BORUSAN PIPE

OUR PRODUCTS, OUR COMMITMENT

CONTENTS

MILESTONES


1944
Foundation of Borusan
1958
Borusan Pipe was founded
1968
Halkalı ERW Pipe Plant started production, İstanbul
1969
First exports
1976
Gemlik ERW Pipe Plant started production, Bursa
1979
Borusan Port inagurated
1994
Borusan Pipe quoted on İstanbul Stock Exchange
1998
Borusan and Mannesmann merged their pipe business activities in Turkey
2001
Acquistion of cold drawn pipe plant in Vobarno, Italy
2004
The company name is amended as “Borusan Mannesmann”
2009
Borusan Port expansion completed

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

Romania Service Center

2023

Acquisition LSAW pipe plant in Florida and HSAW pipe plant in Alabama

2024

Borusan and Mannesmann partnership has ended. The name of the company has changed as Borusan Boru in Türkiye and Borusan Pipe internationally

Gemlik Location

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 Kocabıyık Foundation was established in 1992 by Asım Kocabıyık, his wife, and children to carry out educational, training, and cultural activities. In 2007, it was renamed Borusan Kocabıyık 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.

Production Group	Automotive Group	Machinery and Power Systems Group	Logistics Group	Energy
Borusan Pipe	Borusan Automotive Group	Borusan Cat	Borusan Lojistik	Borusan EnBW Enerji
Borçelik	Borusan Araç İhale		Borusan Port	
Supsan	Parcapazari.com			

Partners

ArcelorMittal, CAT, GIWA, EATON, EnBW

Distrubuted Brands

JAGUAR, BMW, MINI, CAT, LAND ROVER

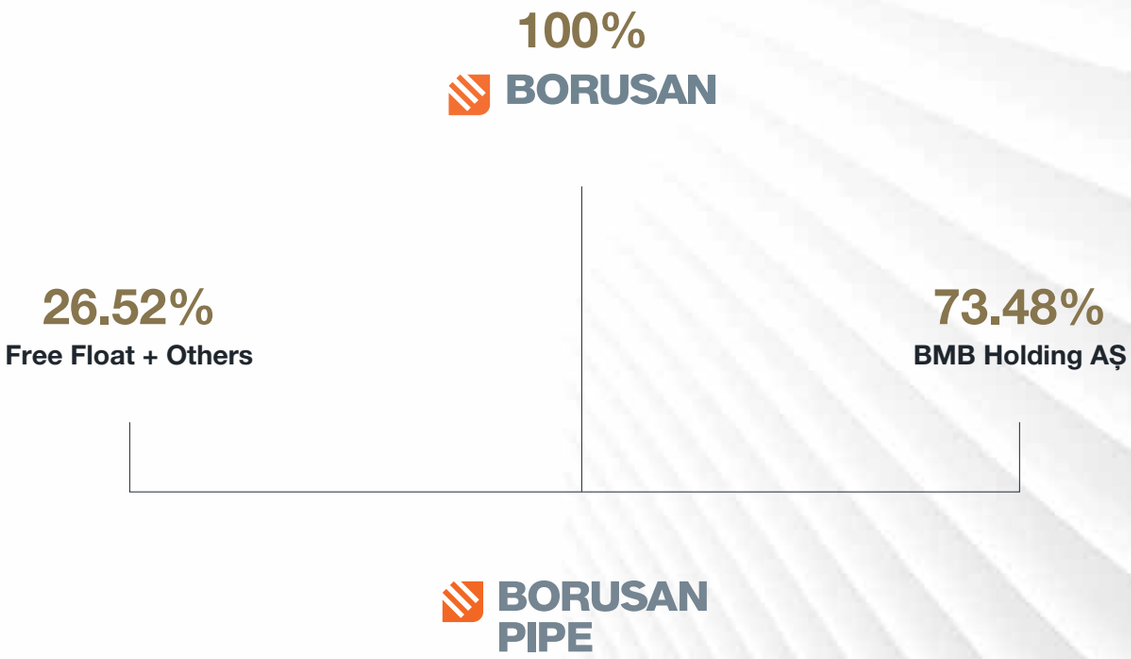
BORUSAN PIPE IN BRIEF

Borusan Piipe 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 Pipe continues its production activities with its 11 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 Pipe 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 Pipe 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

Borusan Berg Pipe Panama City City LSAW Pipe Plant

Sectors served: Energy Sector

Workforce : 171
Area : 28.600 m²

USA / Alabama

Borusan Berg Pipe Mobile Pipe HSAW Pipe Plant

Sectors served: Energy Sector

Workforce : 99
Area : 30.600 m²

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

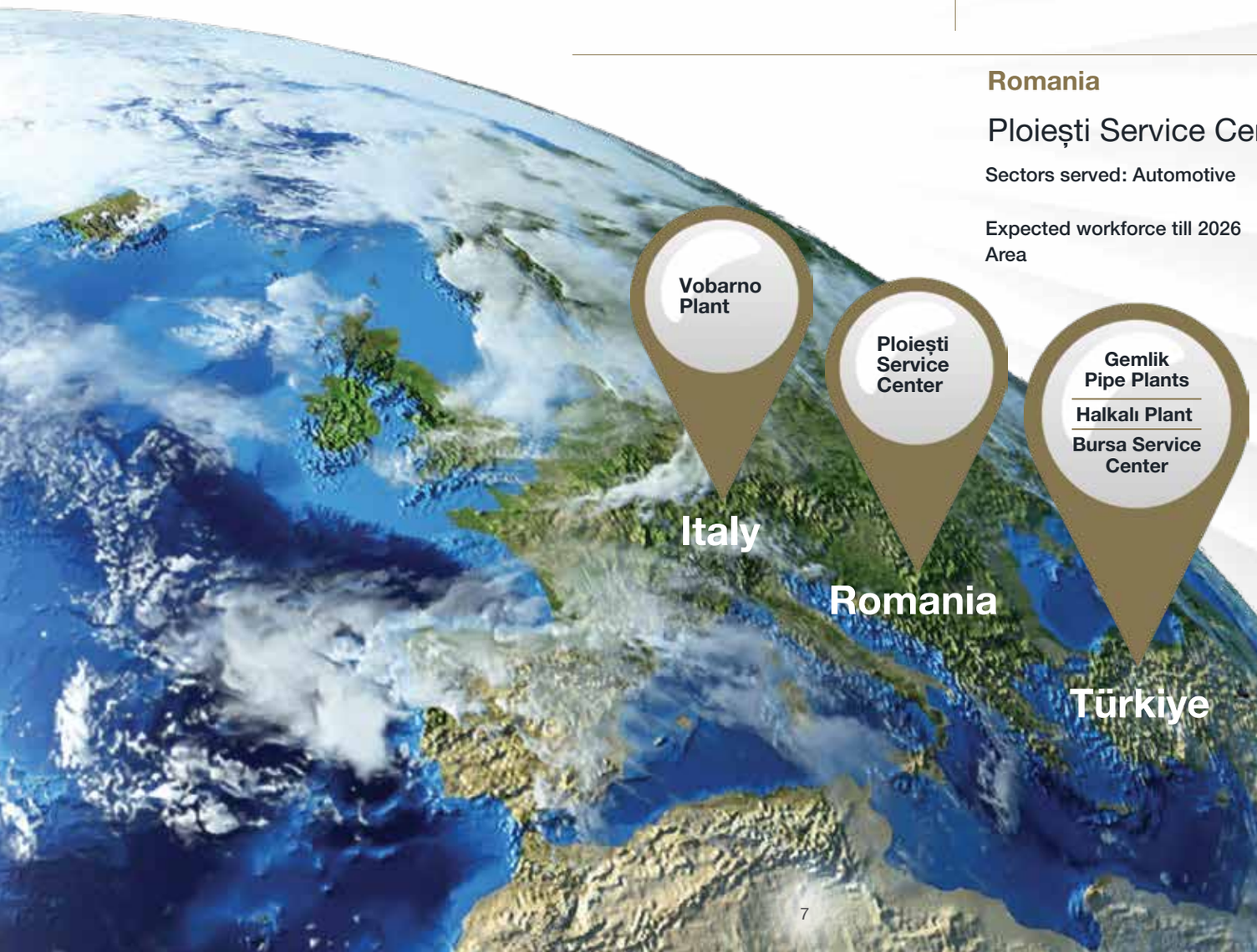
Workforce : 90
Area : 24.000 m²

Romania

Ploiești Service Center (Coming Soon)

Sectors served: Automotive

Expected workforce till 2026 : 62
Area : 4.800 m²



BORUSAN GROUP SUSTAINABILITY STRATEGY

Borusan Holding, which started its sustainability journey 15 years ago, updated its sustainability strategy in 2020. In this context, priority issues and 2030 Group and company targets were determined in these matters.

While sustainability activities carried out with group companies are handled within the scope of Climate, Human and Innovation (i3) value areas, the overall strategy is inspired by the world and inspired by the future.



Climate

Climate-focused We aim to be carbon neutral by 2030, reduce water and plastic consumption and support terrestrial life while building a renewable energy portfolio.

In addition, we aim to reduce the waste rate to disposal to 50 percent by activating a sustainable procurement policy.



SUSTAINABILITY AT **BORUSAN PIPE**

Human

In the human header retaining and developing talent, preventing unwanted losses, being the most preferred employer, increasing the ratio of women leaders and employees are among the prominent topics. In addition, in the name of social development, we prioritize providing a happy, healthy and safe working environment for our employees and raise awareness about gender equality.



Innovation

On the topic of innovation While aiming to create innovative, sustainable business models, we plan to invest in start-ups. We closely follow global innovation trends in every field from electric vehicles to artificial intelligence applications, from machine learning to advanced data analysis and implement new projects within our Group companies.



CUSTOMER BENEFITS

Exceeding Limits with Continuous R&D

Borusan Pipe 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 Pipe gets the maximum benefits from the location advantage of its plants. Borusan Pipe'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 Pipe 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 Pipe provides turnkey products either with its modern integrated facilities or reliable processing suppliers, for its customers.

VOC - Most Valuable Driving Force

Borusan Pipe 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 Pipe. 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 Pipe'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 Pipe 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 Pipe endeavors to protect the health and safety of its workforce and service providers.

Borusan Pipe; 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 Pipe, 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	2,87 mm - 13,06 mm	6,00 m - 18,30 m
1.050” - 13.375”	0.113” - 0.514”	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 inpections 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 mm≤OD≤323.9 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 mm≤OD≤88.9 mm: full body
114.3 mm≤OD≤323.9 mm: weld seam
21.3 mm≤OD≤168,3 mm: off-line heat treatment.

Production Range

OD	Wall Thickness (mm & inch)																								
mm	mm	2,8	3,0	3,2	3,6	3,68	3,7	4,0	4,5	5,1	5,2	6	6,6	7	7,1	8,1	8,4	8,6	9,0	9,5	10,0	11	12	12,7
	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	5,16 mm - 25,4 mm	Single lengths up to 24,50 m*
20'' - 120''	0,203'' - 1''	

* For pilling 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
- API Q1
- ISO9001
- ISO14001
- ISO45001
- EN ISO/IEC 17025
- EN ISO 3183

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
mm	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 Certifed-Pressure Equipment Directive 2014/68/eu Certified

Production Range

OD	Wall Thickness (mm)																								
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	10,0
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<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	Nominal Bore		Wall Thickness (mm)									
(mm)	(mm)	(inch)	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	Outside Diameter	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)
(ich)	(mm)					
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
11/4	42,40	2,82	2,82	2,54	3,10	3,79
11/2	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
21/2	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)
- Temporary oil application
  (Other colors are available upon request.)
- Hot dip galvanizing
- PE, PP Coating
- Bare Pipe (Uncoated)
- Temporary oil application

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)
3 1/2	90	4.000 (101.6)	0.125 (3.18)	5.18 (7.72)	…	…	1120 (7700)	1310 (19000)
			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)
4	100	4.500 (114.3)	0.125 (3.18)	5.85 (8.71)	…	…	1000 (6900)	1170 (8100)
			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
			0.625 (15.88)	32.99 (49.11)	...	160	2800 (19300)	2800 (19300)
			0.750 (19.05)	38.59 (57.43)	XXS	...	2800 (19300)	2800 (19300)
6	150	6.625 (168.3)	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)	STD	40	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)	XS	80	2350 (16200)	2740 (18900)
			0.562 (14.27)	36.43 (54.20)	...	120	2800 (19300)	2800 (19300)
			0.719 (18.26)	45.39 (67.56)	...	160	2800 (19300)	2800 (19300)
			0.864 (21.95)	53.21 (79.22)	XXS	...	2800 (19300)	2800 (19300)
8	200	8.625 (219.1)	0.188 (4.78)	16.96 (25.26)	...	...	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)	...	20	1040 (7200)	1220 (8400)
			0.277 (7.04)	24.72 (36.31)	...	30	1160 (7800)	1350 (9300)
			0.312 (7.92)	27.73 (41.24)	...	...	1300 (9000)	1520 (10500)
			0.322 (8.18)	28.58 (42.55)	STD	40	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)	...	60	1700 (11700)	2000 (13800)
			0.438 (11.13)	38.33 (57.08)	...	...	1830 (12600)	2130 (14700)
			0.500 (12.70)	43.43 (64.64)	XS	80	2090 (14400)	2430 (16800)
			0.594 (15.09)	51.00 (75.92)	...	100	2500 (17200)	2800 (19300)
			0.719 (18.26)	60.77 (90.44)	...	120	2800 (19300)	2800 (19300)
			0.812 (20.62)	67.82 (100.92)	...	140	2800 (19300)	2800 (19300)
			0.875 (22.22)	72.49 (107.88)	XXS	...	2800 (19300)	2800 (19300)
			0.906 (23.01)	74.76 (111.27)	...	160	2800 (19300)	2800 (19300)
10	250	10.750 (273.0)	0.188 (4.78)	21.23 (31.62)	...	...	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)	...	20	840 (5800)	980 (6800)
			0.279 (7.09)	31.23 (46.49)	...	...	930 (6400)	1090 (7500)
			0.307 (7.80)	34.27 (51.01)	...	30	1030 (7100)	1200 (8300)
			0.344 (8.74)	38.27 (56.96)	...	...	1150 (7900)	1340 (9200)
			0.365 (9.27)	40.52 (60.29)	STD	40	1220 (8400)	1430 (9900)
			0.438 (11.13)	48.28 (71.87)	...	...	1470 (10100)	1710 (11800)
			0.500 (12.70)	54.79 (81.52)	XS	60	1670 (11500)	1950 (13400)
			0.594 (15.09)	64.49 (95.97)	...	80	1990 (13700)	2320 (16000)
			0.719 (18.26)	77.10 (114.70)	...	100	2410 (16600)	2800 (19300)
			0.844 (21.44)	89.38 (133.00)	...	120	2800 (19300)	2800 (19300)
			1.000 (25.40)	104.23 (155.09)	XXS	140	2800 (19300)	2800 (19300)
			1.125 (28.57)	115.75 (172.21)	...	160	2800 (19300)	2800 (19300)
12	300	12.750 (323.8)	0.203 (5.16)	27.23 (40.55)	...	...	570 (3900)	670 (4600)
			0.219 (5.56)	29.34 (43.63)	...	...	620 (4300)	720 (5000)
			0.250 (6.35)	33.41 (49.71)	...	20	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)	...	30	930 (6400)	1090 (7500)
			0.344 (8.74)	45.62 (67.90)	...	...	970 (6700)	1130 (7800)
			0.375 (9.52)	49.61 (73.78)	STD	...	1060 (7300)	1240 (8500)
			0.406 (10.31)	53.57 (79.70)	...	40	1150 (7900)	1340 (9200)
			0.438 (11.13)	57.65 (85.82)	...	...	1240 (8500)	1440 (9900)
			0.500 (12.70)	65.48 (97.43)	XS	...	1410 (9700)	1650 (11400)
			0.562 (14.27)	73.22 (108.92)	...	60	1590 (11000)	1850 (12800)
			0.688 (17.48)	88.71 (132.04)	...	80	1940 (13400)	2270 (15700)
			0.844 (21.44)	107.42 (159.86)	...	100	2390 (16500)	2780 (19200)
			1.000 (25.40)	125.61 (186.91)	XXS	120	2800 (19300)	2800 (19300)
			1.125 (28.57)	139.81 (208.00)	...	140	2800 (19300)	2800 (19300)
			1.312 (33.32)	160.42 (238.68)	...	160	2800 (19300)	2800 (19300)

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 - FIRESIST+

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’’

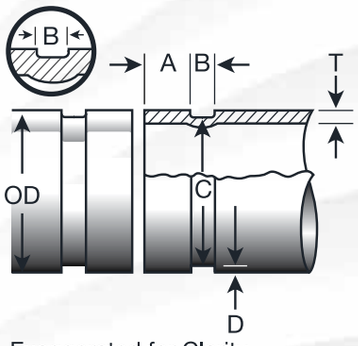
Technical Specifications

- 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	2,0 mm - 12,70 mm
1/2” - 12,751”	0,079” - 0,500’’



Exaggerated for Clarity

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	5,16 mm - 25,4 mm	Single lengths up to 24,50 m
20'' - 120''	0,203'' - 1''	

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	Wall Thickness (mm)																		
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	12,7
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	5,16 mm - 25,4 mm	Single lengths up to 55,0 m
20'' - 120''	0,203'' - 1''	

For ERW Micro Pilling Pipes

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"	0.110'' - 0.500''	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.

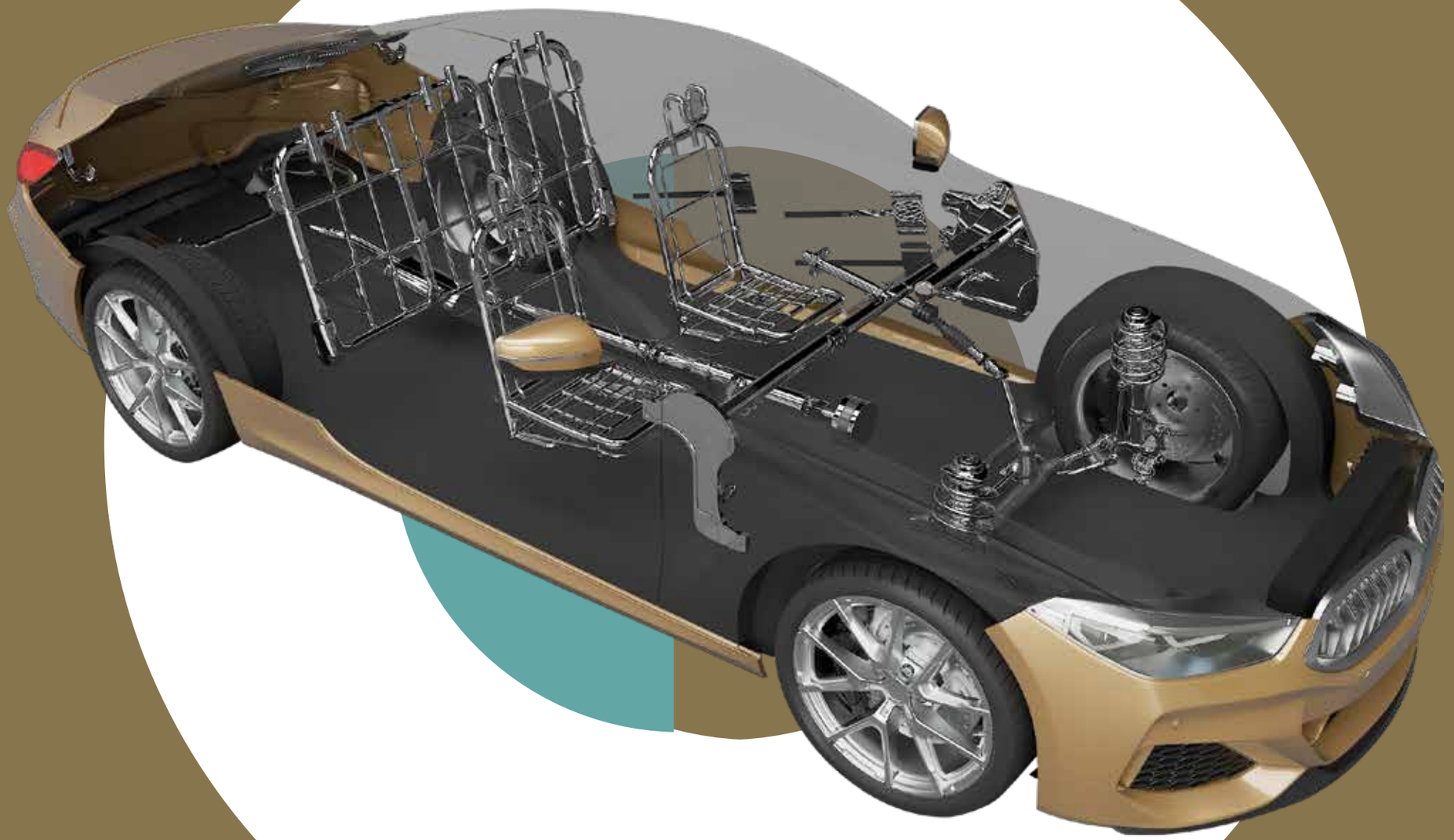
Most Common ERW Piling Tube Sizes

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 Strenght (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 Pipe 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 productionof 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 inquires 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

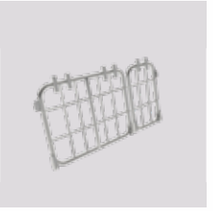
HEAD REST TUBES

CROSS CAR BEAMS

STEERING COLUMN TUBES

STABILIZER

EXHAUST TUBES



REAR SEAT FRAME TUBES

GAS SPRING

AXLE

TRUNK HINGE

DOOR IMPACT BEAMS

HYDRAULIC APPLICATION

Borusan Pipe'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 Pipe 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 Pipe 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	Wall Thickness (mm)																									
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	11,00
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	Wall Thickness (mm)																								
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	10
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)

	Wall Thickness (inch)																						
OD (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	0.406
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

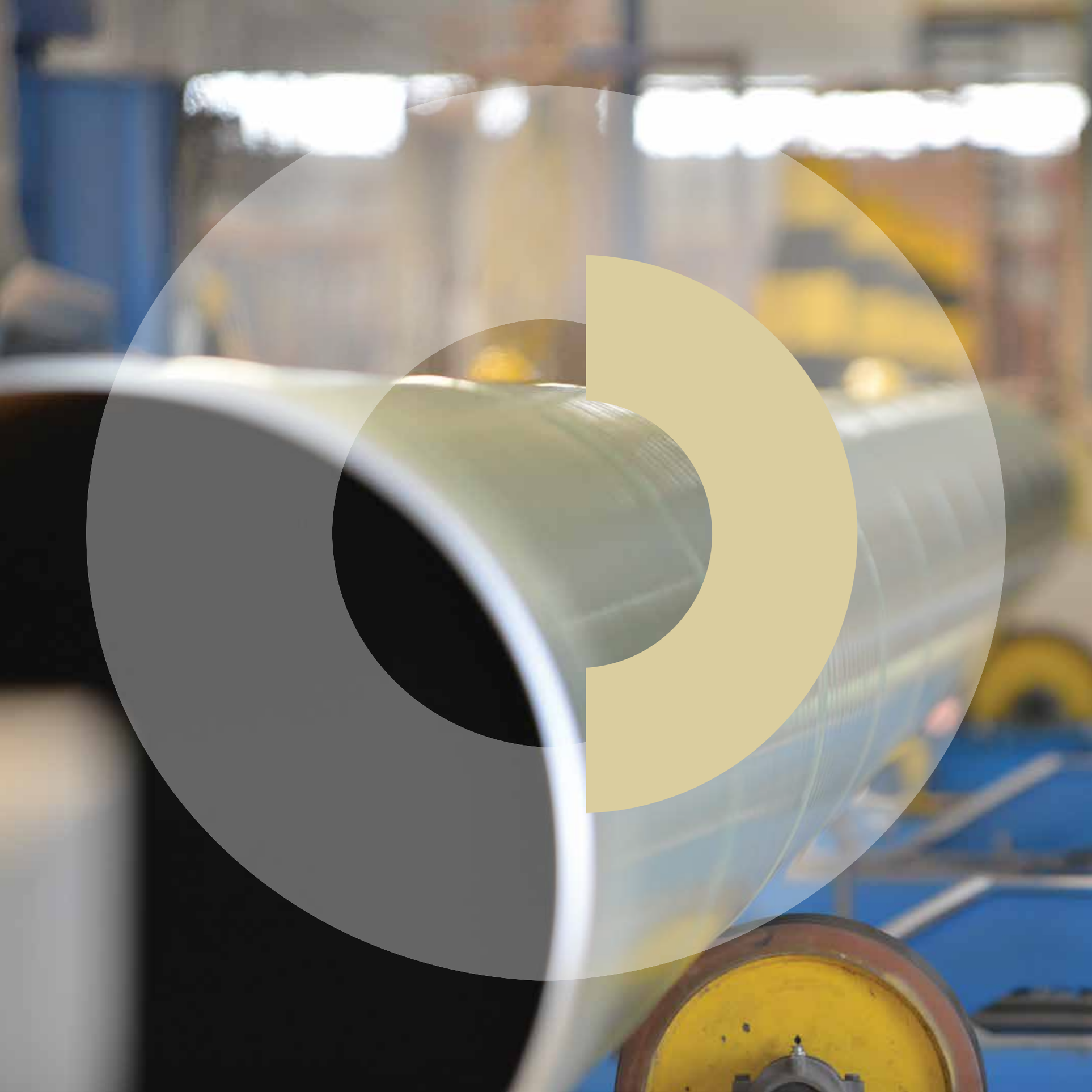
Please contact our sales department for any inquiries.

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

Side Length	Wall Thickness (mm)										
b x h (mm)	0,80	0,90	1,00	1,20	1,50	2,00	2,50	3,00	3,50	4,00	5,00
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.

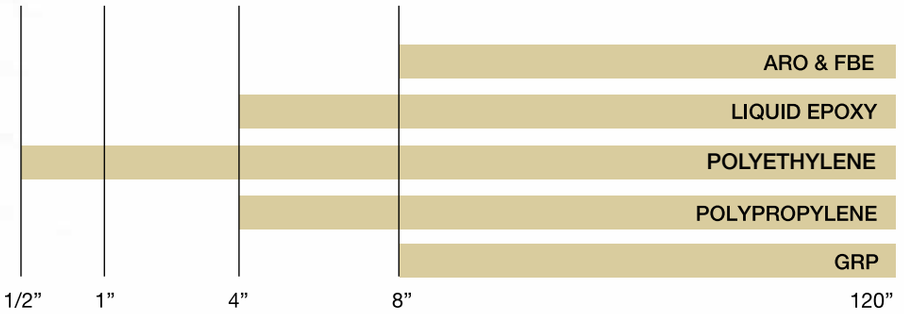
COATINGS AND LININGS



COATINGS AND LININGS

Scope and Field of Application

Borusan Pipe 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 Pipe galvanizing operations are currently applied to export U.S. and many European countries.(ASTM A53, TS EN 10240)

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

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December 2023

BORUSAN COMPANY