









STAINLESS STEEL AND NICKEL ALLOYS SEAMLESS PIPES & TUBES

TUBACEX GROUP

TUBACEX: A GLOBAL LEADER IN SEAMLESS STAINLESS AND HIGH NICKEL ALLOYS PIPES & TUBES





The Tubacex Group has become one of the world's main suppliers of Seamless Stainless Steel and Nickel alloy tubes. Founded in 1963, Tubacex brings the experience of a world leader combined with a strong R&D effort which is needed to fulfill the future needs of the industry.

Nowadays the Tubacex Group, exporting into more than 100 countries worldwide, has a share of around 15% of the world market of seamless stainless steel tubes and pipes, with a total workforce of around 1.800 employees. The headquarters are located in Llodio, 25 Km (15 miles) from the seaport city of Bilbao, in northern Spain.

Tubacex Group's integrated production process includes a steel making plant, 3 extrusion presses and more than 20 cold pilger mills and draw benches that allow us to supply tubes for different applications, through our global commercial network.

TUBACEX: A GLOBAL INTEGRATED GROUP TO YOUR SERVICE



















Extrusion facilities



Cold finishing facilities



Mechanical tubing Pipes & tubes Fittings



Global service

& distribution network



Commercial network

ACERÍA DE ALAVA STAINLESS STEEL BARS & BILLETS

Aceralava is the Steel Melting Shop of the Tubacex Group. Located in Spain, the company manufactures stainless steel and high nickel alloys bars and billets (round & square), and it is the main steel supplier of the group's companies. Aceralava also supplies its products to the stainless steel market. The dimensions of the billets and bars go from 120 mm to 508 mm.

TUBACEX TUBOS INOXIDABLES SEAMLESS PIPE & TUBING

T.T.I. manufactures seamless stainless steel and high nickel alloys tubes and pipes. The sizes manufactured through the extrusion press and the 11 cold rolling machines go from $\frac{1}{2}$ " up to 8" NPS (19 – 250 mm OD). The production programme covers most of the seamless specialities in stainless steel. T.T.I. has two mills (for hot extrusion and cold finishing) located in Spain.

SHOELLER BLECKMANN EDESTAHLROHR SEAMLESS PIPE & TUBING

Located in Austria, the company manufactures seamless stainless steel pipes and tubes in dimensions between 1/8" and 8" NPS, (6 – 250 mm OD). Schoeller Bleckmann Edelstahlrohr is a highly reputed company associated with quality and good service.

SALEM TUBESEAMLESS AND WELDED/DRAWN PIPE & TUBING

Located in the USA, Salem Tube manufactures welded and seamless stainless steel and nickel alloy tubes. Their range goes from 1/8" to 2" OD (3,17 - 50,8 mm OD). The company is highly specialized in precision tubing for the most demanding industries as military and aerospace, with a high weight of high nickel alloys in the product portfolio.

TUBACEX TAYLOR ACCESORIOS FITTINGS & ELBOWS

Tubacex Taylor Accesorios (TTA), located in Spain, manufactures stainless steel (also carbon and alloy) butt welding fittings (elbows and return bends), perfectly complementing the activity of Tubacex Tubos Inoxidables (TTI). Size range goes from $\frac{1}{2}$ " up to 14" NS, in short and long radius as well as in special radii.

COTUBES & TUBACEX GROUP'S GLOBAL SERVICE & DISTRIBUTION NETWORK

Comercial de Tubos y Accesorios is the Tubacex Group's master distributor. The company supplies mechanical tubes, seamless stainless steel tubes and pipes and round bars worlwide from their automatic and computerized warehouse located in Spain. The group has, in addition, warehouses in the United States, France, China and Brazil.



Worldwide presence

Through our commercial offices

Competitiveness

Thanks to our lean manufacturing process

Service

Cooperation with our customers

Flexibility

In materials chemical composition & deliveries

Reliability

Of a fully integrated company

Our Customers are the main driver of Tubacex Group's activity and efforts . Our organization and investments are continuously being adapted to fulfil the increasing requirements that companies are facing everyday in high demanding activities in the oil & gas, petrochemical, chemical and power generation industries among others. These new challenging needs are driving us to implement in our mills the most advanced verification equipment and inspection procedures to assure product quality and a high service, guaranteed by a fully integrated company with worlwide presence.



OIL & GAS EXPLORATION & PRODUCTION

New challenging corrosive environments and applications are driving Tubacex product portfolio of corrosion resistant alloys in both on-shore and off-shore E&P, with a particular focus in:

- Oil Country Tubular Goods (OCTG) Umbilical tubes along with a wide range of seamless stainless and high nickel alloys for subsea application (risers, flowlines, manifolds...)
- Tubes for platforms (piping systems, separators...).



REFINING, PETROCHEMICAL & CHEMICAL

Tubacex offers extensive grade and size portfolio to achieve designers expectations regarding several areas & equipments in the petrochemical and Chemical industry, particularly:

• Regas Facilities • Refineries • Heat exchangers • Reactors • Furnaces, heaters and re-heaters • Other process industries.



FERTILIZER PRODUCTION

Fertilizer production materials need to bear severe corrosion conditions. Tubacex provides pipes & tubes for the equipment involved in the production of Urea, Ammonia, Nitric acid, Sulphuric acid, Phosphoric acid and Melamine.

• Strippers • Condensers • Scrubbers • Reactors • Piping



POWER GENERATION

Tubacex's manufacturing range covers the main stainless steel heat ressistant grades used in boiler equipments, in both:

- Critical equipment Ultra Super Critical (USC) equipment Industrial power plants
- Nuclear power plants.



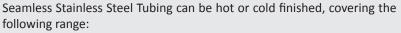
STOCK FOR DISTRIBUTION

Tubacex's manufacturing range covers the main seamless stainless steel portfolio for distributors worlwide:

• Pipes and Tubes according to all relevant standards • Hollow Bars for metal-mechanic industry through our master distributor COTUBES • Instrumentation & hydraulic tubing for a wide range of high added value industries, including aerospace. •Round Bars.

OVERAL RANGE

The Tubacex Group has an extensive manufacturing programme for stainless steel and nickel alloys seamless pipes & tubes covering most dimensions and grades required by the industry including products as OCTG, Umbilicals and Boiler Tubes.





		SIDE IETER												W/	ALL T	THIC	KNE:	SS											
A AS	ASTM A 31 SME B.36.:	2 10							0,154 0,179 3,91 4,55																				
	Inch		DIN mm	3,2					4,0 4,5											8,8	10,0	11,0						25,0 D	IN m
	1,496		38,0																										
	1,575		40,0																										40,0
1 1/4	1,660	42,16				4	10			80				160															
	1,752		44,5																										44,5
1/2	1,900	48,26					40			80						:	160												48,3
	2,008		51,0																										51,0
	2,126																												
	2,244		57,0																										57,0
2,0	2,375	60,33							40			80								160								_	
	2,500		63,5																									_	63,5
	2,756																											_	
	2,875		76,1								40				80						160							_	76,1
3,0	3,500	88,9										40					80						160					_	
	4,000		101,6										40					80											101,
	4,252		108,0																									_	108,0
	4,500 5,236		114,3 133.0										40						81)			120	160				_	114,3
	5,236		133,0		+																								133,0
5,0	5,563	141,3	139,7		+	10								40	1						80		120		160			_	141.
J,0	6,260	141,5	159.0		+	10								40							00		120		100				159.0
6,0	6,625	168.28	168,3		+	10										40						80			120	160		_	168,
-,0	7.626	200,20	193.7			20																				100			193,
8,0	8.625	219,08	219,1		+			10											40		60		80			120	160	_	219,:
	9.000	,	228.6		+																- 50		- 30						228,6
	9.626		244.5					+																				_	244,5

								CC	DLD	M	ANU	JFA	CT	UR	IN	GI	DIN	ME	NS	10	NS											
		ΓSIDE ⁄IETER													WA	LLT	HIC	KNE	SS													
A AS	ASTM A 31 SME B.36.	.2		0,020 0,035 0 0,50 0,89 1																												Inch mm
NPS	Inch	mm	DIN mm	0,5 0,9	1,2 1,6	2,0	2,3 2,	,6	2,9	3,2		3,6		4,0	0 4,5		5,0		5,6	5		6,3		7,	1	8,0				11,0 12,5	5 14,2	DIN mm
	0,125	3,17	3,2																													3,0
	0,236		6,0																													6,0
	0,315																															8,0
1/8	0,405	10,29	10,2		10																											10,2
	0,472																															12,0
1/4	0,540	13,72	13,5		10																											13,5
	0,630																															16,0
3/8	0,675	17,15	17,2		10		40			80																						17,2
	0,748																															19,0
	0,787		20,0																													20,0
1/2	0,840	21,34			5	10		40																								21,3
	0,984		25,0																					_								25,0
3/4	1,050	26,67			5	10			40					80)				160)												26,9
	1,181		30,0																													30,0
	1,260																															32,0
1,0	1,315	33,40	33,7		5			10			40				80							160										33,7
	1,378																															35,0
	1,496		38,0																													38,0
	1,575		40,0		_																											40,0
1 1/4	1,660	42,16	42,4 44,5		5			10				40				80						160										42,4
/0	1,752	10.00	44,5		5			10					40				80														-	44,5 48,3
1 1/2	1,900	48,26	48,3 51,0		5			10					40				80														-	48,3 51,0
	2,008		57,0																												+	57,0
2,0	2,244	60,33	60,3					10						40	,																	60,3
2,0	2,500	00,53	63.5					10						40	,																	63,5
	2,756		70,0																													70,0
2 1/2	2,875	73,03	76,1			5			10)								40						30					160			76,1
3,0	3,500	88,90	88,9			5			10									4	10						80				100			88,9
3 1/2	4,000	101,60	101,6						10											40					50	80						101,6
	4,252		108,0																													108,0
4,0	4,500	114,30							10)											40							80				114,3
	5,236		133,0																													133,0
5,0	5,563	141,30	141,3								10												40						80	120)	141,3
6,0	6,625	168,28									10													4	0					80		168,3
	7,626		193,7																													193,7
8,0	8,625	219,08												10								20					40			80		219,1

Production according to main manufacturing standards (ASTM/ASME, EN and other international manufacturing standards). Non standard articles available on request.

OVERAL RANGE

Tubacex manufacturing range covers the main stainless steel grades requested by the industry. From our steel plant Aceralava (Spain) we offer a tailor made list of steels. Our metalurgical engineers are devoted to the developement of sophisticated steels capable of operating in the demanding environments of the future. Exceptions over the standard steel grades are satisfied through Aceralava.



			STAINLESS STEEI	GRAD	ES			
	ASTM	WNr	AFNOR	C max*	Cr	Ni	Mo	Other
	304	1.4301	TU Z 6 CN 18-09	0,08	17/20	8/11		
	304 L	1.4306	TU Z 2 CN 18-10	0,03	18/20	10/12		
	304 L	1.4307	TU Z 3 CN 19-09	0,03	17,5/19,5	8/10,5		
	304 H		TU Z 6 CN 19-10	0,04/0,10	18/20	8/11		
	TX304HB**	1.4907		0,07	17/19	7,5/10,5		Nb 0,3/0,6 Cu 2,5/3,5
	321	1.4541	TU Z 6 CNT 18-10	0,08	17/19	9/12		5 C < Ti < 0,60
	321 H		TU Z 6 CNT 18-12 B	0,04/0,10	17/20	9/13		4 C < Ti < 0,60
	347	1.4550	TU Z 6 CNNb 18-10	0,08	17/19	9/12		10 C < Nb < 1,0
	347 H		TU Z 6 CNNb 18-12 B	0,04/0,08	17/20	9/13		8 C < Nb < 1,0
	347 H FG	1.4908		0,07	17/19	9/13		8 C < Nb < 1,1
	316	1.4401	TU Z 6 CND 17-11	0,08	16/18	11/14	2/3	
AUSTENITIC	316 L	1.4404	TU Z 2 CND 17-12	0,03	16/18	11/14	2/3	
Z	316 Ti	1.4571	TU Z 6 CNDT 17-12	0,08	16,5/18,5	10,5/13,5	2/2,5	5 C < Ti < 0,80
STE	(316 L)	1.4435	TU Z 2 CND 17-13	0,03	17/18,5	12,5/15	2,5/3	
) A	(316)	1.4436	TU Z 6 CND 17-12	0,07	16,5/18,5	11/14	2,5/3	
	316 Nb	1.4580		0,08	16/18	11/13	2/2,5	10 C < Nb < 1,0
	316 N/316 LN			0,03	16/18	11/14	2/3	N 0,10/0,16
	316 L urea			0,03	17/18	13/15	2/3	
	317		TU Z 2 CND 19-15	0,08	18/20	11/15	3/4	
	317 L	1.4438	TU Z 2 CND 19-15	0,03	18/20	11/15	3/4	
	309 S/309 H	1.4833	TU Z 12 CN 24-12	0,08	22/24	12/15	<0,75	
	310 S/310 H	1.4845	TU Z 12 CN 25-20	0,08	24/26	19/22	< 0,75	
	310 HCbN	1.4952		0,07	24/26	19/22		0,2 < Nb < 0,6
	310 MoLN	1.4466		0,02	24/26	21/23	2/2,5	N=0,1/0,15 Si<0,4 P<0,02
		1.4828	TU Z 17 CNS 20-12	0,20	19/21	11/13		Si 1,5/2,5
	314	1.4841	TU Z 15 CNS 25-20	0,15	24/26	19/21		Si 1,5/2,5
	UNS S31254	1.4547		0,02	19,5/20,5	17,5/18,5	6,0/6,5	Cu 0,50/1,00 N 0,18/0,22
FERRITIC AUSTENITIC	UNS S31803	1.4462	TU Z 2 CND 22-05-03	0,03	21/23	4,5/6,5	2,5/3,5	N 0,12/0,20
TEN TEN	UNS S32750	1.4410			24,0/26,0	6,0/8,0	3,0/5,0	
AUS	UNS S32760	1.4501	TU Z 3 CND 25-06-Az	0,03	24/26	6/8	3/5	N 0,2/0,3 Cu & W 0,5/1,0
	904 L	1.4539	TU Z 1 CNDU 25-20	0,02	19/21	24/26	4/5	Cu 1,20/2,00 N 0,04/0,10
	800-H-HT	1.4876	(TU Z10 NC 32-21)	0,6/0,10	19/23	30/35		Al & Ti 0,15/0,60
HIGH	UNS N08020	2.4660		0,07	19/21	32/38	2/3	Cu 3/4 Nb 8xC-1,0 Fe Balance
Ξ ≦	UNS N08825	2.4858		0,05	19,5/23,5	38/46	2,5/3,5	Cu 1,5/3,0 Al 0,2 max Ti 0,6/1,2 Fe Balance
	UNS N08028	1.4563	TU Z2 CNDU 31-27	0,03	26/28	30/32	3/4	Cu=0,8/1,4 N=0,04/0,15 Fe Balance
	G-3 N06985				21,0/23,5	44,0/52,0	6,5/8,0	Fe: 18,0/21,0

^{*} Maximum unless otherwise indicated. ** Tubacex name.

In addition to these standards, Tubacex's capabilities include a wide range of stainless steel and high nickel alloy grades depending on the requirements of our customers.







SEAMLESS STAINLESS PIPES & TUBES

The more efficiency is requested, the more challenging is the environment for the steel. Stainless steel use is growing in seamless pipes & tubes manufacturing as the industry moves towards new applications, more efficient technologies are developed and new equipments are built.

The manufacturing methods employed at Tubacex Group's main production units reflect the most advanced technologies. Production of seamless stainless steel pipes and tubes is carried out according to all common international delivery and tolerance standards.

Main standards applicable to seamless stainless steel pipes & tubes

alloy steel and stainless steel tubes.

MAI	N AMERICAN STANDARDS FOR SEAMLESS STAINLESS STEEL TUBES AND PIPES
Specification	Description
ASTM A213	Standard specification for seamless, ferritic and austenitic alloy-steel boiler, superheater and heat exchanger tubes.
ASTM A269	Standard specification for seamless and welded austenitic stainless steel tubing for general service.
ASTM A312	Standard specification for seamless welded and heavily cold worked austenitic stainless steel pipes.
ASTM A450	Standard specification for general requirements for carbon and low alloy steel tubes.
ASTM A530	Standard specification for general requirements for specialized carbon and alloy steel pipe.
ASTM A789	Standard specification for seamless and welded ferritic/austenitic stainless steel tubing for general service.
ASTM A790	Standard specification for seamless and welded ferritic/austenitic stainless steel pipe.
ASTM A999	Standard specification for general requirements for alloy and stainless steel pipe.



The Tubacex Group offers a wide range of pipes & tubes according to European and American standards.



Strong stock availability is provided by **COTUBES** and the other Tubacex Group's stocks through the world.



Billets used in the manufacturing process of pipes & tubes are mainly produced in house, in the Group's own steelworks, through a totally integrated process.



Precision tubing (instrumentation & hydraulic) with outside diameters from 6 mm O.D. is manufactured in Schoeller Bleckmann Edelstahlrohr, while Salem Tube manufacturing portfolio starts from 3 mm O.D.

MAIN EUROPEAN STANDARDS FOR SEAMLESS STAINLESS STEEL TUBES AND PIPES

Standard specification for general requirements for ferritic alloy steel, austenitic

Specification	Description
EN ISO 1127	Stainless steel tubes – dimensions, tolerances and conventional masses per lenght unit.
EN ISO 9692-1	Welding and allied processes recomendations for joint preparation - Part 1: Manual metalarc welding, gasshielded metalarc welding, gas welding, TIG welding and beam welding of steels.
EN 10204	Metallic products – types of inspection documents.
EN 10216-5	Seamless tubes for pressure purposes – Technical delivery conditions – Part 5: Stainless Steel Tubes.
EN 10297-2	Seamless Tubes for mechanical and general engineering purposes – technical delivery conditions – Part 2: Stainless Steel.
EN 10305-1. PT.	Steel tubes for precision applications — Technical delivery conditions — Part 1: Seamless Cold Drawn tubes.

Quality valued around the world

Tubacex brings the experience of a world leader in the manufacturing of seamless stainless steel pipes & tubes, constantly increasing quality standard. Our organization and investments are continuously being adapted to the high demanding conditions that our customers face everyday.

ASTM A1016

SEAMLESS STAINLESS PIPES & TUBES

The Tubacex Group has an extensive manufacturing programme for seamless stainless pipes & tubes covering most dimensions and grades required by the oil & gas, petrochemical, chemical, power generation and process industries.

						SE	AMLE	ESS P	IPE_			W	all thick	ness: Av	erage
App	oroxim	ate w	eight	s acc	. to. <i>l</i>	ANSI	/ ASN	1E B3	6.19 a	and A	SME	B36.:	10 dir	nensi	ons
NPS	OD	Sch Wall	5S Wt	Sch Wall	10S Wt	Sch Wall	40S Wt	Sch Wall	80S Wt	Sch Wall	120S Wt	Sch Wall	160S Wt	X) Wall	KS Wt
	mm	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
inch	inches	inch.	lb/ft	inch.	lb/ft	inch.	lb/ft	inch.	lb/ft	inch.	lb/ft	inch.	lb/ft	inch.	lb/ft
1/8"	10.29 0.405	0.89 0.035	0.21 0.14	1.24 0.049	0.28 0.19	1.73 0.068	0.37 0.25	2.41 0.095	0.48 0.32						
1/4"	13.72 0.540	1.24 0.049	0.39 0.26	1.65 0.065	0.50 0.34	2.24 0.088	0.64 0.43	3.02 0.119	0.81 0.54						
3/8"	17.15 0.675	1.24 0.049	0.49 0.33	1.65 0.065	0.64 0.43	2.31 0.091	0.86 0.58	3.20 0.126	1.12 0.75						
1/2"	21.34 0.840	1.65 0.065	0.81 0.54	2.11 0.083	1.02 0.68	2.77 0.109	1.29 0.87	3.73 0.147	1.64 1.10			4.78 0.188	1.98 1.33		
3/4"	26.67 1.050	1.65 0.065	1.03 0.69	2.11 0.083	1.30 0.87	2.87 0.113	1.71 1.15	3.91 0.154	2.23 1.50			5.56 0.219	2.94 1.97		
1"	33.40 1.315	1.65 0.065	1.31 0.88	2.77 0.109	2.12 1.43	3.38 0.133	2.54 1.71	4.55 0.179	3.29 2.21			6.35 0.250	4.30 2.89	9.09 0.358	5.53 3.71
1 1/4"	42.16 1.660	1.65 0.065	1.67 1.12	2.77 0.109	2.73 1.83	3.56 0.140	3.44 2.31	4.85 0.191	4.53 3.04			6.35 0.250	5.69 3.82	9.70 0.382	7.88 5.29
1 1/2"	48.26 1.900	1.65 0.065	1.93 1.30	2.77 0.109	3.15 2.12	3.68 0.145	4.11 2.76	5.08 0.200	5.49 3.69			7.14 0.281	7.35 4.93	10.16 0.400	9.69 6.51
2"	60.32 2.375	1.65 0.065	2.42 1.62	2.77 0.109	3.99 2.68	3.91 0.154	5.52 3.71	5.54 0.218	7.60 5.10			8.74 0.344	11.29 7.58	11.07 0.436	13.65 9.16
2 1/2"	73.02 2.875	2.11 0.083	3.75 2.52	3.05 0.120	5.34 3.59	5.16 0.203	8.77 5.89	7.01 0.276	11.58 7.78			9.52 0.375	15.14 10.16	14.02 0.552	20.71 13.90
3"	88.90 3.500	2.11 0.083	4.59 3.08	3.05 0.120	6.56 4.40	5.49 0.216	11.46 7.70	7.62 0.300	15.50 10.41			11.13 0.438	21.67 14.55	15.24 0.600	28.10 18.87
3 1/2"	101.60 4.000			3.05 0.120	7.52 5.05	5.74 0.226	13.77 9.25	8.08 0.318	18.92 12.70			12.70 0.500	28.26 18.97	16.15 0.636	34.55 23.19
4"	114.30 4.500			3.05 0.120	8.49 5.70	6.02 0.237	16.32 10.96	8.56 0.337	22.66 15.21	11.13 0.438	28.74 19.30	13.49 0.531	34.04 22.85	17.12 0.674	41.66 27.97
5″	141.30 5.563			3.40 0.134	11.74 7.88	6.55 0.258	22.09 14.83	9.52 0.375	31.41 21.09	12.70 0.500	40.88 27.45	15.88 0.625	49.87 33.48	19.05 0.750	58.32 39.15
6"	168.28 6.625			3.40 0.134	14.03 9.42	7.11 0.280	28.69 19.26	10.97 0.432	43.20 29.00	14.27 0.562	55.02 36.94	18.26 0.719	68.59 46.05	21.95 0.864	80.43 54.00
8"	219.08 8.625			3.76 0.148	20.27 13.61	8.18 0.322	43.19 28.99	12.70 0.500	65.61 44.05	18.26 0.719	91.79 61.63	23.04 0.906	112.94 75.82	22.22 0.875	109.53 73.53



Tubacex is the world leader in the manufacturing of tubes for furnaces, heaters and Reheaters for the petrochemical industry, along with a wide range of piping for downstream applications.



Offshore (mainly ferritic austenitic grades) is the fastest growing area in Tubacex product protfolio.



Heat exchanger, reactor fertilizer industries.

F. III	3
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and condenser tubes are a supplied by Tubacex to the petrochemical, chemical and



Tubacex's manufacturing range covers the main stainless steel heat resistant grades used in boiler equipment, in both critical and ultra super critical equipment, including shotpeening.

For minimun wall according to ASTM A 213 add 10%

							SEA	MLE	SS T	UBE				Wall	thickne	ess: Ave	rage
		A	pro	kima	te w	eight	s acc	. to.	Birm	ingh	am \	Vire	Gau	ge - E	SWG		
			20	18	16	15	14	13	12	11	10	9	8	7	6	5	4
inch	mm	mm inch	0,890 0,035	1,245 0,049	1,650 0,065	1,830 0,072	2,110 0,083	2,410 0,095	2,770 0,109	3,050 0,120	3,400 0,134	3,760 0,148	4,190 0,165	4,570 0,180	5,160 0,203	5,590 0,220	6,040 0,238
1/4" 0,250	6,35	kg/m lb/ft	0,12 0,08	0,16 0,11	0,19 0,13												
3/8" 0,375	9,53	kg/m lb/ft	0,19 0,13	0,26 0,17	0,33 0,22	0,35 0,24	0,39 0,26										
1/2" 0,500	12,70	kg/m lb/ft	0,26 0,18	0,36 0,24	0,46 0,31	0,50 0,33	0,56 0,38	0,62 0,42	0,69 0,46	0,74 0,50							
5/8" 0,625	15,88	kg/m lb/ft	0,33 0,22	0,46 0,31	0,59 0,40	0,64 0,43	0,73 0,49	0,81 0,55	0,91 0,61	0,98 0,66	1,05 0,70	1,13 0,76					
3/4" 0,750	19,05	kg/m lb/ft	0,40 0,27	0,55 0,37	0,72 0,48	0,79 0,53	0,89 0,60	1,01 0,68	1,13 0,76	1,22 0,82	1,33 0,90	1,40 0,94	1,52 1,02	1,61 1,08	1,73 1,16		
1" 1,000	25,40	kg/m lb/ft		0,75 0,51	0,98 0,66	1,08 0,73	1,23 0,83	1,39 0,93	1,57 1,05	1,71 1,15	1,87 1,26	2,00 1,35	2,18 1,45	2,33 1,56	2,56 1,73		
1 1/4" 1,250	31,75	kg/m lb/ft		0,95 0,64	1,24 0,84	1,37 0,92	1,56 1,05	1,77 1,19	2,01 1,35	2,19 1,47	2,42 1,62	2,60 1,75	2,85 1,91	3,05 2,05	3,37 2,26	3,58 2,41	3,80 2,55
1 1/2" 1,500	38,10	kg/m lb/ft		1,15 0,77	1,51 1,01	1,66 1,12	1,90 1,28	2,16 1,45	2,45 1,65	2,68 1,80	2,96 1,99	3,20 2,15	3,51 2,35	3,78 2,55	4,19 2,82	4,47 3,01	4,75 3,19
1 3/4" 1,750	44,45	kg/m lb/ft		1,35 0,90	1,77 1,19	1,95 1,31	2,24 1,50	2,54 1,71	2,89 1,94	3,16 2,12	3,50 2,35	3,83 2,57	4,21 2,83	4,55 3,05	5,05 3,39	5,40 3,63	5,76 3,87
2" 2,000	50,80	kg/m lb/ft			2,03 1,37	2,24 1,51	2,57 1,73	2,92 1,96	3,33 2,24	3,64 2,45	4,04 2,71	4,43 2,97	4,88 3,28	5,28 3,55	5,87 3,95	6,30 4,24	6,73 4,52
2 1/4" 2,250	57,15	kg/m lb/ft				2,53 1,70	2,91 1,95	3,31 2,22	3,77 2,53	4,13 2,77	4,58 3,08	5,04 3,38	5,55 3,74	6,01 4,04	6,70 4,50	7,20 4,84	7,70 5,17
2 1/2" 2,500	63,50	kg/m lb/ft				2,82 1,90	3,24 2,18	3,69 2,48	4,23 2,84	4,61 3,12	5,13 3,44	5,64 3,79	6,23 4,18	6,74 4,54	7,54 5,06	8,09 5,44	8,66 5,82
3" 3,000	76,20	kg/m lb/ft					3,91 2,63	4,46 3,00	5,14 3,42	5,58 3,75	6,20 4,17	6,82 4,58	7,57 5,08	8,25 5,54	9,19 6,18	9,91 6,66	10,62 7,14
3 1/2" 3,500	88,90	kg/m lb/ft					4,58 3,08	5,23 3,51	5,97 4,01	6,55 4,40	7,29 4,90	8,02 5,38	8,91 5,97	9,70 6,52	10,85 7,28	11,71 7,85	12,55 8,44

For minimun wall according to ASTM A 213 add 10%

STAINLESS STEEL MECHANICAL TUBES

COTUBES, the master distributor of the Tubacex Group, is specialized in the commercialization of Hollow Bar manufactured in both T.T.I. Tubacex Tubos Inoxidables and Schoeller Bleckmann Edelstahlrohr. Cotubes offers excellent availability supported by a global distribution network.

In addition, the company operates one of the worlwide's more relevant seamless stainless steel tubes & pipes stocks.

																																		W	/all t	thick	knes	s: A	vera
D																	IN	SII	DE	D	ΙA	ME	TE	ER															
	16	20	25	28	32	36	40	45	50	55	56	60	61	63	67	69	71	75	80	85	90	95	98	100	106	110	112	118	122	125	130	132	140	150	160	170	180	186	190
32	8	6																																					
36	10	8	5,5																																				
40		10	7,5	6																																			
45		12,5		8,5	6,5																																		
50			12,5		9	7																																	
56				14		10	8																																
63					15,5	13,5	11,5	9	6,5																														L
71						17,5	15,5	13	10,5	5	7,5																	V	NΔ	۱LI									
75							17,5	15	12,5	5	9,5	7,5																				6							
80							20	17,5	15		12			8,5														HI	CK	N	ES	5							
85								20	17,5	15			12		9																								
90									20		17			13,5	11,5		9,5																						
95									22,5	5	19,5			16		13		10																					
100											22			18,5			14,5	12,5	10																				
106											25			21,5			17,5		13	10,5																			
112														24,5			20,5		16	13,5	11																		
118														27,5			23,5		19		14	11,5																	
125																	27		22,5		17,5	15		12,5															
132																	30,5		26		21		17		13														
140																				30		25		20	17		14												
150																				35			27,5		22			16		12,5									
160																						35		30			24		19			14							
170																								35		30		26			20		15						
180																								40			34			27,5			20	15					L
190																									42			36				29		20	15				
200																											44				35		30	25	20				
212																														43,5	41			31		21			L
224																																46	42		32	27,5	22		L
236																																	48	43		33			23
240																																				35			25



The Tubacex Group offers the main dimensions of mechanical tubes according to EN 10294-2, in a wide range of combinations of OD/ID.

In the manufacture of cylindrical tools or hollow stainless steel parts, the cost of machining the bore is greatly reduced when hollow bar is used as basic material. Chip loss is substantially lower than if solid bar is used. A wide range of hollow parts can be processed from hollow bar, as liners, feed bushes, shearing cylinders, cutting rings, fittings, pumps, flange rings and hollow axles.

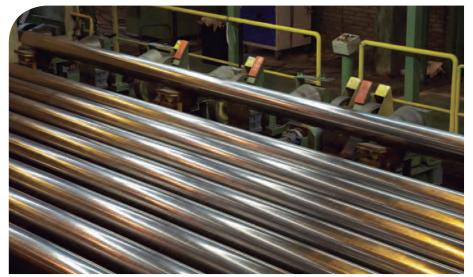
HIGH NICKEL ALLOYS SEAMLESS PIPES & TUBES

New challenging corrosive environments and applications are increasing the use of high nickel alloys in the seamless tubes production, particularly in the oil & gas industry.

Tubacex Group's manufacturing range covers the main high nickel alloy grades requested by the industry. Exceptions over the standard steel grades are satisfied through our Steel Melting Shop Aceralava.

	HIGH NICKEL ALLOYS SEAMLESS	STEEL TUBES AND PIPES
Alloy	Basic Characteristics	Usual Applications
UNS N08904	Good resistance to severe corrosion conditions	Pipelines and different equipment for the chemical industry and desalinization plants
UNS N08800	Good strength and resistance to oxidation and carburization in high temperature atmosphere	Process piping, heat exchangers
UNS N08810	Similar to UNS N8800 with higher creep-rupture strength	Heater tubing in power plants, industrial and heat-treatment equipment, chemical and petrochemical processing
UNS N08811	Similar to UNS N8810 with even higher creep-rupture strength	Same as for UNS N08810 but for higher temperatures
UNS N08020	Good resistance to general corrosion in a variety of acids	Piping, heat exchangers and other process equipment
UNS N08825	Good resistance to acids (specifically sulphuric and phosphoric) and corrosion cracking	Chemical processing, acid production, pickling equipment, process piping, heat exchanger tubing
UNS N08028	High resistance to corrosive conditions, e.g. oxidizing acids and salts. Resistant to pitting corrosion, and to stress corrosion cracking	Acid (sulphuric, phosphosric or nitric) production and processing, pickling plants, Oil production for wells within a corrosive environment or, Gas production in sour gas wells

	APPLICABLE ASTM SPECIFICATIONS	
Specification	Description	ASTM
ASTM B677-99	Specification for UNS N08904, UNS N08925, and UNS N08926 Seamless Pipe and Tube	UNS N08904
ASTM B163-98a ASTM B407-96	Specification for Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes Specification for Nickel-Iron-Chromium Alloy Seamless Pipe and Tube	UNS N08800
ASTM B163-98a ASTM B407-96	Specification for Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes Specification for Nickel-Iron-Chromium Alloy Seamless Pipe and Tube	UNS N08810
ASTM B163-98a ASTM B407-96	Specification for Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes Specification for Nickel-Iron-Chromium Alloy Seamless Pipe and Tube	UNS N08811
ASTM B729-00 ASTM B829-99	Specification for Seamless UNS N08020, UNS N08026, and UNS N08024 Nickel Alloy Pipe and Tube Specification for General Requirements for Nickel and Nickel Alloys Seamless Pipe and Tube	UNS N08020
ASTM B163-98a ASTM B423-99 ASTM B829-99	Specification for Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes Specification for Nickel-Iron-Chromium-Molybdenum-Copper Alloys (UNS N08825 and N08221) Seamless Pipe and Tube Specification for General Requirements for Nickel and Nickel Alloys Seamless Pipe and Tube	UNS N08825
ASTM B668 ASTM B829	Standard Specification for UNS N08028 Seamless Pipe and Tube Specification for General Requirements for Nickel and Nickel Alloys Seamless Pipe and Tube	UNS N08028



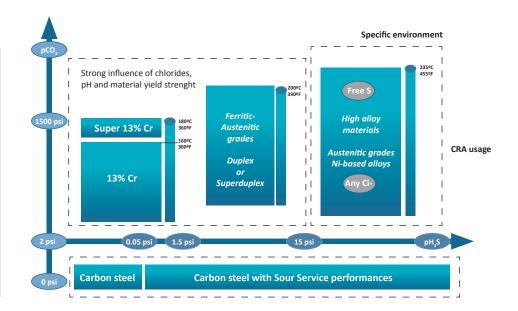
In addition to the most widely used high nickel alloys mentioned above, the Tubacex group is constantly adding new grades to its product portfolio. 600 series, although still not produced in our steel melting shop Acería de Álava, are commonly used by Salem Tube and are starting to be introduced in Tubacex Tubos Inoxidables and Schoeller Bleckmann Edelstahlrorh portfolio - particularly UNS N06025 which is growing strongly in the oil & gas isdustry.

OIL COUNTRY TUBULAR GOODS

Tubacex Tubos Inoxidables - TTI has been designated to develop and lead the production of this high quality product in the facilities located in the north of Spain. A key point in our OCTG strategy was the signing of an agreement with Vallourec&Mannesmann for common marketing and development of this product. This partnership with a world leader contributes to consolidate our world presence and to satisfy the future growing Customer expectations.

CRA tubings are used in designs with long life, high yield strength requirements and in wells with the most severe corrosive environments

- High temperature
- High pressure of CO2 and/or H2S
- High chlorides content, low pH, presence of free S...



		OCTG: TU	BACEX MAN	UFACTURING	G RANGE		
STEEL	GRADE	2 3/8"-2 7/8"	3 1/2"-4 1/2"	5"-5 1/2"	6 5/8"-7"	7 5/8"-7 3/4"	8 5/8"-9 5/8"
	65	R3	R3	R3	R3	R2	
22Cr	110	R3	R3	R3	R3	R2	
	125	R3	R3	R3	R3	R2	
	80	R3	R3	R3	R3	R2	
25Cr	110		UNDER F	RESEARCH & DEVEL	OPMENT		
	125	R3	R3	R3	R3	R2	UNDER RESEARCH &
28Cr	110	R3	R3	R3	R3	R2	DEVELOPMENT
2801	125	R3	R3	R3	R3	R2	
825	110	R3	R3				
G3	110	R3	R3	UNDER F	RESEARCH & DEVEL	OPMENT	
63	125	R3					



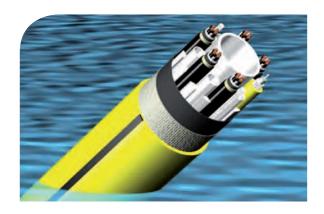
Downhole casing and production tubing in CRA such as duplex stainless steels and nickel alloys are ideal to cope with the aggressive corrosion found in sour wells due to hydrogen sulphide, carbon dioxide and other chemicals. Predominantly, Tubacex's downhole casing and production tubing is supplied in cold-worked condition to ensure high strength despite its low weight.

Tubacex tubes cover a wide range of applications:

- HP/HT
- Sour or wet gas
- Enhanced Oil Recovery
- Chlorides, Hydrogen sulphide, free sulphur ...
- Sandscreens
- High corrosion resistance

SUBSEA UMBILICALS

Umbilicals are manufactured in Schoeller Bleckmann Edelstahlrorh in a State of the art new mill to assure the high quality of the product. In addition, big outside diameter umbilical tubes are manufactured in Tubacex Tubos Inoxidables.



Subsea umbilicals are control lines used in offshore wells where Christmas trees (an assembly of control valves, gauges and chokes that control oil and gas flow in a completed well) are installed on the ocean floor. Umbilicals make up part of Tubacex SURF (Subsea Umbilicals, Risers jumpers, manifolds, loops and Flowlines) package of tubular products for offshore resistant to sea water environments and fluids transmitted through the tubes and with high corrosion ressitance to sea water.

For the past years almost any Subsea oil production system in the world utilized Super duplex steel within their umbilical tubes, due to high corrosion resistance in sea water, excellent mechanical properties and resistance and durability. Two superduplex grades are available.



SUBSEA UMBILICALS: TUBACEX MANUFACTURING RANGE		
Superduplex Stainless Steel - ID from 1/2 to 3 $^{1}/_{2}$ Inch		
Production Unit	Tubacex, Spain	SBER, Austria
Steel grade	UNS S32750, UNS S32760	UNS S32750, UNS S32760
Tubes finish	Straight	Straight or Coiled

Note: Parameters may vary over time. Please verify your specific requirements

Traceability

Traceability is important to us. Each product that leaves our tube factory in Ternitz is provided with a works certificate (company certificate), which is presented to the customer upon delivery. This ensures that the quality-controlled production at SBER is traceable for each customer.

Quality

Schoeller Bleckmann Edelstahlrohr manufacturing processes are designed to ensure maximum quality within the production of its seamless grades of umbilical tubes, with particular focus in the heat treatment process. Non Destructive Testing is used along the total length of all produced tubes. The company holds several approvals as a manufacturer of seamless tube and pipe, and can deliver tubular products in accordance with most international standards. Below are some examples.

Umbilicals make up part of Tubacex SURF (Subsea Umbilicals, Risers jumpers, manifolds, loops and Flowlines) package of tubular products for offshore resistant to sea water environments and fluids transmitted through the tubes and with high corrosion resistance to sea water.

Tubacex group manufactures Umbilicals in a state of the art new mill.

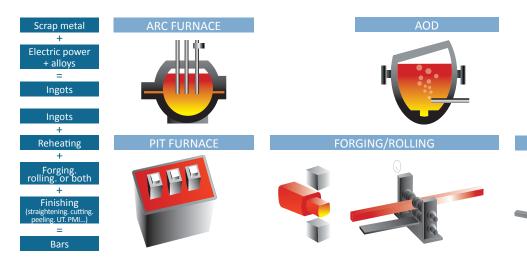
This new production unit integrates the best available technologies and know-how for the production of the best quality product. Highly automatic facilities and a fully integrated traceability system contributes to a very costly efficient product.



TUBE MANUFACTURING PROCESS & EQUIPMENT

STEEL PRODUCTION

Tubacex is a fully integrated company with one melting shop (in Spain), two extrusion facilities (in Spain and Austria) and three cold finishing facilities (in Spain, Austria and the USA). The Group is capable of producing seamless steel tubes in hot and cold finishing.



HOT FINISHED PRODUCTION

Tubacex Tubos Inoxidables

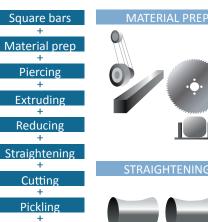
HOT EXTRUSION PLANT Llodio. SPAIN

- 80-250 mm OD
- Horizontal induction furnaces
- Expanding press (hydraulic. 1.600 ton)
- Vertical induction furnaces
- Extrusion press (hydraulic. 4.100 ton)
- Soaking furnace (walking beams)
- Stretching reducing mill
- Heat treatment
- N.D. testing (ultrasonic. hydrostatic)
- Finishing lines

Schoeller Bleckmann Edelstahlrohr

HOT EXTRUSION PLANT Ternitz. AUSTRIA

- 38-250 mm OD
- Horizontal induction furnaces
- Expanding press (hydraulic. 1.600 ton)
- Vertical induction furnaces
- 2 Extrusion presses (hydraulic, 2.000 and 3.300 tons)
- Soaking furnace (walking beams)
- Stretching reducing mill
- Heat treatment/bright annealing furnace
- N.D. testing (ultrasonic. hydrostatic)
- Finishing lines

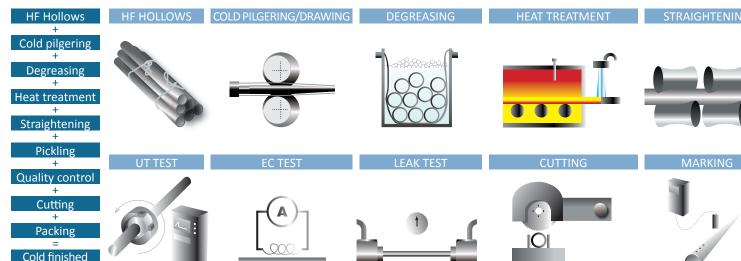


Quality control

Hot finished

tubes

COLD FINISHED PRODUCTION



Welding and coiling capabilities available in SBER Special Tube Plant.

tubes

CASTING





SQUARE OR ROUND BARS

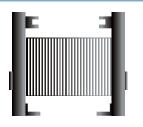


Acería de Álava

STEEL MELTING SHOP Amurrio. SPAIN

- Acería Electric Arc Furnace (100 tons)
- AOD converter (60 tonnes)
- 8 soaking pit furnaces (gas heated)
- Forging press
- Blooming rolling mill
- Heat treatment
- Peeling and polishing
- Non destructive tests

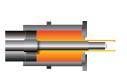
INDUCTION HEATING



PIERCING/EXPANDING



EXTRUDING



REHEATING



REDUCING



CUTTING





PASSIVAT



VATION



TY CONTROL HF TU







CE TLIDES



Tubacex Tubos Inoxidables Amurrio. SPAIN

COLD FINISHING PLANT

- 19 193 mm O
- Pilger cold rolling mills
- Heat treatment furnaces
- N.D. testing (eddy current. ultrasonic. hydrostatic)
- Finishing lines

OCTG FINISHING LINE

- Pilger cold Rolling Mills
- Fully automated finishing line for big outside diameter tubes
- Specific N.D. testing (ultrasonic, hydrostatic)

Schoeller Bleckmann Edelstahlrohr Ternitz. AUSTRIA

COLD FINISHING PLANT

- 6 250 mm OD
- Pilger cold rolling mills
- Drawing benches
- Heat treatment furnaces
- N.D. testing
- Finishing lines

SPECIAL TUBE PLANT

- 4 Pilger mills LC 50 with integrated cleaning
- Bright annealing furnace (1t/h).
 Straightener
- Finishing line + US/Eddy Current/PMI
- Welding units + X-ray radioscopes + coilers
- Hydropressure testing device

Salem Tube Greenville. PA. USA

COLD FINISHING PLANT

- 3-57 mm OD
- Drawing benches
- Heat treatment furnaces
- N.D. testing (eddy current. ultrasonic. hydrostatic)

QUALITY & APPROVALS

Tubacex Group holds several approvals as a manufacturer of seamless tube and pipe, and can deliver tubular products in accordance with most international standards.

MANUFACTURING STANDARDS

Apart from standards mentioned in the catalogue we also manufacture according to UNE, BS, SIS, GOST, JIS and other international standards and Steel grades.

MANAGEMENT SYSTEM CERTIFICATES

ISO 9001.

ENVIRONMENTAL RESPONSABILITY

Tubacex Group is highly engaged with the environment and it is ISO 14001 certified.

SAFETY

Occupational health and Safety is also a key element of our culture. The company is OHSAS 18.001 certified.

APPROVALS

Tubacex is approved to manufacture according to TÜV, Lloyd's register, DNV, Germanischer Lloyd's, BV, Norsok etc. Complete list of approvals is available on request.

OTHER CERTIFICATIONS

Tüv Süddeutschland (Ad - Merkblatt Wo / Trd 100)

Lloyd's Register of Shipping (rules for the manufacture, testing and certification of materials)

Qualification as Manufacturer of Special Materials to Norsok M-650

ASME Quality System Certificate as Material Organization for Ferrous and Nonferrous Material Tüv Süddeutschland (Pressure Equipment Directive 97/23Ec)

Det Norske Veritas (Dnv's Rules for Classification Pt.2)

Germanischer Lloyd (Austenitic Stainless Steel Pipes and Tubes According to En 10216-5 or Equivalent Standards)

PED 97/23/EC.

AD2000, werkblatt W0.

JIS Mark scheme

Complete list of approvals and certifications is available on request.





MANAGEMENT SYSTEM CERTIFICATES

UNE - EN - ISO 9001:2000 ER-0006/1991



OHSAS 18001:1999



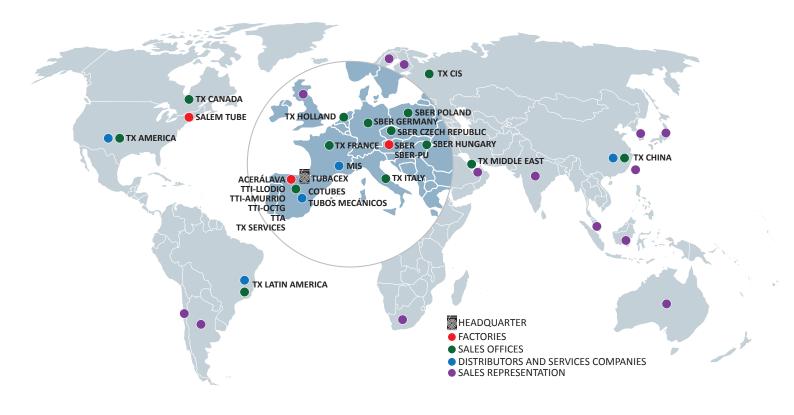
UNE - EN - ISO 14001:1996 GA-2001/0127







TUBACEX AROUND THE WORLD



Nowadays the Tubacex Group is exporting into more than 100 countries worlwide from its manufacturing sites and warehouses. The company has 15 commercial offices and a wide network of agents in several countries that allow a global presence.



MANUFACTURING COMPANIES

Acería de Álava, S.A.

STEEL MELTING SHOP

Amurrio. SPAIN

Tubacex Tubos Inoxidables, S.A.

HOT EXTRUSION PLANT

Llodio. SPAIN

COLD FINISHING PLANT OCTG FINISHING PLANT

Amurrio. SPAIN

Schoeller Bleckmann Edelstahlrohr, GmbH

COLD FINISHING PLANT HOT EXTRUSION PLANT SPECIAL TUBE PLANT

Ternitz. AUSTRIA.

Salem Tube, Inc.

COLD FINISHING PLANT

Greenville. PA. USA

Tubacex Taylor Accesorios, S.A.

BUTT WELDING FITTINGS

Artzeniega. SPAIN

Tubacex Services S.L.

TUBE FINISHING SERVICES

Santander. SPAIN

SERVICE & DISTRIBUTION COMPANIES

Comercial de Tubos y Accesorios, S.A.

STAINLESS STEEL LONG PRODUCTS DISTRIBUTION

Amurrio. SPAIN

Metaux Inox Services, S.A.S.

STAINLESS STEEL LONG PRODUCTS DISTRIBUTION

Satolas & Bonce. FRANCE

Tubacex America, Inc.

STAINLESS STEEL LONG PRODUCTS DISTRIBUTION

Houston. UNITED STATES

Tubos Mecánicos, S.A.

CARBON & ALLOYED MECHANICAL TUBING DISTRIBUTION

Barcelona. SPAIN

Special Steels do Brazil

STAINLESS STEEL TRADING & DISTRIBUTION

Sao Paulo. BRAZIL



HEAD OFFICE: TUBACEX GROUP.

Tres Cruces, 8. P.O. Box nº 22 01400 LLODIO (ÁLAVA) SPAIN Phone: +(34) 94 671 93 00 Fax: +(34) 94 671 93 14 +(34) 94 672 50 62/74 e-mail: sales@tubacex.es



SALES OFFICES AROUND THE WORLD

NETHERLANDS

TUBACEX EUROPE, BV

Phone: + 31 (0) 162 690 430 Fax: + 31 (0) 162 690 435 e-mail: marcel.villares@tubacex.nl

SPAIN:

COTUBES

Phone: + 34 945 39 36 00 Fax: + 31 945 39 34 22 e-mail: jbilbao@cotubes.es

CANADA:

TUBACEX CANADA INC.

Phone: + (1) 905 629 2011 Fax: + (1) 905 629 4468 e-mail: sales@tubacex-cda.com

FRANCE:

TUBACEX FRANCE

Phone: + (33) 1 48 79 30 50 Fax: + (33) 1 48 79 18 06 e-mail: frederic.bouvier@sbtf.fr

UNITED STATES OF AMERICA:

TUBACEX AMERICA

Phone: + (1) 713 856 2700/13 Fax: + (1) 713 856 2799 e-mail: sales@tubacex-usa.com

ITALY:

TUBACEX ITALIA

Phone: + (39) 02 669 5505 Fax: + (39) 02 673 845 92 e-mail: sales@tubacexitalia.it

CHINA:

TUBACEX ASIA

Phone: + (86) 21 5298 0242 Fax: + (86) 21 5298 0241

e-mail: tubacexasia@tubacex.com.cn

BRASIL:

TUBACEX LATIN AMERICA

Phone: + (55) (11) 3622 4860 Fax: + (55) (11) 3621 9117

e-mail: vendas@special-steels.com.br

UAE - DUBAI:

TUBACEX MIDDLE EAST

Phone: + (971) 4 7017 212 Fax: + (971) 4 7017 213 e-mail: inigo@ae.tubacex.com

RUSSIA:

TUBACEX CIS

Phone + (7) 916 644 22 51 Fax:+(7) 495 959 21 80 e-mail: okulyk@tubacex.su

GERMANY:

SCHOELLER-BLECKMANN EDELSTAHLROHR DEUTSCHLAND GMBH

Phone: + (49) 2150 70 567-0 Fax: + (49) 2150 70 567-20 e-mail: juergen.brinkmann@sber.de

HUNGARY:

SCHOELLER-BLECKMANN EDELSTAHLROHR PHÖNIX KFT

Phone: + (36) 1 250 23 42 Fax: + (36) 1 250 23 46 e-mail: jozsef.horvath@sber.hu

CZECH REPUBLIC:

SCHOELLER-BLECKMANN a.s.

Phone: + (42) 02 71 00 11 91 Fax: + (42) 02 71 00 11 90 e-mail: martin.broz@sbpraha.cz

AUSTRIA:

SCHOELLER-BLECKMANN EDELSTAHLROHR, GmbH

Phone: + (43) 2630 3160 Fax: + (43) 2630 369 47 e-mail: office@sber.co.at

POLAND:

SCHOELLER-BLECKMANN EDELSTAHLROHR, AG

Phone: + (48) 32 253 99 67 Fax: + (48) 32 206 82 48

e-mail: bronislaw.flak@sber.com.pl