



O U R P R O D U C T S , O U R C O M M I T M E N T

CONTENTS

Milestones

2

Borusan
Holding at a Glance

4

Borusan
Mannesmann in
Brief

5

Energy

14

OCTG
Casing and Tubing

16

ERW Line Pipes

20



ERW Water
Pipes

29

Fire Sprinkler
Pipes-Firesist

34

Water Well
Casing Pipes

38



Self
Anchor

45



Foundation /
Piling Tubes

46

Engineering
Technologies

48



**Global
Presence**

6

**Customer
Benefits**

10

Our Team

12

**QEHS
Management**

13



**Spirally Welded
Line Pipes**

22

**Tubes for Pressure
Purpose / Boiler Tubes**

24

**Water
Transmission**

27



**Spirally Welded
Water Line Pipes**

39

Construction

40

**Circular Hollow
Sections**

42



Automotive Tubes

52

**Industrial
Applications**

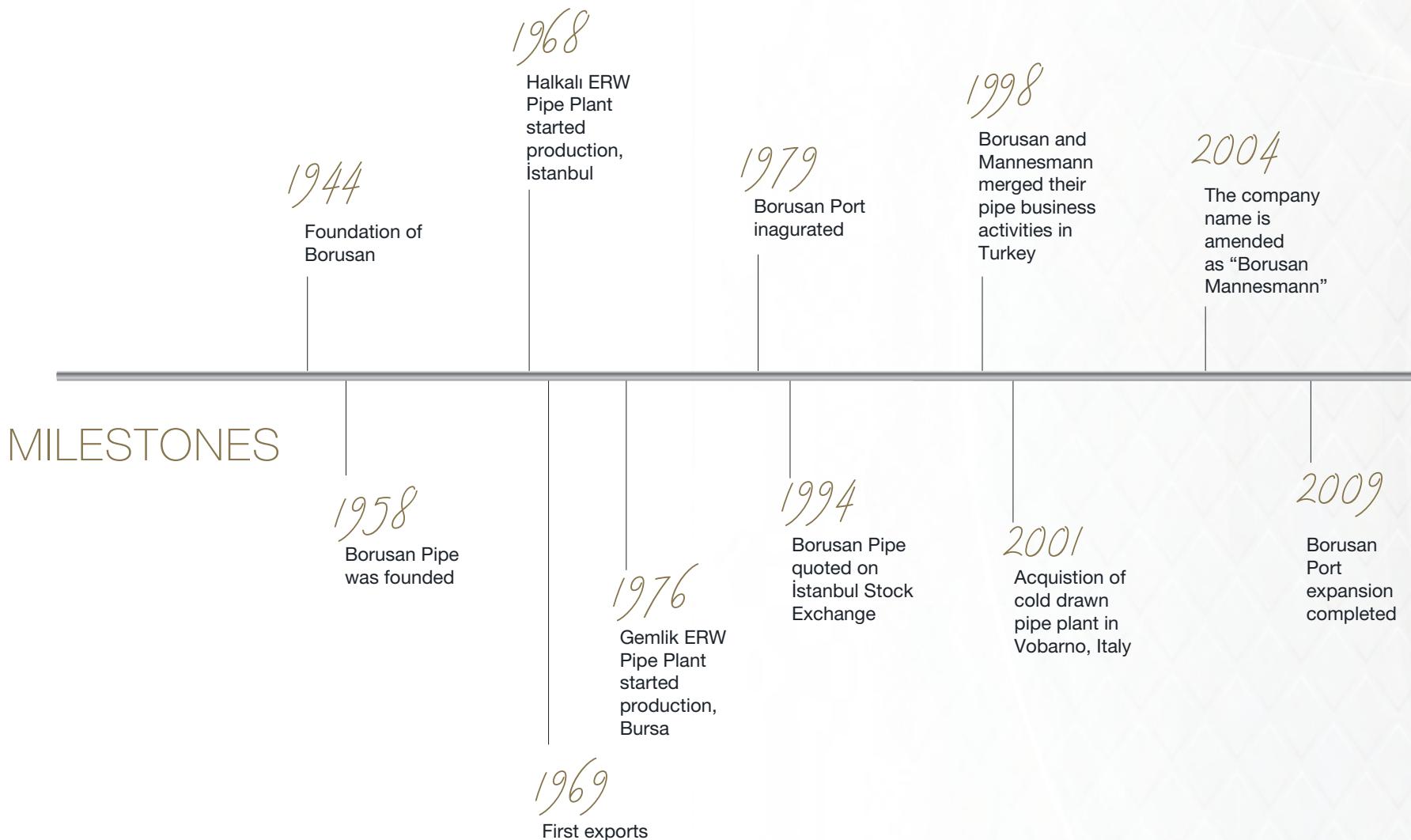
54



**Coatings and
Linings**

62





| | |
|-------------|---|
| 2011 | Gemlik HSAW Pipe Plant started production, Bursa |
| 2014 | Houston OCTG Plant started production, Texas |
| 2016 | Bursa Service Center |
| 2019 | Gemlik Automotive Pipe Plant |
| 2023 | Acquisition LSAW pipe plant in Florida and HSAW pipe plant in Alabama |
| 2023 | Romania Service Center |



BORUSAN HOLDING AT A GLANCE

The main strategy of Borusan Group is based on continuing to create added value for Türkiye's economy while fostering a mindset that focuses on global markets, and creates innovative products and services

Celebrating its 79th anniversary in 2023, the Borusan Group consistently grows in the steel, distributorship, logistics, and energy industries in various world markets, particularly in Türkiye.

In 2006 Borusan Group signed the United Nations Global Compact Policy, which supports and adheres to the principles of "good corporate governance" and "sustainability" as a prerequisite for long-term and permanent success.



Contribution to Community

Borusan has adopted the principle of providing benefits to the society in which it does business. To better fulfill Borusan's social responsibilities, Borusan Kocabiyik Foundation was established in 1992 by Asım Kocabiyik, his wife, and children to carry out educational, training, and cultural activities. In 2007, it was renamed Borusan Kocabiyik Foundation. Believing that economic, social, and cultural development is possible with education, the Foundation has been carrying out essential studies education since its establishment. With a deep social responsibility consciousness, the Borusan Group established the Borusan Center for Culture & Arts on October 15, 1997. The Borusan Center for Culture and Arts is a member of the International Society of Contemporary Music (ISCM) and the European Music Council (EMC). Borusan Istanbul Philharmonic Orchestra (BIFO) has become one of Türkiye's leading philharmonic ensembles under the management of former artistic director and chief conductor Sascha Goetzel. Giving its concert premiere in May 1999, BIFO has since become a prominent element of Istanbul's cultural scene.

| Steel | | Distributorship | | Logistics | Energy |
|---|--|--|---|---|---------------------|
| The Pipe Group | The Flat Steel Group | The Earth Moving Equipments Group | The Automotive Group | Borusan Lojistik | Borusan EnBW Enerji |
| Borusan Mannesmann Borusan İstikbal Ticaret | Borçelik | Borusan CAT  | Borusan Otomotiv ve Oto Supsan Borusan Araç İhale parcapazari.com      | | |
| Partners | | | | | |
|  A Member of the Salzgitter Group | ArcelorMittal  |  | Giva Holding GmbH  |  | |

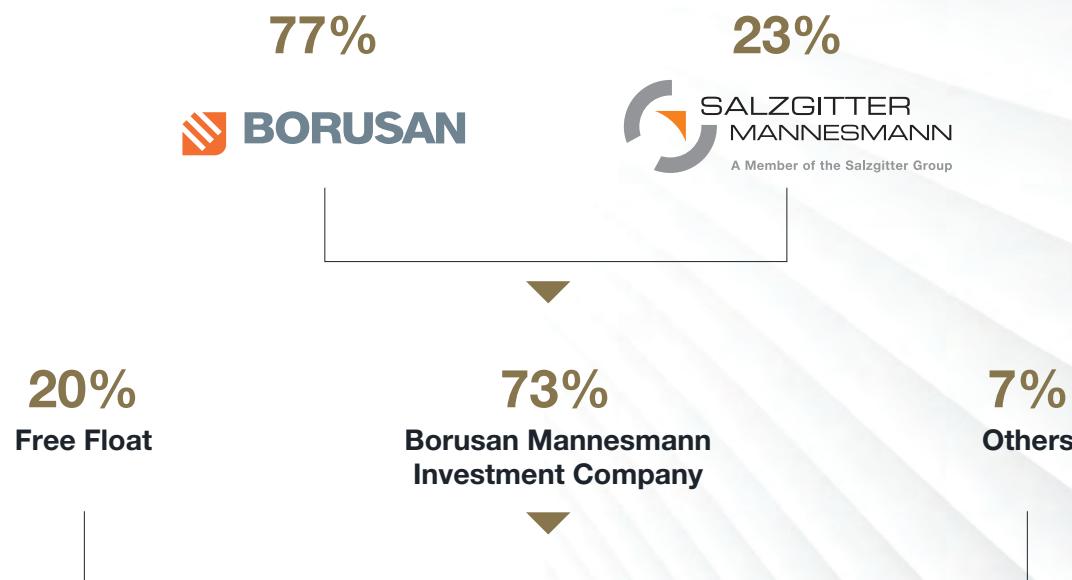
BORUSAN MANNESMANN IN BRIEF

Borusan Mannesmann is among the leading manufacturer of steel pipes in the world.

Steel pipe manufacturing is the core business of the Borusan Group, a conglomerate spread over four different industries; steel, distributorship, logistics; and energy. Borusan Mannesmann continues its production activities with its 10 facilities in 3 different countries in Türkiye, Italy, USA, and Romania.

The company's product range includes; water pipes, oil and gas line pipes, industrial pipes and profiles, installation pipes, OCTG pipes, and hollow sections. Borusan Mannesmann has wide experience and a range of track records in oil and gas pipeline projects with high-grade API standards in domestic and international markets.

A dynamic, highly qualified staff, regularly trained to keep abreast of new manufacturing and management, ensure that production conforms to exacting quality standards. Borusan Mannesmann has become the standard-bearer for trust and quality in the sector by bringing added value to products and services with highly qualified employees and the continuously improving workforce.



11 FACILITIES IN 3 CONTINENTS

Türkiye

Gemlik ERW Pipe Plant

Sectors served: Energy, Construction,
Water Transmission
Workforce : 750
Area : 388.000 m²

Türkiye

Gemlik HSAW Pipe Plant

Sectors served: Energy, Construction,
Water Transmission
Workforce : 140
Area : 70.000 m²

Türkiye

Gemlik Automotive Pipe Plant

Sectors served: Automotive
Workforce : 130
Area : 20.000 m²

Türkiye

Gemlik ERW Pipe Plant

Sectors served: Energy, Construction,
Water Transmission
Workforce : 750
Area : 388.000 m²

Türkiye

Halkalı Plant

Sectors served: Engineering Technologies
Workforce : 450
Area : 67.000 m²

USA / Florida

Panama City LSAW Pipe Plant

Sectors served: Energy Sector
Workforce : 171
Area : 28.600 m²

USA / Alabama

Mobile Pipe HSAW Pipe Plant

Sectors served: Energy Sector
Workforce : 99
Area : 30.600 m²

Alabama
Pipe
Plant

Panama
City
Plant

Houston
Pipe
Plant

USA
Alabama

USA
Florida

USA
Texas

Türkiye

Bursa Service Center

Sectors served : Automotive

Workforce : 300
Area : 500.000 m²

USA / Texas

Houston ERW Plant

Sectors served : Energy Sector

Workforce : 300
Area : 500.000 m²

Italy

Vobarno Plant

Sectors served: Engineering Technologies

Workforce : 90
Area : 24.000 m²

USA / Texas

Houston SRM Plant (Coming Soon)

Sectors served : Water Transmission

Workforce : 300
Area : 500.000 m²

Italy

Vobarno Plant

Sectors served: Engineering Technologies

Workforce : 90
Area : 24.000 m²

Romania

Ploiești Service Center (Coming Soon)

Sectors served: Automotive

Expected workforce till 2026 : 62
Area : 4.800 m²

Vobarno
Plant

Ploiești
Service
Center

Gemlik
Pipe Plants
Halkalı Plant
Bursa Service
Center

Italy

Romania

Türkiye

SUSTAINABILITY AT BORUSAN HOLDING

Traceable Steps for Sustainable Future

Borusan Group regards sustainability as the cornerstone of its business processes, treating environmental, social, and economic aspects of sustainability.

Updating its sustainability efforts in a much more inclusive way in 2020, Borusan carries out integrative studies in the focus areas of climate, human, and innovation. While it is aimed to be carbon neutral in 2030, to reduce water consumption in the focus of climate throughout the Group, it is desired to support terrestrial life while creating a clean and renewable energy portfolio.

As a corporation with ethical values, Borusan has considered sustainability principles when preparing the strategic plan. Its investments and programs are designed in line with this mentality.



In 2006, Borusan Holding signed the United Nations (UN) Global Compact consisting of 10 articles on human rights, labor standards, environmental protection, and anti-corruption. As a result of this initiative of the UN which was commenced in 1999 with the participation of 1,300 corporations from all over the world so far, Borusan set its course to follow as “Borusan’s Path” and secured it under corporate commitment.



In 2010, Borusan Holding joined the “World Business Council for Sustainable Development” as the 2nd member from Türkiye.

Drawn up based on GRI's globally recognized Sustainability Reporting Guidelines, the first Borusan Sustainability Report was published in 2009. In December, the report was deemed “Notable”, in other words, exceptionally successful and satisfactory at the UN standards, by New York based Global Compact Center of the United Nations. Borusan continues publishing progress reports constantly.

SUSTAINABILITY AT BORUSAN MANNESMANN



For Our World

Throughout its operations, Borusan Mannesmann identifies strategies in order to minimize its footprint on the environment and follows environment-friendly policies for a clean environment and healthy future. It operates in accordance with all national and international regulations with a view to recycling its waste, minimizing its use of natural resources, passing on a healthy environment to the posterity.



Borusan Mannesmann regularly reports its sustainability work under the Borusan Group umbrella. Accordingly, the first Borusan Sustainability Report based on the globally recognized GRI Sustainability Guidelines, was published in 2009. And in December, it was found "Notable", or exceptionally successful and sufficient based on UN standards by the United Nations' Global Compact Center in New York City.



Borusan Mannesmann also produces environment-friendly projects together with Borusan Ocean Volunteers Platform, which helps us share with the society our corporate and individual knowledge, skills and know-how, and take part in joint projects with various NGOs.

CUSTOMER BENEFITS

Exceeding Limits with Continuous R&D

Borusan Mannesmann's research and development philosophy enables us to carry out research activities in all markets and develop new products for our customer's and market needs. As Borusan Mannesmann; we also conduct joint projects with our raw material suppliers to develop special material qualities for the manufacture of desired products. We collaborate in performing trial productions and troubleshooting activities to maintain excellence in product and process design and implementation to the best possible extent.

As a company that embraces Lean 6 Sigma methodology; launching breakthrough technologies, improving production and process control steps is a part of our daily life.



Integrated Delivery Services

Challenging the dynamics of global competition, Borusan Mannesmann gets the maximum benefits from the location advantage of its plants. Borusan Mannesmann's state of the art Houston Plant has direct rail and barge accesses with dedicated trucks. Also owned solely by Borusan Group, Borusan Port in Gemlik location is one of Europe's most important ports in terms of both size and location. Its physical conditions and Equipment Park enables Borusan Port to serve container and bulk vessels at the same time with the capacity to handle 5 million tons of cargo, 250.000 vehicles and 400.000 TEU containers.

Borusan Mannesmann regularly provides shipping to many different destinations in the world - an ability, which gives the company a certain edge on transportation by sea. Borusan Logistics is our delivery partner that provides services of chartering and project transportation, as well as international bulk, container, land, railway and air transportation. As a solution partner with its reliable services and tracking systems in international transportation, Borusan Logistics creates value for us in terms of our "port to door" deliveries.

Turnkey Synergetic Solutions

Our customers are assured that all of our products meet their expectations varying from internationally recognized specifications to special requirements. Borusan Mannesmann provides turnkey products either with its modern integrated facilities or reliable processing suppliers, for its customers.

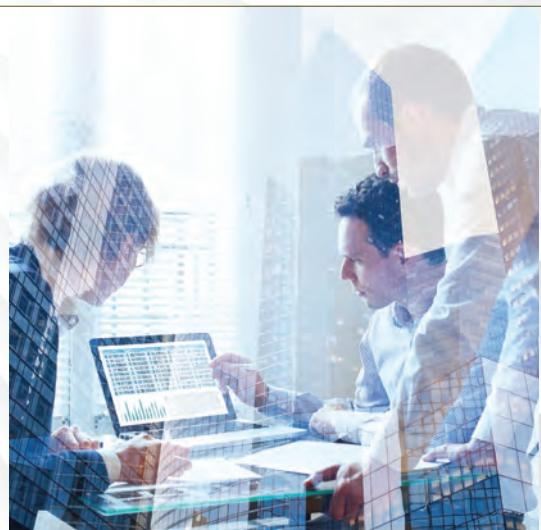


VOC - Most Valuable Driving Force

Borusan Mannesmann has been capturing the requirements and feedback of our customers to provide the best product and service quality. We have been applying the VOC - Voice of Customer process since 2003. Serving to our customers and delivering synergetic solutions in the most cost effective way is a consistent discipline in Borusan Mannesmann. We aim to compose personal recipes for special market needs. This approach leads us to go beyond ourselves and present valuable services for our customers.

Well Established Sales Organization

Borusan Mannesmann's sales experts provide fast response and reliable technical consultation in close cooperation with our customers before and after the sales process. Our sales organization is made of professional local representatives who speak our customer's language in their market and always provide the best solutions for the business. Company's representatives are carefully picked from the best of highly qualified distributors in the local market. We provide the best solutions; in your country, in your language with equipped people.



OUR TEAM

There is no limit to human potential. Success brings the desire to achieve more. Having a principle of ‘being one step ahead,’ our talented workforce is dedicated to achieving high customer service. Our sales organization comprises planning, sales, and trade operations experts. The educational and developmental programs which will create a significant difference for Borusan members in means of business processes and personal development are designed by the Borusan Academy. The Leadership and Sales Faculty programs are jointly offered with the Sabancı University, Executive Development Unit. They consist of various certification programs, including long-term postgraduate education and development topics prepared by locally and internationally renowned experts in their fields.



QEHS Management

Borusan Group companies all share a common set of guiding principles, which help this vast enterprise to operate in complete harmony. These principles are commitments to productivity, innovation, and environmental responsibility.

From raw material to finished product, Borusan Mannesmann determines the impacts on the environment and reduce impacts control each step of the process. Our Environmental Management System Certificate (ISO 14001) proves our commitment to environment.

Healthy performance is delivered through healthy people. In compliance with ISO 45001, Borusan Mannesmann's endeavors to protect the health and safety of its workforce and service providers.

Borusan Mannesmann; exemplary with its modern management approach, as well as its investments, has been applying The Lean Six Sigma methodology since 2002 and Voice of Customer (VOC) process since 2003.

The Lean Six Sigma methodology is a highly disciplined business management strategy that seeks to remove the causes of defects in production and business processes, and to continuously improve productivity, profitability, and customer satisfaction. Besides with the VOC process, we capture the requirements and feedback from our customers to provide the best product and service quality.

Ongoing efforts to improve customer satisfaction brought Borusan Mannesmann, Complaints Handling Management Systems Certificate (ISO 10002), which is a first in the steel pipe sector globally.





ENERGY



OCTG-CASING AND TUBING

Sizes

| Outside Diameter | Wall Thickness | Length |
|--|---------------------------------------|---|
| 26,7 mm - 339,7 mm 1.050" - 13.375" | 2,87 mm - 13,06 mm 0.113" - 0.514" | 6,00 m - 18,30 m 19,68 ft - 60,04 ft |

Production Standards & Material Qualities

- API 5CT certified for threaded and coupled casing and tubing (According to API 5B)
- Full ERW grade range: H40, J55/K55, L80, N80, FBNAU, P110 and Q125
- Proprietary as rolled 80, 90 grade available
- Enhanced high collapse versions of L80 and P110 grades available



Tests & Certificates

- API 5CT
- Visual and dimensional inspection
- Mechanical Tests: Tensile, Flattening, Expanding
- Steady scarfing with 100% weldline ultrasonic testing
- Hydrotesting in place of 100%
- Consistent wall thickness with oversize drift options available
- Reduced tolerances through statistical process control
- Uniform concentricity, roundness, straightness and cylindricity
- Fully normalized weld zones
- NDT Standards: U/S (ASTM E 213 Level 3)
- Suitable for directional drilling and multiple fracturing operations
- Accredited lab tests and third party inspections available (full body and weld line UT, EMI, SEA)

Finishing Operations

- Plain end square cut or high quality API 5B certified threading and coupling
- Premium and semi-premium threads available
- High quality threaded compound, couplings and protectors
- Torque controlled coupling application
- External corrosion prevention with durable and environmentally safe coating



Tubing - Production Range

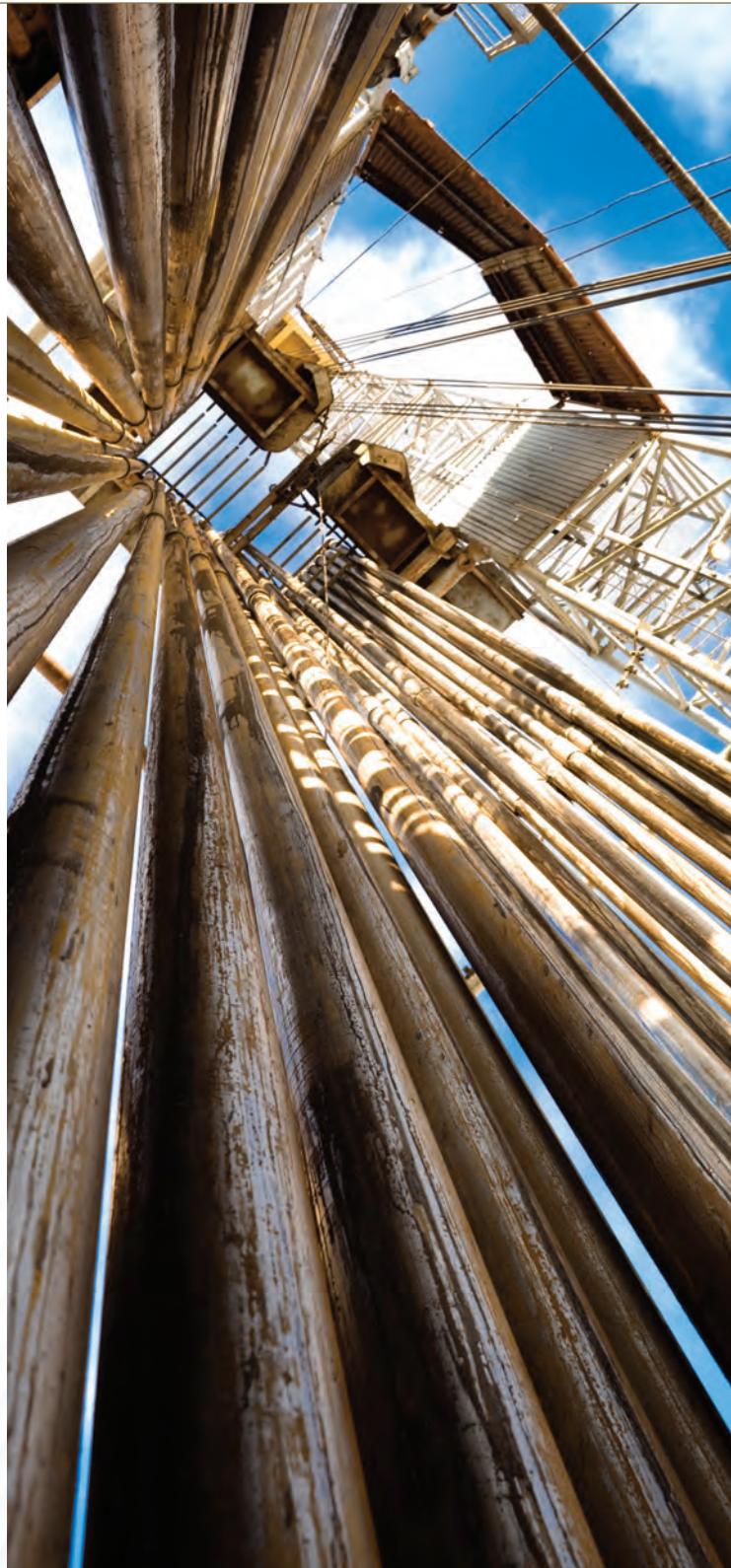
| | Range 1 | Range 2 | Range 3 |
|------|-------------|-------------|-------------|
| (ft) | 20.0 - 24.0 | 28.0 - 32.0 | 38.0 - 42.0 |

Labels

Nominal linear mass shown for information and assistance in ordering only (T&C: threaded and coupled)

| OD (inch) | Non-Upset T&C Nominal Linear mass (lb/ft) | External Upset T&C Nominal Linear mass (lb/ft) | Wall Thickness (inch) |
|--------------|---|--|-----------------------------|
| 1.050 | 1.14 | 1.20 | 0.113 |
| 1.050 | 1.48 | 1.54 | 0.154 |
| 1.315 | 1.70 | 1.80 | 0.133 |
| 1.315 | 2.19 | 2.24 | 0.179 |
| 1.660 | 2.09 | - | 0.125 |
| 1.660 | 2.30 | 2.40 | 0.140 |
| 1.660 | 3.03 | 3.07 | 0.191 |
| 1.900 | 2.40 | - | 0.125 |
| 1.900 | 2.75 | 2.90 | 0.145 |
| 1.900 | 3.65 | 3.73 | 0.200 |
| 1.900 | 4.42 | - | 0.250 |
| 1.900 | 5.15 | - | 0.300 |
| 2.063 | 3.24 | - | 0.156 |
| 2.063 | 4.50 | - | 0.225 |
| 2.375 | 4.00 | - | 0.167 |
| 2.375 | 4.60 | 4.70 | 0.190 |
| 2.375 | 5.80 | 5.95 | 0.254 |
| 2.375 | 6.60 | - | 0.295 |
| 2.375 | 7.35 | 7.45 | 0.336 |
| 2.875 | 6.40 | 6.50 | 0.217 |
| 2.875 | 7.80 | 7.90 | 0.276 |
| 2.875 | 8.60 | 8.70 | 0.308 |
| 2.875 | 9.35 | 9.45 | 0.340 |
| 2.875 | 10.50 | - | 0.392 |
| 3.500 | 7.70 | - | 0.216 |
| 3.500 | 9.20 | 9.30 | 0.254 |
| 3.500 | 10.20 | - | 0.289 |
| 3.500 | 12.70 | 12.95 | 0.375 |
| 4.000 | 9.50 | - | 0.226 |
| 4.000 | 10.70 | 11.00 | 0.262 |
| 4.500 | 12.60 | 12.75 | 0.271 |
| 4.500 | 15.20 | - | 0.337 |

API 5CT Tubing grades: J55, J55N, N80Q, L80, P110, FBNAU



Casing - Production Range

| Range Lengths: | Range 1 | Range 2 | Range 3 | Extra long |
|----------------|-------------|----------------------------|----------------------------|--------------|
| (ft) | 18.0 - 25.0 | 25.0 - 34.0 (95% 28ft min) | 34.0 - 48.0 (95% 36ft min) | 48.0 - 65.00 |

Labels

Nominal linear mass shown for information and assistance in ordering only (T&C: threaded and coupled)

| OD (inch) | T&C Nominal linear mass (lb/ft) | Wall Thickness (inch) |
|-----------|---------------------------------|-----------------------|
| 4.5 | 9.50 | 0.205 |
| 4.5 | 10.50 | 0.224 |
| 4.5 | 11.60 | 0.250 |
| 4.5 | 13.50 | 0.290 |
| 4.5 | 15.10 | 0.337 |
| 4.5 | 16.60 | 0.375 |
| 4.5 | 18.90 | 0.430 |
| 4.5 | 21.50 | 0.500 |
| 5 | 11.50 | 0.220 |
| 5 | 13.00 | 0.253 |
| 5 | 15.00 | 0.296 |
| 5 | 18.00 | 0.362 |
| 5.5 | 14.00 | 0.244 |
| 5.5 | 15.50 | 0.275 |
| 5.5 | 17.00 | 0.304 |
| 5.5 | 20.00 | 0.361 |
| 5.5 | 23.00 | 0.415 |
| 5.5 | 26.00 | 0.476 |
| 5.5 | 26.80 | 0.500 |
| 5.5 | 29.70 | 0.562 |
| 6.00 | 24.1 | 0.400 |
| 6.625 | 24.00 | 0.352 |
| 6.625 | 28.00 | 0.417 |
| 6.625 | 32.00 | 0.475 |
| 6.625 | 35.00 | 0.525 |
| 7 | 17.00 | 0.231 |
| 7 | 20.00 | 0.272 |
| 7 | 23.00 | 0.317 |
| 7 | 26.00 | 0.362 |
| 7 | 29.00 | 0.408 |
| 7 | 32.00 | 0.453 |
| 7 | 35.00 | 0.498 |
| 7 | 38.00 | 0.540 |
| 7 | 41.00 | 0.590 |
| 7.625 | 24.00 | 0.300 |

| OD (inch) | T&C Nominal linear mass (lb/ft) | Wall Thickness (inch) |
|-----------|---------------------------------|-----------------------|
| 7.625 | 26.40 | 0.328 |
| 7.625 | 29.70 | 0.375 |
| 7.625 | 33.70 | 0.430 |
| 7.625 | 39.00 | 0.500 |
| 7.625 | 42.80 | 0.562 |
| 7.625 | 45.30 | 0.595 |
| 8.625 | 24.00 | 0.264 |
| 8.625 | 28.00 | 0.304 |
| 8.625 | 32.00 | 0.352 |
| 8.625 | 36.00 | 0.400 |
| 8.625 | 40.00 | 0.450 |
| 8.625 | 44.00 | 0.500 |
| 9.625 | 32.30 | 0.312 |
| 9.625 | 36.00 | 0.352 |
| 9.625 | 40.00 | 0.395 |
| 9.625 | 43.50 | 0.435 |
| 9.625 | 47.00 | 0.472 |
| 9.625 | 53.50 | 0.545 |
| 9.625 | 58.40 | 0.595 |
| 10.75 | 32.75 | 0.279 |
| 10.75 | 40.50 | 0.350 |
| 10.75 | 45.50 | 0.400 |
| 10.75 | 51.00 | 0.450 |
| 10.75 | 55.50 | 0.495 |
| 10.75 | 60.70 | 0.545 |
| 10.75 | 65.70 | 0.595 |
| 11.75 | 42.00 | 0.333 |
| 11.75 | 47.00 | 0.375 |
| 11.75 | 54.00 | 0.435 |
| 11.75 | 60.00 | 0.489 |
| 13.375 | 48.00 | 0.330 |
| 13.375 | 54.50 | 0.380 |
| 13.375 | 61.00 | 0.430 |
| 13.375 | 68.00 | 0.480 |
| 13.375 | 72.00 | 0.514 |

Grades

- API 5CT: H40, J55, N80, L80, L80-D10, P110
- API 5CT Monogrammed Proprietary: N80HC, L80HC, L80 EHC, P110 HC, P110 EHC, P110 HSCY
- Proprietary (no API Monogram): B-80, B90, Borusan-K55HC, B-110CY,

- End finish options*: PE, STC, LTC, BTC, P110CY

- Please contact our sales department for premium and semi-premium connections availability

ERW LINE PIPES

Sizes

| Outside Diameter | Wall Thickness | Length |
|--------------------|-------------------|---------------------|
| 21,3 mm - 339,7 mm | 2,8 mm - 12,7 mm* | 6,00 m - 18,30 m |
| 1/2" - 13 3/8" | 0.109" - 0.500" | 19,68 ft - 60,04 ft |

Please ask for shorter lengths

* For US mill up to 15,88 mm available

Production Standards & Material Qualities

Line Pipe

| | |
|----------------------|---|
| API 5L, PSL 1, PSL 2 | A, B, X42, X46, X52, X56, X60, X65, X70 |
| CSA Z 245.1 | Gr 241-Gr 359 |
| EN ISO 3183 | L245-L485 (N, M, NE, ME) |
| SI 530 | Grade B |



Tests & Certificates

- Visual and Dimensional Inspection
- Mechanical Tests:
 - Tensile, Flattening, Expanding, Bending
 - Weld Ductility, Fracture Toughness, PP, PE Testing
- Metallographic Examination
 - Purity Analysis
- Chemical Analysis
- Hydrostatic Test
- Non Destructive Inspection:
 - Eddy Current, Ultrasonic Test (Weld Check)
 - Ultrasonic (full body, optional)
- Mill Test Certificates
 - Acc. to EN 10204 2.1; 2.2; 3.1; 3.2
- NDT Standards
 - UT (EN ISO 10893-11 Level U2), ET (EN ISO 10893-2 Level E2), API, EN ISO 3183, CSA Z.245.1

Threading

$114.3 \text{ mm} \leq \text{OD} \leq 323.9 \text{ mm}$: API 5L
(Line Pipe according to API 5B)

Finishing Operations

Plain End-Square cut or bevelled / Zaplok
Black self colored / uncoated
Mill protective coating (black varnish) on outside surface
Epoxy lining and coating (AWWA C210), API RP5L2
3 Layer PE coating (DIN 30670, ISO 21809-1)
3 Layer PP coating (DIN 30678, ISO 21809-1)

Heat Treatment

$21.3 \text{ mm} \leq \text{OD} \leq 88.9 \text{ mm}$: full body
 $114.3 \text{ mm} \leq \text{OD} \leq 323.9 \text{ mm}$: weld seam
 $21.3 \text{ mm} \leq \text{OD} \leq 168.3 \text{ mm}$: off-line heat treatment.

Production Range

| OD | Wall Thickness (mm & inch) | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|----------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------|-------|--------|-------|
| | mm | inch | 0,109 | 0,113 | 0,133 | 0,140 | 0,145 | 0,147 | 0,154 | 0,179 | 0,200 | 0,203 | 0,237 | 0,258 | 0,277 | 0,280 | 0,318 | 0,331 | 0,337 | 0,354 | 0,375 | 0,394 | 0,432 | 0,472 | 0,500 |
| 21,3 | 1/2 | 1,28 | 1,35 | 1,43 | 1,57 | 1,60 | 1,61 | 1,71 | | | | | | | | | | | | | | | | | |
| 26,9 | 3/4 | 1,66 | 1,77 | 1,87 | 2,07 | 2,11 | 2,12 | 2,26 | 2,49 | | | | | | | | | | | | | | | | |
| 33,7 | 1 | 2,13 | 2,27 | 2,41 | 2,67 | 2,72 | 2,74 | 2,93 | 3,24 | 3,60 | | | | | | | | | | | | up to X 52 | | | |
| 42,4 | 1 1/4 | 2,73 | 2,91 | 3,09 | 3,44 | 3,51 | 3,53 | 3,79 | 4,21 | 4,69 | 4,77 | | | | | | | | | | | up to X 60 | | | |
| 48,3 | 1 1/2 | 3,14 | 3,35 | 3,56 | 3,97 | 4,05 | 4,07 | 4,37 | 4,86 | 5,43 | 5,53 | | | | | | | | | | | up to X 65 | | | |
| 60,3 | 2 3/8 | 3,97 | 4,24 | 4,51 | 5,03 | 5,14 | 5,16 | 5,55 | 6,19 | 6,94 | 7,07 | | | | | | | | | | | up to X 70 | | | |
| 73 | 2 7/8 | 4,85 | 5,18 | 5,51 | 6,16 | 6,29 | 6,32 | 6,81 | 7,60 | 8,54 | 8,69 | 9,91 | 10,81 | 11,39 | 11,54 | | | | | | | | | | |
| 88,9 | 3 1/2 | 5,95 | 6,35 | 6,76 | 7,57 | 7,73 | 7,77 | 8,37 | 9,37 | 10,54 | 10,73 | 12,27 | 13,39 | 14,14 | 14,32 | | | | | | | | | | |
| 114,3 | 4 1/2 | | 8,23 | 8,77 | 9,83 | 10,04 | 10,09 | 10,88 | 12,18 | 13,73 | 13,99 | 16,02 | 17,53 | 18,52 | 18,77 | 21,21 | 21,94 | 22,42 | 23,37 | 24,55 | | | | | |
| 141,3 | 5 9/16 | | 10,23 | 10,90 | 12,22 | 12,49 | 12,55 | 13,54 | 15,18 | 17,13 | 17,45 | 20,02 | 21,92 | 23,18 | 23,50 | 26,61 | 27,53 | 28,14 | 29,36 | 30,88 | 32,38 | | | | |
| 168,3 | 6 5/8 | | | 13,03 | 14,62 | 14,94 | 15,02 | 16,21 | 18,18 | 20,53 | 20,91 | 24,01 | 26,32 | 27,84 | 28,22 | 32,00 | 33,12 | 33,87 | 35,36 | 37,20 | 39,04 | 42,67 | | | |
| 219,1 | 8 5/8 | | | | 19,13 | 19,55 | 19,65 | 21,22 | 23,81 | 26,91 | 27,43 | 31,53 | 34,59 | 36,61 | 37,12 | 42,15 | 43,65 | 44,64 | 46,63 | 49,10 | 51,56 | 56,45 | 61,29 | 64,64 | |
| 273 | 10 3/4 | | | | | | | 26,53 | 29,80 | 33,69 | 34,34 | 39,51 | 43,36 | 45,92 | 46,56 | 52,91 | 54,81 | 56,07 | 58,59 | 61,73 | 64,86 | 71,07 | 77,24 | 81,52 | |
| 323,9 | 12 3/4 | | | | | | | 31,55 | 35,44 | 40,09 | 40,87 | 47,04 | 51,64 | 54,70 | 55,47 | 63,08 | 65,35 | 66,87 | 69,89 | 73,65 | 77,41 | 84,88 | 92,30 | 97,46 | |
| 339,7 | 13 3/8 | | | | | | | | 37,20 | 42,08 | 42,89 | 49,37 | 54,21 | 57,43 | 58,23 | 66,24 | 68,63 | 70,22 | 73,40 | 77,36 | 81,30 | 89,16 | 96,97 | 102,41 | |

SPIRALLY WELDED LINE PIPES

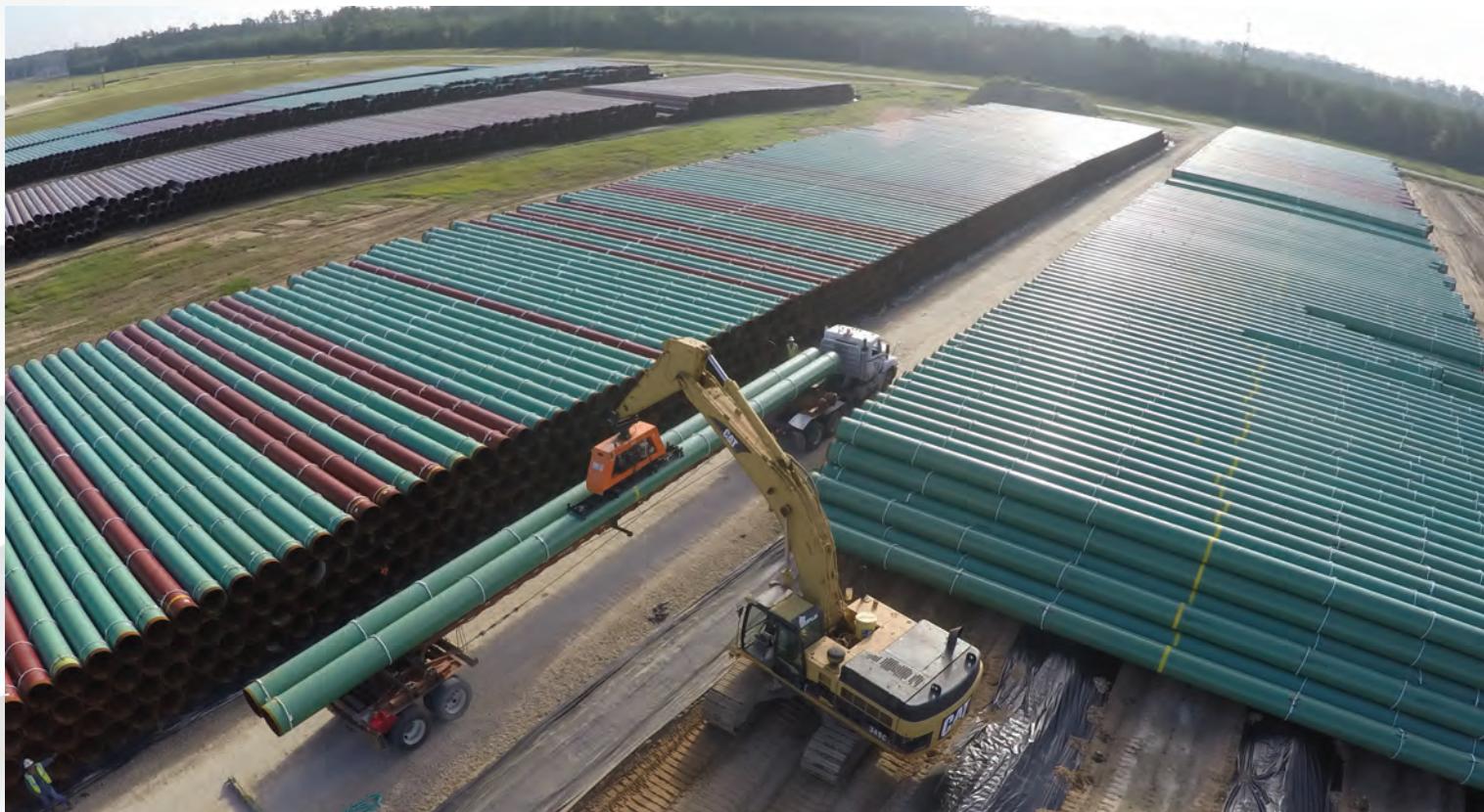
Sizes

| Outside Diameter | Wall Thickness | Length |
|---------------------------------|--------------------------------------|-------------------------------|
| 508 mm - 3.048 mm 20" - 120" | 5,16 mm - 25,4 mm 0,203" - 1,000" | Single lengths up to 24,50 m* |
| | | |

* For piling pipes single lengths up to 55 m

Production Standards & Material Qualities

| | | |
|----------|------------------------------|---|
| API 5L | PSL1 - PSL2 GRA - X80 (N, M) | CSA Z245.1 : Requirement of category I, II, III |
| ISO 3183 | L555 - X80 (N, M, ME) | |



Coating Standards

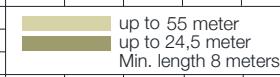
- Abrasion Resistant Overlay (ARO) OD Coating: API 5L7, CSA Z245.20, NACE RP 0394, AWWA C213
- FBE (Fusion Bonded Epoxy) OD Coating: API 5L7, CSA Z245.20, NACE RP 0394, AWWA C213
- Polyethylene OD Coating: DIN 30670, TS 5139, NF A 49-710, UNI 9099, EN ISO 21809-1
- Polypropylene OD Coating: DIN 30678, NF A 49-711, EN ISO 21809-1
- Flowcoat Epoxy ID Coating: API RP 5L2, EN 10301
- Solvent Free Epoxy (SFE) ID Coating: AWWA C 210
- Glass fibre reinforced plastic GRP OD Coating

Quality Certificates

- API 5L • ISO45001
- API Q1 • EN ISO/IEC 17025
- ISO9001 • EN ISO 3183
- ISO14001

Production Range

| OD | Wall Thickness (mm & inch) | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | mm | 4,78 | 5,16 | 5,56 | 6,35 | 7,14 | 7,92 | 8,74 | 9,52 | 10,31 | 11,13 | 11,91 | 12,70 | 13,49 | 14,27 | 15,00 | 16,66 | 17,48 | 18,26 | 19,05 | 20,62 | 22,23 | 23,83 | 25,40 | |
| inch | 0.188 | 0.203 | 0.219 | 0.250 | 0.281 | 0.312 | 0.344 | 0.375 | 0.406 | 0.438 | 0.469 | 0.500 | 0.531 | 0.562 | 0.591 | 0.656 | 0.688 | 0.719 | 0.750 | 0.812 | 0.875 | 0.938 | 1 | | |
| 508 | 20 | | | | | | | | | | | | | | | | | | | | | | | | |
| 559 | 22 | | | | | | | | | | | | | | | | | | | | | | | | |
| 610 | 24 | | | | | | | | | | | | | | | | | | | | | | | | |
| 660 | 26 | | | | | | | | | | | | | | | | | | | | | | | | |
| 711 | 28 | | | | | | | | | | | | | | | | | | | | | | | | |
| 762 | 30 | | | | | | | | | | | | | | | | | | | | | | | | |
| 813 | 32 | | | | | | | | | | | | | | | | | | | | | | | | |
| 864 | 34 | | | | | | | | | | | | | | | | | | | | | | | | |
| 914 | 36 | | | | | | | | | | | | | | | | | | | | | | | | |
| 965 | 38 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.016 | 40 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.067 | 42 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.118 | 44 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.168 | 46 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.219 | 48 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.270 | 50 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.321 | 52 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.372 | 54 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.422 | 56 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.524 | 60 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.626 | 64 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.676 | 66 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.727 | 68 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.829 | 72 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.032 | 80 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.083 | 82 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.235 | 88 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.540 | 100 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.794 | 110 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.048 | 120 | | | | | | | | | | | | | | | | | | | | | | | | |


 up to 55 meter
 up to 24,5 meter
 Min. length 8 meters

TUBES FOR PRESSURE PURPOSE / BOILER TUBES

Sizes

| Outside Diameter | Wall Thickness | Length |
|-------------------|------------------|------------------|
| 21,3 mm - 339,7mm | 2,0 mm - 12,7 mm | 5,00 m - 18,30 m |
| 1/2" - 13 3/8" | 0,079" - 0,500" | 16,40 ft - 60 ft |

Please ask for shorter lengths.

Finishing Operations

- Plain End-Square cut or bevelled
- Black self colored/uncoated
- Surface protective coating (black varnished)

Production Standards & Material Qualities

| | |
|-----------------------------|--|
| ASTM A 178 | GrA, GrC, GrD |
| EN 10217-1 (BS 3059 Part 1) | P195 TR1/TR2, P235 TR1/TR2, P265 TR1/TR2 |
| EN 10217-2 (BS 3059 Part 2) | P195 GH, P235 GH, P265 GH |
| EN 10217-3 | P355 N, P355 NH |

Quality Certificates

AD-2000 WO, AD-2000 W4, PED

NDT Standards

UT (EN ISO 10893-11), ET (EN ISO 10893-2)



Tests & Certificates

- Visual and Dimensional Inspection
 - Mechanical Tests:
 - Tensile Test, Flattening Test, Flaring Test
 - Expanding Test
 - Metallographic Examination
 - Chemical Analysis
 - Hydrostatic Test
 - Non Destructive Inspection:
 - In-Line Ultrasonic (weld check)
 - Eddy Current
 - Mill Test Certificates
- Acc. to EN 10204 2.1; 2.2; 3.1; 3.2
 PED Certified-Pressure Equipment Directive 2014/68/eu Certified

Production Range

| OD mm | Wall Thickness (mm) | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 2,0 | 2,3 | 2,7 | 2,9 | 3,0 | 3,2 | 3,4 | 3,6 | 3,8 | 4,0 | 4,2 | 4,5 | 4,7 | 5,0 | 5,2 | 5,4 | 5,5 | 6,0 | 6,5 | 7,0 | 7,5 | 8,0 | 8,5 | 9,0 | 9,5 |
| 21,3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21,3<D<23 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23,<D<25,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,0<D<26,9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26,9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26,9<D<28,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28,0<D<30,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30,0<D<32,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32,0<D<33,7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33,7 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33,7<D<38,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38,0<D<42,4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42,4 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42,4<D<45,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45,0<D<48,3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48,3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48,3<D<51,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51,0<D<54,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 54,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 54,0<D<57,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57,0<D<60,3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60,3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60,3<D<63,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63,5<D<67,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 67,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 67,0<D<70,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70,0<D<73,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 73,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 73,0<D<76,1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76,1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76,1<D<80,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80,0<D<82,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 82,5 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 82,5<D<85,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85,0 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 85,0<D<88,9 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 88,9 | | | | | | | | | | | | | | | | | | | | | | | | | |

Please contact our sales department for tolerances.

LSAW LINE PIPES

Sizes

| Outside Diameter | Wall Thickness | Length |
|------------------|-------------------|--------------------------------|
| 610 mm - 1524 mm | 10,3 mm – 38,0 mm | Up to 24 mt. (double jointing) |
| 24" – 60" | 0.406" – 1.5" | Up to 80 ft |

Test, Certificates & Specifications

- API, CSA, EN, ISO
- NACE, DNV



WATER TRANSMISSION



ERW WATER PIPES

Sizes

| Outside Diameter | Wall Thickness | Length |
|--------------------|------------------|------------------|
| 21,3 mm - 339,7 mm | 2,0 mm - 12,7 mm | 3,00 m - 18,30 m |
| 1/2" - 13 3/8" | 0,079" - 0,500" | 9,8 ft - 60 ft |

Production Standards & Material Qualities

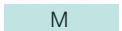
- Production Norms
EN 10224, EN 10255, ISO 65, ASTM A 53, ASTM A 795, ASTM A 589
- Galvanizing Norms
EN 10240, EN ISO 1461 (BS 729), ASTM A 53, NFA 49-700, UNI 5745
- Production Standard for Threading and Coupling (1/2"- 6")
ISO 7/1, ANSI B.1.20.1, EN 10255
- Grooving (3/4"-12") according to Victaulic Standard.
- Our medium series pipes can be guaranteed up to 25 bar operating pressure for water.
- Material Qualities
DIN 17100 St 37, St 44, St 52
EN 10025 S 195, S 235, S 275, S 355
Gr A, Gr B

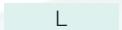


Production Range (EN 10255)

| Outside Diameter (mm) | Nominal Bore (mm) | (inch) | Wall Thickness (mm) | | | | | | | | | |
|--------------------------|----------------------|--------|---------------------|---------|-----|---------|---------|------|-----|-----|-----|-----|
| | | | 2,0 | 2,3 | 2,6 | 2,9 | 3,2 | 3,6 | 4,0 | 4,5 | 5,0 | 5,4 |
| 21,3 | 15 | 1/2 | L2 | L/L1 | M | | H | | | | | |
| 26,9 | 20 | 3/4 | | L2/L1/L | M | | H | | | | | |
| 33,7 | 25 | 1 | | | L2 | L/L1 | M | | H | | | |
| 42,4 | 32 | 1 1/4 | | | L2 | L/L1 | M | | H | | | |
| 48,3 | 40 | 1 1/2 | | | | L2/L/L1 | M | | H | | | |
| 60,3 | 50 | 2 | | | | L2 | L/L1 | M | | H | | |
| 76,1 | 65 | 2 1/2 | | | | | L2/L/L1 | M | | H | | |
| 88,9 | 80 | 3 | | | | | L2/L | L1 | M | | H | |
| 114,3 | 100 | 4 | | | | | | L2/L | L1 | M | | H |
| 139,7 | 125 | 5 | | | | | | | | L | M | H |
| 165,1 | 150 | 6 | | | | | | | | L | M | H |

 H
 Heavy Series

 M
 Medium Series

 L
 Light Series

| Unit Weights for Black Plain End Pipes | | | | | | |
|--|--------------------------|----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|----------------------------------|
| Outside Diameter (inch) | Outside Diameter (mm) | Unit Weights L Series (kg/mt) | Unit Weights L1 Series (kg/mt) | Unit Weights L2 Series (kg/mt) | Unit Weights M Series (kg/mt) | Unit Weights H Series (kg/mt) |
| 1/2 | 21,30 | 1,08 | 1,08 | 0,95 | 1,21 | 1,44 |
| 3/4 | 26,90 | 1,40 | 1,39 | 1,38 | 1,56 | 1,87 |
| 1 | 33,70 | 2,20 | 2,20 | 1,98 | 2,41 | 2,93 |
| 1 1/4 | 42,40 | 2,82 | 2,82 | 2,54 | 3,10 | 3,79 |
| 1 1/2 | 48,30 | 3,25 | 3,24 | 3,23 | 3,56 | 4,37 |
| 2 | 60,30 | 4,51 | 4,49 | 4,08 | 5,03 | 6,19 |
| 2 1/2 | 76,10 | 5,75 | 5,73 | 5,71 | 6,42 | 7,93 |
| 3 | 88,90 | 6,76 | 7,55 | 6,72 | 8,36 | 10,30 |
| 4 | 114,30 | 9,83 | 10,80 | 9,75 | 12,20 | 14,50 |
| 5 | 139,70 | 15,00 | | | 16,60 | 17,90 |
| 6 | 165,10 | 17,80 | | | 19,80 | 21,30 |

Tests & Certificates

- Visual and Dimensional Inspection
- Leak tightness testing: Hydrostatic Test, Eddy Current Test
- Destructive Tests: Flattening, Bending
- Mechanical Tests
- Chemical Analysis
- Metallographic Examination
- Others as required by the standards
- Ultrasonic weld seam test if applicable for gas pipes
- Mill Test Certificates
 - Issued upon request according to EN 10204 2.1; 2.2; 3.1; 3.2
- NDT Standards:
 - ET (EN ISO 10893-2), ET (ASTM E309)
- UKCA Certification

Finishing Operations

- Plain end (square cut or bevelled)
- Threaded and coupled (Max OD: 168.3 mm)
- Grooved
- Outside protective coating (black or red vanished)
 - (Other colors are available upon request.)
- Temporary oil application
- Hot dip galvanizing
- PE, PP Coating
- Bare Pipe (Uncoated)
- Temporary oil application

A53/A53M -12

TABLE X2.2 Dimensions, Weights (Masses) per Unit Length, and Test Pressures for Plain-End Pipe

| NPS Designator | DN Designator | Specified Outside Diameter, in (mm) | Specified Wall Thickness, in (mm) | Nominal Weight (Mass) per Unit Length, Plain End, lb/ft (kg/m) | Weight Class | Schedule No. | Test Pressure, psi (kPa) | |
|----------------|---------------|-------------------------------------|-----------------------------------|--|--------------|--------------|--------------------------|--------------|
| | | | | | | | Grade A | Grade B |
| 1/2 | 15 | 0.840 (21.3) | 0.109 (2.77) | 0.85 (1.27) | STD | 40 | 700 (4800) | 700 (4800) |
| | | | 0.147 (3.73) | 1.09 (1.62) | XS | 80 | 850 (5900) | 850 (5900) |
| | | | 0.188 (4.78) | 1.31 (1.95) | ... | 160 | 900 (6200) | 900 (6200) |
| | | | 0.294 (7.47) | 1.72 (2.55) | XXS | ... | 1000 (6900) | 1000 (6900) |
| 3/4 | 20 | 1.050 (26.7) | 0.113 (2.87) | 1.13 (1.69) | STD | 40 | 700 (4800) | 700 (4800) |
| | | | 0.154 (3.91) | 1.48 (2.20) | XS | 80 | 850 (5900) | 850 (5900) |
| | | | 0.219 (5.56) | 1.95 (2.90) | ... | 160 | 950 (6500) | 950 (6500) |
| | | | 0.308 (7.82) | 2.44 (3.64) | XXS | ... | 1000 (6900) | 1000 (6900) |
| 1 | 25 | 1.315 (33.4) | 0.133 (3.38) | 1.68 (2.50) | STD | 40 | 700 (4800) | 700 (4800) |
| | | | 0.179 (4.55) | 2.17 (3.24) | XS | 80 | 850 (5900) | 850 (5900) |
| | | | 0.250 (6.35) | 2.85 (4.24) | ... | 160 | 950 (6500) | 950 (6500) |
| | | | 0.358 (9.09) | 3.66 (5.45) | XXS | ... | 1000 (6900) | 1000 (6900) |
| 1 1/4 | 32 | 1.660 (42.2) | 0.140 (3.56) | 2.27 (3.39) | STD | 40 | 1200 (8300) | 1300 (9000) |
| | | | 0.191 (4.85) | 3.00 (4.47) | XS | 80 | 1800 (12400) | 1900 (13000) |
| | | | 0.250 (6.35) | 3.77 (5.61) | ... | 160 | 1900 (13100) | 2000 (13800) |
| | | | 0.382 (9.70) | 5.22 (7.77) | XXS | ... | 2200 (15200) | 2300 (15900) |
| 1 1/2 | 40 | 1.900 (48.3) | 0.145 (3.68) | 2.72 (4.05) | STD | 40 | 1200 (8300) | 1300 (9000) |
| | | | 0.200 (5.08) | 3.63 (5.41) | XS | 80 | 1800 (12400) | 1900 (13100) |
| | | | 0.281 (7.14) | 4.86 (7.25) | ... | 160 | 1950 (13400) | 2050 (14100) |
| | | | 0.400 (10.16) | 6.41 (9.56) | XXS | ... | 2200 (15200) | 2300 (15900) |
| 2 | 50 | 2.375(60.3) | 0.154 (3.91) | 3.66 (5.44) | STD | 40 | 2300 (15900) | 2500 (17200) |
| | | | 0.218 (5.54) | 5.03 (7.48) | XS | 80 | 2500 (17200) | 2500 (17200) |
| | | | 0.344 (8.74) | 7.47 (11.11) | ... | 160 | 2500 (17200) | 2500 (17200) |
| | | | 0.436 (11.07) | 9.04 (13.44) | XXS | ... | 2500 (17200) | 2500 (17200) |
| 2 1/2 | 65 | 2.875 (73.0) | 0.203 (5.16) | 5.80 (8.63) | STD | 40 | 2500 (17200) | 2500 (17200) |
| | | | 0.276 (7.01) | 7.67 (11.41) | SXS | 80 | 2500 (17200) | 2500 (17200) |
| | | | 0.375 (9.52) | 10.02 (14.90) | ... | 160 | 2500 (17200) | 2500 (17200) |
| | | | 0.552 (14.02) | 13.71 (20.39) | XXS | ... | 2500 (17200) | 2500 (17200) |
| 3 | 80 | 3.500 (88.9) | 0.125 (3.18) | 4.51 (6.72) | ... | ... | 1290 (8900) | 1500 (1000) |
| | | | 0.156 (3.96) | 5.58 (8.29) | ... | ... | 1600 (11000) | 1870 (12900) |
| | | | 0.188 (4.78) | 6.66 (9.92) | ... | ... | 1930 (13330) | 2260 (15600) |
| | | | 0.216 (5.49) | 7.58 (11.29) | STD | 40 | 2220 (15300) | 2500 (17200) |
| | | | 0.250 (6.35) | 8.69 (12.93) | ... | ... | 2500 (17200) | 2500 (17200) |
| | | | 0.281 (7.14) | 9.67 (14.40) | ... | ... | 2500 (17200) | 2500 (17200) |
| | | | 0.300 (7.62) | 10.26 (15.27) | XS | 80 | 2500 (17200) | 2500 (17200) |
| | | | 0.438 (11.13) | 14.34 (21.35) | ... | 160 | 2500 (17200) | 2500 (17200) |
| | | | 0.600 (15.24) | 18.60 (27.68) | XXS | ... | 2500 (17200) | 2500 (17200) |
| | | | 0.125 (3.18) | 5.18 (7.72) | ... | ... | 1120 (7700) | 1310 (19000) |
| 3 1/2 | 90 | 4.000 (101.6) | 0.156 (3.96) | 6.41 (9.53) | ... | ... | 1400 (6700) | 1640 (11300) |
| | | | 0.188 (4.78) | 7.66 (11.41) | ... | ... | 1690 (11700) | 1970 (13600) |
| | | | 0.226 (5.74) | 9.12 (13.57) | STD | 40 | 2030 (14000) | 2370 (16300) |
| | | | 0.250 (6.35) | 10.02 (14.92) | ... | ... | 2250 (15500) | 2500 (17200) |
| | | | 0.281(7.14) | 11.17 (16.63) | ... | ... | 2500 (17200) | 2500 (17200) |
| | | | 0.318 (8.08) | 12.52 (18.63) | XS | 80 | 2800 (19300) | 2800 (19300) |
| | | | 0.125 (3.18) | 5.85 (8.71) | ... | ... | 1000 (6900) | 1170 (8100) |
| 4 | 100 | 4.500 (114.3) | 0.156 (3.96) | 7.24 (10.78) | ... | ... | 1250 (8600) | 1460 (10100) |
| | | | 0.188 (4.78) | 8.67 (12.91) | ... | ... | 1500 (10300) | 1750 (12100) |
| | | | 0.219 (5.56) | 10.02 (14.91) | ... | ... | 1750 (12100) | 2040 (14100) |
| | | | 0.237 (6.02) | 10.80 (16.07) | STD | 40 | 1900 (13100) | 2210 (15200) |
| | | | 0.250 (6.35) | 11.36 (16.90) | ... | ... | 2000 (13800) | 2330 (16100) |
| | | | 0.281 (7.14) | 12.67 (18.87) | ... | ... | 2250 (15100) | 2620 (18100) |
| | | | 0.312 (7.92) | 13.97 (20.78) | ... | ... | 2500 (17200) | 2800 (19300) |
| | | | 0.337 (8.56) | 15.00 (22.32) | XS | 80 | 2700 (18600) | 2800 (19300) |
| | | | 0.438 (11.13) | 19.02 (28.32) | ... | 120 | 2800 (19300) | 2800 (19300) |
| | | | 0.531 (13.49) | 22.53 (33.54) | ... | 160 | 2800 (19300) | 2800 (19300) |
| | | | 0.674(17.12) | 27.57 (41.03) | XXS | ... | 2800 (19300) | 2800 (19300) |
| 5 | 125 | 5.563 (141.3) | 0.156 (3.96) | 9.02 (13.41) | ... | ... | 1010 (7000) | 1180 (8100) |
| | | | 0.188 (4.78) | 10.80 (16.09) | ... | ... | 1220 (8400) | 1420 (9800) |
| | | | 0.219 (5.56) | 12.51 (18.61) | ... | ... | 1420 (9800) | 1650 (11400) |
| | | | 0.258 (6.55) | 14.63 (21.77) | STD | 40 | 1670 (11500) | 1950 (13400) |
| | | | 0.281 (7.14) | 15.87 (23.62) | ... | ... | 1820 (12500) | 2120 (14600) |
| | | | 0.312 (7.92) | 17.51 (26.05) | ... | ... | 2020 (13900) | 2360 (16300) |
| | | | 0.344 (8.74) | 19.19 (28.57) | ... | ... | 2230 (15400) | 2600 (17900) |
| | | | 0.375 (9.52) | 20.80 (30.94) | XS | 80 | 2430 (16800) | 2800 (19300) |
| | | | 0.500 (12.70) | 27.06 (40.28) | ... | 120 | 2800 (19300) | 2800 (19300) |

| NPS Designator | DN Designator | Specified Outside Diameter, in (mm) | Specified Wall Thickness, in (mm) | Nominal Weight (Mass) per Unit Length, Plain End, lb/ft (kg/m) | Weight Class | Schedule No. | Test Pressure, psi (kPa) | |
|-------------------|------------------|--|--------------------------------------|---|--------------|--------------|--------------------------|--------------|
| | | | | | | | Grade A | Grade B |
| 6 | 150 | 6.625 (168.3) | 0.625 (15.88) | 32.99 (49.11) | STD | 160 | 2800 (19300) | 2800 (19300) |
| | | | 0.750 (19.05) | 38.59 (57.43) | | | 2800 (19300) | 2800 (19300) |
| | | | 0.188 (4.78) | 12.94 (19.27) | | | 1020 (7000) | 1190 (8200) |
| | | | 0.219 (5.56) | 15.00 (22.31) | | | 1190 (8200) | 1390 (9600) |
| | | | 0.250 (6.35) | 17.04 (25.36) | | | 1360 (9400) | 1580 (10900) |
| | | | 0.280 (7.11) | 18.99 (28.26) | | | 1520 (10500) | 1780 (12300) |
| | | | 0.312 (7.92) | 21.06 (31.32) | | | 1700 (11700) | 1980 (13700) |
| | | | 0.344 (8.74) | 23.10 (34.39) | | | 1870 (12900) | 2180 (15000) |
| | | | 0.375 (9.52) | 25.05 (37.28) | | | 2040 (14100) | 2380 (16400) |
| | | | 0.432 (10.97) | 28.60 (42.56) | | | 2350 (16200) | 2740 (18900) |
| | | | 0.562 (14.27) | 36.43 (54.20) | | | 2800 (19300) | 2800 (19300) |
| | | | 0.719 (18.26) | 45.39 (67.56) | | | 2800 (19300) | 2800 (19300) |
| | | | 0.864 (21.95) | 53.21 (79.22) | | | 2800 (19300) | 2800 (19300) |
| 8 | 200 | 8.625 (219.1) | 0.188 (4.78) | 16.96 (25.26) | STD | 40 | 780 (5400) | 920 (6300) |
| | | | 0.203 (5.16) | 18.28 (27.22) | | | 850 (5900) | 1000 (6900) |
| | | | 0.219 (5.56) | 19.68 (29.28) | | | 910 (6300) | 1070 (7400) |
| | | | 0.250 (6.35) | 22.38 (33.31) | | | 1040 (7200) | 1220 (8400) |
| | | | 0.277 (7.04) | 24.72 (36.31) | | | 1160 (7800) | 1350 (9300) |
| | | | 0.312 (7.92) | 27.73 (41.24) | | | 1300 (9000) | 1520 (10500) |
| | | | 0.322 (8.18) | 28.58 (42.55) | | | 1340 (9200) | 1570 (10800) |
| | | | 0.344 (8.74) | 30.45 (45.34) | | | 1440 (9900) | 1680 (11600) |
| | | | 0.375 (9.52) | 33.07 (49.20) | | | 1570 (10800) | 1830 (12600) |
| | | | 0.406 (10.31) | 35.67 (53.08) | | | 1700 (11700) | 2000 (13800) |
| | | | 0.438 (11.13) | 38.33 (57.08) | | | 1830 (12600) | 2130 (14700) |
| | | | 0.500 (12.70) | 43.43 (64.64) | | | 2090 (14400) | 2430 (16800) |
| | | | 0.594 (15.09) | 51.00 (75.92) | | | 2500 (17200) | 2800 (19300) |
| | | | 0.719 (18.26) | 60.77 (90.44) | | | 2800 (19300) | 2800 (19300) |
| | | | 0.812 (20.62) | 67.82 (100.92) | | | 2800 (19300) | 2800 (19300) |
| | | | 0.875 (22.22) | 72.49 (107.88) | | | 2800 (19300) | 2800 (19300) |
| | | | 0.906 (23.01) | 74.76 (111.27) | | | 2800 (19300) | 2800 (19300) |
| 10 | 250 | 10.750 (273.0) | 0.188 (4.78) | 21.23 (31.62) | STD | 40 | 630 (4300) | 730 (5000) |
| | | | 0.203 (5.16) | 22.89 (34.08) | | | 680 (4700) | 800 (5500) |
| | | | 0.219 (5.56) | 24.65 (36.67) | | | 730 (5000) | 860 (5900) |
| | | | 0.250 (6.35) | 28.06 (41.75) | | | 840 (5800) | 980 (6800) |
| | | | 0.279 (7.09) | 31.23 (46.49) | | | 930 (6400) | 1090 (7500) |
| | | | 0.307 (7.80) | 34.27 (51.01) | | | 1030 (7100) | 1200 (8300) |
| | | | 0.344 (8.74) | 38.27 (56.96) | | | 1150 (7900) | 1340 (9200) |
| | | | 0.365 (9.27) | 40.52 (60.29) | | | 1220 (8400) | 1430 (9900) |
| | | | 0.438 (11.13) | 48.28 (71.87) | | | 1470 (10100) | 1710 (11800) |
| | | | 0.500 (12.70) | 54.79 (81.52) | | | 1670 (11500) | 1950 (13400) |
| | | | 0.594 (15.09) | 64.49 (95.97) | | | 1990 (13700) | 2320 (16000) |
| | | | 0.719 (18.26) | 77.10 (114.70) | | | 2410 (16600) | 2800 (19300) |
| | | | 0.844 (21.44) | 89.38 (133.00) | | | 120 | 2800 (19300) |
| | | | 1.000 (25.40) | 104.23 (155.09) | | | 2800 (19300) | 2800 (19300) |
| | | | 1.125 (28.57) | 115.75 (172.21) | | | 2800 (19300) | 2800 (19300) |
| 12 | 300 | 12.750 (323.8) | 0.203 (5.16) | 27.23 (40.55) | STD | 40 | 570 (3900) | 670 (4600) |
| | | | 0.219 (5.56) | 29.34 (43.63) | | | 620 (4300) | 720 (5000) |
| | | | 0.250 (6.35) | 33.41 (49.71) | | | 710 (4900) | 820 (5700) |
| | | | 0.281 (7.14) | 37.46 (55.75) | | | 790 (5400) | 930 (6400) |
| | | | 0.312 (7.92) | 41.48 (61.69) | | | 880 (6100) | 1030 (7100) |
| | | | 0.330 (8.38) | 43.81 (65.18) | | | 930 (6400) | 1090 (7500) |
| | | | 0.344 (8.74) | 45.62 (67.90) | | | 970 (6700) | 1130 (7800) |
| | | | 0.375 (9.52) | 49.61 (73.78) | | | 1060 (7300) | 1240 (8500) |
| | | | 0.406 (10.31) | 53.57 (79.70) | | | 1150 (7900) | 1340 (9200) |
| | | | 0.438 (11.13) | 57.65 (85.82) | | | 1240 (8500) | 1440 (9900) |
| | | | 0.500 (12.70) | 65.48 (97.43) | | | 1410 (9700) | 1650 (11400) |
| | | | 0.562 (14.27) | 73.22 (108.92) | | | 1590 (11000) | 1850 (12800) |
| | | | 0.688 (17.48) | 88.71 (132.04) | | | 1940 (13400) | 2270 (15700) |
| | | | 0.844 (21.44) | 107.42 (159.86) | | | 2390 (16500) | 2780 (19200) |
| | | | 1.000 (25.40) | 125.61 (186.91) | | | 2800 (19300) | 2800 (19300) |
| | | | 1.125 (28.57) | 139.81 (208.00) | | | 2800 (19300) | 2800 (19300) |
| | | | 1.312 (33.32) | 160.42 (238.68) | | | 2800 (19300) | 2800 (19300) |

A795/A795M

TABLE 1 Dimensions, Weights, and Test Pressure For Light -Weight Fire Protection Pipe- Schedule 10

| NPS Designator | DN Designator | Outside Diameter | | Nominal Wall Thickness | | Weight Plain End | | Electric-Resistance-Welded | | |
|-------------------|------------------|------------------|---------|---------------------------|--------|------------------|---------|----------------------------|------|--------|
| | | in. | mm | in. | mm | lb/ft | kg/m | kPa | kPa | kPa |
| 3/4 | 20 | 1.050 | (26.7) | 0.083 | (2.11) | 0.86 | (1.28) | (3400) | 700 | (4800) |
| 1 | 25 | 1.315 | (33.4) | 0.109 | (2.77) | 1.41 | (2.09) | (3400) | 700 | (4800) |
| 1 1/4 | 32 | 1.660 | (42.2) | 0.109 | (2.77) | 1.81 | (2.69) | (3400) | 1000 | (6900) |
| 1 1/2 | 40 | 1.900 | (48.3) | 0.109 | (2.77) | 2.09 | (3.11) | (3400) | 1000 | (6900) |
| 2 | 50 | 2.375 | (60.3) | 0.109 | (2.77) | 2.64 | (3.93) | (3400) | 1000 | (6900) |
| 2 1/2 | 65 | 2.875 | (73.0) | 0.120 | (3.05) | 3.53 | (5.26) | (3400) | 1000 | (6900) |
| 3 | 80 | 3.500 | (88.9) | 0.120 | (3.05) | 4.34 | (6.46) | (3400) | 1000 | (6900) |
| 3 1/2 | 90 | 4.000 | (101.6) | 0.120 | (3.05) | 4.98 | (7.41) | (3400) | 1200 | (8300) |
| 4 | 100 | 4.500 | (114.3) | 0.120 | (3.05) | 5.62 | (8.37) | (3400) | 1200 | (8300) |
| 5 | 125 | 5.563 | (141.3) | 0.134 | (3.40) | 7.78 | (11.58) | B | 1200 | (8300) |
| 6 | 150 | 6.625 | (168.3) | 0.134 | (3.40) | 9.30 | (13.85) | B | 1000 | (6900) |
| 8 | 200 | 8.625 | (219.1) | 0.188C | (4.78) | 16.96 | (25.26) | B | 800 | (5500) |
| 10 | 250 | 10.750 | (273.1) | 0.188C | (4.78) | 21.23 | (31.62) | B | 700 | (4800) |

TABLE 2 Dimensions,Weights, Test Pressures For Standard-Weight Fire Protection Pipe - Schedule 30 and Schedule 40

| NPS Designator | DN Designator | Specified Outside Diameter | | Nominal Wall Thickness | | Weight Plain End | | Weight Threaded and Coupled | | Electric - Resistance - Welded | | |
|-------------------|------------------|-------------------------------|---------|---------------------------|--------|------------------|---------|--------------------------------|---------|--------------------------------|------|--------|
| | | in. | mm | in. | mm | lb/ft | kg/m | lb/ft | kg/m | kPa | kPa | kPa |
| 1/2 | 15 | 0.840 | (21.3) | 0.109 | (2.77) | 0.85 | (1.27) | 0.85 | (1.27) | (4800) | 700 | (4800) |
| 3/4 | 20 | 1.050 | (26.7) | 0.113 | (2.87) | 1.13 | (1.69) | 1.13 | (1.68) | (4800) | 700 | (4800) |
| 1 | 25 | 1.315 | (33.4) | 0.133 | (3.38) | 1.68 | (2.50) | 1.68 | (2.50) | (4800) | 700 | (4800) |
| 1 1/4 | 32 | 1.660 | (42.2) | 0.140 | (3.56) | 2.27 | (3.39) | 2.28 | (3.40) | (6900) | 1000 | (6900) |
| 1 1/2 | 40 | 1.900 | (48.3) | 0.145 | (3.68) | 2.72 | (4.05) | 2.73 | (4.07) | (6900) | 1000 | (6900) |
| 2 | 50 | 2.375 | (60.3) | 0.154 | (3.91) | 3.66 | (5.45) | 3.69 | (5.50) | (6900) | 1000 | (6900) |
| 2 1/2 | 65 | 2.875 | (73.0) | 0.203 | (5.16) | 5.80 | (8.64) | 5.83 | (8.68) | (6900) | 1000 | (6900) |
| 3 | 80 | 3.500 | (88.9) | 0.216 | (5.49) | 7.58 | (11.29) | 7.62 | (11.35) | (6900) | 1000 | (6900) |
| 3 1/2 | 90 | 4.000 | (101.6) | 0.226 | (5.74) | 9.12 | (13.58) | 9.21 | (13.71) | (8300) | 1200 | (8300) |
| 4 | 100 | 4.500 | (114.3) | 0.237 | (6.02) | 10.80 | (16.09) | 10.91 | (16.25) | (8300) | 1200 | (8300) |
| 5 | 125 | 5.563 | (141.3) | 0.258 | (6.55) | 14.63 | (21.79) | 14.82 | (22.07) | C | 1200 | (8300) |
| 6 | 150 | 6.625 | (168.3) | 0.280 | (7.11) | 18.99 | (28.29) | 19.20 | (28.60) | C | 1200 | (8300) |
| 8 | 200 | 8.625 | (219.1) | 0.277A | (7.04) | 24.72 | (36.82) | 25.57 | (38.09) | C | 1200 | (8300) |
| 10 | 250 | 10.750 | (273.1) | 0.307A | (7.80) | 34.27 | (51.05) | 35.78 | (53.29) | C | 1000 | (6900) |

FIRESPRINKLER PIPES - FIREST+ ---

Sizes

| Outside Diameter | Wall Thickness |
|--------------------|-------------------|
| 21,3 mm - 323,9 mm | 2,0 mm - 12,70 mm |
| 1/2" - 12,751" | 0,079" - 0,500" |

Technical Specifications

- Superior epoxy coating up to 250 microns
- Corrosivity category C4-M certified
- DEKRA certified
- Available in Gray (RAL 7012)
- Roll grooved, Threaded & Coupled or Beveled pipe end
- Eliminates field painting
- Widest range of UL and FM approval, CE certified
- Produced according to ASTM and EN standards
- Pressure ratings up to 300 psi
- Size range between 1/2" -12"
- Reliable in all sizes
- Inner weld seam removal and custom length upon request
- Tight tolerances, consistent roundness and straightness

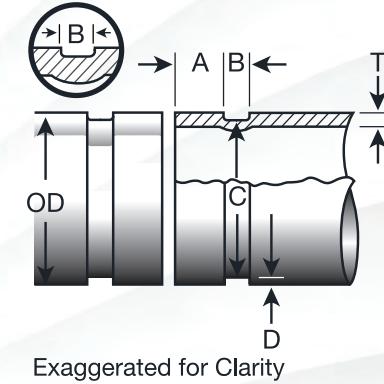


FIRE SPRINKLER PIPES - FIRESIST®



Sizes

| Outside Diameter | Wall Thickness |
|--------------------------------------|--------------------------------------|
| 21,3 mm - 323,9 mm 1/2" - 12,751" | 2,0 mm - 12,70 mm 0,079" - 0,500" |



Technical Specifications

- FM approved
- UL/C-UL Listed
- NFS certified
- Tight tolerances
- Consistent wall thickness, straightness, roundness
- CE, PED certified
- Pressure tested
- Reliable high steel quality
- Galvanised sandblasted varnished coated black, red (RAL 3000, RAL 3002, RAL 3009) or grey (RAL 7012)
- Plain Ends, Grooved or Threaded & Coupled
- Custom length availability



EASY FLOW NON THREADABLE LIGHTWALL

| | OD (mm) | OD (inch) | Wall Thickness (mm) | Wall Thickness (inch) | Weight (kg/m) | Weight (lb/ft) | UL | FM |
|----------------------|------------|--------------|------------------------|--------------------------|------------------|-------------------|----|----|
| Easy Flow Light Wall | 33,7 | 1 | 2,00 | 0,079 | 1,56 | 1,05 | | ✓ |
| | 33,7 | 1 | 2,60 | 0,102 | 1,99 | 1,34 | | ✓ |
| | 42,4 | 1 1/4 | 2,00 | 0,079 | 1,99 | 1,34 | | ✓ |
| | 42,4 | 1 1/4 | 2,30 | 0,091 | 2,27 | 1,53 | | ✓ |
| | 42,4 | 1 1/4 | 2,60 | 0,102 | 2,55 | 1,71 | | ✓ |
| | 48,3 | 1 1/2 | 2,00 | 0,079 | 2,28 | 1,53 | | ✓ |
| | 48,3 | 1 1/2 | 2,60 | 0,102 | 2,93 | 1,97 | | ✓ |
| | 60,3 | 2 | 2,00 | 0,079 | 2,88 | 1,93 | | ✓ |
| | 60,3 | 2 | 2,90 | 0,114 | 4,10 | 2,76 | | ✓ |
| | 76,1 | 2 1/2 | 2,18 | 0,086 | 3,97 | 2,67 | | ✓ |
| | 76,1 | 2 1/2 | 2,90 | 0,114 | 5,23 | 3,52 | | ✓ |
| | 88,9 | 3 | 2,36 | 0,093 | 5,04 | 3,38 | | ✓ |
| | 88,9 | 3 | 3,20 | 0,126 | 6,76 | 4,54 | | ✓ |
| | 114,3 | 4 | 2,60 | 0,102 | 7,16 | 4,81 | | ✓ |
| | 114,3 | 4 | 3,60 | 0,142 | 9,83 | 6,60 | | ✓ |
| | 139,7 | 5 | 3,40 | 0,134 | 11,43 | 7,68 | | ✓ |
| SCH 7 | 33,4 | 1" | 2,00 | 0,079 | 1,55 | 1,04 | ✓ | ✓ |
| | 42,2 | 1 1/4" | 2,00 | 0,079 | 1,98 | 1,33 | ✓ | ✓ |
| | 48,3 | 1 1/2" | 2,13 | 0,084 | 2,42 | 1,62 | ✓ | ✓ |
| | 60,3 | 2" | 2,13 | 0,084 | 3,05 | 2,05 | ✓ | ✓ |
| | 73 | 2 1/2" | 2,18 | 0,086 | 3,80 | 2,55 | ✓ | ✓ |
| | 88,9 | 3" | 2,36 | 0,093 | 5,04 | 3,38 | ✓ | ✓ |
| | 114,3 | 4" | 2,60 | 0,108 | 7,16 | 4,81 | ✓ | ✓ |
| | 141,3 | 5" | 3,40 | 0,134 | 11,56 | 7,76 | ✓ | |
| SCH 10 | 26,7 | 3/4" | 2,11 | 0,083 | 1,28 | 0,86 | ✓ | |
| | 33,4 | 1" | 2,77 | 0,109 | 2,09 | 1,41 | ✓ | ✓ |
| | 42,2 | 1 1/4" | 2,77 | 0,109 | 2,69 | 1,81 | ✓ | ✓ |
| | 48,3 | 1 1/2" | 2,77 | 0,109 | 3,11 | 2,09 | ✓ | ✓ |
| | 60,3 | 2" | 2,77 | 0,109 | 3,93 | 2,64 | ✓ | ✓ |
| | 73 | 2 1/2" | 3,05 | 0,120 | 5,26 | 3,53 | ✓ | ✓ |
| | 88,9 | 3" | 3,05 | 0,120 | 6,46 | 4,34 | ✓ | ✓ |
| | 101,6 | 3 1/2" | 3,05 | 0,120 | 7,41 | 4,98 | ✓ | ✓ |
| | 114,3 | 4" | 3,05 | 0,120 | 8,37 | 5,62 | ✓ | ✓ |
| | 141,3 | 5" | 3,4 | 0,134 | 11,58 | 7,78 | ✓ | ✓ |
| | 168,3 | 6" | 3,4 | 0,134 | 13,85 | 9,30 | ✓ | ✓ |
| | 219,1 | 8" | 4,78 | 0,188 | 25,26 | 16,96 | ✓ | ✓ |
| | 273,1 | 10" | 4,78 | 0,188 | 31,62 | 21,23 | ✓ | ✓ |
| | 323,8 | 12" | 4,78 | 0,188 | 37,61 | 25,28 | ✓ | |
| SCH 30 | 33,4 | 1" | 2,90 | 0,114 | 2,18 | 1,46 | | ✓ |
| | 42,2 | 1 1/4" | 2,97 | 0,117 | 2,87 | 1,93 | | ✓ |
| | 48,3 | 1 1/2" | 3,18 | 0,125 | 3,53 | 2,37 | | ✓ |
| | 60,3 | 2" | 3,18 | 0,125 | 4,48 | 3,00 | | ✓ |
| | 73 | 2 1/2" | 4,78 | 0,188 | 8,04 | 5,40 | | ✓ |
| | 88,9 | 3" | 4,78 | 0,188 | 9,92 | 6,65 | | ✓ |
| | 101,6 | 3 1/2" | 4,78 | 0,188 | 11,41 | 7,65 | | ✓ |
| | 114,3 | 4" | 4,78 | 0,188 | 12,91 | 8,66 | | ✓ |
| | 219,1 | 8" | 7,04 | 0,277 | 36,82 | 24,72 | | ✓ |
| | 273,1 | 10" | 7,8 | 0,307 | 51,05 | 34,27 | | ✓ |
| SCH 40 | 21,3 | 1/2" | 2,77 | 0,109 | 1,27 | 0,85 | ✓ | ✓ |
| | 26,7 | 3/4" | 2,87 | 0,113 | 1,69 | 1,13 | ✓ | ✓ |
| | 33,4 | 1" | 3,38 | 0,133 | 2,50 | 1,68 | ✓ | ✓ |
| | 42,2 | 1 1/4" | 3,56 | 0,140 | 3,39 | 2,27 | ✓ | ✓ |
| | 48,3 | 1 1/2" | 3,68 | 0,145 | 4,05 | 2,72 | ✓ | ✓ |
| | 60,3 | 2" | 3,91 | 0,154 | 5,45 | 3,66 | ✓ | ✓ |
| | 73 | 2 1/2" | 5,16 | 0,203 | 8,64 | 5,80 | ✓ | ✓ |
| | 88,9 | 3" | 5,49 | 0,216 | 11,29 | 7,58 | ✓ | ✓ |
| | 101,6 | 3 1/2" | 5,74 | 0,226 | 13,58 | 9,12 | ✓ | ✓ |
| | 114,3 | 4" | 6,02 | 0,237 | 16,09 | 10,80 | ✓ | ✓ |
| | 141,3 | 5" | 6,55 | 0,258 | 21,79 | 14,63 | ✓ | ✓ |
| | 168,3 | 6" | 7,11 | 0,280 | 28,29 | 18,99 | ✓ | ✓ |
| | 219,1 | 8" | 8,18 | 0,322 | 45,34 | 30,45 | ✓ | ✓ |
| | 273,1 | 10" | 9,27 | 0,365 | 60,29 | 40,52 | ✓ | ✓ |
| SCH 80 | 21,3 | 1/2" | 3,73 | 0,147 | 1,62 | 1,09 | | ✓ |
| | 26,7 | 3/4" | 3,91 | 0,154 | 2,20 | 1,48 | | ✓ |
| | 33,4 | 1" | 4,55 | 0,179 | 3,25 | 2,19 | | ✓ |
| | 42,2 | 1 1/4" | 4,85 | 0,191 | 4,49 | 3,03 | | ✓ |
| | 48,3 | 1 1/2" | 5,08 | 0,200 | 5,39 | 3,65 | | ✓ |
| | 60,3 | 2" | 5,54 | 0,218 | 7,55 | 5,08 | | ✓ |
| | 73 | 2 1/2" | 7,01 | 0,276 | 11,52 | 7,75 | | ✓ |
| | 88,9 | 3" | 7,62 | 0,300 | 15,39 | 10,35 | | ✓ |
| | 101,6 | 3 1/2" | 8,08 | 0,318 | 18,82 | 12,67 | | ✓ |
| | 114,3 | 4" | 8,56 | 0,337 | 22,60 | 15,20 | | ✓ |
| | 141,3 | 5" | 9,52 | 0,375 | 31,42 | 21,04 | | ✓ |
| | 168,3 | 6" | 10,97 | 0,432 | 43,05 | 28,88 | | ✓ |
| | 219,1 | 8" | 12,70 | 0,500 | 65,41 | 44,00 | | ✓ |

ASTM FM & UL

| | OD (mm) | OD (inch) | Wall Thickness (mm) | Wall Thickness (inch) | Weight (lb/ft) | Weight (kg/mt PE) | FM Approval | UL |
|-----------|---------|-----------|---------------------|-----------------------|----------------|-------------------|-------------|----|
| Lightwall | 33,7 | 1" | 2,00 | 0.079 | 1,05 | 1,56 | ✓ | |
| | 33,7 | 1" | 2,60 | 0.102 | 1,34 | 1,99 | ✓ | |
| | 42,4 | 1 1/4" | 2,00 | 0.079 | 1,34 | 1,99 | ✓ | |
| | 42,4 | 1 1/4" | 2,30 | 0.091 | 1,53 | 2,27 | ✓ | |
| | 42,4 | 1 1/4" | 2,60 | 0.102 | 1,71 | 2,55 | ✓ | |
| | 48,3 | 1 1/2" | 2,00 | 0.079 | 1,53 | 2,28 | ✓ | |
| | 48,3 | 1 1/2" | 2,60 | 0.102 | 1,97 | 2,93 | ✓ | |
| | 60,3 | 2" | 2,00 | 0.079 | 1,93 | 2,88 | ✓ | |
| | 60,3 | 2" | 2,90 | 0.114 | 2,76 | 4,10 | ✓ | |
| | 76,1 | 2 1/2" | 2,18 | 0.086 | 2,67 | 3,97 | ✓ | |
| | 76,1 | 2 1/2" | 2,90 | 0.114 | 3,52 | 5,23 | ✓ | |
| | 88,9 | 3" | 2,36 | 0.093 | 3,38 | 5,04 | ✓ | |
| | 88,9 | 3" | 3,20 | 0.126 | 4,54 | 6,76 | ✓ | |
| | 114,3 | 4" | 2,60 | 0.102 | 4,81 | 7,16 | ✓ | |
| | 114,3 | 4" | 3,60 | 0.142 | 6,60 | 9,83 | ✓ | |
| | 139,7 | 5" | 3,40 | 0.134 | 7,68 | 11,43 | ✓ | |

| | OD (mm) | OD (inch) | Wall Thickness (mm) | Wall Thickness (inch) | FM | UL |
|----------------|---------|-----------|---------------------|-----------------------|----|----|
| EN10255 Medium | 21,3 | 1/2" | 2,6 | 0.102 | | |
| | 26,9 | 3/4" | 2,6 | 0.102 | | |
| | 33,7 | 1" | 3,2 | 0.126 | ✓ | |
| | 42,4 | 1 1/4" | 3,2 | 0.126 | ✓ | ✓ |
| | 48,3 | 1 1/2" | 3,2 | 0.126 | ✓ | ✓ |
| | 60,3 | 2" | 3,6 | 0.142 | ✓ | ✓ |
| | 76,1 | 2 1/2" | 3,6 | 0.142 | ✓ | ✓ |
| | 88,9 | 3" | 4 | 0.157 | ✓ | ✓ |
| | 114,3 | 4" | 4,5 | 0.177 | ✓ | ✓ |
| | 139,7 | 5" | 5 | 0.197 | ✓ | ✓ |
| | 165,1 | 6" | 5 | 0.197 | ✓ | ✓ |

| | OD (mm) | OD (inch) | Wall Thickness (mm) | Wall Thickness (inch) | FM |
|---------------|---------|-----------|---------------------|-----------------------|----|
| EN10255 Heavy | 21,3 | 1/2" | 3,2 | 0.126 | ✓ |
| | 26,9 | 3/4" | 3,2 | 0.126 | ✓ |
| | 33,7 | 1" | 4 | 0.157 | ✓ |
| | 42,4 | 1 1/4" | 4 | 0.157 | ✓ |
| | 48,3 | 1 1/2" | 4 | 0.157 | ✓ |
| | 60,3 | 2" | 4,5 | 0.177 | ✓ |
| | 76,1 | 2 1/2" | 4,5 | 0.177 | ✓ |
| | 88,9 | 3" | 5 | 0.197 | ✓ |
| | 114,3 | 4" | 5,4 | 0.213 | ✓ |
| | 139,7 | 5" | 5,4 | 0.213 | ✓ |
| | 165,1 | 6" | 5,4 | 0.213 | ✓ |

WATER WELL CASING PIPES

Sizes

| Outside Diameter | Wall Thickness | Length |
|--------------------|-----------------|------------------|
| 33,4 mm - 323,9 mm | 3,2 mm - 9,5 mm | 6,00 m - 18,30 m |
| 1,314"- 12,751" | 0,126" - 0,374" | 19,68 ft - 60 ft |

Production Standards & Material Qualities

- ASTM A 589 Type I, II, III, IV Production Standard
- ASTM A 53
- Reliable High Steel Quality
- From Grade A or Grade B Material Quality
- Weldable
- Threadable

Finishing Operations

- Threaded up to 6"
- Hot Dip Galvanised up to 6"

Tests & Certificates

- Visual and Dimensional Inspection
- Leak tightness testing: Hydrostatic Test, Eddy Current Test
- Destructive Tests: Flattening, Bending
- Mechanical Tests
- Chemical Analysis
- Metallographic Examination
- Others as required by the standards
- Mill Test Certificates
 - Issued upon request according to EN 10204 2.1; 2.2; 3.1; 3.2
- NDT Standards:
 - ET (EN ISO 10893-2), ET (ASTM E309)
- Glass fibre reinforced plastic (GRP), OD Coating

Product Options

| OD (inch) | OD (mm) | Wall Thickness (inch) | Wall Thickness (mm) |
|-----------|---------|-----------------------|---------------------|
| 4 1/2" | 114,3 | 0,237 | 6,02 |
| 5 1/2" | 141,3 | 0,188 | 4,78 |
| 5 1/2" | 141,3 | 0,258 | 6,55 |
| 6 5/8" | 168,3 | 0,188 | 4,78 |
| 6 5/8" | 168,3 | 0,219 | 5,56 |
| 6 5/8" | 168,3 | 0,25 | 6,35 |
| 6 5/8" | 168,3 | 0,28 | 7,11 |
| 8 5/8" | 219,1 | 0,219 | 5,56 |
| 8 5/8" | 219,1 | 0,25 | 6,35 |
| 8 5/8" | 219,1 | 0,277 | 7,04 |
| 8 5/8" | 219,1 | 0,322 | 8,18 |
| 10 3/4" | 273 | 0,25 | 6,35 |
| 10 3/4" | 273 | 0,279 | 7,09 |
| 10 3/4" | 273 | 0,365 | 9,27 |
| 12 3/4" | 323,8 | 0,25 | 6,35 |
| 12 3/4" | 323,8 | 0,33 | 8,38 |
| 12 3/4" | 323,8 | 0,375 | 9,52 |



SPIRALLY WELDED WATER LINE PIPES

Sizes

| Outside Diameter | Wall Thickness | Length |
|---------------------------------|----------------------------------|------------------------------|
| 508 mm - 3.048 mm 20" - 120" | 5,16 mm - 25,4 mm 0,203" - 1" | Single lengths up to 24,50 m |

Production Standards & Material Qualities

| | |
|------------|---------------------|
| EN 10217-1 | P195 - P265 TR1&TR2 |
| EN 10224 | L235 - L355 |
| AWWA C 200 | Grade 30 - Grade 50 |
| UNI 6363 | Fe 360 - Fe 510 |

*Production Range: See page 21

Coating Standards

- Dual Layer Abrasion Resistant FBE OD Coating: API 5L7, CSA Z 245-20, NACE RP 0394, AWWA C213
- FBE (Fusion Bonded Epoxy) OD Coating: API 5L7, CSA Z 245-20, NACE RP 0394, AWWA C213
- Polyethylene OD Coating: DIN 30670, TS 5139, NF A 49-710, UNI 9099, EN ISO 21809-1
- Polypropylene OD Coating: DIN 30678, NF A 49-711, EN ISO 21809-1
- Flow Coat Epox ID Coating: API RP 5L2, EN 10301
- Epoxy ID Coating: AWWA C 210
- Cement Mortar: AWWA C 205, DIN 2614, BS 534, EN 10298
- Glass fibre reinforced plastic (GRP), OD Coating





CONSTRUCTION



CIRCULAR HOLLOW SECTIONS

Sizes

| Outside Diameter | Wall Thickness | Length |
|--------------------|------------------|---------------------|
| 21,3 mm - 339,7 mm | 2,0 mm - 12,7 mm | 5,00 m - 12,0 m |
| 1/2" - 13 3/8" | 0,079" - 0,500" | 16,40 ft - 39,37 ft |

Production Standards & Material Qualities

| | |
|--------------------|--|
| EN 10305-5 | E 195, E 235, E 275, E 355 |
| ASTM A 500 | GR A, GR B, GR C |
| EN 10219 (BS 6363) | S 235, S 275, S 355, S 460 MH, NH (J0H, JRH, J2H, K2H, GR 34/26, GR 43/36) |
| EN 10210 | S 235, S 275, S355, S460 MH, NH (J0H, JRH, J2H, K2H) |



Tests & Certificates

- Visual and Dimensional Inspection
 - Mechanical Tests:
 - Tensile Test
 - Flattening Test, Flaring Test
 - Expanding Test
 - Impact Test
 - Metallographic Examination
 - Chemical Analysis
 - Non Destructive Inspection: In-Line Ultrasonic (weld check)
In-Line and offline Eddy Current (for round tubes)
 - Mill Test Certificates
 - According to EN 10204 2.1; 2.2; 3.1; 3.2
 - NDT Standards
 - ET (ISO 10893-2)
 - Quality Certificates
 - EN 10219 - EN10210 CE marked
-

Finishing Operations

- Plain End-Square cut or bevelled
- Black, self-colored/uncoated
- Mill protective oil coating; for both round, square and rectangular tubes, black & red varnish for outside surface of round tubes.



Production Range (EN 10219)

| OD mm | Wall Thickness (mm) | | | | | | | | | | | | | | | | | |
|----------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| | 2,0 | 2,5 | 2,7 | 2,9 | 3,0 | 3,2 | 3,6 | 4,0 | 5,0 | 5,5 | 6,0 | 7,0 | 8,0 | 8,5 | 9,20 | 10,0 | 11,0 | 12,0 |
| 21,3 | | | | | | | | | | | | | | | | | | |
| 25,0 | | | | | | | | | | | | | | | | | | |
| 26,9 | | | | | | | | | | | | | | | | | | |
| 32,0 | | | | | | | | | | | | | | | | | | |
| 33,7 | | | | | | | | | | | | | | | | | | |
| 38,0 | | | | | | | | | | | | | | | | | | |
| 42,4 | | | | | | | | | | | | | | | | | | |
| 48,3 | | | | | | | | | | | | | | | | | | |
| 51,0 | | | | | | | | | | | | | | | | | | |
| 57,0 | | | | | | | | | | | | | | | | | | |
| 60,3 | | | | | | | | | | | | | | | | | | |
| 63,5 | | | | | | | | | | | | | | | | | | |
| 70,0 | | | | | | | | | | | | | | | | | | |
| 73,0 | | | | | | | | | | | | | | | | | | |
| 76,1 | | | | | | | | | | | | | | | | | | |
| 82,5 | | | | | | | | | | | | | | | | | | |
| 88,9 | | | | | | | | | | | | | | | | | | |
| 101,6 | | | | | | | | | | | | | | | | | | |
| 114,3 | | | | | | | | | | | | | | | | | | |
| 127,0 | | | | | | | | | | | | | | | | | | |
| 133,0 | | | | | | | | | | | | | | | | | | |
| 139,7 | | | | | | | | | | | | | | | | | | |
| 141,3 | | | | | | | | | | | | | | | | | | |
| 159,0 | | | | | | | | | | | | | | | | | | |
| 165,1 | | | | | | | | | | | | | | | | | | |
| 168,3 | | | | | | | | | | | | | | | | | | |
| 177,8 | | | | | | | | | | | | | | | | | | |
| 219,1 | | | | | | | | | | | | | | | | | | |
| 244,5 | | | | | | | | | | | | | | | | | | |
| 273,0 | | | | | | | | | | | | | | | | | | |
| 323,9 | | | | | | | | | | | | | | | | | | |
| 339,7 | | | | | | | | | | | | | | | | | | |



SELF DRILLING ANCHOR PIPES

Sizes

| Outer Diameter | Wall Thickness |
|-------------------|----------------|
| 21,3 mm - 88,9 mm | Up to 10.00 mm |
| ½" - 3 1/2" | Up to 0.394" |

Production Standards

EN 10210
EN 10219-1



FOUNDATION / PILLING TUBES

Sizes

For Spirally Welded Pipes

| Outside Diameter | Wall Thickness | Length |
|---------------------------------|-------------------------------------|-----------------------------|
| 508 mm - 3.048 mm 20" - 120" | 5,16 mm - 25,4 mm 0,203" - 1000" | Single lengths up to 55,0 m |
| | | |

For ERW Micro Pilling Pipes

| Outside Diameter | Wall Thickness | Length |
|--------------------------------------|-------------------------------------|---|
| 21,3 mm - 339,7 mm 1/2" - 13 3/8" | 2,8 mm - 12,7 mm 0,110" - 0,500" | 6,00 m - 18,30 m 19.69 ft - 60.04 ft |
| | | |



Production Standards & Material Qualities

| | |
|-------------------------|---|
| EN 10219-1 | Grade including S355 J2H, CE marking according to S355, S460 MH, S550 J2H |
| ASTM A252 | Grade including Grade 3 |
| Inner weld bead removed | |

Coating Standards

- Dual Layer Abrasion Resistant FBE OD Coating: API 5L7, CSA Z 245-20, NACE RP 0394, AWWA C213
- FBE (Fusion Bonded Epoxy) OD Coating: API 5L7, CSA Z 245-20, NACE RP 0394, AWWA C213
- Polyethylene OD Coating: DIN 30670, TS 5139, NF A 49-710, UNI 9099, EN ISO 21809-1
- Polypropylene OD Coating: DIN 30678, NF A 49-711, EN ISO 21809-1
- Epoxy ID Coating: AWWA C 210 Dual Layer Abrasion Resistant FBE OD Coating: API 5L7, CSA Z 245-20, NACE RP 0394, AWWA C213
- FBE (Fusion Bonded Epoxy) OD Coating: API 5L7, CSA Z 245-20, NACE RP 0394, AWWA C213
- Polyethylene OD Coating: DIN 30670, TS 5139, NF A 49-710, UNI 9099, EN ISO 21809-1
- Polypropylene OD Coating: DIN 30678, NF A 49-711, EN ISO 21809-1
- Epoxy ID Coating: AWWA C 210

Protective Paint Systems

BS EN ISO 12944-5.2019

Paints and varnishes. Corrision protection of steel structures by protective paint systems.

Most Common ERW Piling Tube Sizes

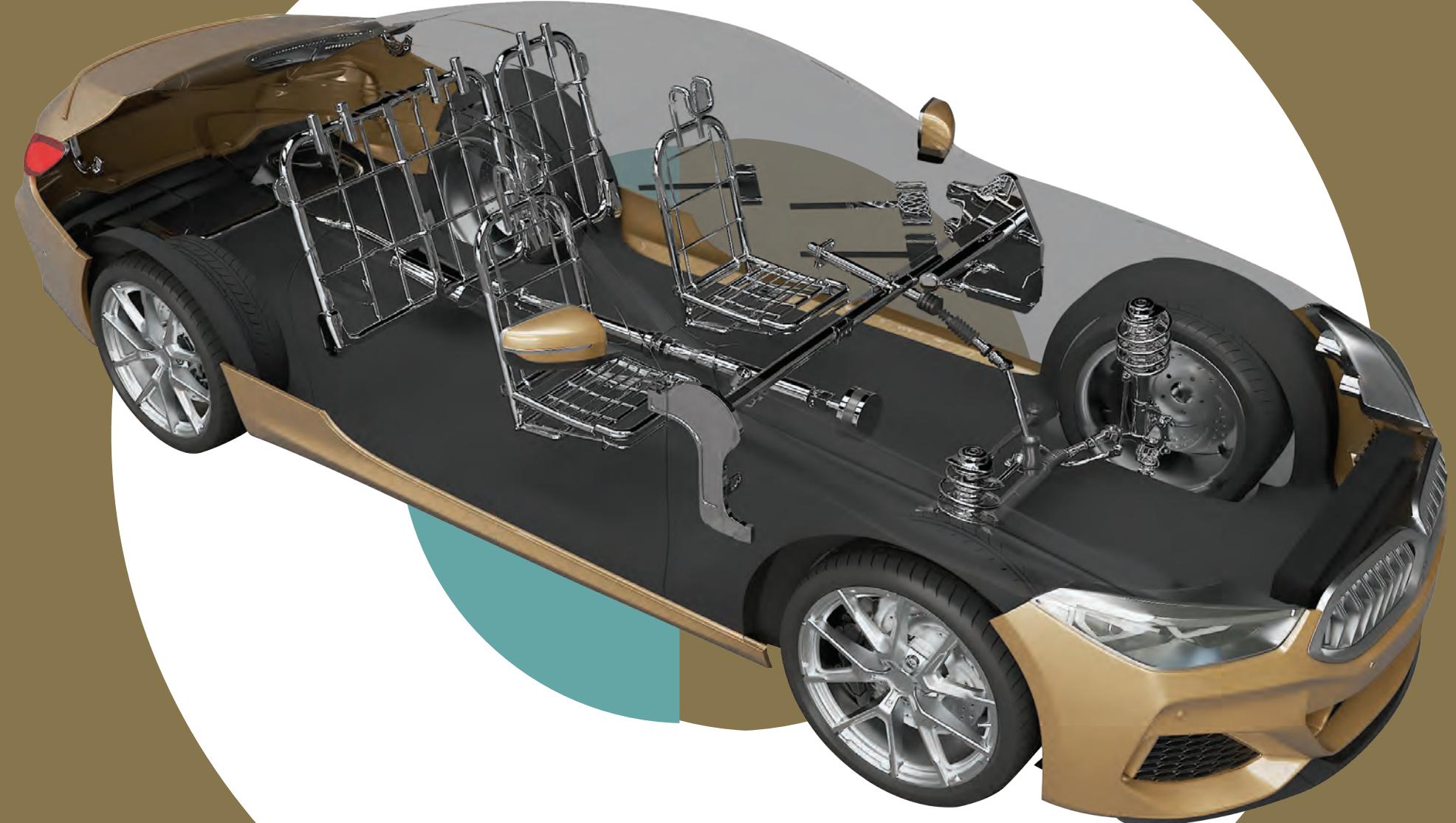
| Diameter (mm) | Wall Thickness (mm) | kg/meter |
|---------------|---------------------|----------|
| 76,1 | 6,3 | 10,84 |
| 88,9 | 6,3 | 12,83 |
| 114,3 | 6,3 | 16,78 |
| 114,3 | 8 | 20,97 |
| 139,7 | 8 | 25,98 |
| 139,7 | 10 | 31,99 |
| 168,3 | 10 | 39,04 |
| 168,3 | 12,5 | 48,03 |
| 219,1 | 10 | 51,57 |
| 219,1 | 12,5 | 63,69 |
| 273,0 | 10 | 64,86 |
| 273,0 | 12,5 | 80,30 |
| 323,9 | 10 | 77,41 |
| 323,9 | 12,5 | 95,99 |

| Chemical (max) | C | Mn | P | S | CEV% |
|----------------|-------|-------|--------|-------|-------|
| S 460 MH | 0,20% | 1,70% | 0,035% | 0,03% | 0,46% |
| S 550 J2H | 0,16% | 2,20% | 0,03% | 0,03% | 0,47% |

| Mechanical | Yield Strength (Mpa) min | Tensile Strength (Mpa) min | Elongation min | Impact Energy at -20°C |
|------------|--------------------------|----------------------------|----------------|------------------------|
| S 460 MH | 460 | 530 - 720 | 17% | 40 Joule |
| S 550 J2H | 550 | 605 - 760 | 14% | 27 Joule |



ENGINEERING TECHNOLOGIES



ENGINEERING TECHNOLOGIES

Production Standards

- Welded Cold Sized Tubes : EN 10305-3
- Welded Cold Drawn Tubes : EN 10305-2
- Welded Cold Sized Square and Rectangular Tubes : EN 10305-5

Note: Other standards such as ASTM A513, JIS G 3445 etc. upon request

Steel Grades

- Structural Steels : S235, S275, S355
- DQ Steels : DC01, DC03, DC04
- HSLA Steels : HC260LA, HC300LA, HC340LA, HC380LA, HC420LA, S315MC, S355MC, S420MC, S460MC, S500MC, S550MC, S600MC, S700MC
- Dual Phase Steels : DP500, DP600, DP800, DP1000
- Heat Treatable Steels : 20MnB5, 22MnB5, 26MnB5, 30MnB5, 34MnB5
- Coated (Galvanized, aluminized) Steels : DX51, DX52, DX53, S220, S350, DX54, HX300LAD, HX340LAD

Note: Other grades upon request



Tests & Inspections

- Visual Examination
 - Dimensional Inspection
 - Metallographic Inspection
 - Tensile Test
 - Drift Expanding / Flaring Test
 - Flattening Test
 - Hardness Testing (HV, HRB, HRC)
 - Ultrasonic Testing
 - Flanging Test
 - Chemical Analysis
 - Eddy Current Testing
 - Surface Roughness Measurement
-

Inspection Documents

- MTC (Mill Test Certificates) acc. to EN 10204 3.1; 2.2

AUTOMOTIVE TUBES

Borusan Mannesmann is a highly recognized manufacturer for its product and service quality in the automotive industry.

Our plants, one in Halkalı - Türkiye, one in Gemlik - Türkiye and one in Vobarno - Italy are specialized in production of value added precision tubes that are used in crucial parts of vehicles. Working together; our sales, quality and design teams manage all kinds of technical, schematic inquiries and response our customers with custom made solutions. Products are commonly used in passenger cars, light and heavy commercial vehicles which are travelling around the globe.



SHOCK ABSORBER TUBES



FRONT SEAT FRAME TUBES



CARDAN SHAFT TUBES



TIE ROD TUBES



HEAD REST TUBES



CROSS CAR BEAMS



STEERING COLUMN TUBES



STABILIZER



EXHAUST TUBES



REAR SEAT FRAME TUBES



GAS SPRING



AXLE



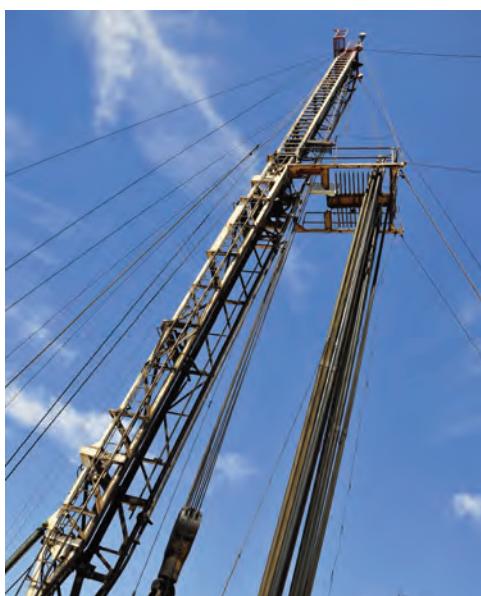
TRUNK HINGE



DOOR IMPACT BEAMS

HYDRAULIC APPLICATION

Borusan Mannesmann's wide product range in the precision business enables the company to serve various industries ranging from hydraulic-pneumatic and drilling to mechanical applications. We have been proud to be a preferred supplier of the industry for years with our delicate approach to meeting the most stringent customer requirements.



INDUSTRIAL APPLICATIONS CUSTOM SHAPED STEEL PROFILES

Borusan Mannesmann manufactures custom-shaped profiles with the highest degree of functionality according to customer expectations.

Custom-designed profiles are used in a variety of applications for different sectors such as automotive, construction, agricultural machinery, towel rails, furniture, etc.

We supply profiles with the most accurate tolerances to meet customers' requirements and drawings. Borusan Mannesmann has the knowledge to select the most suitable forming technologies to meet specific needs.

TECHNOLOGIES FOR SPECIAL SHAPE PROFILES

- Direct Roll Forming
- HFW + Cold Forming
- Forming by Cold Drawing



We are ready to produce according to different standards and/or customers' specialized technical requirements.

Steel grades, wall thickness, dimensions, and tolerances may vary according to the requirements of the final product. Different pre-coated raw materials and final coating methods are available upon request.

FURTHER PROCESSING

- Length Cutting
- Bending
- Hole Drilling
- Online Die Stamping

INSPECTION DOCUMENTS

- MTC (Mill Test Certificates) acc. to EN 10204 2.2, 3.1

TESTS & INSPECTIONS

- Visual Examination
- Dimensional Inspection
- Metallographic Inspection
- Tensile Test
- Chemical Analysis
- Flattening Test
- Hardness Testing (HV, HRB, HRC)
- Eddy Current Testing
- 3D Scanning



Welded Cold Sized Tubes for Precision Applications

| OD mm | Wall Thickness (mm) | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|
| | 0,70 | 1,00 | 1,20 | 1,50 | 1,70 | 2,00 | 2,20 | 2,50 | 2,80 | 3,00 | 3,30 | 3,50 | 4,00 | 4,50 | 5,00 | 5,50 | 6,00 | 6,50 | 7,00 | 7,50 | 8,00 | 8,50 | 9,00 | 9,50 | 10,00 | 10,50 |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8,2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9,3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11,1 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12,6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12,7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25,4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26,9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27,2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 28,6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31,8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33,7 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 42 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 44,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 48,6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 54 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 55,6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56,4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56,8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 63,5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 67 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 68 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 76 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 83 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 88,9 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | | | | | | | | | | | | | | | |

Welded Cold Sized Tubes (EN 10305-3)

Delivery Conditions:

BKM (+Cr1 ve + Cr2) = Standard

NBK (+N) = Normalized

GBK (+A) = Annealed

Steel Grades: St 14, St 13, St 12, St 34, St 37, St 44, St 52

(E155) (E195) (E235) (E275) (E355)

Welded Cold Drawn Tubes for Precision Applications

| OD mm | Wall Thickness (mm) | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|---------------------|---|------|-----|------|---|------|-----|------|---|------|-----|---|------|-----|---|-----|---|-----|---|-----|---|-----|---|
| | 0,9 | 1 | 1,25 | 1,5 | 1,75 | 2 | 2,25 | 2,5 | 2,75 | 3 | 3,25 | 3,5 | 4 | 4,25 | 4,5 | 5 | 5,5 | 6 | 6,5 | 7 | 7,5 | 8 | 8,5 | 9 |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 - 17 | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 - 19 | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 - 21 | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 - 23 | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 - 25 | | | | | | | | | | | | | | | | | | | | | | | | |
| 26 - 27 | | | | | | | | | | | | | | | | | | | | | | | | |
| 28 - 30 | | | | | | | | | | | | | | | | | | | | | | | | |
| 31-33 | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 - 36 | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 - 39 | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 - 44 | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 - 47 | | | | | | | | | | | | | | | | | | | | | | | | |
| 48 - 49 | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 - 54 | | | | | | | | | | | | | | | | | | | | | | | | |
| 55 - 57 | | | | | | | | | | | | | | | | | | | | | | | | |
| 58 - 61 | | | | | | | | | | | | | | | | | | | | | | | | |
| 62 - 64 | | | | | | | | | | | | | | | | | | | | | | | | |
| 65 - 66 | | | | | | | | | | | | | | | | | | | | | | | | |
| 67 - 69 | | | | | | | | | | | | | | | | | | | | | | | | |
| 70 - 72 | | | | | | | | | | | | | | | | | | | | | | | | |
| 73 - 74 | | | | | | | | | | | | | | | | | | | | | | | | |
| 75 - 77 | | | | | | | | | | | | | | | | | | | | | | | | |
| 78 - 83 | | | | | | | | | | | | | | | | | | | | | | | | |
| 84 - 87 | | | | | | | | | | | | | | | | | | | | | | | | |
| 88 - 89 | | | | | | | | | | | | | | | | | | | | | | | | |
| 90 - 91 | | | | | | | | | | | | | | | | | | | | | | | | |
| 92 - 96 | | | | | | | | | | | | | | | | | | | | | | | | |
| 97 - 100 | | | | | | | | | | | | | | | | | | | | | | | | |
| 101 - 105 | | | | | | | | | | | | | | | | | | | | | | | | |
| 106 - 110 | | | | | | | | | | | | | | | | | | | | | | | | |
| 111 - 120 | | | | | | | | | | | | | | | | | | | | | | | | |
| 121 - 130 | | | | | | | | | | | | | | | | | | | | | | | | |

Cold Drawn Welded Steel Tubes (EN 10305-2)

Please contact our sales department for intermediate sizes.

Delivery Conditions:

+ C (BK) = Cold finished/hard

+ LC (BKW) = Cold finished/soft

+ N (NBK) = Normalized

+ SR (BKS) = Cold finished and stress relieved

+ A (GBK) = Annealed

Standard Norms: TS EN 10305-2, UNI 7946, BS 6323 Part 6, NFA 49-341, ASTM A 513

Steel Grades mainly used: RSt 34-2, RSt 37-2, St 44-2, St 52-3

(E 195) (E 235) (E 275) (E 355)

ASTM A 513 Mechanical Tubing (Type V-VI)

| OD (inch) | Wall Thickness (inch) | | | | | | | | | | | | | | | | | | | | | | |
|-----------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 0.035 | 0.049 | 0.058 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 | 0.125 | 0.134 | 0.156 | 0.165 | 0.180 | 0.188 | 0.207 | 0.219 | 0.238 | 0.250 | 0.281 | 0.284 | 0.313 | 0.344 | 0.375 |
| 0.625 | | | | | | | | | | | | | | | | | | | | | | | |
| 0.688 | | | | | | | | | | | | | | | | | | | | | | | |
| 0.750 | | | | | | | | | | | | | | | | | | | | | | | |
| 0.813 | | | | | | | | | | | | | | | | | | | | | | | |
| 0.875 | | | | | | | | | | | | | | | | | | | | | | | |
| 0.938 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.000 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.063 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.125 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.188 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.250 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.313 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.375 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.500 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.563 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.625 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.688 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.750 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.768 | | | | | | | | | | | | | | | | | | | | | | | |
| 1.875 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.000 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.125 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.250 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.375 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.438 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.500 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.563 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.625 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.750 | | | | | | | | | | | | | | | | | | | | | | | |
| 2.875 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.000 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.063 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.125 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.250 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.375 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.500 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.555 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.625 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.688 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.750 | | | | | | | | | | | | | | | | | | | | | | | |
| 3.875 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.000 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.022 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.062 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.095 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.125 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.250 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.375 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.500 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.562 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.593 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.625 | | | | | | | | | | | | | | | | | | | | | | | |
| 4.750 | | | | | | | | | | | | | | | | | | | | | | | |
| 5.000 | | | | | | | | | | | | | | | | | | | | | | | |
| 5.125 | | | | | | | | | | | | | | | | | | | | | | | |

Delivery Conditions: M.D., S.S.I.D.

M.D.: Mandrel Drawn

S.S.I.D.: Special Smooth Inside Diameter

Standard Norms Supplied: ASTM A 513

Steel Grades Mainly Used: 1008-1040

Please contact our sales department for any inquiries.

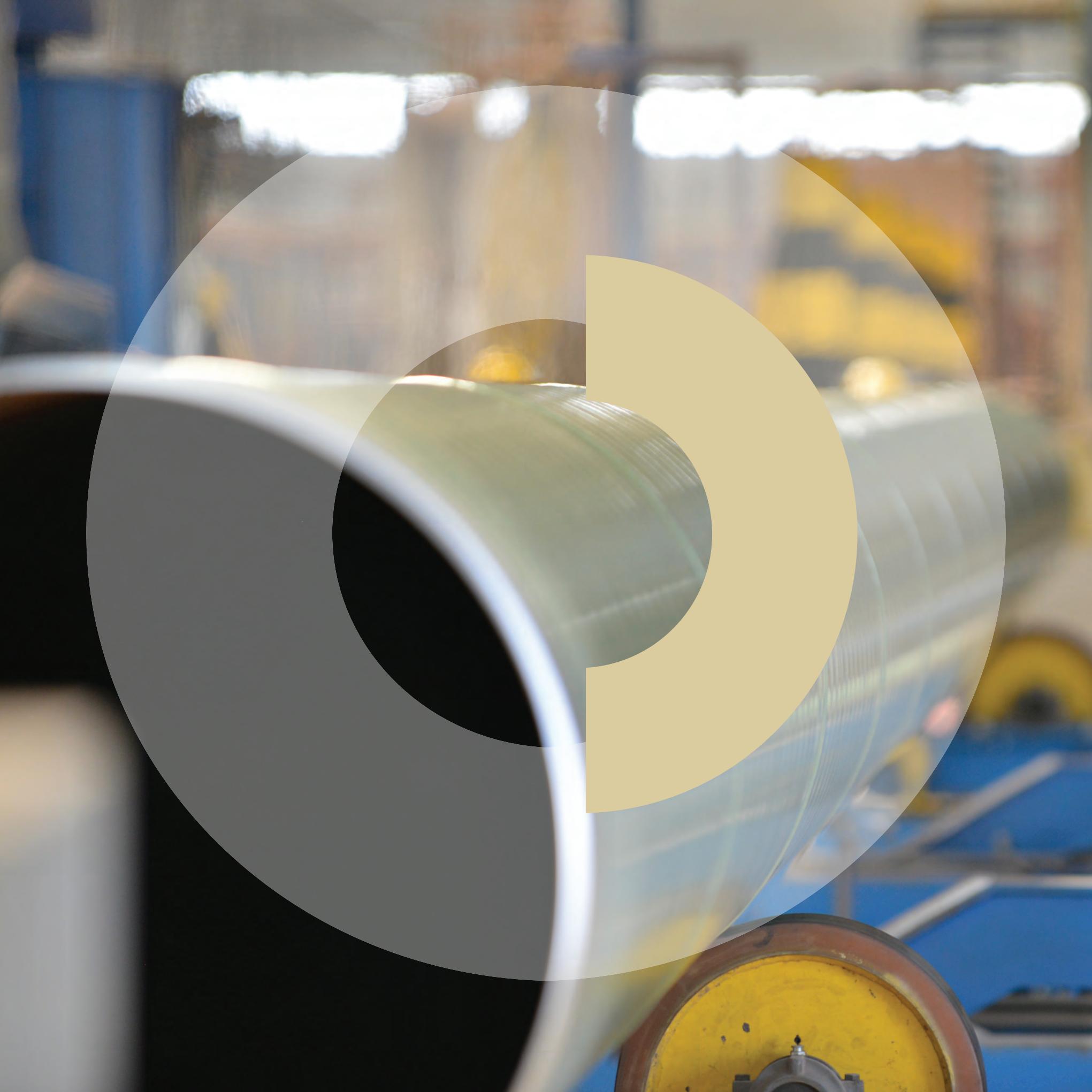
Welded Hollow Sections for Precision Applications (EN 10305-5)

| Side Length | Wall Thickness (mm) | | | | | | | | | |
|--------------|---------------------|------|------|------|------|------|------|------|------|------|
| | 0,80 | 0,90 | 1,00 | 1,20 | 1,50 | 2,00 | 2,50 | 3,00 | 3,50 | 4,00 |
| 8 x 20 | | | | | | | | | | |
| 10 x 10 | | | | | | | | | | |
| 10 x 15 | | | | | | | | | | |
| 10 x 18 | | | | | | | | | | |
| 10 x 20 | | | | | | | | | | |
| 10 x 25 | | | | | | | | | | |
| 10 x 30 | | | | | | | | | | |
| 10 x 33 | | | | | | | | | | |
| 10 x 35 | | | | | | | | | | |
| 10 x 40 | | | | | | | | | | |
| 10 x 50 | | | | | | | | | | |
| 12,7 x 12,7 | | | | | | | | | | |
| 15 x 15 | | | | | | | | | | |
| 15 x 20 | | | | | | | | | | |
| 15 x 25 | | | | | | | | | | |
| 15 x 30 | | | | | | | | | | |
| 15 x 35 | | | | | | | | | | |
| 15 x 40 | | | | | | | | | | |
| 15 x 50 | | | | | | | | | | |
| 16 x 16 | | | | | | | | | | |
| 17 x 21 | | | | | | | | | | |
| 17 x 35 | | | | | | | | | | |
| 18 x 18 | | | | | | | | | | |
| 18 x 30 | | | | | | | | | | |
| 19 x 19 | | | | | | | | | | |
| 20 x 20 | | | | | | | | | | |
| 20 x 25 | | | | | | | | | | |
| 20 x 30 | | | | | | | | | | |
| 20 x 35 | | | | | | | | | | |
| 20 x 40 | | | | | | | | | | |
| 20 x 45 | | | | | | | | | | |
| 20 x 50 | | | | | | | | | | |
| 20 x 55 | | | | | | | | | | |
| 20 x 60 | | | | | | | | | | |
| 20 x 80 | | | | | | | | | | |
| 21 x 21 | | | | | | | | | | |
| 23 x 30 | | | | | | | | | | |
| 25 x 25 | | | | | | | | | | |
| 25,4 x 25,4 | | | | | | | | | | |
| 25,4 x 50,80 | | | | | | | | | | |
| 25 x 30 | | | | | | | | | | |
| 25 x 35 | | | | | | | | | | |
| 25 x 40 | | | | | | | | | | |
| 25 x 45 | | | | | | | | | | |
| 25 x 50 | | | | | | | | | | |
| 25 x 55 | | | | | | | | | | |
| 25 x 60 | | | | | | | | | | |
| 27 x 27 | | | | | | | | | | |
| 30 x 30 | | | | | | | | | | |
| 30 x 35 | | | | | | | | | | |
| 30 x 40 | | | | | | | | | | |
| 30 x 45 | | | | | | | | | | |
| 30 x 50 | | | | | | | | | | |
| 30 x 60 | | | | | | | | | | |
| 30 x 70 | | | | | | | | | | |
| 30 x 80 | | | | | | | | | | |
| 30 x 90 | | | | | | | | | | |
| 32 x 32 | | | | | | | | | | |
| 32 x 60 | | | | | | | | | | |
| 33 x 60 | | | | | | | | | | |
| 35 x 35 | | | | | | | | | | |
| 35 x 40 | | | | | | | | | | |
| 35 x 45 | | | | | | | | | | |
| 35 x 50 | | | | | | | | | | |
| 35 x 75 | | | | | | | | | | |
| 38 x 38 | | | | | | | | | | |
| 40 x 40 | | | | | | | | | | |
| 40 x 50 | | | | | | | | | | |
| 40 x 60 | | | | | | | | | | |
| 40 x 70 | | | | | | | | | | |
| 40 x 80 | | | | | | | | | | |
| 44,5 x 44,5 | | | | | | | | | | |
| 45 x 45 | | | | | | | | | | |
| 50 x 50 | | | | | | | | | | |
| 50 x 60 | | | | | | | | | | |
| 50 x 80 | | | | | | | | | | |
| 50,8 x 50,8 | | | | | | | | | | |
| 60 x 60 | | | | | | | | | | |
| 70x70 | | | | | | | | | | |
| 80x80 | | | | | | | | | | |
| 90x90 | | | | | | | | | | |
| 100x100 | | | | | | | | | | |
| 110x110 | | | | | | | | | | |
| 120x120 | | | | | | | | | | |
| 120x130 | | | | | | | | | | |
| 120x140 | | | | | | | | | | |
| 130x130 | | | | | | | | | | |

(Thicknesses bigger than 5mm must be examined.)
Grades stronger than S700 must be examined.



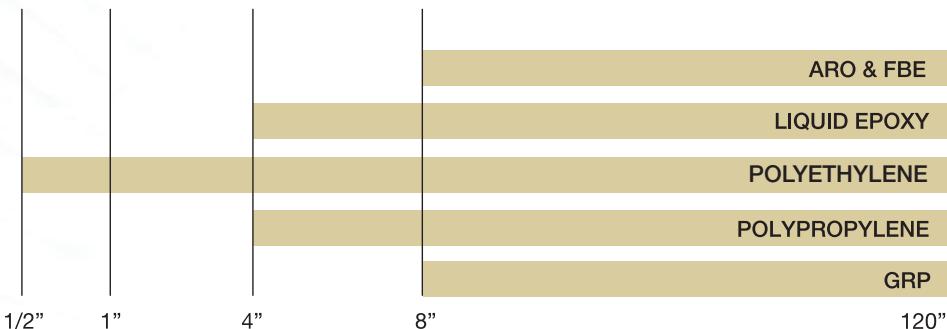
COATINGS AND LININGS



COATINGS AND LININGS

Scope and Field of Application

Borusan Mannesmann products are manufactured with modern types of equipment, offering a wide range of anti-corrosive coatings. The below graph illustrates the type of coatings applied externally and internally according to standards and particular customer requirements.



Surface Preparation

The process enabling the appropriate surface cleanliness and smoothness level according to the type of coating is applied by blasting method. (Sa 2 1/2)
(DIN 55928, SIS 55900)

Galvanizing

Especially for water pipes, Borusan Mannesmann galvanizing operations are currently applied to export U.S. and many European countries.(ASTM A53, TS EN 10240)

Polyethylene - Polypropylene Coating

Excellent protection for buried pipes, high mechanical strength, and corrosion resistance.

Low, medium, or high-density polyethylene or polypropylene coating.

3 Layer Coating Method:

Layer 1: Electrostatic epoxy primer.

Layer 2: Extrusion adhesive wrapping for spiral, an electrostatic adhesive layer for ERW.

Layer 3: Extrusion polyethylene or polypropylene wrapping for spiral, hot extrusion for ERW.

For PE: EN ISO 21809-1 (DIN 30670, NF A 49-710, UNI 9099)

For PP: EN ISO 21809-1 (DIN 30678, NFA 49-711)

Flow-Coat Epoxy Lining

For gas transmission lines, in order to reduce pipe wall roughness, thus increasing throughput. Average thickness 60 µm.
(API RP 5L2)

Liquid Epoxy

Various epoxy coatings enable a hygienic inner surface for potable water transportation and an outer surface to resist soil or seawater corrosion. The coating thickness of up to 600 micron. (AWWA C 210, TS 5140, EN 12944-5)

FBE-Fusion Bonded Epoxy

Provides high protection of pipe lines used for oil, gas, and water transmission. (AWWA C 213, API 5L7, CSA Z 245-20, NACE RP 0394)

Abrasion Resistant Overlay ARO

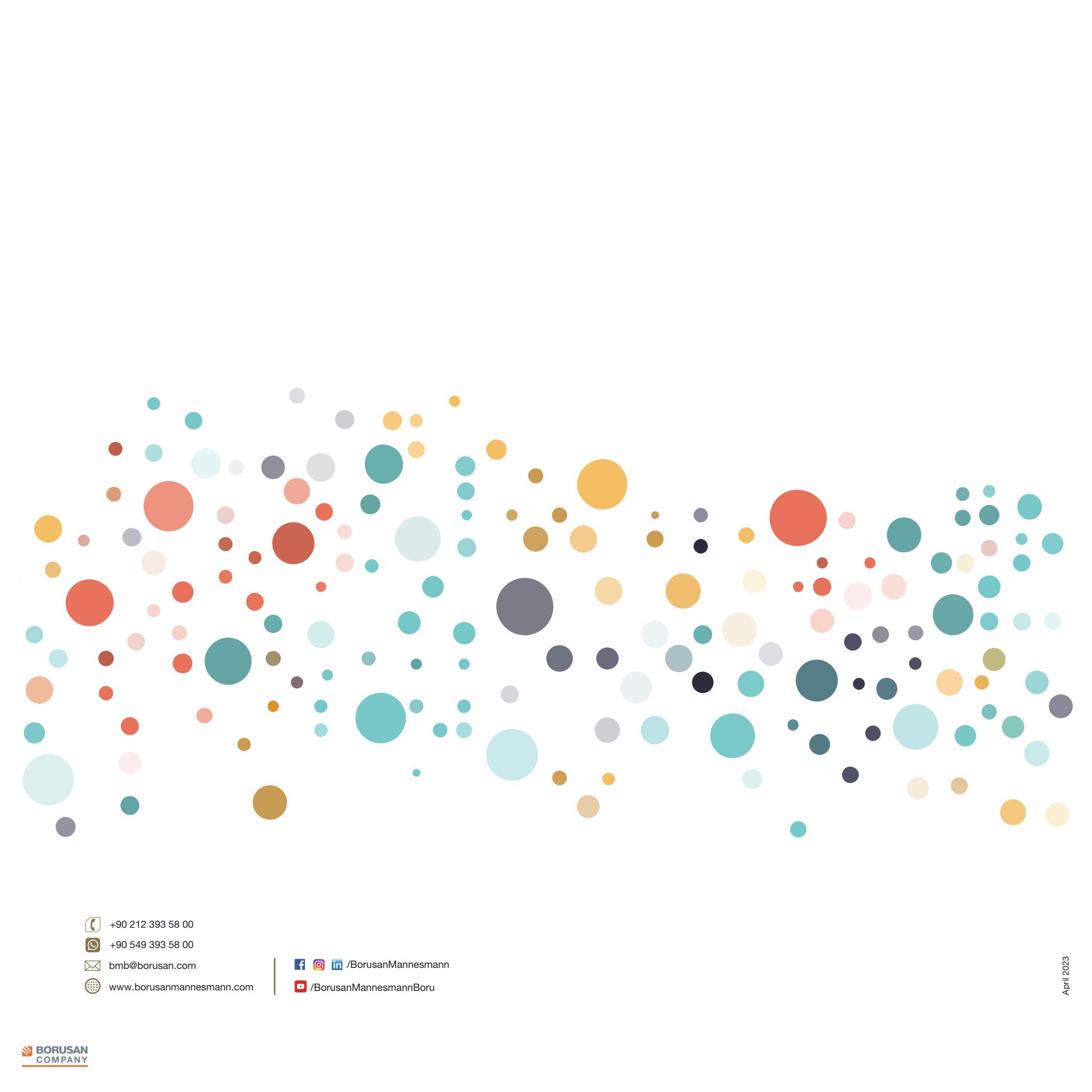
Dual-layer fusion bonded epoxy provides excellent abrasion, impact resistance and also maintains excellent protection for gas-oil line pipes. (AWWA C 213, API 5L7, CSA Z 245-20, NACE RP 0394)

Glass fibre reinforced plastic (GRP) Coating

For buried and HDD line pipes, GRP coating provides excellent mechanical protection.

Tests Performed

| | | |
|--------------------------------|---|----------------------------------|
| Coating Thickness | MFR and MVR Test | Cross Cut Test |
| Holiday Testing | CD (Cathodic Disbondment Test) | Epoxy Bend Test |
| Impact Strength | DSC Test (Differential Scanning Calorimetry test) | V Cut Test |
| Adhesion Test | Manuel Holiday | FBE Porosity Test |
| Indentation Strength | Wet Sponge Pinhole Test | Porosity Test |
| Coating Resistivity | Hot Water Immersion Test | Cross Section Porosity |
| Elongation Percentage at Break | Buchholz Hardness Test | Low-temperature Flexibility Test |
| Strain at Break Test | Shore A & Shore D Measurement | Cure & Gel Time Test |
| | PE/PP Breaking Elongation Test | Moisture Content Test |
| | | FBE Particle Size Test |



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