Pipes for civil and industrial installations

Tenaris

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Towards the future of sustainable steel

TENARIS'S COMMITMENT FOR ENVIRONMENT

Develop a long-term sustainable business model

Prevent pollution and use resources more efficiently

Minimize the environmental impact of our products and services

REDUCED AIR EMISSIONS

Low NOx emission combustion systems and advanced filtration systems

RESOURCE SAVINGS

Advanced systems to recycle energy, waste and industrial water

ENVIRONMENTAL MANAGEMENT SYSTEMS

ISO 14001 certified environmental management system

ENVIRONMENTAL PRODUCT DECLARATIONS

EPD®

SYSTEM CERTIFICATIONS

ISO 9001:2015	ISO 14001:2015	OHSAS 18001:2007	ISO 50001:2011
Quality Management System	Environmental Management System	Health & Safety Management System	Energy Management System

PARTICIPATION IN PRODUCT ASSOCIATIONS

Promozione Acciaio Foundation
For the development of steel use in infrastructures and construction.

FirePro Association
For the development and design of active and passive firefighting systems.

AIZ
For the development of the use of hot-dip galvanizing as corrosion protection for steel.
Participation at international level in EGGA (European General Galvanizers Association) activities.

Products

Threadable pipes for plumbing systems and other applications

EN 10255 norm

MECHANICAL AND CHEMICAL PROPERTIES

Steel name	S 195T

MECHANICAL PROPERTIES

Ultimate tensile strenght (N/mm²)	**320 ÷520**
Yield strenght MIN (N/mm²)	**195**
Elongation MIN %	**20**

CHEMICAL COMPOSITION % (CAST ANALYSIS)

C	MAX	**0,20**	P	MAX	**0,035**
Mn	MAX	**1,40**	S	MAX	**0,030**

STANDARD LENGTH

6 m.

—

ENDS

- With conical thread and coupling
- With conical thread, without coupling
- Plain
- Grooved

—

TESTS

Hydrostatic test at 50 bar or equivalent nondestructive electromagnetic test (Eddy Current) according to norm 10893-1.

SURFACES

- Black (hot finished)
- Hot-dipped galvanized
- With external epoxy coating – Thermo®
- Fusion bonded epoxy – Thermo Plus
- With external polyethylene coating – Polycoat

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CERTIFICATION

3.1 test certificate in compliance with norm EN 10204.

—

MARKING

According to norm EN 10255.

TOLERANCES

SERIES	OUTSIDE DIAMETER	WALL THICKNESS	WEIGHT	LENGTH
LIGHT L1	See table of dimensions	+ not limited – 8%	+10% – 8% on each tube	6000 mm + 100 mm - 0 mm
MEDIUM - HEAVY	See table of dimensions	± 12,5%*		6000 mm + 100 mm - 0 mm

* The maximum tolerance is not applied if the bundle is within the weight tolerance

LIGHT SERIES L1 EN 10255 – EN 10226/1 (EX UNI ISO 7/1) THREADABLE*

NOMINAL DIAMETER		OUTSIDE DIAMETER MAX	OUTSIDE DIAMETER MIN	W.T.	NOMINAL WEIGHT – kg/m PLAIN ENDS		NOMINAL WEIGHT – kg/m THREADED WITH COUPLING	
inches	ND	mm	mm	mm	black	galvanized	black	galvanized
3/8	10	17,4	16,7	2,0	0,742	0,780	0,748	0,786
1/2	15	21,7	21,0	2,3	1,08	1,13	1,09	1,17
3/4	20	27,1	26,4	2,3	1,39	1,45	1,40	1,46
1	25	34,0	33,2	2,9	2,20	2,28	2,22	2,30
1 1/4	32	42,7	41,9	2,9	2,82	2,92	2,85	2,95
1 1/2	40	48,6	47,8	2,9	3,24	3,35	3,28	3,39
2	50	60,7	59,6	3,2	4,49	4,63	4,56	4,70
2 1/2	65	76,3	75,2	3,2	5,73	5,91	5,85	6,03
3	80	89,4	87,9	3,6	7,55	7,76	7,72	7,93
4	100	114,9	113,0	4,0	10,80	11,08	11,1	11,40

* with coupling EN 10241 (ex UNI 15050)

MEDIUM SERIES EN 10255 – EN 10226/1 (EX UNI ISO 7/1) THREADABLE

NOMINAL DIAMETER		OUTSIDE DIAMETER MAX	OUTSIDE DIAMETER MIN	W.T.	NOMINAL WEIGHT – kg/m PLAIN ENDS		NOMINAL WEIGHT – kg/m THREADED WITH COUPLING	
inches	ND	mm	mm	mm	black	galvanized	black	galvanized
3/8	10	17,5	16,7	2,3	0,839	0,876	0,845	0,882
1/2	15	21,8	21,0	2,6	1,21	1,26	1,22	1,27
3/4	20	27,3	26,5	2,6	1,56	1,62	1,57	1,63
1	25	34,2	33,3	3,2	2,41	2,49	2,43	2,51
1 1/4	32	42,9	42	3,2	3,10	3,2	3,13	3,23
1 1/2	40	48,8	47,9	3,2	3,56	3,67	3,60	3,71
2	50	60,8	59,7	3,6	5,03	5,17	5,10	5,24
2 1/2	65	76,6	75,3	3,6	6,42	6,60	6,54	6,72
3	80	89,5	88,0	4,0	8,36	8,57	8,53	8,74
4	100	115,0	113,1	4,5	12,2	12,48	12,5	12,80
5	125	140,8	138,5	5,0	16,6	16,94	17,1	17,30
6	150	166,5	163,9	5,0	19,8	20,20	20,4	20,80

HEAVY SERIES EN 10255 – EN 10226/1 (EX UNI ISO 7/1) THREADABLE

NOMINAL DIAMETER		OUTSIDE DIAMETER MAX	OUTSIDE DIAMETER MIN	W.T.	NOMINAL WEIGHT – kg/m PLAIN ENDS		NOMINAL WEIGHT – kg/m THREADED WITH COUPLING	
inches	ND	mm	mm	mm	black	galvanized	black	galvanized
3/8	10	17,5	16,7	2,9	1,02	1,06	1,03	1,07
1/2	15	21,8	21,0	3,2	1,44	1,49	1,45	1,50
3/4	20	27,3	26,5	3,2	1,87	1,93	1,88	1,94
1	25	34,2	33,3	4,0	2,93	3,89	3,82	3,92
1 1/4	32	42,9	42,0	4,0	3,79	3,2	3,13	3,23
1 1/2	40	48,8	47,9	4,0	4,37	4,48	4,41	4,52
2	50	60,8	59,7	4,5	6,19	6,33	6,26	6,40
2 1/2	65	76,6	75,3	4,5	7,93	8,11	8,05	8,23
3	80	89,5	88,0	5,0	10,3	10,51	10,5	10,90
4	100	115,0	113,1	5,4	14,5	14,27	14,8	15,10
5	125	140,8	138,5	5,4	17,9	18,24	18,4	18,70
6	150	166,5	163,9	5,4	21,3	21,70	21,9	22,30

Tubes for pressure applications

EN 10216-1 Norm

MECHANICAL AND CHEMICAL PROPERTIES

Style name	P235TR2*

MECHANICAL PROPERTIES

Ultimate tensile strenght (N/mm²)	**360 ÷500**
Yield strenght (N/mm²)	**235**
Elongation MIN % (l)	**25**
Elongation MIN % (t)	**23**

CHEMICAL COMPOSITION % (CAST ANALYSIS)

C	MAX	**0,16**	P	MAX	**0,025**
Mn	MAX	**1,20**	S	MAX	**0,015**
Si	MAX	**0,35**	Al	MIN	**0,020**

* Upon request different steel types in compliance with the norm can be supplied

LENGTHS

Normally supplied in production lengths of from 4 to 8m.
Different lengths must be agreed upon.

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ENDS

Plain, cut perpendicularly to the tube axis.

SURFACES

- Black hot dip galvanized
- With external epoxy coating – Thermo®
- With external polyethylene coating – Polycoat

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MARKING

In compliance with norm EN 10216-1.

TESTS

Hydrostatic test at 70 bar or equivalent nondestructive electromagnetic test (Eddy Current) in compliance with norm ISO 10839-1.

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CERTIFICATION

3.1 test certificate in compliance with norm EN 10204.

TOLERANCES

OUTSIDE DIAMETER	TOLERANCE	WALL THICKNESS
O.D. ≤ 219,1 mm	± 1%o ± 0,5mm, the greater of the two values	± 12,5% or ± 0,4 mm, bigger of the two values
O.D. > 219,1 mm	± 1%o ± 0,5mm, the greater of the two values	± 20% when the WT/O.D. relationship is ≤ 0,025 ± 15% when the WT/O.D. relationship is > 0,025 ≤ 0,050

DIMENSIONS AND WEIGHT

OUTSIDE DIAMETER	W.T.	NOMINAL WEIGHT
mm	mm	kg/m
33,7	2,6	1,99
42,4	2,6	2,55
48,3	2,6	2,93
60,3	2,9	4,11
70	2,9	4,80
76,1	2,9	5,24
88,9	3,2	6,76
101,6	3,6	8,70
108	3,6	9,27
114,3	3,6	9,83
133	4	12,72
139,7	4,0	13,38

OUTSIDE DIAMETER	W.T.	NOMINAL WEIGHT
mm	mm	kg/m
159	4,5	17,15
168,3	4,5	18,18
193,7	5,4	25,08
219,1	6,3	33,06
244,5	6,3	37,01
273	6,3	41,44
323,9	8,4	65,36
355,6	8	68,58
406,4	8,8	86,29
457	10	110,24
508	11	134,82
610	12,5	184,19

Tubes for transportation systems - Gas

EN ISO 3183

MECHANICAL AND CHEMICAL PROPERTIES

Type of steel	L245R PSL2

MECHANICAL PROPERTIES

Ultimate tensile strenght (N/mm²)	**415**
Yield strenght MIN (N/mm²)	**245**
Elongation MIN %	**20**

CHEMICAL COMPOSITION % (CAST ANALYSIS)

C	MAX	**0,28**	P	MAX	**0,030**
Mn	MAX	**1,2**	S	MAX	**0,030**

SURFACE

- With external epoxy coating – Thermo® yellow
- Black hot dip galvanized
- Fusion bonded epoxy – Thermo Plus
- With external polyethylene coating – Polycoat

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CERTIFICATION

3.1 test certificate in compliance with norm EN 10204.

ENDS

Plain, cut perpendicularly to the tube axis.

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TESTS

The pipes are subjected to tests in conformity to production standards, additional tests should be agreed when ordering in compliance with norm ISO 10893-1.

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MARKING

In compliance with norm EN ISO 3183.

TOLERANCES

OUTSIDE DIAMETER	WALL THICKNESS	NOMINAL WEIGHT	LENGTH
a± 0,75 %	Sp < 4 mm +0,6% - 0,5%	according to norm EN ISO 3183: 2012	+ 100 – 0 mm on each tube
a± 0,75 %	Sp > 4 mm < 25 mm + 0,15% - 0,125%	according to norm EN ISO 3183: 2012	+ 100 – 0 mm on each tube

DIMENSIONS - EN ISO 3183

ND		OUTSIDE DIAMETER	W.T.	NOMINAL WEIGHT	EXECUTION
inches		mm	mm	Kg/m	
3/4	20	26,9	2,3	1,40	SL1
1	25	33,7	2,9	2,21	SL1
1 1/4	32	42,4	2,9	2,83	SL1
1 1/2	40	48,3	2,9	3,26	SL1
2	50	60,3	3,2	4,52	SL1
2 1/2	65	76,1	3,2	5,77	SL1
3	80	88,9	3,6	7,59	SL1
4	100	114,0	4,0	10,9	SL1

*On request up to 10" is available | Length 6 m

Seamless pipes for cable ducting

UNI 7683 Norm
Threaded and galvanized for explosion-proof electric plant (AD-PE)

MECHANICAL AND CHEMICAL PROPERTIES

Type of steel	Fe 360

MECHANICAL PROPERTIES

Ultimate tensile strenght (N/mm²)	**360 ÷480**
Yield strenght MIN (N/mm²)	**215**
Elongation MIN %	**24**

CHEMICAL COMPOSITION % (CAST ANALYSIS)

C	MAX	**0,19**	P	MAX	**0,045**
Mn		**0,4 ÷0,8**	S	MAX	**0,045**
Si	MAX	**0,35**			

LENGTH
6 m with tolerances + 100 - 50 mm.
3% permissible in lengths of from 4 to 5.95m.

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ENDS
Conical gas thread UNI 6125
Each pipe is supplied with a UNI 7684 coupling fitted to one end, galvanized after biconical threading, and the other with a plastic end cap.

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TESTS
Hydrostatic test at 50 bar or equivalent test, with nondestructive electromagnetic tests. Tensile and bending tests according to procedures required by the norm.

SURFACE
- Black
- Galvanized

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MARKING
In compliance with norm UNI 7683.

Coupling
Die stamped with the words:
AD UNI 7684

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CERTIFICATION
3.1 test certificate in compliance with norm EN 10204 will be issued.

TOLERANCES

WEIGHT	WALL THICKNESS
± 10% on each tube; ± 7,5% for lots of at least 10 t	+ not limited - 12,5%

DIMENSIONS – PIPES AND COUPLINGS

PIPE DIMENSIONS				WEIGHT OF THREADED PIPE WITH COUPLING	COUPLING DIMENSIONS (UNI 7684)	
NOMINAL THREAD DIAMETER	OUTSIDE DIAMETER MAX	OUTSIDE DIAMETER MIN	W.T.		DIAMETER	EXTERNAL LENGTH MIN
inches	mm	mm	mm	kg/m	mm	mm
1/2	21,7	21,0	2,35	1,19	25	45
3/4	27,1	26,4	2,35	1,50	32	45
1	34,0	33,2	2,90	2,33	39	60
1 1/4	42,7	41,9	2,90	2,99	48	60
1 1/2	48,6	47,8	2,90	3,45	54	60
2	60,7	59,6	3,25	4,83	66	60
2 1/2	76,3	75,2	3,25	6,15	82	70
3	89,4	87,9	3,65	8,15	95	70

Seamless carbon steel pipes

TECHNICAL FEATURES

Galvanizing is by hot-dipping in a completely automated plant in compliance with the UNI EN 10240 norm, which stipulates various levels of quality depending on pipe application:
EN 10240 - ASTM A53 - A123

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SPECS

ASTM A53 API 5L/ A 106 Gr. B X42 X 52
ASTM A 333 GR 6°

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GALVANIZATION

ASTM A 53 - A123 – EN 10240-A1
ISO 1461

CERTIFICATION FOR GALVANIZED MATERIAL

DVGW

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ENDS

Plain - Threaded - Grooved

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OTHER COATINGS

- Hot Coated Epoxy Powder
- Red color RAL 3000 for fire-extinguishing system
- External coating extruded polyethylene sheath

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DIMENSIONS

From ½ to 8

PIPE DIMENSIONS

NPS	ND	OD	W.T.	WEIGHT	CLASS	NUMBER
inches		mm	mm	Kg/m	STD,XS,XXS	
1/2	15	21,3	2,77	1,30	STD	40
1/2	15	21,3	3,73	1,66	XS	80
1/2	15	21,3	4,78	2,01		160
1/2	15	21,3	7,47	2,62	XXS	
3/4	20	26,7	2,87	1,74	STD	40
3/4	20	26,7	3,91	2,26	XS	80
3/4	20	26,7	5,54	2,98		160
3/4	20	26,7	7,82	3,75	XXS	
1	25	33,4	3,4	2,59	STD	40
1	25	33,4	4,5	3,30	XS	80
1	25	33,4	6,4	4,39		160
1	25	33,4	9,1	5,62	XXS	
1 ¼	32	42,2	3,6	3,53	STD	40
1 ¼	32	42,2	4,9	4,64	XS	80
1 ¼	32	42,2	6,4	5,82		160
1 ¼	32	42,2	9,7	8,01	XXS	
1 ½	40	48,3	3,68	4,05	STD	40
1 ½	40	48,3	5,1	5,60	XS	80
1 ½	40	48,3	7,1	7,43		160
1 ½	40	48,3	10,2	9,87	XXS	
2	50	60,3	3,9	5,59	STD	40
2	50	60,3	5,5	7,66	XS	80
2	50	60,3	8,7	11,40		160
2	50	60,3	11,1	13,87	XXS	
2 ½	65	73	5,16	8,95	STD	40
2 ½	65	73	7	11,73	XS	80
2 ½	65	73	9,5	15,32		160
2 ½	65	73	14,0	20,98	XXS	

NPS	ND	OD	W.T.	WEIGHT	CLASS	NUMBER
inches		mm	mm	Kg/m	STD,XS,XXS	
3	80	88,9	5,49	11,29	STD	40
3	80	88,9	7,6	15,69	XS	80
3	80	88,9	11,1	21,93		160
3	80	88,9	15,2	28,45	XXS	
4	100	114,3	6,0	16,50	STD	40
4	100	114,3	8,6	23,09	XS	80
4	100	114,3	11,1	29,10		120
4	100	114,3	13,5	34,56		160
4	100	114,3	17,1	42,22	XXS	
5	125	141,3	6,6	22,58	STD	40
5	125	141,3	9,5	31,80	XS	80
5	125	141,3	12,7	41,48		120
5	125	141,3	15,9	50,64		160
5	125	141,3	19,0	59,02	XXS	
6	150	168,3	7,1	29,07	STD	40
6	150	168,3	11,0	43,95	XS	80
6	150	168,3	14,3	55,94		120
6	150	168,3	18,3	69,72		160
6	150	168,3	21,9	81,44	XXS	
8	200	219,1	6,4	34,58		20
8	200	219,1	7	37,71		30
8	200	219,1	8,2	43,93	STD	40
8	200	219,1	10,3	54,63		60
8	200	219,1	12,7	66,58	XS	80
8	200	219,1	15,1	78,24		100
8	200	219,1	18,3	93,34		120
8	200	219,1	20,6	103,86		140
8	200	219,1	22,2	111,03	XXS	
8	200	219,1	23,00	114,56		160

Coatings

Anti-corrosion treatments

The Tenaris mill in Piombino is able to guarantee a series of pipe coating treatments according to the most stringent international standards (ISO, EN, ASTM, DWG, DIN).

The choice of applying an anti-corrosion treatments is closely linked to climate and environmental conditions in the foreseen pipe installation site (assessment by the designer).

Through extrusion, electrostatic application

- EPOXY POWDER PAINT (THERMO)
- FUSION BONDED EPOXY
- HOT-DIP GALVANIZING
- HOT-DIP GALVANIZING + EPOXY POWDER PAINT
- TRIPLE LAYER POLYETHYLENE

and hot-dip galvanizing, we prevent rust and improve pipe mechanical resistance properties.

All finishes require prior processing of the surface to be coated which can be mechanical (sanding) or chemical (pickling).

Galvanized pipes

Hot dip galvanized

Application of a layer of 99.995% pure electrolytic zinc (55-80 microns), on both inner and external pipe surface, in a single process, to protect the pipe against rust. Furthermore, the Tenaris galvanizing plant in Piombino uses new "Lead-free Galvanizing" technology. Zinc protects the pipe with a dual mechanism: as a barrier effect, between the steel surface and the aggressive atmosphere, and as a cathodic protection, due to the electro-chemical potential difference between the two metals. The result is an exceptionally durable coating, with high mechanical resistance and combined physical and electro-chemical protection.

GALVANIZATION NORM

- EN 10240 A1
- A53
- A123
- ISO1461

MARKING

Marking in black paint every 40 cm with the following:

- EN 10240 A.1 lead free
- A53 lead free
- A123 lead free
- ISO 1461

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APPROVAL

DVGW

DVGW-Registrierungsbescheid
für Erzeugnisse der Wasserversorgung

Zertifizierungsstelle
Certification body

Überwachte Producte
NW-7101AK2001
NW-7103AN2006

Dalmine Thermo® pipes

Epoxy powder paint

In civil and industrial installation, the color of the pipe must identify the fluid being carried. Tenaris created Dalmine Thermo®: steel pipes, hotcoated with epoxy powder, meaning no painting on site by the installer is necessary and pipe use is identified more easily and safely. The coating is applied by fusing epoxy powder to the surface of the shotblasted pipe, preheated at about 200°C.

The coating, with a minimum thickness of 50 microns, at a working temperature of between –10 and +110°C, has excellent adhesion properties and resistance to abrasion and allows bending with a standard portable tool with a mandrel having a minimum bending radius of 6 times the external diameter of the pipe.

●	Dalmine Thermo® **red**	Ral 3000	For civil and industrial installations and fireproof systems.
●	Dalmine Thermo® **red**	Ral 3011	For civil and industrial installations.
●	Dalmine Thermo® **green**	Ral 6032	For civil and industrial installations.
●	Dalmine Thermo® **yellow**	Ral 1021	For natural gas distribution.
○	Dalmine Thermo® **white**	Ral 9010	For civil and industrial installations and transport of comburents.

Dalmine Thermo® pipes can have not-standard colors if needed.

Examples of Dalmine Thermo® pipes

Dalmine Thermo Plus pipes

Single layer fusion bonded epoxy coating

FBE coating consists of a thermosetting resin, applied as powder with thickness that can reach up to 500 microns. Once applied and catalyzed, the coating has an extremely hard surface with excellent bond to the sub-layer and exceptional resistance to chemical agents at both low and high temperatures.

DIMENSIONAL RANGE	
Diameter (mm)	**21,3 - 213**
Diameter (inches)	**1/2" - 10"**
Length (m)	**6 - 13,5**

COATING NORM

EN 21809-2

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ENDS

- Plain - Grooved
- Brushing on length 75 mm
- Ends can be equipped with caps

PACKAGING

In hexagonal bundles or load units

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MARKING

According to norm EN21809-2

Dalmine Polycoat pipes

Dalmine pipes with polyethylene coating

A liner type extrusion system is used for this type of coating. This technology, accompanied by an accurate material selection according to current regulations, ensures a triple or double layer polyolefin polymer based coating in black and yellow compound.

DIMENSIONAL RANGE	
Diameter (mm)	**21,3 - 219,1**
Diameter (inches)	**1/2" - 8"**
Length (m)	**6 - 13,5**

COATING FEATURES

- High resistance against liquid, gas and chemical product corrosion;
- High mechanical resistance in impact and hardness tests;
- High bonding index at various temperatures, from Arctic to tropical zones;
- High insulation over time;
- High deformation resistance, with the possibility of cold bending on site;
- Possibility of differentiation by installation ground type;
- Coating restoration in the joint area in the event of damages during transportation or installation.

APPLICATIONS

- Gas and liquid transport piping;
- Aqueduct piping;
- Methane - water connection piping.

Special coatings
Coatings with thickness up to 5.5 mm can be supplied upon specific customer's request.

Coating types
Coatings can be supplied with different types of topcoats such as:

- LDPE Low density;
- MDPE Medium density;
- HDPE High density;
- triple layer R3R made up of Fusion Bond Epoxy Bond and Polyethylene;
- double layer R2R made up of Bond and Polyethylene.

Marking
Pigmented ink jet white, ensuring durability.

Ends
Brushing on length from 75 mm to 150 mm, with max 30° angle. The ends can be equipped with caps or connectors upon request.

Fluid transport identification
Pipes can be continuously co-extruded with blue polymer upon customer's request if intended to transport water, or yellow polymer if intended to transport methane.

Packaging
In hexagonal bundles or load units.

UNI 9099 - Steel pipe used for underground or underwater piping

Top material	**Copolymers or Homopolymers with black smoke content** (2,5 ± 0,5% in weight)
Temperature range (°C)	**-30 + 60**

TOTAL MINIMUM COATING THICKNESS

ND	Specified OD		Class N	Class R	Class S
mm	Over	Up to			
≤ 100	-	114,3	1,2	1,8	2,5
> 100 e ≤ 250	114,3	273	1,5	2,0	2,5

Class N - R3N - triple layer Normal coating; Class R - R3R - triple layer Reinforced coating; Class S - R3S - triple layer Special coating

EN 21809-1 - Petroleum and natural gas industries

Classe	A	B
Top material	**LDPE** (Low density)	**MDPE/HDPE** (Medium and High density)
Temperature range (°C)	**-20 + 60**	**-40 + 60**

TOTAL MINIMUM COATING THICKNESS

Pm	Class A1	Class A2	Class A3	Class B1	Class B2	Class B3
kg/m						
Pm ≤ 15	1,8	2,1	2,6	1,3	1,8	2,3
15 < Pm ≤ 150	2	2,4	3	1,5	2,1	2,7

Class 1 - light installations (sandy ground); Class 2 - standard installations (clayey ground); Class 3 - installations (rocky ground or sea)

DIN 30670 - Polyethylene coatings on steel pipes and fittings

Class	N	S
Temperature range (°C)	**-20 + 60**	**-40 + 60**

TOTAL MINIMUM COATING THICKNESS

ND	Normal (n)	Increased (v)
mm		
≤ 100	1,8	2,5
> 100 e ≤ 250	2	2,7

Class N - R3N - triple layer Normal coating; Class R - R3R - triple layer Reinforced coating; Class S - R3S - triple layer Special coating

Services

Fast-connection grooved-end pipes

Tenaris black pipes galvanized and coated with epoxy resin from the Dalmine Thermo® range are used for fire extinguishing systems and gas & water distribution. They can be supplied from 1 to 8 inches in diameter and in lengths ranging from 3.5 to 6 metres. They have grooved ends to be used in fast connection systems.

UNI 5634/97 standard, which covers the identification systems for pipes and ducts conveying fluids in civil and industrial installations, requires each pipe to be colour-coded to allow identification of the fluid it carries.

The steel pipes from Dalmine Thermo® are coated with epoxy resin so that the installer does not have to paint them and each pipe is easily and securely identified.

Tenaris performs suitable pre-cutting operations which ensure that after processing the paint coating remains uniform over the entire surface of the pipe, including the cutting areas.

Thanks to its cutting, grooving, axis and off-axis drilling services, Tenaris provides customised products, ready for assembly, according to the project specifications.

These services are carried out in compliance with the current standards on plumbing and heating systems. Grooved-end pipes are labour-saving because they are easier to join and assemble on site and do not require the installer to perform complex machining at the installation site.

For welded pipes, especially those with large diameters, a seamless pipe ring is welded onto the pipe at the area to be machined, so as to prevent cracking during the grooving operations. Tenaris 21 to 406 mm seamless steel pipes maintain their integrity during grooving. This guarantees safety and reliability for the installer.

Application fields:

- Fire-extinguishing systems – sprinklers
- Water and air service systems
- Heating systems, air conditioning and plumbing systems for commercial, industrial, health, educational and sports facilities, tunnels, research centres and laboratories.

BENEFITS

- Reduced design and installation time resulting in lower costs.
- Safety and effectiveness during installation.

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APPLICABLE STANDARDS

The minimum thickness of smooth, threaded or grooved steel pipes must comply with the following standards:
ISO 65 M for DN ≤ 150 mm
ISO 4200 D series for DN > 150 mm

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CORRELATION BETWEEN THICKNESS
ISO 65M - EN 10255 SM

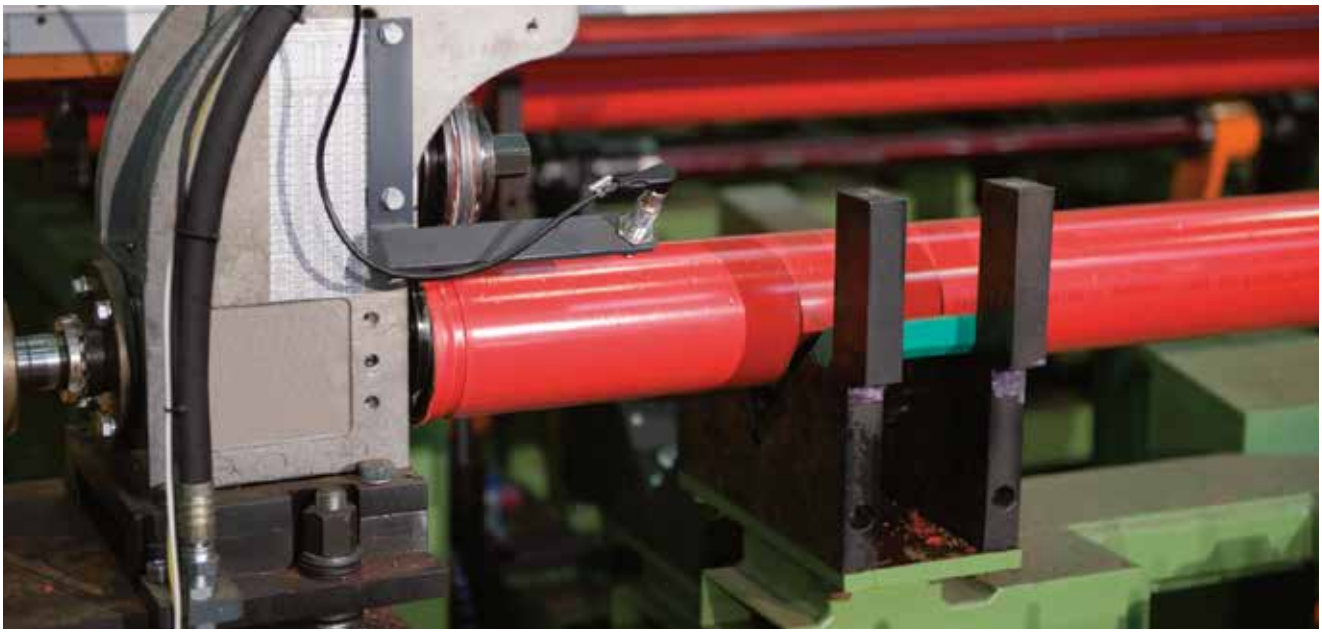
< OD 165 mm (DN 150)
- See table

—

CORRELATION BETWEEN THICKNESS
ISO 4200 D SERIES - EN 10216 - 1

> OD 165 mm (DN 150)
- See table

—
Detail
of production step



ND	ISO 65 M	EN 10255
inches	WT (mm)	WT (mm)
1/2	2,6	2,6
3/4	2,6	2,6
1	3,2	3,2
1 1/4	3,2	3,2
1 1/2	3,2	3,2
2	3,6	3,6
2 1/2	3,6	3,6
3	4	4
4	4,5	4,5
5	5	5
6	5	5

OD	ISO 4200 Serie D	EN 10216 -1
mm	WT (mm)	WT (mm)
168,3	4	4,5
193,7	-	5,4
219,1	4,5	6,3
244,5	-	6,3
273	5	6,3
323,9	5,6	8,4
355,6	5,6	8
406,4	6,3	8,8

MEDIUM SERIES EN 10255

NOMINAL DIAMETER	THICKNESS	LINEAR MASS
inches	mm	kg/m
1	3,2	2,410
1 1/4	3,2	3,100
1 1/2	3,2	3,560
2	3,6	5,030
2 1/2	3,6	6,420
3	4,0	8,360
4	4,5	12,200
5	5,0	16,600
6	5,0	19,800

SERIES EN 10216-1

NOMINAL DIAMETER	THICKNESS	LINEAR MASS
mm	mm	kg/m
42,4	2,6	2,55
48,3	2,6	2,93
60,3	2,9	4,11
70,0	2,9	4,80
76,1	2,9	5,24
88,9	3,2	6,76
101,6	3,6	8,70
108,0	3,6	9,27
114,3	3,6	9,83
133,0	4,0	12,72
139,7	4,0	13,38
159,0	4,5	17,15
168,3	4,5	18,18
193,7	5,4	25,08
219,1	6,3	33,13

Packing

Pipes are packed in hexagonal bundles with four steel bands with a green seal showing the Tenaris logo.

PIPES FOR PLUMBING INSTALLATIONS

DIAMETER		EN 10255 SL1		EN 10255 SM		EN 10216-1 S		THERMO SL1		POLYCOAT SM		POLYCOAT SL1	
		LIGHT SERIES 1		MEDIUM SERIES				LIGHT SERIES 1		MEDIUM SERIES		LIGHT SERIES 1	
inches	mm	n° pipes	kg	n° pipes	kg	n° pipes	kg	n° pipes	kg	n° pipes	kg	n° pipes	kg
3/8	17,1	169	750	169	850	–	–	–	–	–	–	–	–
1/2	21,3	127	820	127	920	–	–	127	820	127	1010	127	91O
3/4	26,9	127	1060	127	1190	–	–	127	1065	127	1300	127	1170
1	33,7	91	1200	91	1315	–	–	91	1205	91	1300	91	1300
1 1/4	42,4	61	1030	61	1135	61	933	61	1035	61	1410	61	1110
1 1/2	48,3	61	1190	61	1300	61	1073	61	1190	61	1400	61	1280
2	60,3	37	1000	37	1115	37	912	37	1000	37	1190	37	1070
2 1/2	76,1	19	653	19	735	19	598	19	1280	19	1510	19	1360
3	88,9	19	860	19	960	19	771	19	865	19	1000	19	910
4	114,3	19	1230	19	1390	19	1125	19	1240	19	1460	19	1300
5	139,7	–	–	7	700	7	650	–	–	7	730	–	–
6	165,1	–	–	7	830	7	764*	–	–	7	870	–	–
8	219,1	–	–	–	–	7	1390	–	–	–	–	–	–
10	273,0	–	–	–	–	7	1745	–	–	–	–	–	–

Length 6 m | The bundle weight is indicative. The actual weight is shown on a label applied to each bundle | * Diameter 168,3 mm | S = SEAMLESS

Installation recommendations

Tenaris Dalmine Thermo®

The welded joint can be made without removing the coating. Analysis has shown the absence of additional harmful substances in the fumes produced during welding.

Welding can be done with oxyacetylene, arc with covered electrodes or TIG methods. The coating in the weld area can easily be repaired with epoxy resin of the same type, applied cold on site with a spatula or brush.

When laying into chase, take care not to damage the epoxy coating. In case the coating is damaged, repair with cold setting epoxy resin.

Comparison between Dalmine Thermo® pipes and pipes coated with normal rust-proofing

The photograph shows the results of a sheer test carried out under negative polarization in compliance with norm UNI 9099.

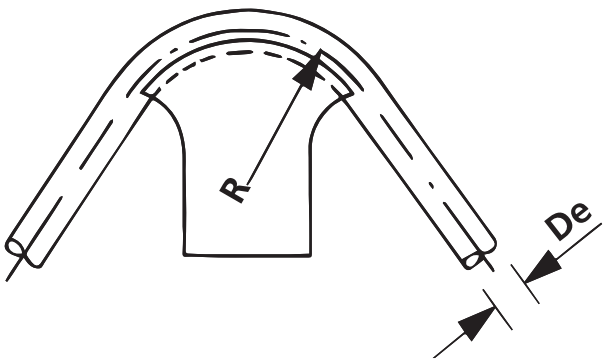
The test involves putting a piece of tube, in which a 6mm diameter hole has been made in the coating, in contact with a saline solution which is afterwards negatively polarized with a high density electric current.
At the end of the test, at a temperature of 23 °C for 28 days, the area where the coating has peeled is measured.

Pipe Dalmine Thermo®

Pipe coated with rust proofing

Bending

De (mm)						
17,2	21,3	26,9	33,7	42,2	48,3	60,3
R (mm)						
50	65	85	100	150	170	220



BIM Building Information Modeling

The European Parliament approved the European Union Public Procurement Directive that introduces the BIM method to design buildings and infrastructures, including the systems installed therein.
The European Directive 2014/24//EU on Public Procurement includes the use of specific electronic instruments such as electronic simulation instruments for building information or similar instruments and clearly expresses the instruction to introduce BIM (Building Information Modeling) within Member States' procurement procedures.

BIM is a collaborative design method the integrates the working information of each design phase in a single model: architectural, structural, system, energy and management. For this reason, it is used by system engineers, building engineers, architects, constructors, assemblers, inspectors, etc.

This three-dimensional model includes information concerning volume and dimensions, material, aspect and technical specifications that are not lost in communications to other firms and other computer platforms.
BIM technology offers multiple examples such as: greater efficiency and productivity, less errors, less downtime, lower costs, greater interoperability, maximum information sharing, more accurate and consistent design control.

CHOOSE TENARIS FOR YOUR BIM PROJECTS

Tenaris has joined the digital revolution involving the building sector and has decided to provide designers with BIM objects according to its product lines.
Information and on-line data reliability is guaranteed by Tenaris.

To access BIM materials please visit Tenaris.com/Gas, water & fire extinguishing section

Tenaris

For additional information, please visit
www.tenaris.com

For technical assistance, please contact
gaswaterandfireextinguishing@tenaris.com

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