[f]	415 (60,200)
L320N or X46N L320Q or X46Q L320M or X46M	320 (46,400)	525 (76,100)	435 (63,100)	655 (95,000)	0.93	[f]	435 (63,100)
L360N or X52N L360Q or X52Q L360M or X52M	360 (52,200)	530 (76,900)	460 (66,700)	760 (110,200)	0.93	[f]	460 (66,700)

$$A_f = C\frac{A_{xc}^{0.2}}{U^{0.9}}$$

where

C is 1940 for calculations using SI units and 625,000 for calculations using USC units;

A_{xc} is the applicable tensile test piece cross-sectional area, expressed in square millimeters (square inches) as follows:

1) for circular cross-section test pieces, 130 mm² (0.20 in.²) for 12.7 mm (0.500 in.) and 8.9 mm (0.350 in.) diameter test pieces, and 65 mm² (0.10 in.²) for 6.4 mm (0.250 in.) diameter test pieces;
2) for full-section test pieces, the lesser of a) 485 mm² (0.75 in.²) and b) the cross-sectional area of the test piece, derived using the specified outside diameter and the specified wall thickness of the pipe, rounded to the nearest 10 mm² (0.01 in.²);
3) for strip test pieces, the lesser of a) 485 mm² (0.75 in.²) and b) the cross-sectional area of the test piece, derived using the specified width of the test piece and the specified wall thickness of the pipe, rounded to the nearest 10 mm² (0.01 in.²);

U is the specified minimum tensile strength, expressed in megapascals (pounds per square inch).

CVN absorbed energy requirement for pipe body of PSL 2 pipe

Specified Outside Diameter D mm (in.)	Full-size CVN Absorbed Energy min K_V J (ft·lbf)						
	Grade						
	≤ L415 or X60	> L415 or X60 to ≤ L450 or X65	> L450 or X65 to ≤ L485 or X70	> L485 or X70 to ≤ L555 or X80	> L555 or X80 to ≤ L625 or X90	> L625 or X90 to ≤ L690 or X100	> L690 or X100 to ≤ L830 or X120
≤ 508 (20.000)	27 (20)	27 (20)	27 (20)	40 (30)	40 (30)	40 (30)	40 (30)

Seam Normalizing: Seam normalizing is performed to improve the microstructure and mechanical properties of the weld zone, ensuring uniformity and reducing the risk of corrosion.

Non-destructive Testing: Additionally, non-destructive tests such as eddy current, ultrasonic testing, magnetic particle inspection, and visual inspection are performed as per API 5L Annexure E to verify pipe Quality.

Marking: After the pipe meets all testing requirements, it is marked with the following information

AL JAZEERA STEEL PRODUCTS CO. SAOG API SPEC. 5L-1299 [MONOGRAM] (MM-YR) OD WT MM GRADE HFW PIPE NO - - - - HYDRO TEST PRESSURE ------MPa HEAT NO - - - - - - - - L ------ M WEIGHT

TECHNICAL DATA OF API 5L PSL 2 PIPE FOR SOUR SERVICE

Chemical composition API 5L PSL 2 pipe for sour service

Steel Grade	Mass Fraction Based on Heat and Product Analyses % max									Carbon Equivalent [a] % max	
	C [b]	Si	Mn [b]	P	S	V	Nb	Ti	Other [c,d]	CE_{IIW}	CE_{Pcm}
Welded Pipe											
L245MS or BMS	0.10	0.40	1.25	0.020	0.002 [e]	0.04	0.04	0.04	—	—	0.19
L290MS or X42MS	0.10	0.40	1.25	0.020	0.002 [e]	0.04	0.04	0.04	—	—	0.19
L320MS or X46MS	0.10	0.45	1.35	0.020	0.002 [e]	0.05	0.05	0.04	—	—	0.20
L360MS or X52MS	0.10	0.45	1.45	0.020	0.002 [e]	0.05	0.06	0.04	—	—	0.20

[c] Al_{total} ≤ 0.060 %; N ≤ 0.012 %; Al/N ≥ 2:1 (not applicable to titanium-killed or titanium-treated steel); Cu ≤ 0.35 % (if agreed, Cu ≤ 0.10 %); Ni ≤ 0.30 %; Cr ≤ 0.30 %; Mo ≤ 0.15 %; B ≤ 0.0005 %.

[d] For welded pipe where calcium is intentionally added, unless otherwise agreed, Ca/S ≥ 1.5 if S > 0.0015 %; for SMLS and welded pipe, Ca ≤ 0.006 %.

Requirements for the results of Tensile test for PSL 2 pipe for Sour service

Pipe Steel Grade	Pipe Body of SMLS and Welded Pipe						Weld Seam of HFW and SAW Pipe
	Yield Strength [a] $R_{t0.5}$ MPa (psi)		Tensile Strength [a] R_m MPa (psi)		Ratio [b] $R_{t0.5}/R_m$	Elongation (on 50 mm or 2 in.) A_f %	Tensile Strength [c] R_m MPa (psi)
	min	max	min	max	max	min	min
L245NS or BNS L245QS or BQS L245MS or BMS	245 (35,500)	450 (65,300) [d]	415 (60,200)	655 (95,000)	0.93	e	415 (60,200)
L290NS or X42NS L290QS or X42QS L290MS or X42MS	290 (42,100)	495 (71,800)	415 (60,200)	655 (95,000)	0.93	e	415 (60,200)
L320NS or X46NS L320QS or X46QS L320MS or X46MS	320 (46,400)	525 (76,100)	435 (63,100)	655 (95,000)	0.93	e	435 (63,100)
L360NS or X52NS L360QS or X52QS L360MS or X52MS	360 (52,200)	530 (76,900)	460 (66,700)	760 (110,200)	0.93	e	460 (66,700)

$$A_f = C\frac{A_{xc}^{0.2}}{U^{0.9}}$$

where

C is 1940 for calculations using SI units and 625,000 for calculations using USC units;

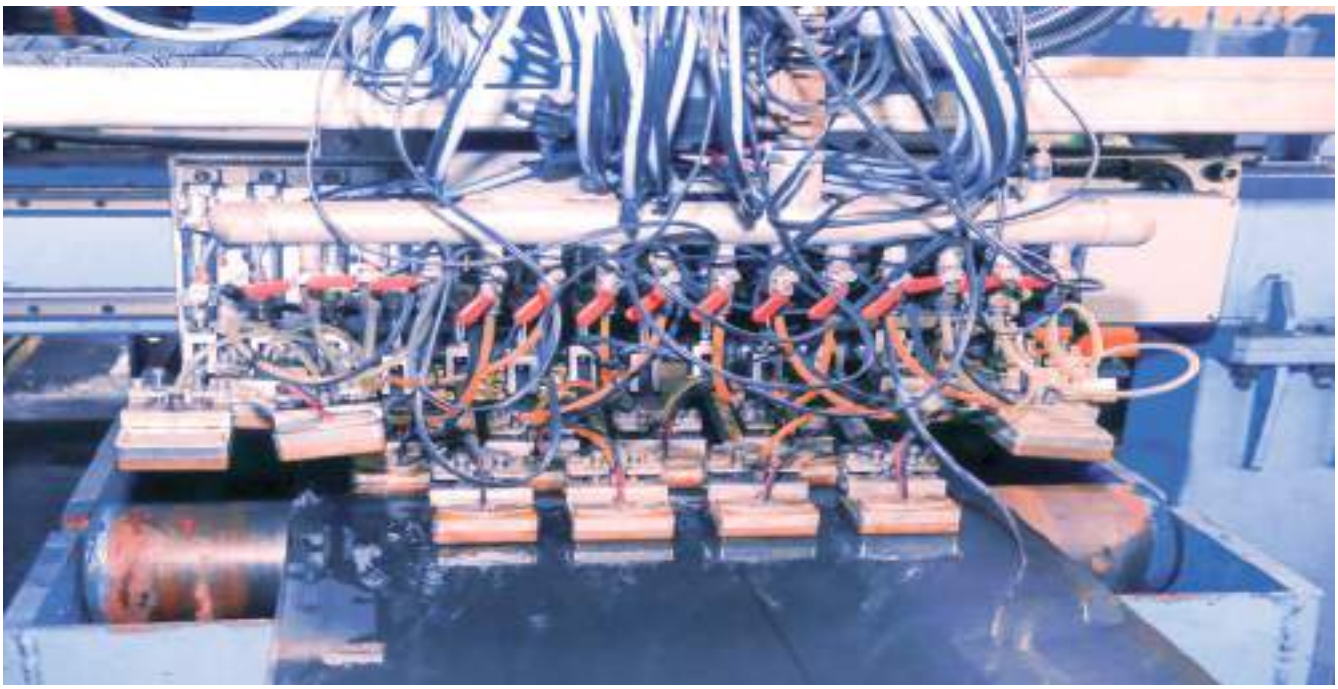
A_{xc} is the applicable tensile test piece cross-sectional area, expressed in square millimeters (square inches) as follows:

1) for circular cross-section test pieces, 130 mm² (0.20 in.²) for 12.7 mm (0.500 in.) and 8.9 mm (0.350 in.) diameter test pieces, and 65 mm² (0.10 in.²) for 6.4 mm (0.250 in.) diameter test pieces;
2) for full-section test pieces, the lesser of a) 485 mm² (0.75 in.²) and b) the cross-sectional area of the test piece, derived using the specified outside diameter and the specified wall thickness of the pipe, rounded to the nearest 10 mm² (0.01 in.²);
3) for strip test pieces, the lesser of a) 485 mm² (0.75 in.²) and b) the cross-sectional area of the test piece, derived using the specified width of the test piece and the specified wall thickness of the pipe, rounded to the nearest 10 mm² (0.01 in.²);

U is the specified minimum tensile strength, expressed in megapascals (pounds per square inch).

CVN absorbed energy requirement for pipe body of PSL 2 pipe

Specified Outside Diameter D mm (in.)	Full-size CVN Absorbed Energy min K_V J (ft·lbf)						
	Grade						
	≤ L415 or X60	> L415 or X60 to ≤ L450 or X65	> L450 or X65 to ≤ L485 or X70	> L485 or X70 to ≤ L555 or X80	> L555 or X80 to ≤ L625 or X90	> L625 or X90 to ≤ L690 or X100	> L690 or X100 to ≤ L830 or X120
≤ 508 (20.000)	27 (20)	27 (20)	27 (20)	40 (30)	40 (30)	40 (30)	40 (30)



Strip Ultrasonic Testing

HYDROGEN INDUCED CRACKING REQUIREMENT FOR API 5L PSL 2 PIPE FOR SOUR SERVICE:

Acceptance Criteria:

- Crack Sensitivity Ratio (CSR): ≤ 15%
- Crack Length Ratio (CLR): ≤ 15%
- Crack Thickness Ratio (CTR): ≤ 5%

Sulfide Stress Cracking (SSC) Test requirement for API 5L PSL 2 pipe for sour service:

Acceptance Criteria: No failure or cracking under specified test conditions.

Vickers Hardness test requirement for API 5L PSL 2 pipe for sour service:

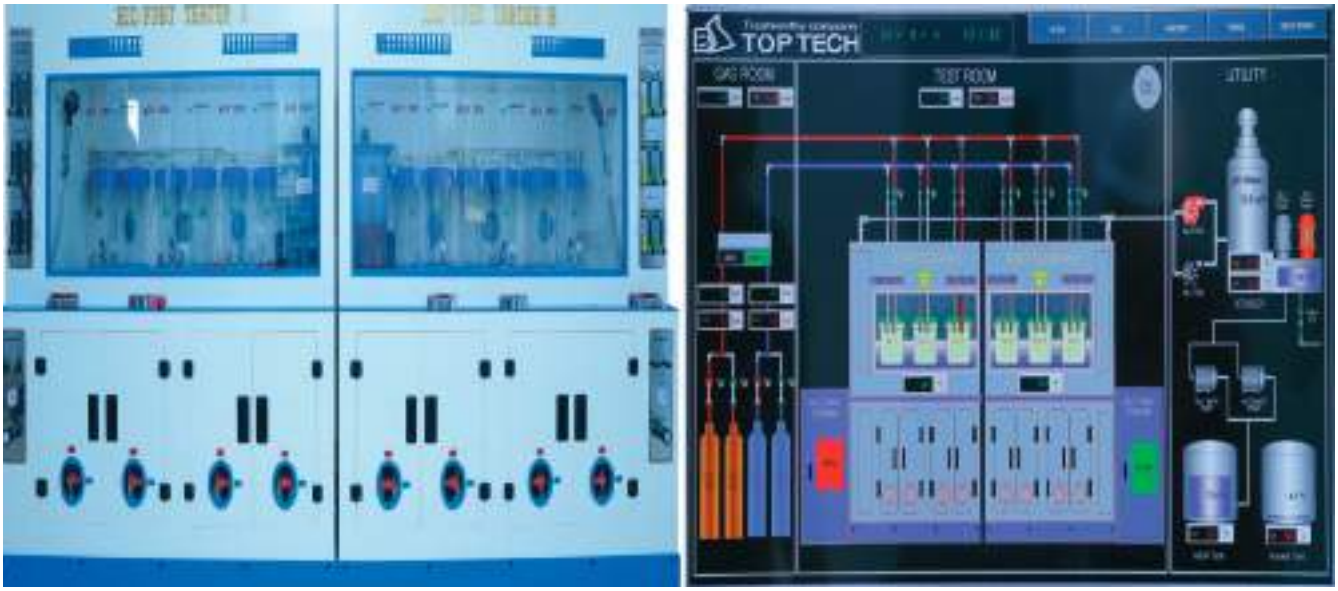
Acceptance Criteria: Maximum hardness 22HRC or 250 HV10 required on weld, HAZ and base metal.

Seam Normalizing: Seam normalizing is performed to improve the microstructure and mechanical properties of the weld zone, ensuring uniformity and reducing the risk of corrosion.

Non-destructive testing: Additionally, non-destructive tests such as eddy current, ultrasonic testing, magnetic particle inspection, and visual inspection are performed as per API 5L Annexure K to verify pipe Quality.

Marking: After the pipe meets all testing requirements, it is marked with the following information

AL JAZEERA STEEL PRODUCTS CO. SAOG API SPEC. 5L-1299 [MONOGRAM] (MM-YR) OD WT MM GRADE HFW PIPE NO - - - - HYDRO TEST PRESSURE ------MPa HEAT NO - - - - - - - - L ------ M WEIGHT ..... KG MADE IN SULTANATE OF OMAN



HIC & SSC Testing Machine

TECHNICAL DATA OF API 5L PSL 2 PIPE FOR OFFSHORE SERVICE

Chemical composition for API 5L PSL 2 offshore service pipe

Steel Grade	Mass Fraction Based on Heat and Product Analyses max %									Carbon Equivalent [a] max %	
	C [b]	Si	Mn [b]	P	S	V	Nb	Ti	Other [c]	CE_{IIW}	CE_{Pcm}
Welded Pipe											
L245MO or BMO	0.12	0.40	1.25	0.020	0.010	0.04	0.04	0.04	f	—	0.19
L290MO or X42MO	0.12	0.40	1.35	0.020	0.010	0.04	0.04	0.04	f	—	0.19
L320MO or X46MO	0.12	0.45	1.35	0.020	0.010	0.05	0.05	0.04	f	—	0.20
L360MO or X52MO	0.12	0.45	1.65	0.020	0.010	0.05	0.05	0.04	e,h	—	0.20

[c] $Al_{total} \leq 0.060$ %; N ≤ 0.012 %; Al/N ≥ 2:1 (not applicable to titanium-killed steel or titanium-treated steel).
[e] Nb + V + Ti ≤ 0.15 %.
[f] Cu ≤ 0.35 %; Ni ≤ 0.30 %; Cr ≤ 0.30 %; Mo ≤ 0.10 %; B ≤ 0.000 5 %.
[h] Cu ≤ 0.50 %; Ni ≤ 0.50 %; Cr ≤ 0.50 %; Mo ≤ 0.50 %; B ≤ 0.000 5 %.

Requirements for the results of tensile test for API 5L PSL 2 offshore service pipe

Pipe Grade	Pipe Body of SMLS and Welded Pipe						Weld Seam of HFW and SAW Pipe
	Yield Strength [a] $R_{t0.5}$ MPa (psi)		Tensile Strength [a] R_m MPa (psi)		Ratio [a,c] $R_{t0.5}/R_m$	Elongation (on 50 mm or 2 in.) A_f %	Tensile Strength [d] R_m MPa (psi)
	min	max	min	max	max	min	min
L245NO or BNO L245QO or BQO L245MO or BMO	245 (35,500)	450 (65,300) [e]	415 (60,200)	655 (95,000)	0.93	f	415 (60,200)
L290NO or X42NO L290QO or X42QO L290MO or X42MO	290 (42,100)	495 (71,800)	415 (60,200)	655 (95,000)	0.93	f	415 (60,200)
L320NO or X46NO L320QO or X46QO L320MO or X46MO	320 (46,400)	520 (75,000)	435 (63,100)	655 (95,000)	0.93	f	435 (63,100)
L360NO or X52NO L360QO or X52QO L360MO or X52MO	360 (52,200)	525 (76,000)	460 (66,700)	760 (110,200)	0.93	f	460 (66,700)

$$A_f = C\frac{A_{xc}^{0.2}}{U^{0.9}}$$

where

C is 1940 for calculations using SI units and 625,000 for calculations using USC units;

A_{xc} is the applicable tensile test piece cross-sectional area, expressed in square millimeters (square inches) as follows:

1) for circular cross-section test pieces, 130 mm² (0.20 in.²) for 12.7 mm (0.500 in.) and 8.9 mm (0.350 in.) diameter test pieces, and 65 mm² (0.10 in.²) for 6.4 mm (0.250 in.) diameter test pieces;
2) for full-section test pieces, the lesser of a) 485 mm² (0.75 in.²) and b) the cross-sectional area of the test piece, derived using the specified outside diameter and the specified wall thickness of the pipe, rounded to the nearest 10 mm² (0.01 in.²);
3) for strip test pieces, the lesser of a) 485 mm² (0.75 in.²) and b) the cross-sectional area of the test piece, derived using the specified width of the test piece and the specified wall thickness of the pipe, rounded to the nearest 10 mm² (0.01 in.²);

U is the specified minimum tensile strength, expressed in megapascals (pounds per square inch).

CVN absorbed energy requirement for pipe body of PSL 2 pipe

Specified Outside Diameter D mm (in.)	Full-size CVN Absorbed Energy min K_V J (ft·lbf)						
	Grade						
	≤ L415 or X60	> L415 or X60 to ≤ L450 or X65	> L450 or X65 to ≤ L485 or X70	> L485 or X70 to ≤ L555 or X80	> L555 or X80 to ≤ L625 or X90	> L625 or X90 to ≤ L690 or X100	> L690 or X100 to ≤ L830 or X120
≤ 508 (20.000)	27 (20)	27 (20)	27 (20)	40 (30)	40 (30)	40 (30)	40 (30)

Vickers Hardness test requirement for API 5L PSL 2 pipe for Offshore service:

Acceptance Criteria: Maximum hardness 25HRC or 270 HV10 required on weld, HAZ and base metal.

Seam Normalizing: Seam normalizing is performed to improve the microstructure and mechanical properties of the weld zone, ensuring uniformity and reducing the risk of corrosion.

Non-destructive testing: Additionally, non-destructive tests such as eddy current, ultrasonic testing, magnetic particle inspection, and visual inspection, as well as hydrostatic testing are performed as per API 5L Annexure K to verify pipe Quality.

Marking: After the pipe meets all testing requirements, it is marked with the following information

AL JAZEERA STEEL PRODUCTS CO. SAOG API SPEC. 5L-1299 [MONOGRAM] (MM-YR) OD WT MM GRADE HFW PIPE NO - - - - HYDRO TEST PRESSURE ------MPa HEAT NO - - - - - - - - L ------ M WEIGHT ..... KG MADE IN SULTANATE OF OMAN.

Offline Ultrasonic Testing

TUBE & PIPE MILL PRODUCTS

TECHNICAL DATA OF BLACK AND HOT DIP GALVANIZED STEEL PIPES CONFORMING TO ASTM A 53 GRADE A & B SCH-40 ASTM A795 GRADE A & B SCH – 40

Nominal Pipe Size		Outside Diameter Standard		Wall Thickness Standard		Weight Of Black Pipes Plain End				Test Pressure Grade A		Test Pressure Grade B		Socket Dimensions In Outside Dia		Socket Dimensions Min Length		No. Of Pcs PerLift
inch	mm	inch	mm	inch	mm	Kg/m	m/MT	lbs/ft	ft/MT	psi	kPa	psi	kPa	inch	mm	inch	mm	
1/2	15	0.840	21.3	0.109	2.77	1.27	787	0.85	2583	700	4800	700	4800	1.063	27.0	1.500	38.	120
3/4	20	1.050	26.7	0.113	2.87	1.69	592	1.13	1941	700	4800	700	4800	1.313	33.4	1.563	39.7	84
1	25	1.315	33.4	0.133	3.38	2.50	400	1.68	1312	700	4800	700	4800	1.576	40.0	1.938	49.2	60
1.1/4	32	1.660	42.2	0.140	3.56	3.39	295	2.27	968	1200	8300	1300	9000	1.900	48.3	2.000	50.8	42
1.1/2	40	1.900	48.3	0.145	3.68	4.05	247	2.72	810	1200	8300	1300	9000	2.200	55.9	2.000	50.8	36
2	50	2.375	60.3	0.154	3.91	5.44	184	3.66	603	2300	15900	2500	17200	2.750	69.8	2.063	52.4	26
2.1/2	65	2.875	73.0	0.203	5.16	8.63	116	5.80	380	2500	17200	2500	17200	3.250	82.5	3.063	77.8	18
3	80	3.500	88.9	0.216	5.49	11.29	89	7.58	291	2220	15300	2500	17200	4.000	101.6	3.188	81.0	14
3.1/2	90	4.000	101.6	0.226	5.74	13.57	74	9.12	242	2030	14000	2370	16300	4.625	117.5	3.313	84.1	12
4	100	4.500	114.3	0.237	6.02	16.07	62	10.80	204	1900	13100	2210	15200	5.000	127.0	3.438	87.3	10
5	125	5.563	141.3	0.258	6.55	21.77	46	14.63	151	1670	11500	1950	13400	6.296	159.9	3.688	93.7	7
6	150	6.625	168.3	0.280	7.11	28.26	35	18.99	116	1520	10500	1780	12300	7.390	187.7	4.938	125.4	7
8	200	8.625	219.1	0.322	8.18	42.55	24	28.58	79	1340	9200	1570	10800	--	--	--	--	

TECHNICAL DATA OF BLACK AND HOT DIP GALVANIZED STEEL PIPES CONFORMING TO ASTM A53 GRADE A & B SCHEDULE 80

Nominal Pipe Size		Outside Diameter Standard		Wall Thickness Standard		Weight Of Black Pipes Plain End				Test Pressure Grade A		Test Pressure Grade B		No. Of Pcs Per Lift
inch	mm	inch	mm	inch	mm	Kg/m	m/MT	lbs/ft	ft/MT	psi	kPa	psi	kPa	
1-1/2	40	1.900	48.30	0.200	5.08	5.41	185	3.63	606	1800	12400	1900	13100	36
2	50	2.375	60.3	0.218	5.54	7.48	134	5.03	439	2500	17200	2500	17200	26
2.1/2	65	2.875	73	0.276	7.01	11.41	88	7.67	288	2500	17200	2500	17200	18
3	80	3.500	88.9	0.300	7.62	15.27	65	10.26	215	2500	17200	2500	17200	14
4	100	4.500	114.3	0.337	8.56	22.32	45	15.00	147	2700	18600	2800	19300	10

TECHNICAL DATA OF BLACK AND HOT DIP GALVANIZED STEEL PIPES CONFORMING TO ASTM A53 GRADE A & B/ ASTM A 795 GRADE A & B SCH-10

Nominal Pipe Size		Outside Diameter Standard		Wall Thickness Standard		Weight Of Black Pipes Plain End				Test Pressure Grade A		Test Pressure Grade B		No. Of Pcs Per Lift
inch	mm	inch	mm	inch	mm	Kg/m	m/MT	lbs/ft	ft/MT	psi	kPa	psi	kPa	
3/4	20	1.050	26.7	0.083	2.11	1.28	781	0.86	2563	700	4800	700	4800	84
1	25	1.315	33.4	0.109	2.77	2.09	478	1.41	1570	700	4800	700	4800	60
1.1/4	32	1.660	42.2	0.109	2.77	2.69	372	1.81	1220	1000	6900	1000	6900	42
1.1/2	40	1.900	48.3	0.109	2.77	3.11	322	2.09	1055	1000	6900	1000	6900	36
2	50	2.375	60.3	0.109	3.05	3.93	254	2.64	835	1000	6900	1000	6900	26
2.1/2	65	2.875	73	0.120	3.05	5.26	190	3.53	624	1000	6900	1000	6900	18
3	80	3.500	88.9	0.120	3.05	6.46	155	4.34	508	1000	6900	1000	6900	14
3.1/2	90	4.000	101.6	0.120	3.05	7.41	135	4.98	443	1200	8300	1200	8300	12
4	100	4.500	114.3	0.120	3.05	8.37	119	5.62	392	1200	8300	1200	8300	10
5	125	5.563	141.3	0.134	3.4	11.58	86	7.78	283	1200	8300	1200	8300	7
6	150	6.625	168.3	0.134	3.4	13.85	72	9.30	237	1000	6900	1000	6900	7
8	200	8.625	219.1	0.188*	4.78	25.26	40	16.96	130	800	5500	800	5500	5
8	200	8.625	219.1	0.148	3.76	19.97	50	13.41	164	800	5500	800	5500	5

MECHANICAL PROPERTIES

Properties	Tensile Strength		Yield Strength	
	psi	MPa	psi	MPa
Grade-A	48000	330	30000	205
Grade-B	60000	415	35000	240

Min Percentage Elongation in 2"[50mm] rounded to nearest 1/2
$e = 625{,}000[1940] \times (A^{0.2}/U^{0.9})$

A= cross sectional area of the tension specimen, rounded to the nearest 0.01 $inch^2$[$1mm^2$], based on specified outside diameter. If the area is more than 0.75 $inch^2$ [$500mm^2$], then the value 0.75 $inch^2$ [$500mm^2$] shall be used.
U= specified minimum tensile strength, psi[MPa].

TOLERANCES

OUTSIDE DIAMETER

Size From	Size To	Tolerance inch (mm)	
inch (mm)	inch (mm)	Positive	Negative
1/2 (15)	1.1/2(40)	1/64 (0.40)	1/64 (0.40)
2 (50)	8 (200)	1% OF OD	1% OF OD

THICKNESS : 12.5% max under the nominal wall thickness.
WEIGHT : + / - 10% on calculated standard weight.

END FINISH : Square Cut Ends for sizes less than or equal to 1.1/2" NPS
Beveled Ends at 30^0 $-0^0/+5^0$ for sizes 2" NPS and above.

BEND TEST : Applicable for sizes 2" NPS and below 90^0 bending radius should be 12 times of the tube diameter.

FLATTENING TEST: Applicable for sizes 2" NPS and above in three stages.

STAGE-1 : For weld ductility until 2/3 of outside dia of specimen tube.

STAGE-2 : For ductility of steel until 1/3 of outside dia of specimen tube.

STAGE-3 : Full flattening for testing of laminated and unsound material.

ZINC COATING : MINIMUM : 1.60 oz / ft^2 [490 GSM]
AVERAGE : 1.80 oz / ft^2 [550 GSM]

MARKING

1. METALLIC SPRINKLER PIPES

For ½" & ¾" ASTM A53 Grade A and Grade B SCH 40 and SCH 10

(UL) LISTED 3KBY STEEL AJSPC/ASTM A53/ASME SA53/SIZE/SCH 40/GRADE A /TYPE E/NDE/LENGTH/ HEAT NO...../OMAN.

For 1" to 8" ASTM A53 Grade A & B SCH 40

(UL) LISTED 3KBY STEEL FM APPROVED AJSPC/ASTM A53/ASTM A795/ ASME SA53/SIZE/ SCH 40/

GRADE /TYPE E /NDE/LENGTH/ HEAT NO/OMAN.

For 1" to 6" ASTM A53 Gr A/B & ASTM A795 Grade A/B SCH 10

(UL) LISTED 3KBY STEEL FM APPROVED AJSPC/ASTM A53/ASTM A795/SIZE/SCH 10/GRADE/TYPE E/ NDE/

LENGTH / HEAT NO/ OMAN.

For 8" ASTM A53 Gr A/B & ASTM A795 Grade A/B 0.188" WALL THICKNESS

(UL) LISTED 3KBY STEEL AJSPC/ASTM A53/ASTM A795/SIZE/0.188"/GRADE/TYPE E/NDE/LENGTH/ HEAT NO/ OMAN.

2. GALVANIZED NSF 372 CERTIFIED PIPES

(Galvanized Steel Pipes: ½" to 3/4" diameter size in Schedule 40)

UND. LAB. CLFD STEEL PIPE NSF 372 MH49792 AJSPC/ASTM A53/ SIZE/SCH 40/GRADE/ TYPE E /NDE/LENGTH/ HEAT NO/OMAN.

(Galvanized Steel Pipes: 1" to 8" diameter size in Schedule 40)

UND. LAB. CLFD STEEL PIPE NSF 372 MH49792 FM APPROVED AJSPC/ASTM A53/ASTM A795/SIZE/SCH 40/GRADE/

TYPE E/NDE/LENGTH/ HEAT NO/OMAN.

(Galvanized Steel Pipes: ½" to 8" diameter size in Schedule 10)

UND. LAB. CLFD STEEL PIPE NSF 372 MH49792 AJSPC/ASTM A53/ASTM A795/SIZE/SCH 10/GRADE/TYPE E/ NDE/LENGTH/ HEAT NO/OMAN.

NOTE: A) AJSPC – AL JAZEERA STEEL PRODUCTS CO. SAOG

3. BLACK STEEL NSF/ ANSI 61 AND NSF/ ANSI 372 CERTIFIED PIPES

(Black Steel Pipes) – ½" to 3/4" diameter in Schedule 40)

UL CLFD. PIPE NSF 61/NSF 372 MH49792 AJSPC/ASTM A53/SIZE/ SCH 40/ GRADE /TYPE E/NDE/LENGTH/ HEAT NO/OMAN.

(Black Steel Pipes) – 1" to 3", 5" to 08" diameter in Schedule 40)

UL CLFD. PIPE NSF 61/NSF 372 MH49792 FM APPROVED AJSPC/ASTM A53/ASTM A795/ SIZE/ SCH 40/ GRADE/

TYPE E/NDE/LENGTH/ HEAT NO/OMAN.

(Black Steel Pipes – ½" to 3", 5" to 08" diameter in Schedule 10)

UL CLFD. PIPE NSF 61/NSF 372 MH49792 AJSPC/ASTM A53/ASTM A795/ SIZE/SCH 10/ GRADE/ TYPE E/NDE/LENGTH/ HEAT NO/OMAN.

TECHNICAL DATA OF BLACK AND HOT DIP GALVANIZED STEEL PIPES CONFORMING TO ASTM A 135/A795 GRADE A / B

Nominal Pipe Size		Outside Diameter Standard		Wall Thickness Standard		Weight of Black Pipes Plain End Pipes				Test Pressure	
inch	mm	inch	mm	inch	mm	Kg/m	m/MT	lbs/ft	ft/MT	psi	kPa
3/4	20	1.050	26.7	0.083	2.1	0.28	0.78	0.86	2562	700	4830
1	25	1.315	33.4	0.109	2.77	2.09	478	1.41	1568	700	4830
1.1/4	32	1.660	42.2	0.109	2.77	2.69	372	1.81	1221	1000	6890
1.1/2	40	1.900	48.30	0.109	2.77	3.11	322	2.09	1056	1000	6890
2	50	2.375	60.3	0.109	2.77	3.93	254	2.64	833	1000	6890
2.1/2	65	2.875	73.0	0.120*	3.05	5.26	190	3.53	623	1000	6890
3	80	3.500	88.9	0.120*	3.05	6.46	155	4.34	6509	1000	6890
3.1/2	90	4.000	101.6	0.120*	3.05	7.41	135	4.98	7443	1200	8270
4	100	4.500	114.3	0.120*	3.05	8.37	119	5.62	390	1200	8270
5	125	5.563	141.3	0.134*	3.40	11.58	86	7.78	11283	1200	8270
6	150	6.625	168.3	0.134*	3.40	13.85	72	9.30	237	1000	6890
8	200	8.625	219.1	0.188**	4.78	25.26	40	16.96	130	800	5520

* Schedule 10 Thickness
** Not Schedule 10

CHEMICAL PROPERTIES

Grade	Carbon C	Manganese Mn	Phosphorus P	Sulphur S
Grade-A	0.25	0.95	0.035	0.035
Grade-B	0.30	1.20	0.035	0.035

MECHANICAL PROPERTIES

Properties	Tensile Strength		Yield Strength	
Grade	psi	MPa	psi	MPa
Grade-A	48000	330	30000	205
Grade-B	60000	415	35000	240

Min percent elongation in 2”(50mm) is
% El (Grade-A) = 56t + 16.5
% El (Grade-B) = 48t + 14
Where t = specified wall thickness (inch)

TOLERANCES

OUTSIDE DIAMETER

Size From	Size To	Tolerance inch (mm)	
inch (Mm)	inch (mm)	Positive	Negative
3/4 (20)	1.1/2(40)	1/64 (0.40)	1/64 (0.40)
2 (50)	8 (200)	1% OF OD	1% OF OD

THICKNESS

12.5% max under the nominal wall thickness.

WEIGHT

+/-10% on calculated standard nominal weight.

HEAT TREATMENT

Weld seam of the ERW pipe in Grade-B shall be heat treated after welding to a minimum temperature of 1000^{0}F [540^{0}C] so that no untempered martensite remains.

ZINC COATING

MINIMUM : 1.30 oz / ft2 [400 GSM] AVERAGE : 1.50 oz / ft2 [460 GSM]

FLATTENING TEST

STAGE-1 : For weld ductility until 2/3 of outside diameter of specimen tube.
STAGE-2 : For ductility of steel until 1/3 of outside diameter of specimen tube.
STAGE-3 : Full flattening for testing of laminated and unsound material.

MARKING

Each pipe is stenciled as “JAZEERA STEEL OMAN, ASTM A135/A795 GR A / B-ERW SCH 10 (or Thk-inch) NPS- LENGTH-HEAT NO”

TABLE-1 : TECHNICAL DATA OF BLACK AND GALVANIZED STEEL PIPES CONFORMING TO EN 10255:2004 (SUPERCEDES BS 1387 : 1985) / AS 1074 - 1989

CLASS	Size		Outside Diameter				Wall Thickness		Weight Of Black Pipes						Weight Of Galvanized Pipes (Calculated)						No Of PipesPacked Per Standard Bundle Tonne Approx
			Max		Min				Plain Ended			Screwed & Socketed			Plain Ended			Screwed & Socketed			
	DN	Specified Od	inch	mm	inch	mm	inch	mm	Kg/m	m/MT	ft/MT	Kg/m	m/MT	ft/MT	Kg/m	m/MT	ft/MT	Kg/m	m/MT	ft/MT	
TYPE L2	1/2	21.3	0.843	21.4	0.827	21.0	0.079	2.00	0.947	1056	3464	0.956	1046	3432	0.995	1005	3297	1.004	996	3268	160
	3/4	26.9	1.059	26.9	1.039	26.4	0.091	2.30	1.380	725	2377	1.390	719	2360	1.441	694	2277	1.451	689	2261	110
	1	33.7	1.331	33.8	1.307	33.2	0.102	2.60	1.980	505	1657	2.000	500	1640	2.058	486	1594	2.078	481	1579	80
	1.1/4	42.4	1.673	42.5	1.650	41.9	0.102	2.60	2.540	394	1292	2.570	389	1277	2.640	379	1243	2.670	375	1229	61
	1.1/2	48.3	1.906	48.4	1.882	47.8	0.114	2.90	3.230	310	1016	3.270	306	1003	3.344	299	981	3.384	296	970	51
	2	60.3	2.370	60.2	2.346	59.6	0.114	2.90	4.080	245	804	4.150	241	791	4.223	237	777	4.293	233	764	37
	2.1/2	76.1	2.992	76.0	2.961	75.2	0.126	3.20	5.710	175	575	5.830	172	563	5.892	170	557	6.012	166	546	27
	3	88.9	3.492	88.7	3.461	87.9	0.126	3.20	6.720	149	488	6.890	145	476	6.934	144	473	7.104	141	462	24
	4	114.3	4.484	113.9	4.449	113.0	0.142	3.60	9.750	103	336	10.000	100	328	10.026	100	327	10.276	97	319	16
MEDIUM SERIES	1/2	21.3	0.858	21.8	0.827	21.0	0.102	2.60	1.210	826	2711	1.220	820	2689	1.257	796	2610	1.266	790	2592	130
	3/4	26.9	1.075	27.3	1.043	26.5	0.102	2.60	1.560	641	2103	1.570	637	2090	1.621	617	2024	1.631	613	2012	100
	1	33.7	1.346	34.2	1.311	33.3	0.126	3.20	2.410	415	1361	2.430	412	1350	2.487	402	1319	2.507	399	1309	65
	1.1/4	42.4	1.689	42.9	1.654	42.0	0.126	3.20	3.100	323	1058	3.130	319	1048	3.199	313	1026	3.229	310	1016	51
	1.1/2	48.3	1.921	48.8	1.886	47.9	0.126	3.20	3.560	281	922	3.600	278	911	3.684	271	891	3.724	269	881	44
	2	60.3	2.394	60.8	2.350	59.7	0.142	3.60	5.030	199	652	5.100	196	643	5.172	193	634	5.242	191	626	30
	2.1/2	76.1	3.016	76.6	2.965	75.3	0.142	3.60	6.420	156	511	6.540	153	502	6.612	151	496	6.732	149	487	24
	3	88.9	3.524	89.5	3.465	88.0	0.157	4.00	8.360	120	392	8.530	117	385	8.583	117	382	8.753	114	375	19
	4	114.3	4.528	115.0	4.453	113.1	0.177	4.50	12.200	82	269	12.500	80	262	12.476	80	263	12.726	79	258	14
	5	139.7	5.543	140.8	5.453	138.5	0.197	5.00	16.600	60	198	17.100	58	192	16.938	59	194	17.438	57	188	10
	6	165.1	6.555	166.5	6.453	163.9	0.197	5.00	19.800	51	166	20.400	49	161	20.102	50	163	20.702	48	158	7
HEAVY SERIES	1/2	21.3	0.858	21.8	0.827	21.0	0.126	3.20	1.440	694	2278	1.450	690	2263	1.486	673	2208	1.495	669	2195	110
	3/4	26.9	1.075	27.3	1.043	26.5	0.126	3.20	1.870	535	1754	1.880	532	1745	1.930	518	1700	1.940	515	1691	80
	1	33.7	1.346	34.2	1.311	33.3	0.157	4.00	2.930	341	1120	2.950	339	1112	3.015	332	1088	3.035	329	1081	55
	1.1/4	42.4	1.689	42.9	1.654	42.0	0.157	4.00	3.790	264	866	3.820	262	859	3.897	257	842	3.927	255	835	44
	1.1/2	48.3	1.921	48.8	1.886	47.9	0.157	4.00	4.370	229	751	4.410	227	744	4.492	223	730	4.532	221	724	37
	2	60.3	2.394	60.8	2.350	59.7	0.177	4.50	6.190	162	530	6.260	160	524	6.330	158	518	6.400	156	513	27
	2.1/2	76.1	3.016	76.6	2.965	75.3	0.177	4.50	7.930	126	414	8.050	124	408	8.110	123	405	8.230	122	399	20
	3	88.9	3.524	89.5	3.465	88.0	0.197	5.00	10.300	97	319	10.500	95	312	10.510	95	312	10.680	94	307	16
	4	114.3	4.528	115.0	4.453	113.1	0.213	5.40	14.500	69	226	14.800	68	222	14.774	68	222	15.024	67	218	12
	5	139.7	5.543	140.8	5.453	138.5	0.213	5.40	17.900	56	183	18.400	54	178	18.238	55	180	18.738	53	175	10
	6	165.1	6.555	166.5	6.453	163.9	0.213	5.40	21.300	47	154	21.900	46	150	21.702	46	151	22.302	45	147	7

TABLE-2 : TECHNICAL DATA OF BLACK AND GALVANIZED STEEL PIPES

CONFORMING TO EN 10255:2004(SUPERCEDES BS 1387 : 1985) / AS 1074 – 1989

CLASS	Size		Outside Diameter				Wall Thickness		Weight Of Black Pipes						Weight Of Galvanized Pipes (Calculated)						No Of Pipes Packed Per Standard Bundle Tonne Approx
			Max		Min				Plain Ended			Screwed & Socketed			Plain En Ed			Screwed & Socketed			
	DN	Specified OD	inch	mm	inch	mm	inch	mm	Kg/m	m/MT	ft/MT	Kg/m	m/MT	ft/MT	Kg/m	m/MT	ft/MT	Kg/m	m/MT	ft/MT	
TYPE L	1/2	21.3	0.854	21.7	0.827	21.0	0.091	2.30	1.080	926	3038	1.090	917	3010	1.126	888	2914	.135	88	289	160
	3/4	26.9	1.067	27.1	1.039	26.4	0.091	2.30	1.400	714	2343	1.410	709	2327	1.441	694	2277	1.45	689	226	110
	1	33.7	1.339	34.0	1.307	33.2	0.114	2.90	2.200	455	1491	2.220	450	1478	2.280	439	439	2.300	435	1426	80
	1.1/4	42.4	1.681	42.7	1.650	41.9	0.114	2.90	2.820	355	1163	2.850	351	1151	2.924	342	1122	2.954	339	111	61
	1.1/2	48.3	1.913	48.6	1.882	47.8	0.114	2.90	3.250	308	1009	3.290	304	997	3.344	299	98	3.384	296	970	51
	2	60.3	2.390	60.7	2.346	59.6	0.126	3.20	4.510	222	727	4.580	218	716	4.650	215	706	4.720	212	695	37
	2.1/2	76.1	2.992	76.0	2.961	75.2	0.126	3.20	5.750	174	571	5.870	170	559	5.892	170	557	6.012	166	546	27
	3	88.9	3.492	88.7	3.461	87.9	0.126	3.20	6.760	148	485	6.930	144	473	6.934	144	473	7.104	14	462	24
	3.1/2	101.6	3.984	101.2	3.949	100.3	0.142	3.60	8.700	115	377	8.880	113	369	8.947	112	367	9.126	110	360	18
	4	114.3	4.484	113.9	4.449	113.0	0.142	3.60	9.830	102	334	10.100	99	325	10.026	100	327	10.276	97	319	16
	5	139.7	5.543	140.8	5.453	138.5	0.177	4.50	15.000	67	219	15.500	65	212	15.344	65	214	15.844	63	207	10
	6	165.1	6.555	166.5	6.453	163.9	0.177	4.50	17.800	56	184	18.400	54	178	18.227	55	180	18.827	53	174	7
TYPE L1	1/2	21.3	0.854	21.7	0.827	21.0	0.091	2.30	1.080	926	3038	1.090	917	3010	1.126	888	2914	1.135	88	289	160
	3/4	26.9	1.067	27.1	1.039	26.4	0.091	2.30	1.390	719	2360	1.400	714	2343	1.441	694	2277	1.45	689	226	110
	1	33.7	1.339	34.0	1.307	33.2	0.114	2.90	2.200	455	1491	2.220	450	1478	2.280	439	1439	2.300	435	1426	80
	1.1/4	42.4	1.681	42.7	1.650	41.9	0.114	2.90	2.820	355	1163	2.850	351	1151	2.924	342	1122	2.954	339	111	61
	1.1/2	48.3	1.913	48.6	1.882	47.8	0.114	2.90	3.240	309	1013	3.280	305	1000	3.344	299	98	3.384	296	970	51
	2	60.3	2.390	60.7	2.346	59.6	0.126	3.20	4.490	223	731	4.560	219	719	4.650	215	706	4.720	212	695	37
	2.1/2	76.1	3.004	76.3	2.961	75.2	0.126	3.20	5.730	175	573	5.850	171	561	5.892	170	557	6.012	166	546	27
	3	88.9	3.520	89.4	3.461	87.9	0.142	3.60	7.550	132	435	7.720	130	425	7.787	128	42	7.957	126	412	24
	4	114.3	4.524	114.9	4.449	113.0	0.157	4.00	10.800	93	304	11.100	90	296	11.158	90	294	11.408	88	288	16

TOLERANCES :

OUTSIDE DIAMETER : As per Table-1 / 2
THICKNESS : +/-10% for M, H series and Type L
-8% with plus tolerance limited by the mass tolerance for Types L1 and L2
MASS : +/-7.5% for M, H series and Type L (for lot 10tons)
+10 / -8 % on individual tubes for types L1 and L2

MECHANICAL PROPERTIES Steel grade S195T

YIELD STRENGTH : 195 MPa (Min)
TENSILE STRENGTH : 320-520 MPa
ELONGATION : 20% (Min) on Gauge Length
5.65 x Sq. Root of Cross Sectional Area

CHEMICAL PROPERTIES

BEND TEST : For sizes 2" and below

Diameter OD	21.3	26.9	33.7	42.4	48.3	60.3
Bending Radius	65	85	100	150	170	220

Note-Weld shall be placed at 90° to the plane of bending.

FLATTENING TEST : For sizes above 2" in Two Stages

- For Weld Test : Flatten upto 75% of Original Tube OD
- For Material other than Weld : Flatten upto 60% of Original Tube OD

LEAK TIGHTNESS TEST : 100% Hydrotesting at 50 Bar OR On-Line Eddy Current (NDT) Test
END FINISH : Plain End / Screwed & Socketed
GALVANIZING : As per EN 10240
BLACK PAINTING : Uniform Black Paint Coating
THREADING : As per EN 10226 - 1 / 2

COLOUR CODING

Series / Type	Medium	Heavy	L	L1	L2
Colour Code	Blue	Red	Green	White	Brown

STENCILING : Each Pipe shall be Stenciled with "JAZEERA STEEL OMAN-W-EN 10255-SERIES/ TYPE-SIZE-LENGTH"
PACKING : Hexagonal Type

TECHNICAL DATA FOR METAL SCAFFOLDING AS PER SPECIFICATION BS EN 39: 2001

Outside Diameter		Thickness		Weight per unit length	
inches	mm	inches	mm	lbs/ft	Kg / m
1.1/2	48.3	0.126	3.2	2.392	3.56
1.1/2	48.3	0.157	4.0	2.937	4.37

TOLERANCES:

Outside Diameter	Thickness	Weight
+ 0.5mm	-10%	-7.5% On Single Tube

STEEL GRADE : S235GT

CHEMICAL COMPOSITION

% C (Max)	% Si (Max)	% Mn (Max)	% P (Max)	% S (Max)	% Al (Max)
0.20	0.05	1.40	0.040	0.045	0.020

MECHANICAL PROPERTIES

YIELD STRENGTH : 235 MPa (Min)
TENSILE STRENGTH : 340-520 MPa
ELONGATION : 24% (Min) on Gauge Length
5.65 x Sq. Root of Cross Sectional Area

END FINISH : Square Cut
STRAIGHTNESS : 1 mm in 500 mm length.

FLATTENING TEST

- For Weld Test : Flatten upto 75% of Original Tube OD
- For Material other than Weld : Flatten upto 60% of Original Tube OD

ZINC COATING : 40 Microns Minimum Outside
MARKING : “EN 39 AJSP 3” for 3.2mm
“EN 39 AJSP 4” for 4.0mm

DELIVERY CONDITIONS

- As Rolled Condition (Without Protection)
- Hot Dip Galvanized

TECHNICAL DATA OF BLACK AND HOT DIP GALVANIZED STEEL PIPES CONFORMING TO ISO 65-1981 FOR FABRICATION AND SHAPING BY NATURAL TECHNIQUES

CLASS	Nominal Pipe Size	Outside Diameter				Wall Thickness			Weight Of Black Pipes								No Of Pieces Per Lift
		Minimum		Maximum					Plain End Pipes				Screwed And Socketed Pipes				
	inch	mm	inch	mm	inch	mm	inch	mm	Kg/m	m/MT	lbs/ft	ft/MT	Kg/m	m/MT	lbs/ft	ft/MT	
LIGHT - 1	1/2	15	0.827	21.00	0.854	21.70	0.091	2.30	1.080	926	0.726	3038	1.090	917	0.732	3010	130
	3/4	20	1.039	26.40	1.067	27.10	0.091	2.30	1.390	719	0.934	2360	1.400	714	0.941	2343	100
	1	25	1.307	33.20	1.339	34.00	0.114	2.90	2.200	455	1.478	1491	2.220	450	1.492	1478	65
	1.1/4	32	1.650	41.90	1.681	42.70	0.114	2.90	2.820	355	1.895	1163	2.850	351	1.915	1151	51
	1.1/2	40	1.882	47.80	1.913	48.60	0.114	2.90	3.240	309	2.177	1013	3.280	305	2.204	1000	44
	2	50	2.346	59.60	2.390	60.70	0.126	3.20	4.490	223	3.017	731	4.560	219	3.064	719	30
	2.1/2	65	2.961	75.20	3.004	76.30	0.126	3.20	5.730	175	3.850	573	5.850	171	3.931	561	24
	3	80	3.461	87.90	3.520	89.40	0.142	3.60	7.550	132	5.073	435	7.720	130	5.188	425	19
	4	100	4.449	113.00	4.524	114.90	0.157	4.00	10.800	93	7.257	304	11.100	90	7.459	296	14
LIGHT - 2	1/2	15	0.827	21.00	0.843	21.40	0.079	2.00	0.947	1056	0.636	3464	0.956	1046	0.642	3432	160
	3/4	20	1.039	26.40	1.059	26.90	0.091	2.30	1.380	725	0.927	2377	1.390	719	0.934	2360	110
	1	25	1.307	33.20	1.331	33.80	0.102	2.60	1.980	505	1.330	1657	2.000	500	1.344	1640	80
	1.1/4	32	1.650	41.90	1.673	42.50	0.102	2.60	2.540	394	1.707	1292	2.570	389	1.727	1277	61
	1.1/2	40	1.882	47.80	1.906	48.40	0.114	2.90	3.230	310	2.170	1016	3.270	306	2.197	1003	51
	2	50	2.346	59.60	2.370	60.20	0.114	2.90	4.080	245	2.742	804	4.150	241	2.789	791	37
	2.1/2	65	2.961	75.20	2.992	76.00	0.126	3.20	5.710	175	3.837	575	5.830	172	3.918	563	27
	3	80	3.461	87.90	3.492	88.70	0.126	3.20	6.720	149	4.516	488	6.890	145	4.630	476	24
	4	100	4.449	113.00	4.484	113.90	0.142	3.60	9.750	103	6.552	336	10.000	100	6.720	328	16
MEDIUM	1/2	15	0.827	21.00	0.858	21.80	0.102	2.60	1.210	826	0.813	2711	1.220	820	0.820	2689	130
	3/4	20	1.043	26.50	1.075	27.30	0.102	2.60	1.560	641	1.048	2103	1.570	637	1.055	2090	100
	1	25	1.311	33.30	1.346	34.20	0.126	3.20	2.410	415	1.619	1361	2.430	412	1.633	1350	65
	1.1/4	32	1.654	42.00	1.689	42.90	0.126	3.20	3.100	323	2.083	1058	3.130	319	2.103	1048	51
	1.1/2	40	1.886	47.90	1.921	48.80	0.126	3.20	3.560	281	2.392	922	3.600	278	2.419	911	44
	2	50	2.350	59.70	2.394	60.80	0.142	3.60	5.030	199	3.380	652	5.100	196	3.427	643	30
	2.1/2	65	2.965	75.30	3.016	76.60	0.142	3.60	6.420	156	4.314	511	6.540	153	4.395	502	24
	3	80	3.465	88.00	3.524	89.50	0.157	4.00	8.360	120	5.618	392	8.530	117	5.732	385	19
	4	100	4.453	113.10	4.528	115.00	0.177	4.50	12.200	82	8.198	269	12.500	80	8.400	262	14
	5	125	5.453	138.50	5.543	140.80	0.197	5.00	16.600	60	11.155	198	17.100	58	11.491	192	10
	6	150	6.453	163.90	6.555	166.50	0.197	5.00	19.800	51	13.305	166	20.400	49	13.708	161	7
HEAVY	1/2	15	0.827	21.00	0.858	21.80	0.126	3.20	1.440	694	0.968	2278	1.450	690	0.974	2263	110
	3/4	20	1.043	26.50	1.075	27.30	0.126	3.20	1.870	535	1.257	1754	1.880	532	1.263	1745	80
	1	25	1.311	33.30	1.346	34.20	0.157	4.00	2.930	341	1.969	1120	2.950	339	1.982	1112	55
	1.1/4	32	1.654	42.00	1.689	42.90	0.157	4.00	3.790	264	2.547	866	3.820	262	2.567	859	44
	1.1/2	40	1.886	47.90	1.921	48.80	0.157	4.00	4.370	229	2.937	751	4.410	227	2.963	744	37
	2	50	2.350	59.70	2.394	60.80	0.177	4.50	6.190	162	4.159	530	6.260	160	4.207	524	27
	2.1/2	65	2.965	75.30	3.016	76.60	0.177	4.50	7.930	126	5.329	414	8.050	124	5.409	408	20
	3	80	3.465	88.00	3.524	89.50	0.197	5.00	10.300	97	6.921	319	10.500	95	7.056	312	16
	4	100	4.453	113.10	4.528	115.00	0.213	5.40	14.500	69	9.744	226	14.800	68	9.945	222	12
	5	125	5.453	138.50	5.543	140.80	0.213	5.40	17.900	56	12.028	183	18.400	54	12.364	178	10
	6	150	6.453	163.90	6.555	166.50	0.213	5.40	21.300	47	14.313	154	21.900	46	14.716	150	7

TECHNICAL DATA

TOLERANCES

Class	Thickness	Weight/Piece	Weight / 10 MT
Light 1	-12.50%	+ / - 10.0%	+ / - 7.5%
Light 2	-8.00%	-8.0 / +10.0%	+ / - 5.0%
Medium	-12.50%	+ / - 10.0%	+ / - 7.5%
Heavy	-12.50%	+ / - 10.0%	+ / - 7.5%

CHEMICAL PROPERTIES

PHOSPHORUS : 0.060% MAX SULPHUR : 0.060% MAX

MECHANICAL PROPERTIES

TENSILE STRENGTH : 320-520 N/MM2
ELONGATION : 15% MIN on GL 5.65xSq. Root of Cross Sectional Area

LEAK TIGHTNESS TEST

All pipes shall be tested hydrostatically at a pressure of 50 bar OR
shall be 100% on-line eddy current tested.

MARKING Each pipes is stenciled with “JAZEERA STEEL OMAN - DN SIZE -SERIES- ISO 65’”

PACKING Hexagonal Type

TECHNICAL DATA OF BLACK AND GALVANIZED STEEL PIPES CONFORMING TO EN-10219-1 & 2
CHEMICAL COMPOSITION / MECHANICAL PROPERTIES OF NON ALLOY STEEL

GRADE	% Carbon C (max)	% Silicon Si (max)	% Manganese Mn (max)	% Phosphorus P(max)	% Sulfur S (max)	% Nitrogen N (max)	Max Carbon Eq CEV	Minimum Yield Strength R_{eH} (MPa)	Tensile Strength R_m (MPa)		Min Elongation (%)	Minimum Impact Energy (J)		
									Thk<3mm	Thk 3mm		-20°C	0°C	20°C
S235JRH	0.17	--	1.40	0.040	0.040	0.009	0.35	235	360-510	360-510	24	--	--	27
S275J0H	0.20	--	1.50	0.035	0.035	0.009	0.40	275	430-580	410-560	20	--	27	--
S275J2H	0.20	--	1.50	0.030	0.030	--	0.40	275	430-580	410-560	20	27	--	--
S355J0H	0.22	0.55	1.60	0.035	0.035	0.009	0.45	355	510-680	470-630	20	--	27	--
S355J2H	0.22	0.55	1.60	0.030	0.030	--	0.45	355	510-680	470-630	20	27	--	--
S355K2H	0.22	0.55	1.60	0.030	0.030	--	0.45	355	510-680	470-630	20	40	--	--

CARBON EQUIVALENT: Max carbon equivalent shall be
CEV = C + (Mn/6) + (Cr + Mo + V)/5 + (Ni + Cu)/15

DIMENSIONS AND TOLERANCES: All dimensions and tolerances shall be according to EN 10219:2006 Part-2

SIZE RANGE
CHS : 21.3 mm OD to 219.1 mm OD
SHS : 12x12, 16x16, 19x19, 25x25, 30x30, 31x31, 38x38, 50x50, 75x75, 80x80, 100x100, 125x125 (mm x mm)
RHS : 31x19, 40x20, 40x25, 50x25, 60x30, 60x40, 80x40, 100x50, 120x60, 120x100, 125x50, 125x75, 150x75, 150x100 (mm x mm)

TOLERANCES EN-10219

<table>
<tr><th>Characteric</th><th>Circular Hollow Sections</th><th colspan="2">Square and Rectangular Hollow Sections</th></tr>
<tr><td rowspan="4">OUTSIDE DIMENSIONS (D, B and H)</td><td rowspan="4">+/- 1% with a minimum of +/-0.50mm and a maximum of +/-1.0 mm</td><td>Side Length (mm)</td><td>Tolerance</td></tr>
<tr><td>H,B<100</td><td>+/- 1% with a min +/-0.5mm</td></tr>
<tr><td>100 H,B 200</td><td>+/- 0.8%</td></tr>
<tr><td>H,B >200</td><td>+/- 0.6%</td></tr>
<tr><td rowspan="2">THICKNESS</td><td>For D<406.4mm:
+/-10% for Thickness 5.0mm
+/-0.5mm for Thickness>5.0mm</td><td colspan="2" rowspan="2">+/-10% for Thickness 5.0mm
+/-0.5mm for Thickness >5.0mm</td></tr>
<tr><td>For D<406.4mm:
+/-10% with a maximum of +/- 2.0mm</td></tr>
<tr><td>OUT OF ROUNDNESS</td><td>2% for hollow sections having a diameter to thickness ratio 100</td><td colspan="2">--</td></tr>
<tr><td>CONCAVITY / CONVEXITY</td><td>--</td><td colspan="2">Max 0.8% with a minimum of 0.5mm</td></tr>
<tr><td>SQUARENESS OF SIDE</td><td>--</td><td colspan="2">90^0 +/- 1^0</td></tr>
<tr><td rowspan="3">EXTERNAL CORNER PROFILE</td><td rowspan="3">--</td><td colspan="2">T 6.0mm
1.6T to 2.4T</td></tr>
<tr><td colspan="2">6.0<T 10.0mm 2.0T to 3.0T</td></tr>
<tr><td colspan="2">T>10.0mm
2.4T to 3.6T</td></tr>
<tr><td>TWIST</td><td>--</td><td colspan="2">2mm plus 0.5mm/m length</td></tr>
<tr><td>STRAIGHTNESS</td><td>0.20% of total length and 3mm over any 1m length</td><td colspan="2">0.15% of total length and 3mm over any 1m length</td></tr>
<tr><td>MASS PER UNIT LENGTH</td><td colspan="3">+/- 6% on individual delivered lengths</td></tr>
<tr><td>MAX WELD BEAD HEIGHT</td><td colspan="3">3.5mm for T 14.2mm and 4.8mm for T>14.2mm</td></tr>
</table>

NON DESTRUCTIVE TEST Eddy Current Testing 100% on-line

MARKING: En 10219 Steel Grade / Jazeera Steel, Oman / Size Thickness / Length / Heat No Xxxxxxx

TECHNICAL DATA OF SQUARE AND RECTANGLE HOLLOW SECTION CONFORMING TO ASTM A500 GRADE A & B

SIZE LXB mm	(Thickness mm)																						
	0.90	1.00	1.20	1.50	1.80	2.00	2.30	2.50	2.60	2.80	3.00	3.50	3.60	4.00	4.50	4.80	5.00	5.50	5.80	6.00	6.50	7.00	7.50	8.00
12 X 12	0.297	0.325	0.377	0.449																				
16 X 16	0.410	0.451	0.528	0.637																				
19 X 19	0.495	0.545	0.641	0.779	0.907	0.987																		
25 X 25	0.665	0.733	0.867	1.061	1.245	1.364	1.532	1.640	1.692	1.793	1.890													
30 X 30	0.806	0.890	1.056	1.297	1.528	1.678	1.894	2.032	2.100	2.233	2.361													
31 X 31	0.834	0.922	1.094	1.344	1.584	1.740	1.966	2.111	2.182	2.321	2.455													
38 X 38	1.032	1.142	1.357	1.674	1.980	2.180	2.471	2.660	2.753	2.936	3.115	3.544	3.627	3.947										
50 X 50	1.371	1.518	1.810	2.239	2.659	2.934	3.338	3.602	3.733	3.991	4.245	4.863	4.983	5.454	6.020	6.347	6.560	7.074	7.370	7.562				
75 X 75				3.416	4.072	4.504	5.144	5.565	5.774	6.189	6.601	7.610	7.809	8.594	9.552	10.115	10.485	11.391	11.923	12.273				
80 X 80				3.652	4.354	4.818	5.505	5.957	6.182	6.629	7.071	8.160	8.374	9.222	10.259	10.868	11.270	12.255	12.833	13.214				
100 X 100						6.074	6.949	7.527	7.815	8.387	8.955	10.358	10.635	11.734	13.085	13.883	14.410	15.709	16.476	16.982	18.229	19.451	20.647	21.817
125 X 125						7.644	8.754	9.490	9.856	10.585	11.310	13.105	13.461	14.874	16.617	17.651	18.335	20.026	21.029	21.692	23.332	24.946	26.534	28.097
31 X 19	0.665	0.733	0.868	1.061	1.246	1.363	1.532	1.640	1.692	1.793	1.890													
40 X 20	0.806	0.890	1.056	1.297	1.528	1.678	1.894	2.032	2.100	2.233	2.361													
40 X 25	0.877	0.969	1.150	1.415	1.670	1.835	2.074	2.229	2.304	2.453	2.597													
50 X 25	1.018	1.126	1.339	1.650	1.952	2.149	2.435	2.621	2.713	2.892	3.068													
60 X 30	1.230	1.361	1.621	2.003	2.376	2.620	2.977	3.210	3.325	3.552	3.774													
60 X 40	1.371	1.518	1.810	2.239	2.659	2.934	3.338	3.602	3.733	3.991	4.245													
80 X 40	1.654	1.832	2.186	2.710	3.224	3.562	4.060	4.387	4.549	4.871	5.187	5.962	6.113	6.710	7.433	7.854	8.130	8.801	9.191	9.446				
100 X 50				3.416	4.072	4.504	5.143	5.565	5.774	6.189	6.600	7.610	7.809	8.594	9.552	10.115	10.485	11.391	11.923	12.272				
120 X 60				4.123	4.920	5.446	6.227	6.742	6.999	7.508	8.013	9.259	9.505	10.478	11.672	12.376	12.840	13.982	14.654	15.098				
120 X 100						6.702	7.671	8.312	8.631	9.267	9.897	11.457	11.765	12.990	14.498	15.390	15.980	17.436	18.297	18.866	20.270	21.649	23.002	24.329
125 X 50						5.289	6.046	6.546	6.795	7.288	7.778	8.984	9.222	10.164	11.319	11.999	12.447	13.550	14.199	14.627	15.678	16.703	17.703	18.677
125 X 75						6.074	6.949	7.527	7.815	8.387	8.955	10.358	10.635	11.734	13.085	13.883	14.410	15.709	16.476	16.982	18.229	19.451	20.647	21.817
150 X 75						6.859	7.852	8.509	8.836	9.486	10.133	11.731	12.048	13.304	14.851	15.767	16.372	17.867	18.752	19.337	20.781	22.198	23.590	24.957
150 X 100						7.644	8.754	9.490	9.856	10.585	11.310	13.105	13.461	14.874	16.617	17.651	18.335	20.026	21.029	21.692	23.332	24.946	26.534	28.097

Kg/m

TECHNICAL DATA OF SQUARE AND RECTANGULAR HOLLOW SECTION CONFORMING TOTHE SPECIFICATION ASTM A500 GRADE A & B (IN INCHES)

Dimensions (inches)	Wall Thickness (inches)	
	Min	Max
1” x 1”	0.039	0.079
1 1/4” x 1 1/4”	0.047	0.110
1 1/2” x 1 1/2”	0.047	0.118
2” x 2”	0.059	0.185
3” x 3”	0.071	0.185
4” x 4”	0.079	0.236
4” x 2”	0.071	0.197
5” x 3”	0.071	0.236
2” x 1”	0.047	0.102

LBS/FT AND NO. OF PCS PER BUNDLE SHALL BE CONFIRMED AT THE TIME OF ENQUIRY.

SPECIFICATION DETAILS

TOLERANCES

Outer Dimensions

Specified Outside Large Flat Dimension inch [mm]	Permissible Variations Over and Under Specified Outside Flat Dimensions inch [mm]
2.1/2”[63.5] or under	0.020 [0.51]
Over 2.1/2 to 3.1/2 [63.5 to 88.9], incl	0.025 [0.64]
Over 3.1/2 to 5.1/2 [88.9 to 139.7], incl	0.030 [0.76]
Over 5.1/2 [139.7]	0.01 times large flat dimension

THICKNESS : + / - 10% of Wall Thickness
SQUARENESS OF SIDES : 90° + / - 2°
CORNER RADIUS : 3 times to Wall Thickness (Maximum)
STRAIGHTNESS : 1 mm in 500 mm
TWIST : 2 mm plus 0.5 mm per meter length (Maximum)

MECHANICAL PROPERTIES

	Grade A	Grade B
YIELD STRENGTH Min (MPa)	269	317
TENSILE STRENGTH Min (MPa)	310	400
ELONGATION in 2” Guage Length min %	25	23

CHEMICAL PROPERTIES

	Grade A	Grade B
CARBON %	0.26 % Max	
PHOSPHOROUS %	0.035 % Max	
SULPHUR %	0.035 % Max	

END FINISH Sections shall be supplied with Mill Finish

SURFACE PROTECTION All sections shall be supplied with rust protective oil coating.

HOT ROLLED CUT TO LENGTH SHEETS

DIMENSIONS:

Thickness	0.90 to 12 mm
WIDTH	1000 TO 2000 mm
LENGTH	1900 TO 6000 mm

ABOVE CUT TO LENGTH SHEETS CAN BE SUPPLIED IN ASTM A36/ BS EN 10025-2 **GRADE S235JR, S275JR AND S355JR**

Chemical Composition and Mechnical Properties

Grade	C % Max	Si % Max	Mn % Max	P % Max	S % Max	N % Max	Ce % Max	Yield Strength Min Mpa	Tensile Strength Min Mpa	Elongation % Min
ASTM A36	0.25	0.40	---	0.040	0.050	---	---	250	400 to 550	23
BS EN 10025-2 S235JR	0.17	---	1.40	0.035	0.035	0.012	0.35	235	360 to 510	26
BS EN 10025-2 S275JR	0.21	---	1.50	0.035	0.035	0.012	0.40	275	<3 - 430 to 580 ≥ 3 - 410 to 560	23
BS EN 10025-2 S355JR	0.24	0.55	1.60	0.035	0.035	0.012	0.45	355	<3 - 510 to 680 ≥ 3 - 470 to 630	22

MERCHANT BAR Mill (MBM) PRODUCTS

TECHNICAL DATA OF HOT ROLLED/ MERCHANT BAR PRODUCTS

Structural steel grades according to the Following National and International Standards can be supplied

EN 10025	ASTM	JIS 3101 / JIS G 3192	CSA G.40.21	AS/NZS 3679
S 235 JR	A 36	SS 400SM / 400/A/B/C		
S 235JO				
S 275 JR	A 572 Gr.42/ A 615 Gr.40	SS 400	44 W	Grade- G300
S 275JO				Grade- G300 LO
S275 J2				
S 355JR	A 572 Gr.50	SS490	50W	Grade- G350
S 355JO				Grade- G350 LO
S 355J2				
	A 572 Gr.60/ A 615 Gr.60	SS 540		
	F1554 Gr. 55			

Typical Chemical Composition & Mechanical Properties of Steel

Grade	% C (Max)	% Si (Max)	% Mn (Max)	% P (Max)	% S (Max)	N PPM	CEQ	Min YS MPa	Min TS MPa	Min ELG %	CVN Impact Test Temp °C	CVN Impact Avg J Min
ASTM A36	0.26	0.4	0.9	0.04	0.05	120	-	250	400 min	20	-	-
ASTM A 572 Gr.50	0.23	0.4	1.35	0.04	0.05	120	-	345	450 min	18	-	-
ASTM A 615 Gr.60	0.26	0.40	1.35	0.040	0.050		-	415	550 min	18	-	-
S275 JR	0.21	0.4	1.5	0.045	0.045	120	0.40	275	410 - 560	22		
S275 JO	0.18	0.4	1.5	0.030	0.030	120	0.40	275	410 - 560	22	0	27
S275 J2	0.18	0.4	1.5	0.030	0.030	120	0.40	275	410 - 560	22	-20	27
S355 JR	0.23	0.55	1.6	0.045	0.045	120	0.45	355	470 - 630	16		
S355 J0	0.20	0.55	1.6	0.030	0.030	120	0.45	355	470 - 630	16	0	27
S355 J2	0.20	0.55	1.6	0.030	0.030	120	0.45	355	470 - 630	16	-20	27
G300	0.25	0.5	1.6	0.040	0.040	-	0.44	300	440 min	22		
JIS G3192 SS400	-	-	-	0.050	0.050			245	400 - 510	21		
JIS G3192 SS540	0.30	-	1.60	0.040	0.040			400	540 min	16		
ASTM F1554 Gr 55	-	-	-	0.048	0.058	-		380	517-655	21		

NOTE : The use of grain refining elements such as Ti, V, and Nb is optional, and it may be used separately or in combination in order to achieve the desired properties.

STRUCTURAL STEEL RANGE

Products	Size Range (mm)		Dimensional Specification	
Beams	80	140	EN 10365	BS EN 10034: 1993
Angles	40	110	DIN 1028	BS EN 10056-1 &2
Channels (UPN/Light)	75	120	DIN1026	JIS G3192:2021 BS EN 10279:2009
Channels (PFC)	100	125		
Rounds	16	50	DIN 1013	BS EN 10060: 2003
Squares	12	50	DIN 1014	BS EN 10059:2003
Flat Bars	38	150	DIN 1017	BS EN 10058:2018
Rebars	8	32	BS 4449 :2025 +A3 :2026	

NOTE : The Above-mentioned section could be manufactured according to equivalent ASTM , AS/ NZS 3679, EN & JIS grades

SIZE DETAILS OF HOT ROLLED MERCHANT BAR PRODUCTS INCLUDING IMPERIAL DIMESNIONS

	Size - Mm	Size - inches (Us Customary Units)	Kg/m	lbs/ft.
ANGLES	40 x 40 x 4.0	1.575 x 1.575 x 0.157	2.42	1.63
	40 x 40 x 4.5	1.575 x 1.575 x 0.177	2.7	1.81
	40 x 40 x 4.7	1.575 x 1.575 x 0.185	2.81	1.89
	40 x 40 x 5.0	1.575 x 1.575 x 0.197	2.87	1.93
	40 x 40 x 5.7	1.575 x 1.575 x 0.224	3.35	2.25
	40 x 40 x 6.0	1.575 x 1.575 x 0.236	3.52	2.37
	45 x 45 x 4	1.772 x 1.772 x 0.157	2.74	1.84
	45 x 45 x 4.5	1.772 x 1.772 x 0.177	3.06	2.06
	45 x 45 x 5.0	1.772 x 1.772 x 0.197	3.38	2.27
	45 x 45 x 6	1.772 x 1.772 x 0.236	3.99	2.69
	50 x 50 x 3.5	2.0 x 2.0 x 0.138	2.69	1.81
	50 x 50 x 3.7	2.0 x 2.0 x 0.146	2.84	1.91
	50 x 50 x 3.8	2.0 x 2.0 x 0.149	2.91	1.96
	50 x 50 x 4.0	2.0 x 2.0 x 0.157	3.06	2.06
	50 x 50 x 4.5	2.0 x 2.0 x 0.177	3.41	2.29
	50 x 50 x 4.7	2.0 x 2.0 x 0.185	3.56	2.39
	50 x 50 x 4.8	2.0 x 2.0 x 0.189	3.63	2.44
	50 x 50 x 5.0	2.0 x 2.0 x 0.197	3.77	2.53
	50 x 50 x 5.5	2.0 x 2.0 x 0.217	4.12	2.77
	50 X 50 X 5.7	2.0 x 2.0 x 0.224	4.26	2.86
	50 X 50 X 5.8	2.0 x 2.0 x 0.228	4.33	2.91
	50 x 50 x 6.0	2.0 x 2.0 x 0.236	4.47	3
	50 x 50 x 6.35	2.0 x 2.0 x 0.250	4.7	3.16
	50 X 50 X 7	2.0 x 2.0 x 0.276	5.15	3.46
	50 X 50 X 7.7	2.0 x 2.0 x 0.303	5.62	3.78
	50 x 50 x 8.0	2.0 x 2.0 x 0.315	5.82	3.91
	50 X 50 X 9.0	2.0 x 2.0 x 0.354	6.47	4.35
	55 x 55 x 4	2.165 x 2.165 x 0.157	3.38	2.27
	55 x 55 x 5	2.165 x 2.165 x 0.197	4.18	2.81
	55 x 55 x 6	2.165 x 2.165 x 0.236	4.95	3.33
	60 x 60 x 4.0	2.36 x 2.36 x 0.157	3.7	2.49
	60 x 60 x 4.7	2.36 x 2.36 x 0.185	4.31	2.9
	60 x 60 x 4.8	2.36 x 2.36 x 0.189	4.39	2.95
	60 x 60 x 5.0	2.36 x 2.36 x 0.197	4.57	3.07
	60 x 60 x 5.5	2.36 x 2.36 x 0.217	5	3.36
	60 x 60 x 5.7	2.36 x 2.36 x 0.224	5.17	3.47
	60 x 60 x 5.8	2.36 x 2.36 x 0.228	5.25	3.53
	60 x 60 x 6.0	2.36 x 2.36 x 0.236	5.42	3.64
	60 x 60 x 7.7	2.36 x 2.36 x 0.303	6.84	4.6
	60 x 60 x 7.8	2.36 x 2.36 x 0.307	6.92	4.65
	60 x 60 x 8.0	2.36 x 2.36 x 0.315	7.09	4.76
	60 x 60 x 10.0	2.36 x 2.36 x 0.394	8.69	5.84
	63 x 63 x 5	2.48 x 2.48 x 0.197	4.82	3.24
	63 x 63 x 6	2.48 x 2.48 x 0.236	5.72	3.84
	65 x 65 x 4.0	2.55 x 2.55 x 0.157	4.02	2.7
	65 x 65 x 5.0	2.55 x 2.55 x 0.197	4.97	3.34
	65 x 65 x 5.5	2.55 x 2.55 x 0.217	5.44	3.66
	65 x 65 x 5.7	2.55 x 2.55 x 0.224	5.63	3.78
	65 x 65 x 5.8	2.55 x 2.55 x 0.228	5.72	3.84
	65 x 65 x 6.0	2.55 x 2.55 x 0.236	5.91	3.97
	65 x 65 x 7.0	2.55 x 2.55 x 0.276	6.83	4.59
	65 x 65 x 7.7	2.55 x 2.55 x 0.303	7.46	5.01
	65 x 65 x 7.8	2.55 x 2.55 x 0.307	7.55	5.07
	65 x 65 x 8.0	2.55 x 2.55 x 0.315	7.73	5.19
	65 x 65 x 9.0	2.55 x 2.55 x 0.354	8.62	5.79
	65 x 65 x 10.0	2.55 x 2.55 x 0.394	9.49	6.38
	70 x 70 x 4.8	2.76 x 2.76 x 0.189	5.16	3.47
	70 x 70 x 5.0	2.76 x 2.76 x 0.197	5.37	3.61
	70 x 70 x 5.5	2.76 x 2.76 x 0.217	5.88	3.95
	70 x 70 x 5.8	2.76 x 2.76 x 0.228	6.18	4.15
	70 x 70 x 6.0	2.76 x 2.76 x 0.236	6.38	4.29
	70 x 70 x 7.0	2.76 x 2.76 x 0.276	7.38	4.96
	70 x 70 x 8.0	2.76 x 2.76 x 0.315	8.36	5.62

SIZE DETAILS OF HOT ROLLED MERCHANT BAR PRODUCTS INCLUDING IMPERIAL DIMESNIONS

	Size - Mm	Size - inches (Us Customary Units)	Kg/m	lbs/ft.
ANGLES CONT'D	75 x 75 x 4.7	3.0 x 3.0 x 0.185	5.43	3.65
	75 x 75 x 5.0	3.0 x 3.0 x 0.197	5.76	3.87
	75 x 75 x 5.5	3.0 x 3.0 x 0.217	6.31	4.24
	75 x 75 x 5.7	3.0 x 3.0 x 0.224	6.53	4.38
	75 x 75 x 5.8	3.0 x 3.0 x 0.228	6.63	4.46
	75 x 75 x 6.0	3.0 x 3.0 x 0.236	6.85	4.6
	75 x 75 x 6.35	3.0 x 3.0 x 0.250	7.23	4.86
	75 x 75 x 7.00	3.0 x 3.0 x 0.276	7.93	5.33
	75 x 75 x 7.50	3.0 x 3.0 x 0.295	8.46	5.68
	75 x 75 x 7.70	3.0 x 3.0 x 0.303	8.67	5.83
	75 x 75 x 7.80	3.0 x 3.0 x 0.307	8.78	5.9
	75 x 75 x 9.0	3.0 x 3.0 x 0.354	10.03	6.74
	75 x 75 x 8.0	3.0 x 3.0 x 0.315	8.99	6.04
	75 x 75 x 9.52	3.0 x 3.0 x 0.375	10.75	7.22
	75 x 75 x 10.0	3.0 x 3.0 x 0.394	11.06	7.43
	75 x 75 x 12.0	3.0 x 3.0 x 0.472	13.07	8.78
	80 x 80 x 5.0	3.15 x 3.15 x 0.197	6.17	4.15
	80 x 80 x 5.8	3.15 x 3.15 x 0.228	7.1	4.77
	80 x 80 x 6.0	3.15 x 3.15 x 0.236	7.34	4.93
	80 x 80 x 7.0	3.15 x 3.15 x 0.276	8.49	5.71
	80 x 80 x 7.7	3.15 x 3.15 x 0.303	9.29	6.24
	80 x 80 x 8.0	3.15 x 3.15 x 0.315	9.63	6.47
	80 x 80 x 10.0	3.15 x 3.15 x 0.394	11.9	8
	90 x 90 x 5.0	3.543 x 3.543 x 0.197	8.3	5.58
	90 x 90 x 6.0	3.543 x 3.543 x 0.236	8.3	5.58
	90 x 90 x 7.0	3.543 x 3.543 x 0.276	9.61	6.46
	90 x 90 x 8.0	3.543 x 3.543 x 0.315	10.9	7.32
	90 x 90 x 9.0	3.543 x 3.543 x 0.354	12.2	8.2
	90 x 90 x 9.7	3.543 x 3.543 x 0.382	13.07	8.78
	90 x 90 x 10.0	3.543 x 3.543 x 0.394	13.4	9
	90 x 90 x 12.0	3.543 x 3.543 x 0.472	15.93	10.7
	100 x 100 x 5.7	4.0 x 4.0 x 0.224	8.82	5.93
	100 x 100 x 6.0	4.0 x 4.0 x 0.236	9.26	6.22
	101.6 x 101.6 x 6.35	4.0 x 4.0 x 0.250	19.05	12.8
	100 x 100 x 7.0	4.0 x 4.0 x 0.276	10.73	7.21
	100 x 100 x 7.7	4.0 x 4.0 x 0.303	11.7	7.86
	100 x 100 x 8.0	4.0 x 4.0 x 0.276	12.2	8.2
	100 x 100 x 9.0	4.0 x 4.0 x 0.354	13.6	9.14
	100 x 100 x 9.7	4.0 x 4.0 x 0.382	14.61	9.82
	100 x 100 x 10.0	4.0 x 4.0 x 0.394	15	10.08
	100 x 100 x 11.0	4.0 x 4.0 x 0.433	16.4	11.02
	100 x 100 x 12.0	4.0 x 4.0 x 0.472	17.83	11.98
	110 x 110 x 6	4.330 x 4.330 x 0.236	10.2	6.85
	110 x 110 x 7	4.330 x 4.330 x 0.276	11.8	7.93
	110 x 110 x 8	4.330 x 4.330 x 0.315	13.4	9
	110 x 110 x 9	4.330 x 4.330 x 0.354	15	10.08
	110 x 110 x 10	4.330 x 4.330 x 0.394	16.6	11.15
	110 x 110 x 12	4.330 x 4.330 x 0.472	19.7	13.24
CHANNELS	100 x 50 x 4.1 x 5.7 (JIS)	4.0 x 2.0 x 0.161 X 0.224	7.8	5.24
	100 x 50 x 4.7 x 6.0 (JIS)	4.0 x 2.0 x 0.185 x 0.236	8	5.38
	100 x 50 x 6.0 x 8.5(UPN)	4.0 x 2.0 x 0.236 x 0.335	10.6	7.12
	100 x 50 x 5.0 x 8.5(PFC)	4.0 x 2.0 x 0.197 x 0.335	10.2	6.85
	125 x 65 x 5.5 x 9.5 (PFC)	5.0 x 2.60 x 0.217 x 0.374	14.8	9.95
	100 x 50 x 5.0 x 7.5 (JIS)	4.0 x 2.0 x 0.197 x 0.295	9.36	6.29
	100 x 50 x 3.8 x 5.2 (JIS)	4.0 x 2.0 x 0.150 x 0.205	7.3	4.91
	75 x 40 x 3.85 x 5.2 (JIS)	3.0 x 1.575 x 0.152 x 0.205	5.36	3.6
	75 x 40 x 5.0x 7.0 (JIS)	3.0 x 1.575 x 0.197 x 0.276	6.92	4.65
	80 x 45 x 6 X 8.0 (UPN)	3.15 X 1.772 X 0.236 X 1.772	8.64	5.81
SQUARE BARS	12 x 12	0.472 x 0.472	1.13	0.76
	14 x 14	0.551 x 0.551	1.51	1.01
	16 x 16	0.630 x 0.630	2.01	1.35
	19 X 19	0.75 X 0.75	2.83	1.9
	20 x 20	0.787 x 0.787	3.14	2.11
	25 x 25	1.00 x 1.00	4.91	3.3
	30 x 30	1.181 x 1.181	7.07	4.75
	32 X 32	1.26 X 1.26	8.04	5.4
	38 X 38	1.50 X 1.50	11.34	7.62
	40 x 40	1.575 x 1.575	12.6	8.47
	45 X 45	1.77 X 1.77	15.9	10.68
	50 x 50	2.00 x 2.00	19.6	13.17

SIZE DETAILS OF HOT ROLLED MERCHANT BAR PRODUCTS INCLUDING IMPERIAL DIMESNIONS

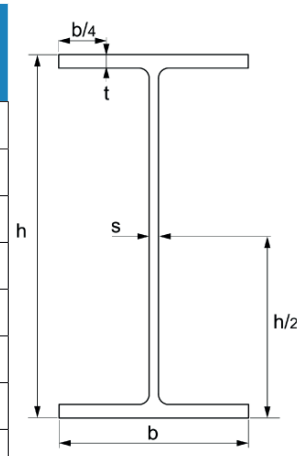
	Size - Mm	Size - inches (Us Customary Units)	Kg/m	lbs/ft.
ROUND BARS	16	0.629	1.58	1.06
	18	0.709	2	1.34
	19	0.748	2.23	1.5
	19.05	0.75	2.2	1.48
	20	0.787	2.47	1.66
	22	0.866	2.98	2
	24	0.945	3.55	2.39
	27	1.063	4.5	3.02
	28	1.102	4.83	3.25
	25	1	3.85	2.59
	30	1.181	5.55	3.73
	32	1.26	6.31	4.24
	33	1.299	6.71	4.51
	36	1.417	7.99	5.37
	38	1.496	8.9	5.98
	40	1.575	9.85	6.62
	42	1.654	10.88	7.31
	45	1.73	12.49	8.39
	44.45	1.75	12.2	8.2
	48	1.89	14.21	9.55
	50	2	15.4	10.35
FLAT BARS	38 x 4.5	1.496 x 0.177	1.34	0.9
	38 x 5	1.496 x 0.197	1.49	1
	38 x 6	1.496 x 0.236	1.79	1.2
	38 x 8	1.496 x 0.315	2.38	1.6
	38 x 9	1.496 x 0.354	2.68	1.8
	38 x 10	1.496 x 0.394	2.98	2
	38 x 12	1.496 x 0.472	3.58	2.41
	38 x 16	1.496 x 0.630	4.77	3.21
	38 x 19	1.496 x 0.748	5.67	3.81
	40 x 4.0	1.574 x 0.157	1.26	0.85
	40 x 4.5	1.574 x 0.177	1.41	0.95
	40 x 5.0	1.574 x 0.197	1.57	1.06
	40 x 6.0	1.574 x 0.236	1.88	1.26
	40 x 7.0	1.574 x 0.276	2.2	1.48
	40 x 8.0	1.574 x 0.315	2.51	1.69
	40 x 10.0	1.574 x 0.394	3.14	2.11
	40 x 12	1.574 x 0.472	3.77	2.53
	40 x 16	1.574 x 0.630	5.02	3.38
	50 x 4.0	2.0 x 0.157	1.57	1.06
	50 x 4.5	2.0 x 0.177	1.77	1.19
	50 x 4.7	2.0 x 0.185	1.84	1.24
	50 x 5.0	2.0 x 0.197	1.9	1.28
	50 x 6.0	2.0 x 0.236	2.36	1.59
	50.8 x 6.25	2.0 x 0.250	2.53	1.7
	50 x 7.0	2.0 x 0.276	2.75	1.85
	50 x 8.0	2.0 x 0.315	3.14	2.11
	50 x 9.0	2.0 x 0.354	3.53	2.37
	50 x 10.0	2.0 x 0.394	3.93	2.64
	50 x 12.0	2.0 x 0.472	4.71	3.17
	50.8 x 12.5	2.0 x 0.500	5.06	3.4
	50 x 16.0	2.0 x 0.630	6.28	4.22
	50 x 19.0	2.0 x 0.748	7.46	5.01
	50 x 20.0	2.0 x 0.787	7.85	5.28
	50 x 25.0	2.0 x 0.984	9.81	6.59
	50 x 30.0	2.0 x 1.181	11.77	7.91
	60 x 5.0	2.36 x 0.197	2.36	1.59
	60 x 6.0	2.36 x 0.236	2.83	1.9
	60 x 8.0	2.36 x 0.315	3.76	2.53
	60 x 9.0	2.36 x 0.354	4.24	2.85
	60 x 10.0	2.36 x 0.394	4.71	3.17
	60 x 12.0	2.36 x 0.472	5.65	3.8
	60 x 15.0	2.36 x 0.591	7.07	4.75
	60 x 20.0	2.36 x 0.787	9.42	6.33

SIZE DETAILS OF HOT ROLLED MERCHANT BAR PRODUCTS INCLUDING IMPERIAL DIMESNIONS

	Size - Mm	Size - inches (Us Customary Units)	Kg/m	lbs/ft.
FLAT BARS CONT'D	65 x 6.0	2.559 x 0.236	3.06	2.06
	65 x 9.0	2.559 x 0.354	4.59	3.09
	65 x 10.0	2.559 x 0.394	5.1	3.43
	65 x 12.0	2.559 x 0.472	6.12	4.11
	65 X 16	2.559 x 0.630	8.16	5.49
	65 X 19	2.559 x 0.748	9.7	6.52
	65 x 20	2.559 x 0.787	10.2	6.85
	65 X 25	2.559 x 0.787	12.7	8.53
	65 X 4.5	2.559 x 0.177	2.3	1.54
	65 X 5	2.559 x 0.197	2.55	1.71
	65 X 8	2.559 x 0.315	4.08	2.74
	70 x 5.0	2.76 x 0.197	2.75	1.85
	70 X 6	2.76 x 0.236	3.3	2.22
	70 X 8	2.76 x 0.315	4.4	2.95
	70 X 10	2.76 x 0.394	5.5	3.69
	75 x 4.5	3.0 x 0.177	2.65	1.78
	75 x 6.0	3.0 x 0.236	3.53	2.37
	76.2 x 6.35	3.0 x 0.250	3.8	2.55
	75 x 8.0	3.0 x 0.315	4.71	3.17
	75 x 9.0	3.0 x 0.354	5.3	3.56
	76.2 x 9.525	3.0 x 0.375	5.72	3.84
	75 x 10.0	3.0 x 0.394	5.89	3.96
	75 x 12.0	3.0 x 0.472	7.07	4.75
	76.2 x 12.7	3.0 x 0.500	7.6	5.1
	75 x 16.0	3.0 x 0.630	9.42	6.33
	75 x 19.0	3.0 x 0.748	11.19	7.52
	75 x 20.0	3.0 x 0.787	11.78	7.91
	75 x 25.0	3.0 x 0.984	14.72	9.89
	80 x 5.0	3.14 x 0.197	3.14	2.11
	80 x 6.0	3.14 x 0.236	3.77	2.53
	80 x 8.0	3.14 x 0.315	5.02	3.37
	80 x 10.0	3.14 x 0.394	6.28	4.22
	80 x 12.0	3.14 x 0.472	7.54	5.06
	80 x 16.0	3.14 x 0.630	10.05	6.75
	80 x 20.0	3.14 x 0.787	12.56	8.44
	90 X 10	3.543 x 0.394	7.07	4.75
	90 X 12	3.543 x 0.472	8.48	5.7
	90 X 15	3.543 x 0.591	10.6	7.12
	90 X 6	3.543 x 0.236	4.24	2.85
	90 X 8	3.543 x 0.315	5.65	3.8
	100 x 4.5	4.0 x 0.177	3.53	2.37
	100 x 5.0	4.0 x 0.197	3.93	2.64
	100 x 6.0	4.0 x 0.236	4.71	3.17
	100 x 8.0	4.0 x 0.315	6.28	4.22
	100 x 9.0	4.0 x 0.354	7.07	4.75
	100 x 10.0	4.0 x 0.394	7.85	5.28
	100 x 12.0	4.0 x 0.472	9.42	6.33
	100 x 16.0	4.0 x 0.630	12.56	8.44
	100 x 19.0	4.0 x 0.748	14.92	10.03
	100 x 20.0	4.0 x 0.787	15.7	10.55
	100 x 25.0	4.0 x 0.984	19.6	13.17
	120 x 6.0	4.724 x 0.236	5.65	3.8
	120 x 8.0	4.724 x 0.315	7.54	5.07
	120 x 10.0	4.724 x 0.394	9.42	6.33
	120 x 12.0	4.724 x 0.472	11.3	7.59
	120 x 15.0	4.724 x 0.591	14.1	9.47
	120 x 20.0	4.724 x 0.787	18.8	12.63
	140 x 12	5.512 x 0.472	13.2	8.87
	150 x 6.0	5.906 x 0.236	7.06	4.74
	150 x 8.0	5.906 x 0.315	9.42	6.33
	150 x 10.0	5.906 x 0.394	11.8	7.93
	150 x 12.0	5.906 x 0.472	14.1	9.47

BEAMS

Size	Sectional Weight (Kg/m)	Web Width h (mm)	Flange Width b (mm)	Web Thickness s (mm)	Flange Thickness t (mm)
IPE AAA 80	4.7	78	46	3.0	4
IPE AA 80	4.9	78	46	3.2	4.2
IPE A 80	5.0	78	46	3.3	4.2
IPE 80	6.0	80	46	3.8	5.2
IPE AAA 100	6.4	97	55	3.4	4.3
IPE AA 100	6.7	97.6	55	3.6	4.5
IPE A 100	6.9	98	55	3.6	4.7
IPE 100	8.1	100	55	4.1	5.7
IPE AAA 120	7.9	117	64	3.5	4.6
IPE AA 120	8.4	117	64	3.8	4.8
IPE A120	8.7	117.6	64	3.8	5.1
IPE 120	10.4	120	64	4.4	6.3
IPE AAA 140	9.52	136	73	3.5	5
IPE AA 140	10.1	136.6	73	3.8	5.2
IPE A140	10.5	137.4	73	3.8	5.6
IPE 140	12.9	140	73	4.7	6.9
HE 100 A	16.7	96	100	5.0	8.0
HE 100 B	20.4	100	100	6.0	10.0
UB 127X76X13	13.0	127	76	4	7.6



Tolerance

Web Width h (mm)	Tolerance (mm)	Flange Width b (mm)	Tolerance (mm)	Web Thickness s (mm)	Tolerance (mm)	Flange Thickness t (mm)	Tolerance (mm)
h ≤ 180	+3.0/ -2.0	b ≤ 110	+4.0/ -1.0	s < 7	± 0.70	t < 6.5	+1.5/ -0.5
						6.5 ≤ t < 10	+2.0/ -1.0

ANGLES

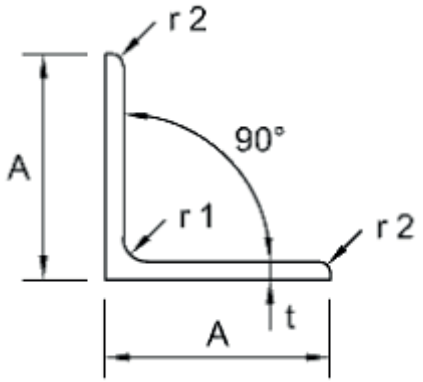
thickness (t) mm

SIZE (mm) AxA	3.5	3.7	3.8	4	4.5	4.7	4.8	5	5.5	5.8	6	7	7.8	8	9	10	11	12
40x40				2.42	2.70	2.81		2.97			3.52							
45 x 45				2.74	3.06			3.38			3.99							
50x50	2.69	2.84	2.91	3.06	3.41	3.56	3.63	3.77	4.12		4.47			5.82	6.47			
55 x 55				3.38				4.18			4.95							
60 x 60				3.70	4.13	4.31	4.39	4.57	5.00	5.25	5.42			7.09		8.69		
63 x 63								4.82			5.72							
65x65						4.69	4.79	4.97	5.44	5.72	5.91	6.83	7.55	7.73				
70x70						5.06	5.16	5.37	5.88	6.18	6.38	7.38	8.16	8.36				
75x75							5.54	5.76	6.31	6.63	6.85	7.93	8.78	8.99	10.03	11.06		
80x80										7.11	7.34	8.49	9.40	9.63		11.90		
90x90												9.61		10.9	12.2	13.40		
100x100											9.26	10.73		12.20	13.60	15.0	16.40	17.80
110 x 110											10.20	11.80		13.40	15.00	16.60		19.70

Kg/m

Tolerance

Leg Length (mm)	Leg Length Tolerance (mm)	Thickness Tolerance (mm)
A≤50 mm	± 1	t ≤ 5 - ± 0.50 mm 5 < t ≤ 10 - ± 0.75 mm 10 < t ≤ 15 - ± 1.00 mm
50 <A≤100	± 2	
100 <A ≤150	±3	



Where
A – Leg Length
t – Leg Thickness
r 1 – Root Radius
r 2 – Toe Radius

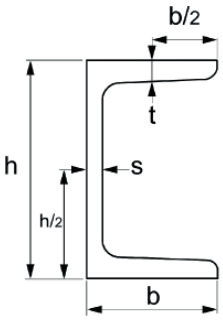
STRAIGHTNESS LEG LENGTH a < 150 mm Tolerance 0.4% L over full bar length

TOLERANCE ON MASS – ± 4 % For thicknesses for t > 4 mm

TOLERANCE ON LENGTH … + 100 MM where minimum length are required

CHANNELS

Size	Sectional Weight (Kg/m)	Web Width h (mm)	Flange Width b (mm)	Web Thickness s (mm)	Flange Thickness t (mm)
UPN 100 x 50 x 6	10.6	100	50	6	8.5
UPN 80 x 45 x 6	8.64	80	45	6	8
UPN 120 x 55 x 7	13.40	120	55	7	9
C 100 x 50 x 4.7	8.00	100	50	4.7	6
C 100x50x5	9.36	100	50	5	7.5
C 100x50x3.86	7.3	100	50	3.86	6
C 75x40x5	6.92	75	40	5	7
C 75x40x3.86	5.36	75	40	3.86	5.2
PFC 100x50x5	10.20	100	50	5	8.5
PFC 125x65x5.5	15.00	125	65	5.5	9.5



Tolerance

Size	Width (mm)		Thickness (mm)	
	Web	Flange	Web	Flange
C 100x50	± 2.0	± 1.5	± 0.50	-0.5
C 75x40	± 1.5	± 1.5	± 0.50	-0.5
PFC 100 x 50	± 2.0	± 1.5	± 0.50	- 0.5
PFC 125 x 65	± 2.0	± 2.5	± 1.00	- 1.0
UPN 80 x 45 x 6	± 1.5	± 1.5	± 0.50	-0.5

- STRAIGHTNESS : h ≤ 150 mm, 0.3% L over full bar length
- HEEL RADIUS : All Sizes Tolerance ≤ 0.3t
- WEB FLATNESS : h ≤ 100, Tolerance ± 0.5 mm; 100 < h ≤ 200 ± 1.0 max
- TOLERANCE ON LENGTH : + 100 mm where minimum length are required
- Out of Squareness : 2mm max.

FLAT BARS

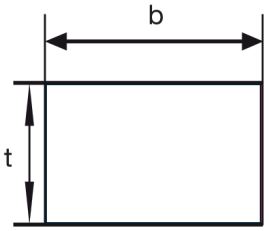
thickness (t) mm →

Width b (mm)	4	4.5	4.7	5	6	8	9	10	12	15	16	19	20	25	30
38		1.34		1.49	1.79	2.38	2.68	2.98	3.58						
40	1.26	1.41		1.57	1.88	2.51		3.14							
50	1.57	1.77	1.84	1.96	2.36	3.14	3.53	3.93	4.71		6.28		7.85	9.81	11.8
60				2.36	2.83	3.77	4.24	4.71	5.65				9.42		
65					3.06		4.59	5.10	6.12						
70				2.75	3.30	4.40	4.95	5.50	6.59		8.79	10.44	11.0		
80				3.14	3.77	5.02		6.28					12.56		
90				3.53	4.24	5.65		7.07	8.48	10.60					
100		3.53		3.93	4.71	6.28	7.07	7.85	9.42	11.80	12.56	14.90	15.70	19.60	23.60
120					5.65	7.54		9.42	11.30	14.10			18.80		
150						9.42		11.80	14.10						

↓ Kg/m

Tolerance

Width b (mm)	Tolerance (mm)	Thickness t (mm)	Tolerance (mm)
38 <b ≤ 40	± 0.75	t ≤ 20	± 0.5
40 < b ≤ 80	± 1.0		
80 < b ≤ 100	± 1.5	20< t ≤ 40	± 1.0
100 < b ≤ 120	± 2.0		
120 < b ≤ 150	± 2.5		



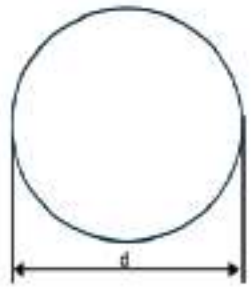
STRAIGHTNESS Nominal cross-section <1000 mm²
Tolerance q ≤ 0.4% L over full bar length

TOLERANCE ON LENGTH … + 100 mm where minimum length are required.

TOLERANCE ON MASS: +/- 4% for thickness > 4mm

ROUNDS BARS

Nominal Dia (mm)	16	18	19	20	22	24	25	27	28	30	30.5	32	36	38	40	42	45	48	50
Mass Kg/ m	1.58	2	2.23	2.47	2.98	3.55	3.85	4.49	4.83	5.55	5.74	6.31	7.99	8.9	9.86	10.9	12.5	14.2	15.4
Dia tolerance (mm)	± 0.50	± 0.50	± 0.50	± 0.50	± 0.50	± 0.50	± 0.50	± 0.60	± 0.60	± 0.60	± 0.60	± 0.60	± 0.80	± 0.80	± 0.80	± 0.80	± 0.80	± 0.80	± 0.80



OVALITY – Shall not exceed 75 % of Dia Tolerance
STRAIGHTNESS … D <_ 25mm tolerance Not esablished
TOLERANCE ON MASS 10 mm to 50 mm (DIA)± 4 % section weight
TOLERANCE ON LENGTH + 100 mm where minimum length are required

SQUARES BARS

STRAIGHTNESS Nominal size a ≤ 25 Not fixed 25mm to 80mm Tolerance 0.4% L over full bar length

TOLERANCE ON LENGTH … + 100 MM where minimum length are required

Size (mm)	Kg/Mtr	Tol.	Twist	CORNER RADIUS
12	1.13	± 0.40	4°/M with a max of 24°	r <_ 1 mm
14	1.54	± 0.40		r <_ 1.5 mm
16	2.01	± 0.50	3°/M with a max of 18°	
19	2.83	± 0.50		
20	3.14	± 0.50		
25	4.91	± 0.50		r <_ 2 mm
30	7.07	± 0.60		
32	8.04	± 0.6		r <_ 2.5mm
35	9.62	± 0.6		
38	11.3	± 0.6		
40	12.6	± 0.80		
45	15.9	± 0.80		
50	19.6	± 0.80		

REBARS

Diameter	From 8 mm to 32 mm	
Commercial Length	6 & 12 meters	
Specification	British Standard	BS 449:1997 Grade 460B/B500B
	American Standard	ASTM A 615 Grade 60
	German Standard	DIN 488-1:2009-08 Grade B500B
	ISO	ISO 6935 : 2015 Gr B500BWR

Standard Grade	Chemical Composition % Max				Mechanical Properties					Bending Test		Rebending Test	
	%C	%Mn	%S	%P	Ys N/mm2 Min	T.S. N/mm2 Min.	E at Fracture % Min.	Agt % Min	Guage Length	Bending Angle Degree	Bending Dia mm	RE-bending Angle Degree	Re-ending Dia mm
BS 4449:1997 Gr.460B	0.25	--	0.050	0.050	460	YSx1.08	14	5	Sd	-	--	45 ° to 23°	16 mm -Sd 16 mm 7d
BS 4449:2005 Gr.B 500B	0.22	--	0.050	0.050	500	YSx1.08	--	5	--	-	--	90 ° to20°	16 mm -4d 16 mm 7d
ASTM A 615 Grade 60	--	--	0.060	--	420	620	20 -9 22-25 mm -8	--	200 mm	180 °	16 mm -3.5d 18-25 mm -5d 28mm -7d	--	--
DIN 488 :2009 Gr B500B	0.22	--	0.050	0.050	500	YSx1.08	--	5	Sd	--	--	90 ° to20°	16 mm -5d 16-28 mm -8d 28 -32 mm -10d
ISO 6935:2015 Gr. B500B WR	.20	1.6	0.050	0.050	500	YSx1.08	14	5	5d	--	--	90° to 20°	--

YS - Yield Strength : TS- Tensile Strength ,E- Elongation :Agt -Total Elongation at maximum force

Mill Standard Bar Count 12 meter Length

Nominal Dia	Unit Mass (Kg/m)	Nominal Mass (Kg/piece)	Pieces/Bundle	Weight/Bundle (MT)
08	0.395	4.74	422	2.000
10	0.617	7.40	270	1.999
12	0.888	10.66	188	2.003
14	1.210	14.52	138	2.004
16	1.580	18.96	106	2.010
18	2.000	24.00	84	2.016
20	2.470	29.64	68	2.016
22	2.980	35.76	56	2.003
25	3.850	46.20	44	2.033
28	4.830	57.96	34	1.971
32	6.310	75.72	26	1.969
Rebar can be Supplied in 6.0 m or 12 m Length				
Plain Round Bars are produced in 6.0 m & 12 m in 16 to 50 mm Dia				

Permissible Deviation From Nominal Mass

Standard	Size (mm)	Deviation(%)
BS 4449:1997 Gr.460B	8 to 10	± 6.5
	> 10	± 4.5
BS 4449:2005 Gr.B 500B	Up to 8	± 6.0
	> 8	± 4.5
ASTM A 615 Grade 60	Up to 10	± 8.0
	> 10	± 6.0
DIN 488 :2009 GrB500B	Up to 8	± 6.0
	> 8	± 4.5
ISO 6935:2015Gr B500BWR	Up to 8	± 8.0
	10 to 12	± 6.0
	14 to 20	± 5.0
	25 to 32	± 4.0

Bundle Characteristics	
Weight	1MT , 2MT
Diameter of Bundle	150 to 300 mm (varies according to dia of rebar 8 mm to 36 mm)
Straps Per Bundle	Minimum 4 (Two end Straps will be 0.50 m from the End)

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