

Coiled Line Pipe



Tenaris

Tenaris is the leading global manufacturer and supplier of tubular products and services used in the drilling, completion and production of oil and gas and a leading supplier of tubular products and services used in process and power plants and in specialized industrial and automotive applications.

Through our integrated global network of manufacturing, R&D and service facilities, we are working with our customers to meet their needs for the timely supply of high performance products in increasingly complex operating environments.

Coiled Line Pipe

Tenaris ensures the highest quality of Coiled line pipe through its Quality Assurance System - which includes ISO 9001 certification.



Tenaris manufactures specialized Coiled line pipe products for subsea applications at its coiled tubes manufacturing facilities in Houston.

Coiled line pipe allows operators to reduce capital expenditures, operational costs, and project risks.

Savings are realized as a result of our unique manufacturing process. This process allows Tenaris to produce coated line pipe in continuous lengths from 1,500 meters for 5" OD to 7,000 meters for 2 3/8" OD. These long continuous lengths speed installation, reduce offshore costs, and prevent contamination to subsea equipment.

Coiled line pipe has been installed in all major offshore hydrocarbon producing areas in the world. Integrated oil

and gas operators have used Coiled line pipe in water depths exceeding 2,200 meters and in challenging arctic environments. Coiled line pipe has been installed by the foremost installation contractors with S-lay, J-lay, Reel-lay and Piggy-back construction techniques.

Today's oil and gas fields demand Coiled line pipe meet the most complete quality standards. Modern non-destructive testing and monitoring processes are employed throughout our manufacturing process. Tenaris is the first and only mill certified to API 5CLP, the Coiled line pipe specification set forth by API. In addition, as an experienced supplier to high specification customers, Tenaris' quality procedures and manufacturing processes enable Coiled line pipe to comply with DNV-OS-F101.

Tenaris is dedicated to meeting the needs of the offshore industry. We employ one of the most experienced and qualified groups in the pipeline manufacturing industry. This experience and our unique product ensure the positive outcome of your construction project.

We are pleased to support our clients in the world's most demanding hydrocarbon environments with the following products and services:

- Coiled line pipe in continuous lengths from 1,500 meters up to 10,000 meters
- Three layer coating for external corrosion protection
- Metal reels suitable for offshore installation and international shipping
- Dedicated project management support
- Sourcing of key accessory components

► Coiled line pipe J-Laid from adjustable tower.

► *Tenaris produces Coiled line pipe in continuous lengths from 1,500 meters to 10,000 meters.*



Manufacturing & Coating

Coiled line pipe is manufactured by joining multiple flat steel strips into long continuous lengths, forming and welding the lengths into pipe, and applying a premium three layer coating onto the pipe. Each process is described in detail below:

Milling: The assembled lengths are then fed into a forming and welding mill. During milling the flat strips are formed into a round pipe shape. The prepared edges of the strip are joined using a High Frequency Induction (HFI) welding process. From there, the weld area is normalized utilizing induction heat treating and the pipe is then full body stress relieved. Following heat

treatment the tube and weld seam undergo Ultrasonic and Electromagnetic (Eddy Current) inspection.

Coating: After milling, the pipe is fed into the purpose built coating line where our three layer coating system is applied continuously. A fusion bond epoxy layer is applied to the prepared steel surface. Then an adhesive copolymer layer is applied followed by the extruded top coat of either High-Density Polyethylene or Polypropylene. The total coating system has been proven in the oil and gas industry for over 20 years. It provides excellent corrosion resistance and mechanical protection by maintaining coating integrity under extreme installation conditions.

Following the manufacturing processes each reel undergoes comprehensive flushing, chemical cleaning (if required by the client), hydrostatic testing, fluid purging, drying, capping and nitrogen atmosphere insertion. When all tests are complete the reels are prepared for shipping.

PRODUCT OFFERING

DIMENSION						X52C GRADE (Minimum Yield = 52,000 psi, Minimum Tensile = 66,000 psi)			X65C GRADE AND SOUR SERVICE (Minimum Yield = 65,000 psi, Minimum Tensile = 77,000 psi)		
Nominal OD	Nominal Wall	Minimum Wall	Nominal ID	ID with Min Wall	Wt/ft	Internal Yield	Hydrotest	Working Pressure	Internal Yield	Hydrotest	Working Pressure
1.000	0.116	0.110	0.768	0.780	1.098	11,100	10,000	8,000	13,900	12,500	10,000
	0.145	0.138	0.710	0.724	1.327	13,700	12,300	9,840	17,100	15,400	12,320
	0.156	0.148	0.688	0.704	1.410	14,600	13,100	10,480	18,200	16,400	13,120
1.250	0.116	0.110	1.018	1.030	1.408	9,000	8,100	6,480	1,200	10,100	8,080
	0.175	0.166	0.900	0.918	2.014	13,300	12,000	9,600	16,600	14,900	11,920
	0.190	0.181	0.870	0.888	2.156	14,200	12,800	10,240	17,800	16,000	12,800
1.500	0.134	0.127	1.232	1.246	1.960	8,700	7,800	6,240	10,900	9,800	7,840
	0.175	0.166	1.150	1.168	2.483	11,200	10,100	8,080	14,000	12,600	10,080
	0.190	0.181	1.120	1.138	2.665	12,000	10,800	8,640	15,000	13,500	10,800
	0.204	0.194	1.092	1.112	2.831	12,900	11,600	9,280	16,100	14,500	11,600
1.750	0.145	0.138	1.460	1.474	2.492	8,100	7,300	5,840	10,100	9,100	7,280
	0.190	0.181	1.370	1.388	3.173	10,400	9,400	7,520	13,000	11,700	9,360
	0.204	0.194	1.342	1.362	3.377	11,200	10,100	8,080	14,000	12,600	10,080
	0.224	0.213	1.302	1.324	3.660	12,200	11,000	8,800	15,300	13,800	11,040
2.000	0.134	0.127	1.732	1.746	2.677	6,600	5,900	4,720	8,200	7,400	5,920
	0.190	0.181	1.620	1.638	3.682	9,200	8,300	6,640	11,500	10,400	8,320
	0.204	0.194	1.592	1.612	3.923	9,800	8,800	7,040	12,300	11,100	8,880
	0.224	0.213	1.552	1.574	4.259	10,800	9,700	7,760	13,500	12,200	9,760
	0.250	0.238	1.500	1.524	4.684	12,000	10,800	8,640	15,000	13,500	10,800
2.375	0.134	0.127	2.107	2.121	3.215	5,600	5,000	4,000	7,000	6,300	5,040
	0.156	0.148	2.063	2.079	3.706	6,400	5,800	4,640	8,000	7,200	5,760
	0.190	0.181	1.995	2.013	4.445	7,800	7,000	5,600	9,700	8,700	6,960
	0.204	0.194	1.967	1.987	4.742	8,400	7,600	6,080	10,400	9,400	7,520
	0.224	0.213	1.927	1.949	5.159	9,200	8,300	6,640	11,500	10,400	8,320
	0.250	0.238	1.875	1.899	5.688	10,200	9,200	7,360	12,800	11,500	9,200
	0.280	0.266	1.815	1.843	6.280	11,400	10,300	8,240	14,200	12,800	10,240
	0.300	0.285	1.775	1.805	6.665	12,000	10,800	8,640	15,000	13,500	10,800
2.625	0.204	0.194	2.217	2.237	5.288	7,600	6,800	5,440	9,500	8,600	6,880
	0.224	0.213	2.177	2.199	5.758	8,300	7,500	6,000	10,400	9,400	7,520
	0.250	0.238	2.125	2.149	6.357	9,200	8,300	6,640	11,500	10,400	8,320
	0.280	0.266	2.065	2.093	7.030	10,300	9,300	7,440	12,800	11,500	9,200
	0.300	0.285	2.025	2.055	7.468	11,000	9,900	7,920	13,700	12,300	9,840
2.875	0.204	0.194	2.467	2.487	5.834	6,900	6,200	4,960	8,700	7,800	6,240
	0.224	0.213	2.427	2.449	6.358	7,600	6,800	5,440	9,500	8,600	6,880
	0.250	0.238	2.375	2.399	7.026	8,500	7,700	6,160	10,700	9,600	7,680
	0.280	0.266	2.315	2.343	7.779	9,500	8,600	6,880	11,900	10,700	8,560
3.500	0.175	0.166	3.150	3.168	6.230	4,900	4,400	3,520	6,200	5,600	4,480
	0.190	0.181	3.120	3.138	6.733	5,300	4,800	3,840	6,600	5,900	4,720
	0.204	0.194	3.092	3.112	7.199	5,700	5,100	4,080	7,100	6,400	5,120
	0.224	0.213	3.052	3.074	7.857	6,300	5,700	4,560	7,900	7,100	5,680
	0.250	0.238	3.000	3.024	8.699	7,000	6,300	5,040	8,800	7,900	6,320
	0.280	0.266	2.940	2.968	9.653	7,800	7,000	5,600	9,800	8,800	7,040
	0.300	0.292	2.886	2.916	10.495	8,500	7,700	6,160	10,700	9,600	7,680
4.000	0.224	0.213	3.552	3.574	9.056	5,500	5,000	4,000	6,900	6,200	4,960
	0.250	0.238	3.500	3.524	10.037	6,100	5,500	4,400	7,700	6,900	5,520
	0.280	0.266	3.440	3.468	11.152	6,800	6,100	4,880	8,500	7,700	6,160
	0.300	0.292	3.386	3.416	12.139	7,500	6,800	5,440	9,400	8,500	6,800
4.500	0.204	0.194	4.092	4.112	9.383	4,500	4,100	3,280	5,600	5,000	4,000
	0.224	0.213	4.052	4.074	10.255	4,900	4,400	3,520	6,100	5,500	4,400
	0.250	0.238	4.000	4.024	11.376	5,500	5,000	4,000	6,900	6,200	4,960
	0.280	0.266	3.940	3.968	12.651	6,100	5,500	4,400	7,700	6,900	5,520
	0.300	0.292	3.886	3.916	13.782	6,700	6,000	4,800	8,300	7,500	6,000
5.000	0.250	0.240	4.500	4.520	12.714	5,000	4,500	3,600	6,200	5,600	4,480
	0.280	0.268	4.440	4.464	14.150	5,500	5,000	4,000	6,900	6,200	4,960
	0.300	0.285	4.400	4.430	15.096	5,900	5,300	4,240	7,300	6,600	5,280

Other wall thicknesses and outer diameters, including 1.315" OD and 3.25" OD, available upon request.

X70C GRADE (Minimum Yield = 70,000 psi, Minimum Tensile = 80,000 psi)			X80C GRADE (Minimum Yield = 80,000 psi, Minimum Tensile = 88,000 psi)			X90C GRADE (Minimum Yield = 90,000 psi, Minimum Tensile = 97,000 psi)		
Internal Yield	Hydrotest	Working Pressure	Internal Yield	Hydrotest	Working Pressure	Internal Yield	Hydrotest	Working Pressure
14,900	13,400	10,720	17,100	15,400	12,320	19,200	17,300	13,840
18,400	16,600	13,280	21,000	18,900	15,120	23,700	21,300	17,040
19,600	17,600	14,080	22,400	20,200	16,160	25,200	22,700	18,160
12,200	11,000	8,800	13,800	12,400	9,920	15,700	14,100	11,280
17,900	16,100	12,800	20,400	18,400	14,720	23,000	20,700	16,560
19,100	17,200	13,760	21,900	19,700	15,760	24,700	22,200	17,760
11,700	10,500	8,400	13,400	12,100	9,680	15,100	13,600	10,880
15,100	13,600	10,880	17,300	15,600	12,480	19,400	17,500	14,000
16,200	14,600	11,680	18,500	16,700	13,360	20,800	18,700	14,960
17,400	15,700	12,560	19,800	17,800	14,240	22,300	20,100	16,080
10,900	9,800	7,840	12,400	11,200	8,960	14,000	12,600	10,080
14,000	12,600	10,080	16,000	14,400	11,520	16,800	15,100	12,080
15,000	13,500	10,800	17,200	15,500	12,400	18,000	16,200	12,960
16,500	14,900	11,920	18,800	16,900	13,520	19,400	17,500	14,000
8,900	8,000	6,400	10,100	9,100	7,280	11,400	10,300	8,240
12,300	11,100	8,880	14,100	12,700	10,160	15,900	14,300	11,440
13,300	12,000	9,600	15,200	13,700	10,960	17,100	15,400	12,320
14,500	13,100	10,480	16,600	14,900	11,920	18,600	16,700	13,360
16,200	14,600	11,680	18,500	16,700	13,360	20,700	18,600	14,880
7,500	6,800	5,440	8,600	7,700	6,160	9,600	8,700	6,960
8,600	7,700	6,160	9,900	8,900	7,120	11,100	10,000	8,000
10,500	9,500	7,600	12,000	10,800	8,640	13,400	12,100	9,680
11,200	10,100	8,080	12,800	11,500	9,200	14,500	13,100	10,480
12,400	11,200	8,960	14,100	12,700	10,160	15,800	14,200	11,360
13,800	12,400	9,920	15,800	14,200	11,360	17,600	15,800	12,640
15,300	13,800	11,040	17,500	15,800	12,640	19,500	17,600	14,080
16,200	14,600	11,680	18,500	16,700	13,360	20,800	18,700	14,960
10,300	9,300	7,440	-	-	-	-	-	-
11,200	10,100	8,080	-	-	-	-	-	-
12,500	11,300	9,040	-	-	-	-	-	-
14,000	12,600	10,080	-	-	-	-	-	-
14,900	13,400	10,720	-	-	-	-	-	-
9,300	8,400	6,720	-	-	-	-	-	-
10,300	9,300	7,440	-	-	-	-	-	-
11,500	10,400	8,320	-	-	-	-	-	-
12,900	11,600	9,280	-	-	-	-	-	-
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► Coiled line pipe S-Laid from a DP vessel (left), and Coiled Line Pipe laid as piggy back from a DL barge. (right)

Technical and Installation Benefits

The long continuous lengths of Coiled line pipe require far fewer offshore construction activities.

Installation Benefits

The number of welds needed to complete a pipeline using Coiled line pipe is less than 1% of the total required with traditional line pipe. This remarkable reduction in offshore welds has the following installation benefits:

Faster installations: Coiled line pipe can be laid at a much faster rate since fewer offshore welding, field joint coating, and non-destructive testing activities are required.

Multiple installation alternatives: Coiled line pipe can be installed directly from the metal shipping reel provided by Tenaris or consolidated onto a large installation carousel or vertical lay reel. Our customers are not tied to a single installation option.

Decrease in offshore weld reject rate: A considerable decrease in the weld rejection rate is realized as fewer orbital girth welds are performed offshore. This generates major cost savings by decreasing the amount of critical path repair time during installation.

Reduction in offshore personnel: Less people are required for laying operations as Coiled line pipe has fewer welding, NDT, and field joint coating operations.

Safety: Pipe handling is minimized by using Coiled line pipe. Fewer lifts are required to complete the pipeline since each reel of Coiled line pipe holds the equivalent of 100 or more joints of traditional line pipe.

Technical Benefits

Coiled line pipe can provide operators significant technical benefits that reduce operating expenses. These benefits are as follows:

Improved subsea system cleanliness: Damage to subsea systems and costly offshore filter change outs can be prevented by using internally cleaned Coiled line pipe. Internal cleanliness can be ensured by cleaning, flushing, and nitrogen purging each reel before shipment. Demanding levels of cleanliness such as NAS

1638 Class 8, 7, or 6 can be achieved by Tenaris.

Coating system integrity:

Each offshore weld requires coating repairs around the weld zone. Coating system integrity can be compromised with each repair. The far fewer offshore welds and associated repairs required for Coiled line pipe increases the integrity of the coating system.

Production standards:

Coiled line pipe is produced to the highest specifications including DNV OS F 101 and API 5CLP (of which Tenaris is the first and only approved manufacturer).

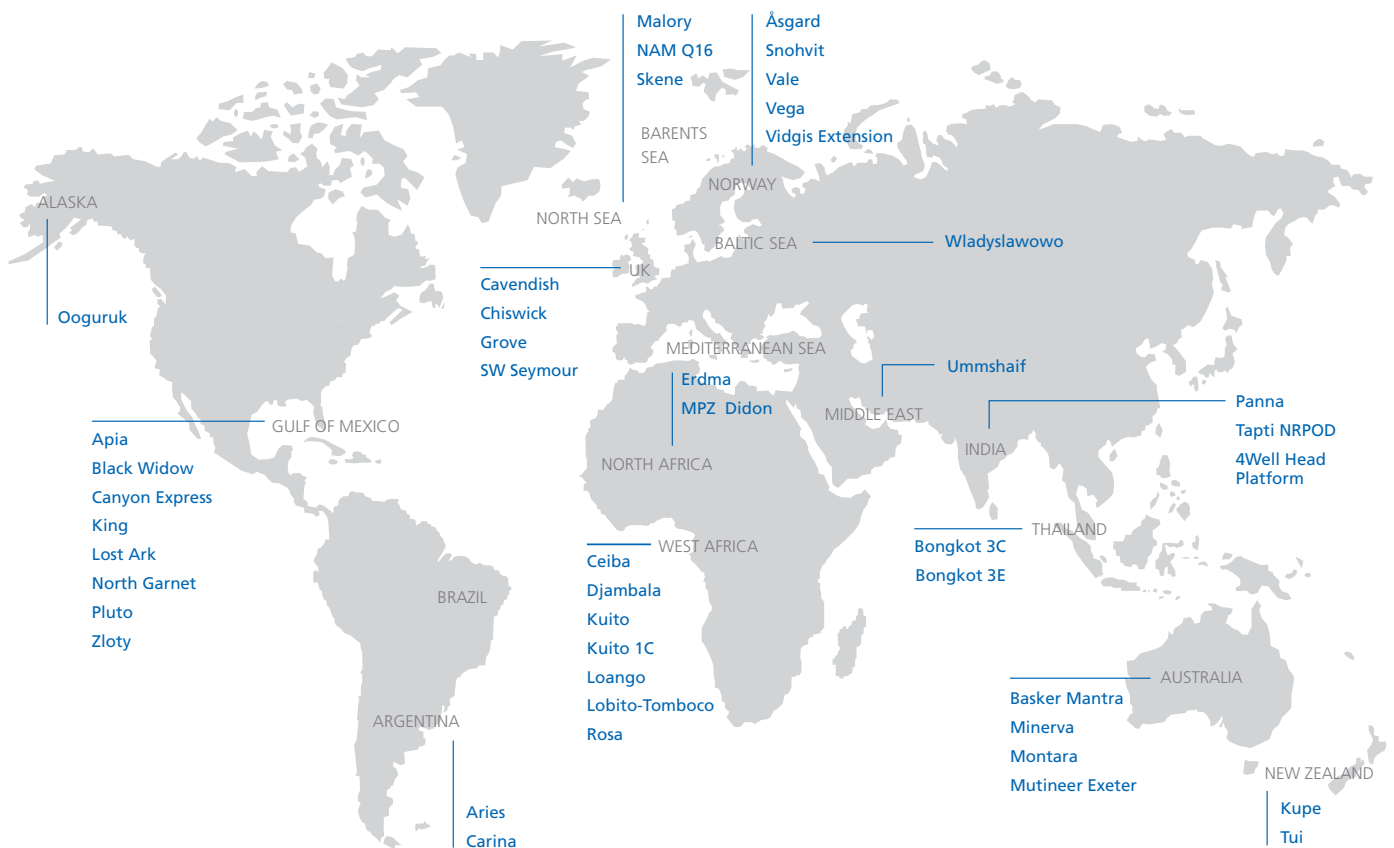
Sour Service Grades

Tenaris offers sour service grades with resistance to sulfide stress, stress corrosion and hydrogen induced cracking. This grade has been tested as “crack” free with NACE Solution A per NACE TM0286-2003 and NACE TMR0177-05.

Coiled line pipe can be an effective solution when the application requires sour service capabilities.

Coiled Line Pipe Around the World

Coiled line pipe from Tenaris has been installed worldwide in all major hydrocarbon producing areas. It has been proven in the harshest environments to the most demanding operators.



APPLICATIONS/PROJECTS

PROJECT	FIELD LOCATION	WATER DEPTH	SUPPLY	MANUFACTURING SPECIFICATION	CLEANLINESS	LENGTH	INSTALLATION METHODOLOGY	APPLICATION
Snohvit LNG Development	Hammerfest Basin, Barents Sea	340 meters (1,115 feet)	4.5" OD x 0.300" WT X65C, 3 layer HDPE	DNV OS F 101	Chemically cleaned and flushed to NAS 1638 Class 8	290,000 meters (951,490 feet)	Each reel of Coiled line pipe was spooled and bundled together onto a vessel with a vertical installation reel.	MEG injection and service line.
Minerva Field Development	Olway Basin, Indian Ocean	60 meters (197 feet)	2.375" OD x 0.190" WT X52C, 3 layer HDPE	DNV OS F 101	Water flushed to NAS 1638 Class 10	20,000 meters (65,620 feet)	Piggy-backed onto larger 10" export line directly from Tenaris provided installation reels.	Glycol injection line.
Canyon Express Project	Gulf of Mexico	2,200 meters (7,218 feet)	2.875" OD x 0.237" WT X80C, 3 layer HDPE	API 5LCP & Supplementary requirements "P" of DNV-OS-F101	Water flushed to NAS 1638 Class 8	88,600 meters (296,690 feet)	Consolidated from Tenaris Coiled Tubes supplied reels onto 4 300Te reels and J-Laid from a multi-service offshore construction vessel.	Methanol injection line.
Djambala Field Development	Offshore Congo, Atlantic Ocean	116 meters (380 feet)	2.375" OD x 0.190" WT X70C, 3 layer HDPE; 1.250" OD x 0.175" WT X70C, 3 layer HDPE;	API 5LCP	Water flushed to NAS 1638 Class 10	21,400 meters (70,213 feet)	S-Laid from diving support vessel directly from Tenaris Coiled Tubes supplied installation reels.	Chemical injection and gas lift lines.

For contact information, please visit our website:
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