



JUBAIL ENERGY SERVICES COMPANY



Jubail Industrial City, Saudi Arabia

[www.jesco.com.sa](http://www.jesco.com.sa)

SEAMLESS  
PERFORMANCE  
EXCEPTIONAL QUALITY

Affiliate of Industrialization & Energy Services Co. (TAQA)





## Industrialization & Energy Services Company

### Corporate Profile

The Industrialization & Energy Services Company (TAQA) is a Saudi Joint Stock Company established by Ministerial Decree in May 2003. It has been endorsed by the Ministry of Petroleum & Mineral Resources since its inception and during its formative stages. TAQA is owned 45% by the Saudi Government, while the remaining 55% is owned collectively by Joint Stock Companies and several private and industrial investors representing a cross section of the Saudi industrial community.

The Government's share through the Public Investment Fund (PIF) was contributed in kind by transferring from Petromin to TAQA the Government's 51% ownership in the Arabian Drilling Company (ADC) and the Arabian Geophysical and Surveying Company (ARGAS). The balance of TAQA's share capital was contributed in cash by the other Saudi investors. TAQA's share capital was increased in May 2006 from SR 533 million to SAR 2,000 million.

The company's main objectives are to localize industry, transfer technologies, increase local content and create employment opportunities for Saudi Nationals. TAQA serves as a project development and investment platform to attract equity partners and to form strategic alliances. Its broad charter allows the company to participate in a spectrum of activities in the energy and energy related sectors.

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### Our Vision

"To be the leading manufacturer of  
high-quality seamless pipes"

### Our Mission

To provide the best quality products  
& services to our customers at  
competitive conditions, create value for  
our shareholders, transfer technology  
and create employment opportunities  
while remaining committed to quality,  
safety, social responsibility  
and environmental protection.





# Our Shareholders

**TAQA**, with its own inherent strengths in the business of oil field and energy services sector lends its solid backing to **JESCO**, along with the added support of other shareholders, in establishing a most modern manufacturing facility to produce highest quality Seamless Pipes in the Middle East.

Our foreign partner, **Duferco** lends its expertise to **JESCO** through an uninterrupted supply of the required raw materials and marketing of the finished products in world markets.

These strong alliances will lead **JESCO** to acquire the reputation it aspires for as a world class producer.

# Introduction

Jubail Energy Services Company (**JESCO**) was established with state-of-the-art manufacturing facility to produce Carbon Steel Seamless Pipe products.

The Company was sponsored and developed through initiatives from the Industrialization and Energy Services Company (**TAQA**), which owns 52% of **JESCO's** paid-in capital of the SR. 1,050 millions (\$ 280M). The balance of **JESCO's** capital is owned by other prominent business houses in the Kingdom of Saudi Arabia as well as Duferco Saudi Ltd., a subsidiary of a global leader in the metals trading sector. **TAQA** itself is a joint stock company partially owned by public institutions like (Public Investment Fund and General Organization of Social Insurance) in addition to a number of Saudi Arabian joint stock companies, and prominent individual investors.

The FQM manufacturing and control process is based on equipment designed and produced by Danieli & C. Officine Meccaniche SpA of Italy.

**JESCO** produces casing and pipeline seamless pipes from 5-1/2" to 16", including intermediate sizes, exceeding API Standards; and its proprietary steel grades cover critical features such as sour service, high collapse and high compression.

Being the first Seamless Pipes manufacturing company in the Middle East and with its latest applied manufacturing technologies and exceptional quality standards. From our ideal location at the sea port of Jubail, **JESCO** offers minimal delivery times by both sea and land transportation, thus catering to the ever changing and demanding market needs. Our "value added customer supply chain" meets customers' expectations at all times and helps them choose **JESCO** as their preferred supplier.

Our aim is to work closely with our customers offering ex-mill "just in time/short deliveries" aiming to reduce some costly inventory burdens currently faced by the customers.





## Our Products

We produce Seamless Steel Pipes of various dimensions ranging from 5-1/2" to 16". These Seamless Pipes are mainly used in the Oil and Gas sector. Our slated annual production rate is 400,000 Metric Tons (MT) of Seamless Line Pipes and OCTG products.

## Infrastructure

JESCO manufacturing facility is located in Jubail Industrial City utilizing a 730,000 square meters allocated by the Royal Commission.

## Utilities

JESCO is assured of uninterrupted supply of required utilities provided by the Royal Commission, Saudi Aramco, Saudi Electric Company and MARAFIQ.

## Technology

JESCO has state-of-the-art FQM Technology provided by Danieli & C. Officine Meccaniche SpA of Italy. FQM technology allows JESCO to produce high quality pipes, with a high degree of production flexibility, versatility and efficiency. The FQM 3-roll retained Mandrel Mill has pronounced advantages over other seamless pipes manufacturing technologies, some of which are:

- Improved wall thickness tolerances.
- Improved pipe surface quality
- Improved pipe outer diameter accuracy
- Higher diameter to wall thickness ratios can be rolled
- Allows efficient use of larger range of sophisticated steel grades
- High and low tonnages can be rolled, allowing order size flexibility and versatility

Through the latest heat treatment technology we are able to achieve API grades and tailored steel grades.

Our proprietary steel grades cover critical features such as sour service, high collapse, high compression or a combination of them all.

Our strengths are many but non is as important to the business than the dedicated team of employees in JESCO.



## Sales & Marketing

JESCO's products are sold throughout Saudi Arabia, GCC and other MENA countries. JESCO and Duferco sell the products to customers in Europe and North America.

From our location in Jubail Industrial City with proximity to modern sea port facilities and a network of roads, we have the ability to deliver our finished products within the shortest possible time.

### **Saudi Arabia Sales and Marketing Office:**

5th Floor Al-Majdouie Tower, King Fahad Road, Dammam, Saudi Arabia

Tel. No. +966 3 813 2255

Fax No. +966 3 813 2244

[sales@jesco.com.sa](mailto:sales@jesco.com.sa)

Overseas customers are served by Duferco through following contact:

[jesco.sales@bh.dufreco.com](mailto:jesco.sales@bh.dufreco.com)

For more details see the last page.

The human operational and technical experiences available to our clients ensure the highest standards of service and quality.

## Quality

Our quality policy is an integral part of the company's overall policies and strategies. This Quality Policy guides the organization towards continuous improvement to fulfill its mission.

- JESCO recognizes that continual improvement is key to sustainable success.
- JESCO is committed to ensure consistent compliance with its Quality Management System requirements which is continually reviewed and updated to improve its effectiveness.
- JESCO pursues policies which enhances its employee's quality of life and preserve business relationships with its suppliers.
- JESCO maintains and makes every effort to improve the health and safety of employees and protect the environment.
- JESCO is committed to continuously evaluate, motivate, train and develop its human resources with particular emphasis to provide training to its Saudi Arabian employees.
- JESCO's Quality Policy provides a framework for establishing, reviewing and measuring quality objectives.





## Certifications

After following and practicing every word of our Quality Policy and with the total commitment at all levels of our organization, JESCO secured full API and ISO Accreditation in the last quarter of 2009 signifying an important step in our corporate development.





## Our Clients

### Our prospective clients are :

- Oil and Gas exploration and production companies
- Refineries
- Petrochemical Companies
- Water Wells Drilling Companies
- Pipes Distributors

## Technical Data: OCTG



### OCTG CASING AND COUPLINGS (API 5CT)

By utilizing its state-of-the-art, **Danieli** manufactured, **FQM** rolling mill, **JESCO** produces seamless casing pipe from **5 1/2"** to **13 3/8"** (as well as intermediate sizes), exceeding API standards.

**JESCO** produces connections, as per API 5B standard and has developed its own interchangeable premium connection called JPC2. Finishing line capacities are **400,000 MT per annum**.

Through the very latest heat treatment technology, **JESCO** is able to achieve API and tailored steel grades. **JESCO's** proprietary steel grades cover critical features such as sour service, high collapse, high compression or a combination of them all with a capacity of **(200,000 MT per annum)**.

A dedicated process control system ensures that our manufacturing process follows the designed production plan.

Critical operations are actively monitored through specially designed and produced devices, which ensure an accurate and continuous process control.

Our **Level 3 automation system** integrates all control and traceability data for our products all the way through to our customer's receipt at the final destination.

**JESCO** provides after sales technical services for all its customers.

The following pages indicate the size and grade ranges which **JESCO** produce.



Technical Data: OCTG

SIZE DESIGNATION, DIMENSION, Nominal WEIGHT and Drift Diameter									
Label 1	Label 2	Outside Diameter		Wall thickness		Drift Diameter		Nominal Weight T & C	
in	lb/ft	in	mm	in	mm	in	mm	lb/ft	kg/m
5 1/2	15.50	5.500	139.70	0.275	6.98	4.825	122,56	15.50	23,07
	17.00			0.304	7.72	4.767	121,08	17.00	25,30
	20.00			0.361	9.17	4.653	118,18	20.00	29,76
	23.00			0.415	10.54	4.545	115,44	23.00	34,23
	26.80			0.500	12.70	4.375	111,12	26.80	39,88
	29.70			0.562	14.27	4.251	107,98	29.70	44,20
	32.60			0.625	15.88	4.125	104,76	32.60	48,51
	35.30			0.687	17.45	4.001	101,62	35.30	52,53
	38.00			0.750	19.05	3.875	98,42	38.00	56,55
	40.50			0.812	20.62	3.751	95,28	40.50	60,27
6 5/8	43.10			0.875	22.22	3.625	92,08	43.10	64,14
	20.00	6.625	168.28	0.288	7.32	5.924	150,46	20.00	29,76
	24.00			0.352	8.94	5.796	147,22	24.00	35,72
	28.00			0.417	10.59	5.666	143,92	28.00	41 ,67
7	32.00			0.475	12.07	5.550	140,98	32.00	47,62
	20.00	7.000	177.80	0.272	6.91	6.331	160,80	20.00	30,06
	23.00			0.317	8.05	6.250 <sup>e</sup>	158,75 <sup>e</sup>	23.00	34,67
	23.00			0.317	8.05	6.241	158,52	23.00	34,67
	26.00			0.362	9.19	6.151	156,24	26.00	39,14
	29.00			0.408	10.36	6.059	153,90	29.00	43,60
	32.00			0.453	11.51	6.000 <sup>e</sup>	152,40 <sup>e</sup>	32.00	47,92
	32.00			0.453	11.51	5.969	151,60	32.00	47,92
	35.00			0.498	12.65	5.879	149,32	35.00	52,23
	38.00			0.540	13.72	5.795	147,18	38.00	56,10
	42.70			0.625	15.88	5.625	142,86	42.70	63,84
	46.40			0.687	17.45	5.500	139,72	46.40	69,35
	50.10			0.750	19.05	5.375	136,52	50.10	74,85
	53.60			0.812	20.62	5.251	133,38	53.60	80,21
	57.10			0.875	22.22	5.125	130,18	57.10	85,42
7 5/8	24.00	7.625	193.68	0.300	7.62	6.900	175,26	24.00	35,72
	26.40			0.328	8.33	6.844	173,84	26.20	39,29
	29.70			0.375	9.52	6.750	171,46	29.70	44,20
	33.70			0.430	10.92	6.640	168,66	33.70	50,15
	39.00			0.500	12.70	6.500	165,10	39.00	58,04
	42.80			0.562	14.27	6.376	161,96	42.80	63,69
	45.30			0.595	15.11	6.310	160,28	45.30	67,41
	47.10			0.625	15.88	6.250	158,74	47.10	70,09
	51.20			0.687	17.45	6.126	155,60	51.20	76,19
	55.30			0.750	19.05	6.000	152,40	55.30	82,30
7 3/4	46.10	7.750	196.85	0.595	15.11	6.500 <sup>e</sup>	165.10 <sup>e</sup>	46.10	68,60
	46.10			0.595	15.11	6.435	163,45	46.10	68.6

SIZE DESIGNATION, DIMENSION, Nominal WEIGHT and Drift Diameter									
Label 1	Label 2	Outside Diameter		Wall thickness		Drift Diameter		Nominal Weight T & C	
in	lb/ft	in	mm	in	mm	in	mm	lb/ft	kg/m
8 5/8	28.00	8.625	219.08	0.304	7.72	7.892	200,48	28.00	41,67
	32.00			0.352	8.94	7.875 <sup>e</sup>	200,02 <sup>e</sup>	32.00	47,62
	32.00			0.352	8.94	7.797	198,02	32.00	47,62
	36.00			0.400	10.16	7.700	195,58	36.00	53,57
	40.00			0.450	11.43	7.625 <sup>e</sup>	193,68 <sup>e</sup>	40.00	59,53
	40.00			0.450	11.43	7.600	193,04	40.00	59,53
	44.00			0.500	12.70	7.500	190,50	44.00	65,48
	49.00			0.557	14.15	7.286	187,60	49.00	72,92
9 5/8	32.30	9.625	244.48	0.312	7.92	8.845	224,66	32.30	48,07
	36.00			0.352	8.94	8.765	222,63	36.00	53,57
	40.00			0.395	10.03	8.750 <sup>e</sup>	222,25 <sup>e</sup>	40.00	59,53
	40.00			0.395	10.03	8.679	220,45	40.00	59,53
	43.50			0.435	11.05	8.599	218,41	43.50	64,74
	47.00			0.472	11.99	8.525	216,54	47.00	69,94
	53.50			0.545	13.84	8.500 <sup>e</sup>	215,90 <sup>e</sup>	53.50	79,62
	53.50			0.545	13.84	8.379	212,83	53.50	79,62
	58.40			0.595	15.11	8.375 <sup>e</sup>	212,72 <sup>e</sup>	58.40	86,91
	58.40			0.595	15.11	8.279	210,29	58.40	86,91
	59.40			0.609	15.47	8.251	209,58	59.40	88,40
	64.90			0.672	17.07	8.125	206,38	64.90	96,58
10 3/4	70.30			0.734	18.64	8.001	203,23	70.30	104,62
	75.60			0.797	20.24	7.875	200,02	75.60	112,50
	40.50	10.750	273.05	0.350	8.89	9.894	251.31	40.50	60,27
	45.50			0.400	10.16	9.875 <sup>e</sup>	250.82 <sup>e</sup>	45.50	67,71
	45.50			0.400	10.16	9.794	248.77	45.50	67,71
	51.00			0.450	11.43	9.694	246.23	51.00	75,90
	55.50			0.495	12.57	9.625 <sup>e</sup>	244.48 <sup>e</sup>	55.50	82,59
	55.50			0.495	12.57	9.604	243.94	55.50	82,59
	60.70			0.545	13.84	9.504	241.40	60.70	90,33
11 3/4	65.70			0.595	15.11	9.404	238.86	65.70	97,77
	73.20			0.672	17.07	9.250	234.95	73.20	108,93
	79.20			0.734	18.64	9.126	231.80	79.20	117,86
	85.30			0.797	20.24	9.000	228.60	85.30	126,94
	42.00	11.750	298.45	0.333	8.46	11.000 <sup>e</sup>	279.40 <sup>e</sup>	42.00	62,50
	42.00			0.333	8.46	10.928	277.50	42.00	62,50
	47.00			0.575	9.52	10.844	275.44	47.00	69,94
	54.00			0.435	11.05	10.724	272.39	54.00	80,36
	60.00			0.489	12.42	10.625 <sup>e</sup>	269.88 <sup>e</sup>	60.00	89,29
	60.00			0.489	12.42	10.616	269.65	60.00	89,29
	65.00			0.534	13.56	10.625 <sup>e</sup>	269.88 <sup>e</sup>	65.00	96,73
	65.00			0.534	13.56	10.526	267.36	65.00	96,73
13 3/8	71.00			0.582	14.78	10.430	264.92	71.00	105,66
	48.00	13.375	339.73	0.330	8.38	12.559	318.99	48.00	71,43
	54.50			0.380	9.65	12.459	316.45	54.50	81,10
	61.00			0.430	10.92	12.359	313.91	61.00	90,78
	68.00			0.480	12.19	12.259	311.37	68.00	101,19
	72.00			0.514	13.06	12.250 <sup>e</sup>	311.15 <sup>e</sup>	72.00	107,15
	72.00			0.514	13.06	12.191	309.63	72.00	107,15



# Technical Data: OCTG

JESCO produces carbon steel grades as per API 5CT standards

### API GRADES MANUFACTURED BY JESCO

Yield strength (ksi)		40	55	65	80	90	95	110	125
Group 1		H 40	J 55 K 55		N 80.1 N 80.Q		R 95		
Group 2				M 65	L 80.1	C 90.1	T 95.1	C 110	
Group 3								P 110	
Group 4									Q 125.1

Every oil and gas field has its own specific features. JESCO's research and development department develops tailored solutions for its customers, in order to overcome such constraints and to maximize the performance and behavior of its seamless pipes inside the well.

### PROPRIETARY GRADES MANUFACTURED BY JESCO

Yield strength (ksi)	55	80	90	95	110	125
Sour Service		JEP80S	JEP90S	JEP95S	JEP110S	
High Collapse Service	JEP55HC	JEP80HC	JEP90HC	JEP95HC	JEP110HC	
Low Temperature Service	JEP55L	JEP80L	JEP90L	JEP95L	JEP110L	JEP125L
High Collapse & Sour Service	JEP55HS	JEP80HS	JEP90HS	JEP95HS	JEP110HS	
Severe Sour Service			JEP90SS	JEP95SS		

JESCO's laboratories have high collapse and sour service testing equipments. All proprietary steel grades are certified internally.

JESCO continually aims to improve and develop new steel grades in order to overcome a higher level of sophisticated demands by our customers.

JESCO's threaded and coupled (T&C) manufacturing program includes short thread cut (SC), long thread cut (LC) and buttress thread cut (BC) connections in accordance with API 5CT & API 5B, along with JESCO's self branded **proprietary connections** for use in more demanding environments.

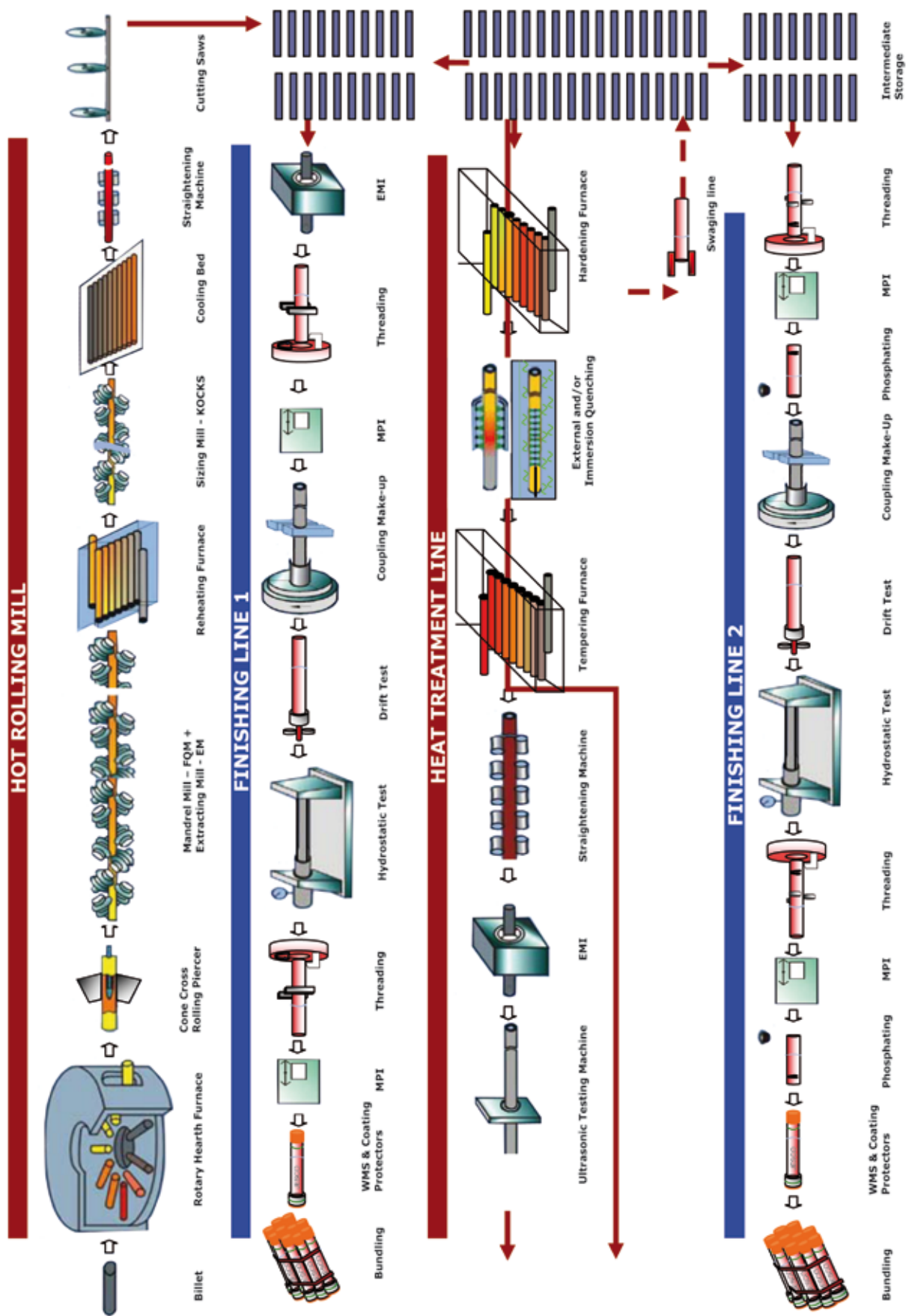
Technical support for string design is available from JESCO's research and development team. Through a dedicated premium supply chain service, JESCO can supply all tubular needs for field operations, including pup-joints, interconnecting cross-overs and loose couplings. JESCO also provides a dedicated repair network for its main regional markets. JESCO offers pipe management solutions for long term customers as part of a supply agreement for a premium supply chain service.

TYPE	GRADE	COUPLING	PIPE END	TYPE	GRADE	COUPLING	
API 5CT Steel Grades	J55			JESCO Severe Sour Service	JEP80S		
	K55				JEP90S		
	M65				JEP95S		
	N80-1				JEP110S		
	N80-Q						
	R95			JESCO Low Temperature Service	JEP55L		
	L80-1				JEP80L		
	C90-1				JEP90L		
	T95-1				JEP95L		
	C110				JEP110L		
	P110			JESCO High Collapse	JEP80HC		
	Q125-1				JEP90HC		
					JEP95HC		
					JEP110HC		

JESCO's proprietary steel grade color identification system is user friendly allowing our products to be easily identified. Special clearance couplings will be painted with a grey band adjacent to the color identification band on the coupling.



JESCO – Technological process flow – OCTG casing T&C



The design of **JESCO** mill, means that following the pipe rolling and / or heat treatment process all pipes are subjected to in-line Non Destructive Testing (NDT) consisting of 100% electromagnetic inspection (EMI) tests for longitudinal, transversal, internal and external defects, as well as ultrasonic testing (UT). **JESCO** can offer full Ultrasound inspection for 100% of the pipe body, including pipe ends. The wall thickness (WT) of each pipe is inspected along its full length.

In-line steel grade monitoring is conducted on each pipe through an eddy current (EC) device. Finishing Lines include wet magnetic powder inspection (WMPI) for pipe ends as well as pin phosphating units.

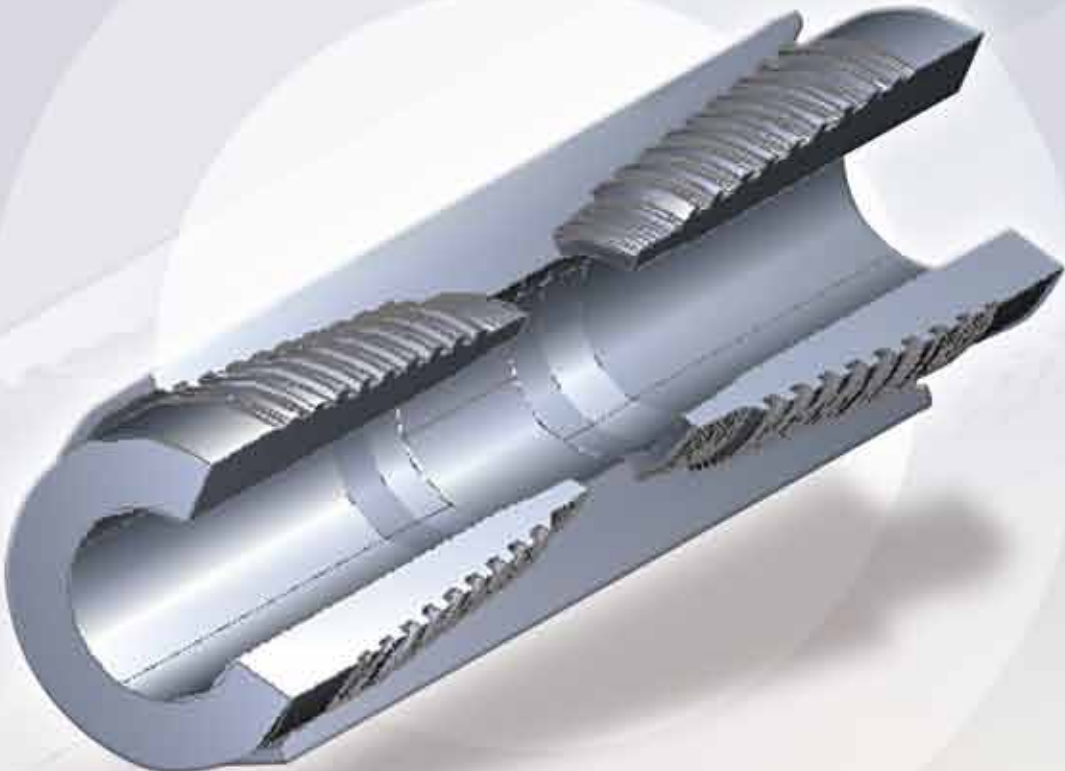
Hydrostatic tests performed with a made-up coupling at the box end. The pin end is threaded following this test. Alternative pressure hydrostatic tests is available on request.

Standard and tailored tests are performed by **JESCO** on their products. Critical tests for casing - NACE and high collapse are conducted in **JESCO's** laboratories.

PHYSICAL TESTS	Tensile Test ISO 6892 and/or ASTM A 370
	Hardness Test
	Impact Test
METALLOGRAPHIC AND CHEMICAL TEST	Grain Size determination McQuaid-Ehn Test or others as specified in ISO 643 and/or ASTM E 112
	Hardenability - grades C 90 and T 95
	Metallographic Evaluation
	Chemical Analyses
INSPECTION AND TESTING ONLINE	Hydrostatic Test (including alternative test pressure)
	Dimensional Measurements (OD, Wt, Length, Thread)
	Weight Determination
	Straightness
	Non-Destructive Examination (NDE) - EMI,UT, MT
	Visual inspection
SPECIAL TESTS	Sulfide stress cracking-test; grades C 90 and T 95 ANSI-NACE Test Method TM 0177-96
	Collapse Test



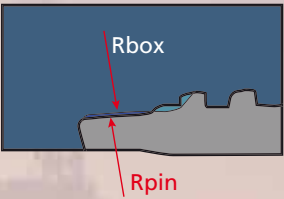
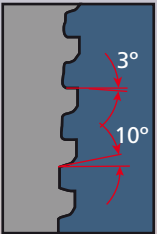
# JPC-2 Interchangeable Premium Connection



Jubail Energy Services Company

## JPC2 CASING AND COUPLING

1	STANDARD		
	API 5CT		
2	DESTINATION		
	Oil and natural gas exploitation		
3	TOLERANCES		
	Standard	outside diameter	Wall tickness
		mm	mm
	API 5CT	+1 / -0.5%	-12.5%
			Weight
			%
			+6.5 / -3.5% for single lengths -1.75% for a carload lots over 18.144 kg
4	DIMENSIONS		



Radius metal to metal  
pressure seal  
Positive torque shoulder



Technical Data: JPC-2

PIPE							PIN	COUPLING					
Nominal outside diameter	Nominal weight	Nominal Wall thickness		Nominal inside diameter	Drift diameter		Nominal section area	Make up loss length	Coupling outside diameter	Coupling inside diameter	Finished length	Critical section area	Tensile efficiency
inch (mm)	lbs/ft	inch	mm	inch	inch	mm	sq. inch	inch	inch	inch	inch	sq. inch	%
5.1/2 (139.7)	15.5	0.275	6.99	4.950	4.825	122.56	4.511	4.843	6.083	4.949	11.654	6.141	136%
	17.0	0.304	7.72	4.892	4.767	121.08	4.962	4.843	6.083	4.949	11.654	6.141	124%
	20.0	0.362	9.19	4.778	4.653	118.19	5.828	4.843	6.083	4.917	11.654	6.141	105%
	23.0	0.415	10.54	4.670	4.545	115.44	6.629	4.843	6.083	4.831	11.654	6.141	93%
	26.0	0.476	12.09	4.548	4.423	112.34	7.511	4.843	6.083	4.831	11.654	6.141	82%
7 (177.8)	23.0	0.317	8.05	6.366	6.241	158.52	6.653	5.197	7.697	6.437	12.402	9.405	141%
	26.0	0.362	9.19	6.276	6.151	156.24	7.549	5.197	7.697	6.388	12.402	9.405	125%
	29.0	0.408	10.36	6.184	6.059	153.90	8.449	5.197	7.697	6.339	12.402	9.405	111%
	32.0	0.454	11.53	6.094	5.969	151.61	9.317	5.197	7.697	6.339	12.402	9.405	101%
	35.0	0.499	12.67	6.004	5.879	149.33	10.173	5.197	7.697	6.339	12.402	9.405	92%
	38.0	0.541	13.74	5.920	5.795	147.19	10.960	5.197	7.697	6.339	12.402	9.405	86%
	41.0	0.590	14.99	5.820	5.695	144.65	11.875	5.197	7.697	6.339	12.402	9.405	79%
7.5/8 (193.68)	26.4	0.328	8.33	6.970	6.844	173.84	7.518	5.374	8.543	7.051	12.756	13.273	177%
	29.7	0.375	9.53	6.876	6.750	171.46	8.537	5.374	8.543	7.012	12.756	13.273	155%
	33.7	0.430	10.92	6.766	6.640	168.66	9.720	5.374	8.543	6.941	12.756	13.273	137%
	35.8	0.465	11.81	6.696	6.570	166.88	10.459	5.374	8.543	6.941	12.756	13.273	127%
	39.0	0.500	12.70	6.626	6.500	165.10	11.193	5.374	8.543	6.941	12.756	13.273	119%
	42.8	0.562	14.27	6.502	6.376	161.96	12.466	5.374	8.543	6.941	12.756	13.273	106%
	47.1	0.626	15.90	6.376	6.250	158.74	13.748	5.374	8.543	6.941	12.756	13.273	97%
9.5/8 (244.48)	36.0	0.352	8.94	8.922	8.765	222.63	10.253	5.433	10.630	9.047	12.874	18.096	177%
	40.0	0.395	10.03	8.836	8.679	220.45	11.455	5.433	10.630	8.992	12.874	18.096	158%
	43.5	0.436	11.07	8.756	8.599	218.41	12.560	5.433	10.630	8.949	12.874	18.096	144%
	47.0	0.473	12.01	8.682	8.525	216.54	13.572	5.433	10.630	8.949	12.874	18.096	133%
	53.5	0.545	13.84	8.536	8.379	212.83	15.547	5.433	10.630	8.949	12.874	18.096	116%
	58.4	0.595	15.11	8.436	8.279	210.29	16.880	5.433	10.630	8.949	12.874	18.096	107%
13.3/8 (339.72)	61.0	0.430	10.92	12.514	12.359	313.92	17.487	5.630	14.370	12.691	13.189	24.630	141%
	68.0	0.480	12.19	12.414	12.259	311.38	19.445	5.630	14.370	12.594	13.189	24.630	127%
	72.0	0.515	13.08	12.346	12.191	309.65	20.768	5.630	14.370	12.594	13.189	24.630	119%
	86.0	0.625	15.88	12.124	11.969	304.01	25.028	5.630	14.370	12.594	13.189	24.630	98%

MAKE UP TORQUE										
Nominal outside diameter	Nominal weight	55 KSI			80 KSI			110 KSI		
		min Lb*ft	opt Lb*ft	max Lb*ft	min Lb*ft	opt Lb*ft	max Lb*ft	min Lb*ft	opt Lb*ft	max Lb*ft
5.1/2 (139.7)	15.5	4230	4700	5170	4630	5140	5650	5140	5710	6280
	17.0	4560	5060	5560	4950	5500	6050	5480	6080	6680
	20.0	5340	5930	6520	5860	6510	7160	6450	7160	7870
	23.0	6390	7090	7790	7170	7960	8750	7830	8700	9570
	26.0	6840	7590	8340	7470	8300	9130	8460	9400	10340
7 (177.8)	23.0	5600	6220	6840	6320	7020	7720	7170	7960	8750
	26.0	6510	7230	7950	7470	8300	9130	8460	9400	10340
	29.0	7470	8300	9130	8460	9400	10340	9850	10850	11850
	32.0	8450	9050	9950	9150	10150	11150	10450	11550	12650
	35.0	8460	9400	10340	9500	10500	11500	10850	11950	13050
	38.0	8780	9750	10720	10100	11200	12300	11100	12300	13500
	41.0	9500	10500	11500	10450	11550	12650	11700	13000	14300
7.5/8 (193.68)	26.4	6450	7160	7870	7170	7960	8750	8150	9050	9950
	29.7	7470	8300	9130	8460	9400	10340	9850	10850	11850
	33.7	9150	10150	11150	10450	11550	12650	12100	13400	14700
	35.8	9500	10500	11500	10850	11950	13050	12450	13750	15050
	39.0	9850	10850	11850	11100	12300	13500	12700	14100	15500
	42.8	10850	11950	13050	12100	13400	14700	13700	15200	16700
	47.1	11450	12650	13850	12700	14100	15500	14400	15900	17400
9.5/8 (244.48)	36.0	7830	8700	9570	9150	10150	11150	10850	11950	13050
	40.0	9500	10500	11500	11100	12300	13500	13050	14450	15850
	43.5	10850	11950	13050	12700	14100	15500	14400	15900	17400
	47.0	11100	12300	13500	13050	14450	15850	14400	15900	17400
	53.5	12100	13400	14700	14400	15900	17400	14400	15900	17400
	58.4	12700	14100	15500	14400	15900	17400	14400	15900	17400
13.3/8 (339.72)	61.0	13700	15200	16700	14400	15900	17400	14400	15900	17400
	68.0	14400	15900	17400	14400	15900	17400	14400	15900	17400
	72.0	14400	15900	17400	14400	15900	17400	14400	15900	17400
	86.0	14400	15900	17400	14400	15900	17400	14400	15900	17400





## Technical Data: LINE PIPES

### LINE PIPES (API 5L PSL1, PSL2)

By utilizing its State-of-the-Art Danieli FQM rolling mill, **JESCO** produces seamless Line Pipe from 5.563” to 16” (as well as intermediate sizes), to the most restricted API Specifications and Standards.

Through the very latest heat treatment technology, **JESCO** is able to achieve API and tailored steel grades. **JESCO's** proprietary steel grades cover critical features such as sour service.

A dedicated process control system ensures that our manufacturing process follows the designed production plan.

Critical operations are actively monitored through specially designed and produced devices to ensure an accurate and continuous process control.

Our level 3 automation system integrates all control and traceability data for our products all the way through to our customer’s receipt at the final destination.

**JESCO** provides after sales technical services for all its customers.

The following pages indicate the size and grade ranges which **JESCO** produces.

LINE PIPE - DIMENSIONS & WEIGHT								
NPS OD	Actual OD		Identification		Wall Thickness		Weight	
	[inch]	[mm]		SCH	[inch]	[mm]	[lb/ft]	[kg/m]
5	5.563	141.3	STD	40	0.258	6.55	14.63	21.77
					0.281	7.14	15.87	23.62
					0.312	7.92	17.51	26.05
					0.344	8.74	19.19	28.57
			XS	80	0.375	9.53	20.80	30.97
					0.500	12.70	27.06	40.28
					0.625	15.88	32.99	49.12
			XXS		0.750	19.05	38.59	57.43
6	6.625	168.3	STD	40	0.280	7.11	18.99	28.26
					0.312	7.92	21.06	31.33
					0.344	8.74	23.10	34.39
					0.375	9.53	25.05	37.31
			XS	80	0.432	10.97	28.60	42.56
					0.500	12.70	32.74	48.73
					0.562	14.27	36.43	54.21
					0.625	15.88	40.09	59.69
			XXS	160	0.719	18.26	45.39	67.57
					0.750	19.05	47.10	70.12
					0.864	21.95	53.21	79.22
					0.875	22.23	53.78	80.08
8	8.625	219.1	STD	30	0.277	7.04	24.72	36.82
					0.312	7.92	27.73	41.25
					0.322	8.18	28.58	42.55
					0.344	8.74	30.45	45.34
			XS	60	0.375	9.53	33.07	49.25
					0.406	10.31	35.67	53.09
					0.438	11.13	38.33	57.08
					0.500	12.70	43.43	64.64
			XXS	80	0.562	14.27	48.44	72.08
					0.594	15.09	51.00	75.92
					0.625	15.88	53.45	79.59
					0.719	18.26	60.77	90.44
			STD	100	0.750	19.05	63.14	93.98
					0.812	20.62	67.82	100.93
					0.875	22.23	72.49	107.93
					0.906	23.01	74.76	111.27
10	10.750	273.0	STD	30	1.000	25.40	81.51	121.33
					0.307	7.80	34.27	51.01
					0.344	8.74	38.27	56.96
					0.365	9.27	40.52	60.29
			XS	40	0.438	11.13	48.28	71.88
					0.500	12.70	54.79	81.53
					0.562	14.27	61.21	91.05
					0.594	15.09	64.49	95.98
			XXS	60	0.625	15.88	67.65	100.69
					0.719	18.26	77.10	114.71
					0.812	20.62	86.26	128.34
					0.844	21.44	89.38	133.01
12	12.750	324.0	STD	30	0.875	22.23	92.37	137.48
					0.938	23.83	98.39	146.43
					1.000	25.40	104.23	155.1
					1.125	28.58	115.75	172.27

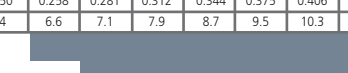



Technical Data: LINE PIPES

LINE PIPE - DIMENSIONS & WEIGHT								
NPS OD	Actual OD		Identification		Wall Thickness		Weight	
	[inch]	[mm]		SCH	[inch]	[mm]	[lb/ft]	[kg/m]
12	12.750	323.8		30	0.312	7.92	41.48	61.7
					0.330	8.38	43.81	65.19
					0.344	8.74	45.62	67.91
			STD	40	0.375	9.53	49.61	73.86
					0.406	10.31	53.57	79.71
					0.438	11.13	57.65	85.82
			XS	60	0.500	12.70	65.48	97.44
					0.562	14.27	73.22	108.93
					0.625	15.88	81.01	120.59
				80	0.688	17.48	88.71	132.05
					0.750	19.05	96.21	143.17
					0.812	20.62	103.63	154.17
				100	0.844	21.44	107.42	159.87
					0.875	22.23	111.08	165.33
					0.938	23.83	118.44	176.29
			XXS	120	1.000	25.40	125.61	186.92
					1.062	26.97	132.69	197.43
					1.125	28.58	139.81	208.08
14	14.000	355.6		20	0.312	7.92	45.65	67.91
					0.344	8.74	50.22	74.76
					0.375	9.53	54.62	81.33
			STD	30	0.406	10.31	59.00	87.79
					0.438	11.13	63.50	94.55
					0.469	11.91	67.84	100.95
			XS	40	0.500	12.70	72.16	107.4
					0.562	14.27	80.73	120.12
					0.594	15.09	85.13	126.72
				60	0.625	15.88	89.36	133.04
					0.688	17.48	97.91	145.76
					0.750	19.05	106.23	158.11
				80	0.812	20.62	114.48	170.34
					0.875	22.23	122.77	182.76
					0.938	23.83	130.98	194.98
				100	1.000	25.40	138.97	206.84
					1.062	26.97	146.88	218.58
					1.094	27.79	150.93	224.66
16	16.000	406.4			0.438	11.13	72.86	108.49
					0.469	11.91	77.87	115.87
					0.500	12.70	82.85	123.31
			XS	40	0.562	14.27	92.75	138
					0.625	15.88	102.72	152.94
					0.656	16.66	107.60	160.13
				60	0.688	17.48	112.62	167.66
					0.750	19.05	122.27	181.98
					0.812	20.62	131.74	196.18
				80	0.844	21.44	136.74	203.54
					0.875	22.23	414.48	210.61
					0.938	23.83	151.03	224.83
				100	1.000	25.40	160.35	238.66
					1.031	26.19	164.98	245.57
					1.062	26.97	169.59	252.37
					1.125	28.58	178.89	266.3

Line Pipes can be ordered in single length range (SRL) or Double range length (DRL).

Tailored fixed lengths as well are possible to be cut in line, subject of previous agreement prior to order placing.

OD		wallthicknessin																							
In		mm	0.250	0.258	0.281	0.312	0.344	0.375	0.406	0.438	0.469	0.500	0.562	0.625	0.688	0.719	0.750	0.812	0.864	0.875	0.938	1.000	1.062	1.125	
			6.4	6.6	7.1	7.9	8.7	9.5	10.3	11.1	11.9	12.7	14.3	15.9	17.5	18.3	19.1	20.6	21.9	22.2	23.8	25.4	27	28.6	
5	9/16	141.3																							
6	5/8	168.3																							
8	5/8	219.1																							
10	3/4	273.1																							
12	3/4	323.9																							
14		355.6																							
16		406.4																							

 JESCO range

API 5L SPECIFICATION

Product Specification	Grade	CHEMICAL REQUIREMENTS, %						TENSILE REQUIREMENTS							
		C <sup>a</sup>	Mn <sup>a</sup>	P	S	Ti	Other	Yield Strength, min				Tensile Strength, min			
								psi		Mpa		psi		Mpa	
								min.	max.	min.	max.	min.	max.	min.	max.
PSL 1	A	0.22	0.9	0.03	0.03			30,000		207		48,000		331	
	B		1.2				b,c	35,000		241		60,000		414	
	X 42		1.3					42,000		290		63,000		434	
	X 46					0.04		46,000		317		66,000		455	
	X 52							52,000		359		71,000		490	
	X 56						c,e	56,000		386		75,000		517	
	X 60							60,000		414		77,000		531	
	X 65					0.06		65,000		448		82,000		565	
	X 70							70,000		483					
PSL 2	B		1.2				b,d	35,000	65,000	241	448	60,000		414	
	X 42		1.3					42,000	72,000	290	496	63,000		434	
	X 46					0.04	c,d	46,000	76,000	317	524	66,000	110,000	455	758
	X 52							52,000	77,000	359	531	71,000		517	
	X 56			0.025	0.015			56,000	79,000	386	544	82,000		531	
	X 60							60,000	82,000	414	565	87,000		565	
	X 65						d	65,000	87,000	448	600	90,000		587	
	X 70					0.06		70,000	90,000	483	621	93,000		603	
	X 80						f	80,000	100,000	552	690	100,000	120,000	621	827

a For each reduction of 0.01% below the specified maximum for carbon, an increase of 0.05% above the specified maximum for manganese is permissible up to a maximum of 1.65% for grades > B, but < X 52; up to a maximum of 1.75% for grades X 52 but < X 80.

b Unless otherwise agreed, the sum of the niobium and vanadium concentrations shall be < 0.06%

c The sum of the niobium, vanadium and titanium concentration shall be < 0.15%

d Unless otherwise agreed, 0.50% maximum for copper, 0.30% maximum for nickel, 0.30% maximum for chromium and 0.15% maximum for molybdenum.

e Unless otherwise agreed, 0.50% maximum for copper, 0.50% maximum for nickel, 0.50% maximum for chromium and 0.50% maximum for molybdenum.

f 0.004% maximum for boron.



Technical Data: LINE PIPES

ISO 3183-3 SPECIFICATION

Steel Name	C <sup>a</sup>	Si	Mn <sup>a</sup>	P	S	V	Nb	Ti	other <sup>b</sup>	CEV <sup>c</sup>	Pcm <sup>de</sup>
L245NC	0.14	0.40	1.35	0.02	0.01					0.36	0.19
L290NC	0.14	0.40	1.35	0.02	0.01	0.05	0.05	0.04	f	0.36	0.19
L360NC	0.16	0.45	1.65	0.02	0.01	0.10	0.05	0.04	f	0.43	0.22
L290QC	0.14	0.40	1.35	0.02	0.01	0.04	0.04	0.04	gh	0.34	0.19
L360QC	0.16	0.45	1.65	0.02	0.01	0.07	0.05	0.04	f	0.39	0.20
L415QC	0.16	0.45	1.65	0.02	0.01	0.08	0.05	0.04	gh	0.41	0.22
L450QC	0.16	0.45	1.65	0.02	0.01	0.09	0.05	0.06	gh	0.42	0.22
L485QC	0.17	0.45	1.75	0.02	0.01	0.10	0.05	0.06	gh	0.42	0.23
L555QC	0.17	0.45	1.85	0.02	0.01	0.10	0.06	0.06	by agreement		
L290MC	0.12	0.40	1.35	0.02	0.01	0.04	0.04	0.04	f	0.34	0.19
L360MC	0.12	0.45	1.65	0.02	0.01	0.05	0.05	0.04	h	0.37	0.20
L415MC	0.12	0.45	1.65	0.02	0.01	0.08	0.06	0.06	gh	0.38	0.21
L450MC	0.12	0.45	1.65	0.02	0.01	0.10	0.06	0.06	gh	0.39	0.22
L485MC	0.12	0.45	1.75	0.02	0.01	0.10	0.06	0.06	gh	0.41	0.23
L555MC	0.14	0.45	1.85	0.02	0.01	0.10	0.06	0.06	by agreement		

Steel Name	Pipe body <sup>m</sup>				Charpy V-notch impact energy				
	Yield Strength R <sub>10.5</sub> N/mm <sup>2</sup>	Tensile Strength R <sub>m</sub> N/mm <sup>2</sup> min	Ratio Strength R <sub>10.5</sub> /R <sub>10.5</sub> max	Elongation <sup>q</sup> L <sub>0</sub> =5.65√S <sub>0</sub> max	Test Temperature thickness (t) mm			Average of three test pieces J	Min individual value J
					t≤20	20≤t≤30	t>30		
L245NC	245 to 440	415	0.90	22	TD-10°C	TD-20°C	TD-30°C	27	22
L290NC	290 to 440	415	0.90	21	TD-10°C	TD-20°C	TD-30°C	30	24
L360NC	360 to 510	460	0.90	20	TD-10°C	TD-20°C	TD-30°C	36	30
L290QC	290 to 440	415	0.90	21	TD-10°C	TD-20°C	TD-30°C	30	24
L360QC	360 to 510	460	0.90	20	TD-10°C	TD-20°C	TD-30°C	36	30
L415QC	415 to 565	520	0.92	18	TD-10°C	TD-20°C	TD-30°C	42	35
L450QC	450 to 570	535	0.92	18	TD-10°C	TD-20°C	TD-30°C	45	38
L485QC	485 to 605	570	0.92	18	TD-10°C	TD-20°C	TD-30°C	50	40
L555QC	555 to 675	625	0.92	18	TD-10°C	TD-20°C	TD-30°C	56	45
L290MC	290 to 440	415	0.90	21	TD-10°C	TD-20°C	TD-30°C	30	24
L360MC	360 to 510	460	0.90	20	TD-10°C	TD-20°C	TD-30°C	36	30
L415MC	415 to 565	520	0.92	18	TD-10°C	TD-20°C	TD-30°C	42	35
L450MC	450 to 570	535	0.92	18	TD-10°C	TD-20°C	TD-30°C	45	38
L485MC	485 to 605	570	0.92	18	TD-10°C	TD-20°C	TD-30°C	50	40
L555MC	555 to 675	625	0.92	18	TD-10°C	TD-20°C	TD-30°C	56	45

Note




















- a For each reduction of 0.01% below the maximum carbon content an increase of 0.05% manganese above the specified maximum value it is permitted, with a maximum increase of 0.2%
- b Al<sub>total</sub> <0.006; N≤0.012; Al:N≥2:1 (not available to titanium killed steels)
- c Ceq=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
- d Pcm=C+V/10+Mo/15+(Cr+Mn+Cu)/20+Si/30+Ni/60+5B
- e For seamless pipe Pcm values 0.03 higher than tabulated value are permitted, up to maximum of 0.25
- f Cu 0.35; Ni≤0.30; Mo≤0.10; B≤0.0005
- g The sum of V, Nb, Ti shall not exceed 0.15%
- h Cu≤0.50; Ni≤0.50; Cr≤0.50; Mo≤0.50;B≤0.0005

Steel Name	C <sup>a</sup>	Si	Mn <sup>a</sup>	P	S	V	Nb	Ti	other <sup>b</sup>	CEV <sup>c</sup>	Pcm <sup>de</sup>
L245NCS	0.14	0.40	1.35	0.02	0.03					0.36	0.19
L290NCS	0.14	0.40	1.35	0.02	0.03	0.05	0.05	0.04		0.36	0.19
L360NCS	0.16	0.45	1.65	0.02	0.03	0.10	0.05	0.04	g	0.43	0.22
L290QCS	0.14	0.40	1.35	0.02	0.03	0.04	0.04	0.04		0.34	0.19
L360QCS	0.16	0.45	1.65	0.02	0.03	0.07	0.05	0.04	g	0.39	0.20
L415QCS	0.16	0.45	1.65	0.02	0.03	0.08	0.05	0.04	gl	0.41	0.22
L450QCS	0.16	0.45	1.65	0.02	0.03	0.09	0.05	0.06	gl	0.42	0.22
L290MCS	0.10	0.40	1.25	0.02	0.02	0.04	0.04	0.04		0.34	0.19
L360MCS	0.10	0.45	1.45	0.02	0.02	0.05	0.05	0.04		0.37	0.20
L415MCS	0.10	0.45	1.45	0.02	0.02	0.08	0.06	0.06	g	0.38	0.21
L450MCS	0.10	0.45	1.45	0.02	0.02	0.10	0.06	0.06	gl	0.39	0.22
L485MCS	0.10	0.45	1.55	0.02	0.02	0.10	0.06	0.06	gl	0.41	0.23

Steel Name	Pipe body <sup>m</sup>				Charpy V-notch impact energy				
	Yield Strength R <sub>10.5</sub> N/mm <sup>2</sup>	Tensile Strength R <sub>m</sub> N/mm <sup>2</sup> min	Ratio Strength R <sub>10.5</sub> /R <sub>10.5</sub> max	Elongation <sup>q</sup> L <sub>0</sub> =5.65√S <sub>0</sub> max	Test Temperature thickness (t) mm			Average of three test pieces J	Min individual value J
					t≤20	20≤t≤30	t>30		
L245NCS	245 to 440	415	0.90	22	TD-10°C	TD-20°C	TD-30°C	27	22
L290NCS	290 to 440	415	0.90	21	TD-10°C	TD-20°C	TD-30°C	30	24
L360NCS	360 to 510	460	0.90	20	TD-10°C	TD-20°C	TD-30°C	36	30
L290QCS	290 to 440	415	0.90	21	TD-10°C	TD-20°C	TD-30°C	30	24
L360QCS	360 to 510	460	0.90	20	TD-10°C	TD-20°C	TD-30°C	36	30
L415QCS	415 to 565	520	0.92	18	TD-10°C	TD-20°C	TD-30°C	42	35
L450QCS	450 to 570	535	0.92	18	TD-10°C	TD-20°C	TD-30°C	45	38
L290MCS	290 to 440	415	0.90	21	TD-10°C	TD-20°C	TD-30°C	30	24
L360MCS	360 to 510	460	0.90	20	TD-10°C	TD-20°C	TD-30°C	36	30
L415MCS	415 to 565	520	0.92	18	TD-10°C	TD-20°C	TD-30°C	42	35
L450MCS	450 to 570	535	0.92	18	TD-10°C	TD-20°C	TD-30°C	45	38
L485MSC	485 to 605	570	0.92	18	TD-10°C	TD-20°C	TD-30°C	50	40

- i For seamless pipe, sulphur content up to 0.08% is permitted
- j Al total <0.006; N≤0.012; Al:N≥2:1 (not available to titanium killed steels);Cu≤0.35 (by agreement≤0.10); Ni≤0.30;
- k Cr≤0.30; Mo≤0.10;B≤0.0005 Ca shall be restricted to 0.006%
- l For these steel grades, a molybdenium content up to 0.035% may be agreed
- n The value for the yield strength ratio apply to the product "pipe".They can not be required for the starting material. For grades L415MCS, L450MCS and L485MCS the ratio may be increased by agreement to 0.93. For seamless pipe manufactured by a process of quenching and tempering, R10.5/Rm ratio greater than the tabulated values may be agreed
- p The R10.5/Rm ratio for M grades applies to transversal test pieces only
- q These values apply to transverse test pieces taken from the pipe body. If longitudinal test pieces are tested, the values of elongation shall be 2 units higher.

Technical Data: LINE PIPES

Product Specification	Grade	Color Grade	Yield Strength		Ultimate tensile Strength		Source
			min kPSI	max kPSI	min kPSI	max kPSI	
PSL 1	A25		25		45		API
	A		30		48		API
	B		35		60		API
	X42		42		60		API
	X46		46		63		API
	X52		52		66		API
	X56		56		71		API
	X60		60		75		API
	X65		65		77		API
	X70		70		82		API
PSL 2	B		35	65	60	110	API
	X42		42	72	60	110	API
	X46		46	76	63	110	API
	X52		52	77	66	110	API
	X56		56	79	71	110	API
	X60		60	82	75	110	API
	X65		65	87	77	110	API
	X70		70	92	82	110	API
	X80		80	102	90	120	API

JESCO's proprietary steel grade color identification system is user friendly allowing our products to be easily identified.

Correlation between API and other International Standards

API 5L	ISO 3183 EN 10 208	NFA 49-211 NFA 49-411	BS 3602	ASTM A 53	ASTM A 333	ASTM A 106
Grade A		TUE 220	Steel 360	Grade A	Grade 1	Grade A
Grade B	L245NB	TUE 250		Grade B	Grade 3 Grade 6	Grade B
		TUE 275	Steel 430			
X 42	L290NB	TUE 290				
X 46		TUE 320				Grade C
X 52	L360NB L360QB	TUE 360				
X 56						
X 60	L415QB	TUE 415				
X 65	L450QB	TUE 450				
X 70	L485QB					
X 80	L555QB					

Duferco was established by Mr. Bruno Bolfo in 1979 in New York City. Today, the company is one of the leading steel trading companies in the world. In addition to steel trading, Duferco also trades in raw materials such as metallurgical coke, coal, iron ore, scrap, pig iron, DRI, and related products, maximising its contacts with world's main steel producers.



Unlike most of its peers in the industry, Duferco employs a unique “hybrid” business model which, apart from trading activities, also includes distribution and industrial activities. In 2008, Duferco traded over 21 million tons of steel and raw material and simultaneously also produced 7,6 million tons of steel products in 7 countries. The company employs 8,500 people in over 40 countries worldwide.

Being involved in new projects and investments that comply with its culture and strategy for low cost production and niche market providers of steel, today the Duferco Group focuses on the highest level of service to its suppliers and customers, combining the steel production/processing activities with the global trading knowledge.

Consistent with this strategy, Duferco is proud to be a shareholder of Jubail Energy Services Company, acting as a strategic partner and investor. We share Jesco's vision to be the leading seamless pipe supplier to the Middle East region and the world. As the exclusive exporter of Jesco's products outside of the Kingdom of Saudi Arabia, Duferco dedicates its network of global offices to provide the very best reach and service to Jesco's clients world wide.

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