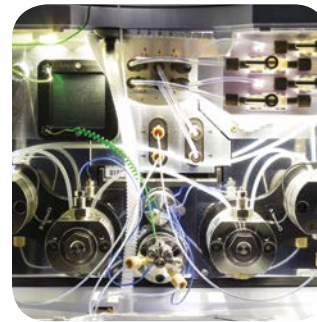




ENGINEERED SOLUTIONS

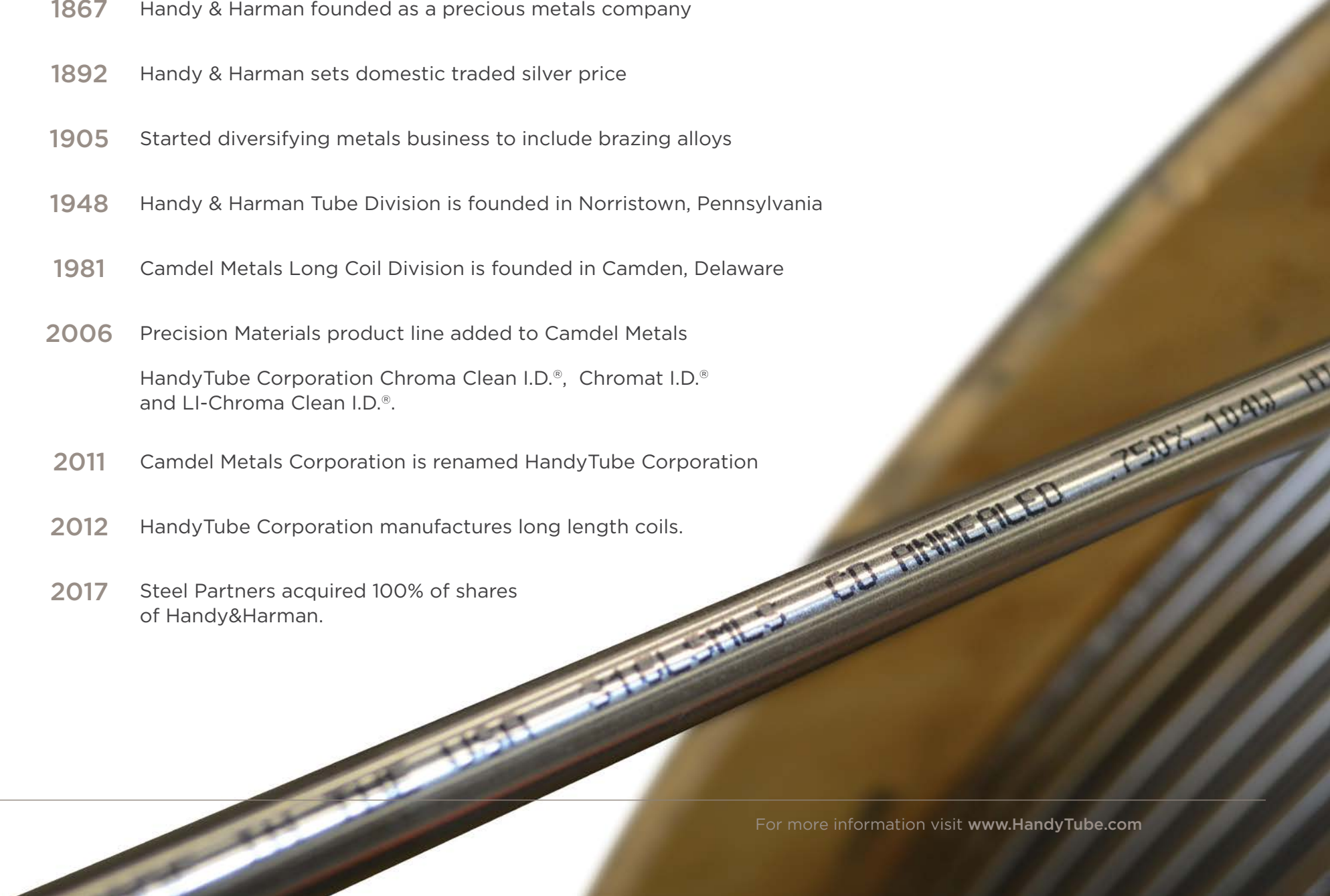
www.HandyTube.com





History of HandyTube

- 1867** Handy & Harman founded as a precious metals company
- 1892** Handy & Harman sets domestic traded silver price
- 1905** Started diversifying metals business to include brazing alloys
- 1948** Handy & Harman Tube Division is founded in Norristown, Pennsylvania
- 1981** Camdel Metals Long Coil Division is founded in Camden, Delaware
- 2006** Precision Materials product line added to Camdel Metals
HandyTube Corporation Chroma Clean I.D.[®], Chromat I.D.[®] and LI-Chroma Clean I.D.[®].
- 2011** Camdel Metals Corporation is renamed HandyTube Corporation
- 2012** HandyTube Corporation manufactures long length coils.
- 2017** Steel Partners acquired 100% of shares of Handy&Harman.





Seamless Coil Tubing

HandyTube has specialized in the manufacture of long length seamless coil tubing of outer diameter sizes smaller than 1" (25.4mm) for over 35 years. Our seamless coil tubing is available in a number of high performance corrosion resistant stainless steel and high nickel alloys, capable of withstanding a variety of environmental conditions. Our specific advantage is being able to make long lengths of tube which are free of welds up to and exceeding 5,000 feet long. This reduces installation efforts and the need for excess fittings as well as minimizes the risk of leaks.

Seamless Small & Ultra Small Diameter Coil Tubing

HandyTube is able to offer tubes with outer diameter sizes as small as 0.017" (0.430mm) and inner diameter sizes as small as 0.004" (0.102mm). For reference, a human hair is approximately 0.003" in size. Applying the same technology that we use to manufacture large coils, and with precision equipment specifically designed in-house, we are able to bring a more complete tubing solution to our customers.



Chroma Clean I.D.® - HandyTube's proprietary cleaning process aimed at removing oil, grease, and other contaminants from the tubing interior. This cleaning is critical for use in chromatography and other industries where any foreign particles can skew precise results.

Chromat I.D.® - HandyTube's proprietary drawing process that promotes ID support during the reduction process for a smoother ID surface.



Seamless Straight Length Tubing

HandyTube manufactures straight length tube, produced according to ASTM, MIL-T, and AMS specifications. Our straight length tube is ideal for ultra high purity, military, aircraft, semiconductor, medical, and general instrumentation applications. Through our unique processing, we manufacture straight length tube suitable for all assembly methods including flared and compression fittings, also with superior weldability.





HE KNOWS IT'S NOT JUST A TUBE.

HandyTube stainless steel seamless tube manufactured with precision.

Engineered Solutions • Superior Customer Service • Reliable Products

ISO 9001-CERTIFIED



CUSTOMER APPROVALS



SHIPBUILDING CERTIFICATIONS



HIGH PRESSURE APPLICATIONS



APPROVED VENDOR LIST



For more information visit www.HandyTube.com

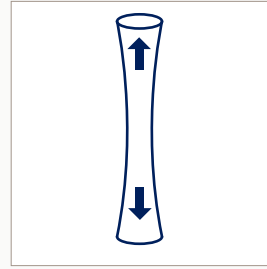
COMMITMENT TO QUALITY

HandyTube facilities are ISO 9001-Certified.

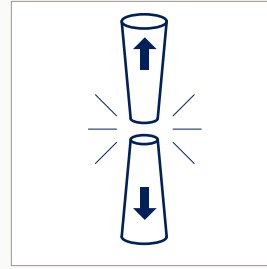
Serving with the latest testing equipment and trained personnel.

TRACEABILITY THROUGHOUT THE ENTIRE MANUFACTURING PROCESS:

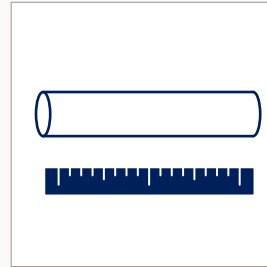
- Material Test Reports accompany every shipment
- In-house, climate controlled laboratory
- Samples retained from every lot for peace of mind
- 100% Positive Material Identification (PMI)
- 100% Pressure Testing of all coils



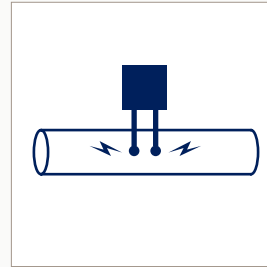
Yield Strength



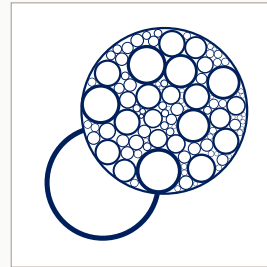
Tensile Strength



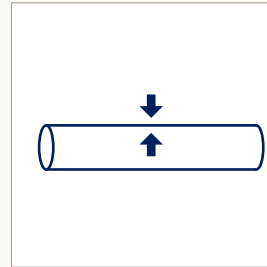
Elongation



Positive Material Identification (PMI)



Grain Size



Rockwell Hardness

Destructive and Non-destructive Tests:

- **Hydrostatic Testing:** a nondestructive test (NDT) for strength and leaks. The test involves filling the tubing with deionized water until it reaches a specified hold pressure. The tubing is then observed for leaks and pressure loss.
- **Splitflow Testing:** a nondestructive test (NDT) used on small diameter tubing to ensure that the interior is free of blockages and the surface is free of leaks. Testing involves holding a tube underwater and flowing Nitrogen through the tube.
- **Eddy Current Testing:** eddy current testing (ECT) is one of many non-destructive electromagnetic (NDE) testing methods. ECT makes use of electromagnetic induction to detect and characterize surface and sub-surface flaws in tubing.
- **Surface Roughness:** smoothness of the OD or ID surface of the tubing. Measurements are taken by a Surfometer verified against certified roughness standards.
- **Dimensional Analysis:** a measurement of the OD, ID, and/or Wall Thickness of the tube using a variety of calibrated micrometers and gauge pins.
- **Hydraulic Diameter:** measure of the cross sectional fluid flow through the inner diameter of the tube. Hydraulic diameter is obtained through a back pressure flow test.
- **Positive Material Identification (PMI):** the analysis of a metallic sample to identify the material grade. This is accomplished by measuring the % composition of its constituent elements and matching it to a database of known alloys. Typical methods for PMI include X-ray fluorescence (XRF).
- **Yield Strength:** the stress at which a specific amount of plastic deformation is produced, usually taken as 0.2 percent of the unstressed length.
- **Tensile Strength:** a measurement of the force required to pull something to the point where it breaks. The tensile strength of a material is the maximum amount of tensile stress that it can take before failure.
- **Elongation:** a measure of the ductility; the amount of strain deformation a material can experience before failure in tensile testing.
- **Grain Size:** a measure of the density of metallic crystals with the same configuration within the microstructure of a material. Grain size serves as an indicator of temper within a sample of material.
- **Rockwell Hardness:** a hardness scale based on indentation hardness of a material. The Rockwell test determines the hardness by measuring the depth of penetration of an indenter under a large load compared to the penetration made by a preload.

AUSTENITIC STAINLESS STEELS

Grade	ALLOY DESIGNATION				COMMON SPECIFICATIONS					
	UNS	EN Name	EN Number	JIS	ASTM	ASME	AMS	MIL-T	BS/EN	Other
TP304/304L	S30400/ S30403	X2CrNi19-11	1.4301/1.4306	SUS304/ 304L	A213, A269, A270, A312, A450, A511, A632, A908, A1016, F899	SA213	5560, 5567, 5647, 5868, 8506	5695, 6845, 8504, 8506, 8606	10216-5, 3651-2	Nace MR0103, Nace MR0175
TP304/304L	S30400/ S30403	X2CrNi19-11	1.4301/1.4306	SUS304/ 304L			5564, 5566, 5569, 6845	8973		
TP304/304L	S30400/ S30403	X2CrNi19-11	1.4301/1.4306	SUS304/ 304L			5563			
TP304/304L	S30400/ S30403	X2CrNi19-11	1.4301/1.4306	SUS304/ 304L			5868			
TP316/316L	S31600/ S31603	X2CrNi-Mo17-12-2	1.4401/1.4404	SUS316/ 316L	A213, A269, A270, A312, A450, A511, A632, A1016, F899	SA213	5573		10216-5, 3651-2	Nace MR0103, Nace MR0175
TP316/316L	S31600/ S31603	X2CrNi-Mo17-12-2	1.4401/1.4404	SUS316/ 316L			5584	8973		
TP316L 2.5Mo	S31603	X3CrNi-Mo17-13-3	1.4436	SUS316L	A213, A269, A270, A312, A450, A511, A632, A1016, F899	SA213	5573		10216-5, 3651-2	Nace MR0103, Nace MR0175
TP316Ti	S31635	X6CrNiMo-Ti17-12-2	1.4571		A213, A312, A450, A1016	SA213			10216-5, 3651-2	Nace MR0103, Nace MR0175
TP317L	S31703	X2CrNi-Mo18-15-4	1.4438	SUS317L	A213, A269, A312, A450, A511, A632, A1016	SA213				Nace MR0103, Nace MR0175
TP321	S32100	X6CrNi-Ti18-10	1.4541	SUS321	A213, A269, A312, A450, A511, A632, A1016	SA213	5557, 5570, 5576, 5645	8606, 8808	10216-5, 3651-2	Nace MR0103, Nace MR0175
TP321	S32100	X6CrNi-Ti18-10	1.4541	SUS321			5896	8973		
TP347	S34700	X6CrNiNb18-10	1.4550	SUS347	A213, A269, A312, A450, A511, A632, A1016	SA213	5556, 5571, 5646	8606, 8808	10216-5, 3651-2	Nace MR0103, Nace MR0175
TP347	S34700	X6CrNiNb18-10	1.4550	SUS347			5897	8973		
904L	N08904	X1NiCrMo-Cu25-20-5	1.4539		A213, A269, A312, A1016	SA213			10216-5, 3651-2	Nace MR0103, Nace MR0175

HIGH-STRENGTH AUSTENITIC & NICKEL ALLOYS

Grade	ALLOY DESIGNATION				COMMON SPECIFICATIONS					
	UNS	EN Name	EN Number	JIS	ASTM	ASME	AMS	MIL-T	BS/EN	Other
XM-19	S20910				A213	SA213				Nace MR0103, Nace MR0175
6Mo	S31254	X1CrNiMo-CuN20-18-7	1.4547		A213, A269, A1016	SA213			10216-5, 3651-2	Norsok M650, Norsok M630, Nace MR0103, Nace MR0175
Alloy 600	N06600	NiCr 15 Fe	2.4816		B163, B167, B829	SB163, SB167	5580			Nace MR0103, Nace MR0175
Alloy 625	N06625		2.4856		B444, B829	SB444	5581			Nace MR0103, Nace MR0175
Alloy 22	N06022		2.4602		B622, B829	SB622				Nace MR0103, Nace MR0175
Alloy C276	N10276		2.4819		B622, B829	SB622				Nace MR0103, Nace MR0175
Alloy 230	N06230	NiCr22W-14Mo	2.4733		B622, B626	SB622, SB626				Nace MR0103, Nace MR0175
Alloy 400	N04400				B163, B165, B444	SB163, SB165, SB444	4574	1368		Nace MR0103, Nace MR0175
MP35N	R30035		2.4999		F562 Chem Only					
N200/N201	N02200/ N02201				B161, B163	SB161, SB163				Nace MR0103, Nace MR0175
Alloy 825	N08825				B163, B423, B829	SB163, SB423				Nace MR0103, Nace MR0175

CHEMICAL COMPOSITION & MECHANICAL PROPERTIES

CHEMICAL COMPOSITION & MECHANICAL PROPERTIES

Austenitic Stainless Steels

		CHEMICAL COMPOSITION ^A															PREN ^B	MECHANICAL PROPERTIES ^C					
Grade	Temper	C	Mn	P	S	Si	Fe	Cr	Ni	Mo	N	Cb	Ti	Cu	Co	Other		Yield (ksi)	Yield (MPa)	UTS (ksi)	UTS (MPa)	Elong %	Hardness
TP304/304L	Annealed	0.035	2.00	0.045	0.030	1.00	-	18.0-20.0	8.0-12.0	-	-	-	-	-	-	-	18	30	205	75	515	35	90 HRB
TP304/304L	1/8 Hard	0.035	2.00	0.045	0.030	1.00	-	18.0-20.0	8.0-12.0	-	-	-	-	-	-	-	18	75	515	105	725	20	N/A
TP304/304L	1/4 Hard	0.035	2.00	0.045	0.030	1.00	-	18.0-20.0	8.0-12.0	-	-	-	-	-	-	-	18	75	515	120	825	15	N/A
TP304/304L	1/2 Hard	0.035	2.00	0.045	0.030	1.00	-	18.0-20.0	8.0-12.0	-	-	-	-	-	-	-	18	110	760	150	1035	7	N/A
TP316/316L	Annealed	0.035	2.00	0.045	0.030	1.00	-	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	-	-	-	23	30	205	75	515	35	90 HRB
TP316/316L	1/8 Hard	0.035	2.00	0.045	0.030	1.00	-	16.0-18.0	10.0-14.0	2.00-3.00	-	-	-	-	-	-	23	75	515	105	725	20	N/A
TP316L 2.5Mo	Annealed	0.035	2.00	0.045	0.030	1.00	-	16.0-18.0	10.0-14.0	2.50-3.00	-	-	-	-	-	-	24	30	205	75	515	35	90 HRB
TP316Ti	Annealed	0.08	2.00	0.045	0.030	0.75	-	16.0-18.0	10.0-14.0	2.00-3.00	0.10	-	5X(C+N)-0.70	-	-	-	23	30	205	75	515	35	90 HRB
TP317L	Annealed	0.035	2.00	0.045	0.030	1.00	-	18.0-20.0	11.0-15.0	3.0-4.0	-	-	-	-	-	-	28	30	205	75	515	35	90 HRB
TP321	Annealed	0.08	2.00	0.045	0.030	1.00	-	17.0-19.0	9.0-12.0	-	-	-	5X(C+N)-0.70	-	-	-	17	30	205	75	515	35	90 HRB
TP321	1/8 Hard	0.08	2.00	0.045	0.030	1.00	-	17.0-19.0	9.0-12.0	-	-	-	5X(C+N)-0.70	-	-	-	17	75	515	105	725	20	N/A
TP347	Annealed	0.08	2.00	0.045	0.030	1.00	-	17.0-20.0	9.0-13.0	-	-	10XC-1.10	-	-	-	-	17	30	205	75	515	35	90 HRB
TP347	1/8 Hard	0.08	2.00	0.045	0.030	1.00	-	17.0-20.0	9.0-13.0	-	-	10XC-1.10	-	-	-	-	17	75	515	105	725	20	N/A
904L	Annealed	0.02	2.00	0.04	0.030	1.00	-	19.0-23.0	23.0-28.0	4.0-5.0	0.10	-	-	1.00-2.00	-	-	32	31	215	71	490	35	90 HRB

High-Strength Austenitic & Nickel Alloys

		CHEMICAL COMPOSITION ^A															PREN ^B	MECHANICAL PROPERTIES ^C					
Grade	Temper	C	Mn	P	S	Si	Fe	Cr	Ni	Mo	N	Cb	Ti	Cu	Co	Other		Yield (ksi)	Yield (MPa)	UTS (ksi)	UTS (MPa)	Elong %	Hardness
XM-19	Annealed	0.06	4.0-6.0	0.045	0.030	1.00	-	20.5-23.5	11.5-13.5	1.50-3.00	0.20-0.40	0.010-0.30	-	-	-	V 0.10-0.30	29	55	380	100	690	35	25 HRC
6Mo	Annealed	0.02	1.00	0.030	0.010	0.80	-	19.5-20.5	17.5-18.5	6.0-6.5	0.18-0.22	-	-	0.50-1.00	-	-	42	45	310	98	675	35	96 HRB
Alloy 600	Annealed	0.15	1.0	-	0.015	0.50	6.0-10.0	14.0-17.0	> 72.0	-	-	-	-	0.5	-	-	14	35	240	80	550	30	92 HRB
Alloy 625	Grade 1	0.10	0.50	0.015	0.015	0.50	5	20.0-23.0	> 58.0	8.0-10.0	-	-	0.40	-	1.0	Cb + Ta 3.15-4.15, Al 0.40	46	60	415	120	825	35	25 HRC
Alloy 22	Annealed	0.015	0.50	0.02	0.02	0.08	2.0-6.0	20.0-22.5	balance	12.5-14.5	-	-	-	-	2.5	W 2.5-3.5, V 0.35	61	45	310	100	690	45	25 HRC
Alloy C276	Annealed	0.010	1.0	0.04	0.03	0.08	4.0-7.0	14.5-16.5	balance	15.0-17.0	-	-	-	-	2.5	W 3.0-4.5, V 0.35	64	41	285	100	690	45	25 HRC
Alloy 230	Annealed	0.05-15	0.30-1.00	0.03	0.015	0.25-0.75	3.0	20.0-24.0	balance	1.0-3.0	-	-	-	-	5.0	W 13.0-15.0, Al 0.50, La 0.005-0.050, B 0.015	23	45	310	110	760	40	N/A
Alloy 400	Annealed	0.30	2.0	-	0.024	0.50	2.5	-	> 63.0	-	-	-	-	28.0-34.0	-	-	-	28	195	70	485	35	N/A
MP35N	Annealed	0.025	0.15	0.015	0.010	0.15	1.0	19.0-21.0	33.0-37.0	9.0-10.5	-	-	1.0	-	bal- ance	B 0.015	49	35	240	115	795	50	N/A
N200/N201	Annealed	0.02	0.35	-	0.010	0.35	0.40	-	> 99.0	-	-	-	-	0.25	-	-	-	15	105	55	380	35	N/A
Alloy 825	Annealed	0.05	1.0	-	0.03	0.50	> 22.0	19.5-23.5	38.0-46.0	2.5-3.5	-	-	0.6-1.2	1.5-3.0	-	Al 0.2	28	35	240	85	585	30	90 HRB

A. Maximum value unless noted otherwise - Compositions may or may not reflect all requirements of specifications listed

B. Minimum pitting resistance equivalent number - PREN = %Cr + 3.3(%Mo) + 16(%N), C. Minimum properties except hardness is maximum

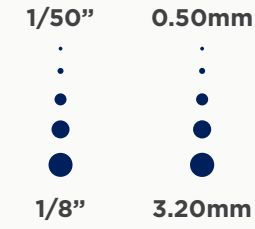
AUSTENITIC STAINLESS STEELS
 (304/304L, 316/316L, 316 L2.5Mo, 316Ti, 317L, 321, 347, 904L)

WALL THICKNESS	OUTER DIAMETER															
	mm	inch	1/50	1/32	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
3.40	0.134															
3.05	0.120															
2.77	0.109															
2.41	0.095															
2.11	0.083															
1.65	0.065															
1.24	0.049															
0.89	0.035															
0.71	0.028															
0.51	0.020															
0.38	0.015															
0.25	0.010															
0.13	0.005															

HIGH-STRENGTH AUSTENITIC & NICKEL ALLOYS
 (XM-19, 6Mo, Alloy 600, Alloy 325, Alloy 22, Alloy C276, Alloy 230, Alloy 400, MP35N, N200/N201, Alloy 825)

WALL THICKNESS	OUTER DIAMETER															
	mm	inch	1/50	1/32	1/16	3/32	1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1
2.77	0.109															
2.41	0.095															
2.11	0.083															
1.65	0.065															
1.24	0.049															
0.89	0.035															
0.71	0.028															
0.51	0.020															
0.38	0.015															
0.25	0.010															
0.13	0.005															

OD SIZING CHART



SMALL & ULTRA SMALL DIAMETER TUBING
 AVERAGE SIZE AND COIL LENGTHS
 (Austenitic Stainless Steel + High Strength Austenitic & Nickel Alloys)

OD	WALL	LENGTH	
		inch	feet
1/50	0.005	1000+	300+
1/32	0.010	1000+	300+
1/16	0.010	1000+	300+
1/16	0.015	1000+	300+
1/16	0.020	1000+	300+
3/32	0.010	1000+	300+
3/32	0.015	1000+	300+
3/32	0.020	1000+	300+
3/32	0.030	1000+	300+
1/8	0.010	500+	150+
1/8	0.015	500+	150+
1/8	0.020	500+	150+
1/8	0.030	500+	150+

OD	WALL	LENGTH	
		mm	meters
0.50	0.13	1000+	300+
0.80	0.25	1000+	300+
1.60	0.25	1000+	300+
1.60	0.38	1000+	300+
1.60	0.50	1000+	300+
2.40	0.25	1000+	300+
2.40	0.38	1000+	300+
2.40	0.50	1000+	300+
2.40	0.75	1000+	300+
3.20	0.25	500+	150+
3.20	0.38	500+	150+
3.20	0.50	500+	150+
3.20	0.75	500+	150+

*Straight lengths available up to 24' (7m)



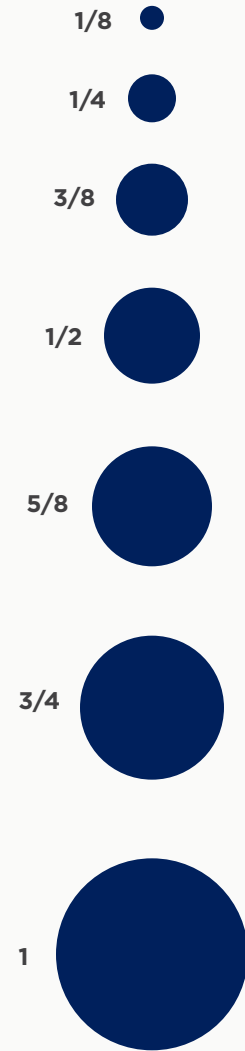
HandyTube is constantly experimenting with new materials and sizes. If you don't see what you're looking for here, contact our Customer Service team to inquire about our ongoing research and development of new products.

AVERAGE SIZE AND COIL LENGTHS
 (304/304L, 316/316L 2.5Mo, 317L, 904L, 6Mo, I825)

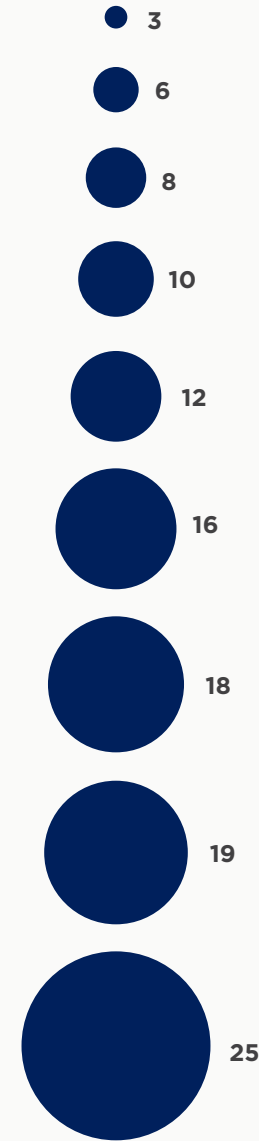
OD		WALL		LENGTH			
inch	inch	feet	meters	mm	mm	feet	meters
1/8	0.035	2900	884	3.00	1.00	2900	884
1/4	0.035	2855	870	6.00	1.00	2765	843
1/4	0.049	2170	662	6.00	1.50	2035	620
1/4	0.065	1770	539	8.00	1.00	1985	605
3/8	0.035	1820	554	8.00	1.50	1420	433
3/8	0.049	1350	412	10.00	1.00	1550	472
3/8	0.065	1070	326	10.00	1.50	1090	332
3/8	0.083	885	270	10.00	2.00	865	264
1/2	0.035	1285	392	12.00	1.00	1270	387
1/2	0.049	980	299	12.00	1.50	885	270
1/2	0.065	765	233	12.00	2.00	695	212
1/2	0.083	625	190	16.00	1.50	645	197
5/8	0.035	1055	321	16.00	2.00	500	152
5/8	0.049	770	235	18.00	1.50	565	172
5/8	0.065	595	182	18.00	2.00	440	134
5/8	0.083	480	147	19.00	1.50	535	163
3/4	0.049	635	193	19.00	2.00	410	125
3/4	0.065	490	149	19.00	2.50	340	104
3/4	0.083	390	120	25.00	1.50	400	122
3/4	0.109	310	95	25.00	2.00	305	93
1	0.065	360	109	25.00	3.00	210	64
1	0.083	285	87				
1	0.109	225	68				
1	0.120	205	63				
1	0.134	185	57				

*Straight lengths available up to 24' (7m)

OD SIZING CHART
(inches)



OD SIZING CHART
(mm)



AVERAGE SIZE AND COIL LENGTHS
 (321, 347, Alloy 22, C276, I625, I600, N200, M400)

OD		WALL		LENGTH			
inch	inch	feet	meters	mm	mm	feet	meters
1/8	0.035	2605	794	3.00	1.00	2900	884
1/4	0.035	1120	341	6.00	1.00	2765	843
1/4	0.049	855	261	6.00	1.50	2035	620
1/4	0.065	695	212	8.00	1.00	1985	605
3/8	0.035	715	218	8.00	1.50	1420	433
3/8	0.049	530	162	10.00	1.00	1550	472
3/8	0.065	420	128	10.00	1.50	1090	332
3/8	0.083	350	107	10.00	2.00	865	264
1/2	0.035	525	160	12.00	1.00	1270	387
1/2	0.049	385	117	12.00	1.50	885	270
1/2	0.065	300	91	12.00	2.00	695	212
1/2	0.083	245	75	16.00	1.50	645	197
5/8	0.035	415	126	16.00	2.00	500	152
5/8	0.049	300	91	18.00	1.50	565	172
5/8	0.065	235	72	18.00	2.00	440	134
5/8	0.083	190	58	19.00	1.50	535	163
3/4	0.049	250	76	19.00	2.00	410	125
3/4	0.065	190	58	19.00	2.50	340	104
3/4	0.083	155	47	25.00	1.50	400	122
3/4	0.109	120	37	25.00	2.00	305	93
1	0.065	140	43	25.00	3.00	210	64
1	0.083	110	34				
1	0.109	90	27				

*Straight lengths available up to 24' (7m)

Working Pressures [psi] for TP 316/316L Seamless Tubing*

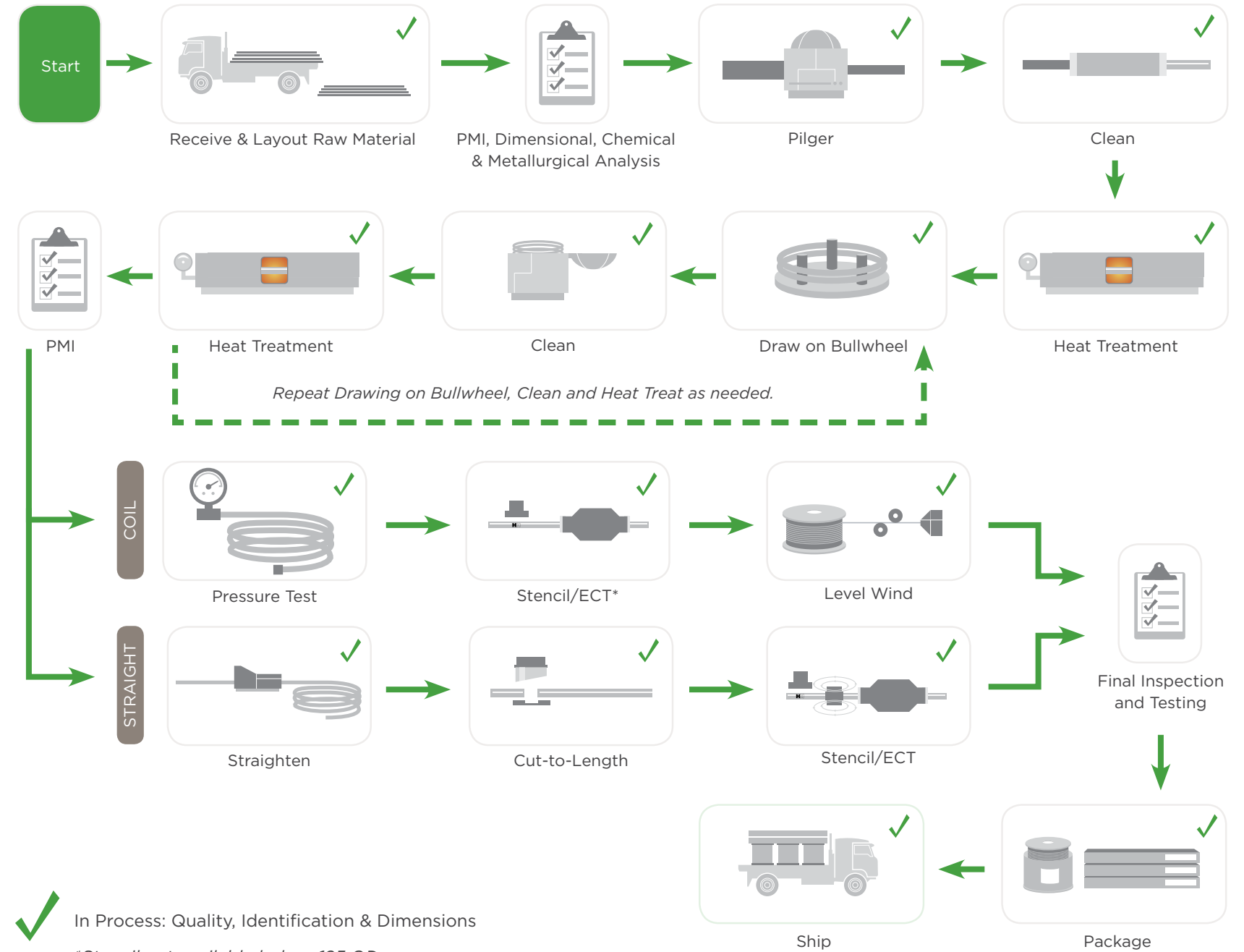
		WALL THICKNESS (IN.)							
		0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120
OUTER DIAMETER (IN.)	0.250	4,200	5,400	8,000	11,200	15,300			
	0.313	3,300	4,300	6,200	8,600	8,600	11,500		
	0.375	2,800	3,500	5,100	7,000	9,300	10,900	13,000	
	0.500		2,600	3,700	5,100	6,700	7,800	9,200	10,800
	0.625		2,000	2,900	4,000	5,200	6,000	7,100	8,300
	0.750			2,400	3,300	4,200	4,900	5,800	6,700
	1.000				2,400	3,100	3,600	4,200	4,900

*Working pressures [psi] calculated per ASME B31.3 for temperatures range of -425 °F to 300 °F for annealed TP 316/316L (UNS S31600/S31603) seamless tubing with standard tolerances offered by HandyTube™. All design and service conditions must be considered by the specifying engineers and were not taken into consideration for the calculations above. Dual-certified 316/316L meets the minimum chemistry and the mechanical properties of both alloy grades and must be specified at time of order placement.

Working Pressures [bar] for TP 316/316L Seamless Tubing*

		WALL THICKNESS (MM)									
		0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0
OUTER DIAMETER (MM)	6	359	461	569	741						
	8		335	410	528						
	10		264	322	412	506	571				
	12		218	264	337	413	465	518			
	14		185	225	285	348	391	435			
	15		172	209	265	323	363	403			
	16		161	195	247	301	338	375			
	18			173	218	265	297	330	380	431	
	20			155	195	237	266	294	339	384	414
	22			140	177	214	240	266	305	346	373
25			123	155	187	210	232	266	301	324	

*Working pressures [bar] calculated per ASME B31.3 for temperatures range of -254 °C to 148 °C for annealed TP 316/316L (UNS S31600/S31603) seamless tubing with standard tolerances offered by HandyTube™. All design and service conditions must be considered by the specifying engineers and were not taken into consideration for the calculations above. Dual-certified 316/316L meets the minimum chemistry and the mechanical properties of both alloy grades and must be specified at time of order placement.



✓ In Process: Quality, Identification & Dimensions

*Stencil not available below .125 OD



ALTERNATIVE ENERGY

Applications

- Hydrogen Fueling Stations and Material Handling
- Geothermal inhibitor tube
- Solar Heater Heads
- Solar Heat Exchangers

Solutions

- Long length coils
- Heavy-wall tubing for high-pressure applications
- Tempered tubing for use with cone-and-thread fittings

OIL & GAS

Applications

- Control lines for Sub-Sea Safety Valves
- CNG Fueling Stations
- Chemical Injection
- Data Transmission
- Intelligent Well Systems

Solutions

- Long length coils
- PVC and TPU Coatings
- Inert Coatings

SHIPBUILDING

Applications

- Hydraulic Tubing
- Multi-Core Tubing

Solutions

- Long length coils
- PVC and TPU Coatings

HEALTH CARE & LIFE SCIENCES

Applications

- Gas & Liquid Chromatography (GC and HPLC)
- Medical Device and Instrumentation

Solutions

- Ultra-Small Diameter (USD™)
- Chromat I.D.® *Smooth ID surface*
- Chroma Clean I.D.® *Enhanced Cleaning*
- Precision cutting & fabrication
- Inert Coatings

CHEMICAL PROCESS & INSTRUMENTATION

Applications

- Steam & Heat Trace Bundles
- Freeze protection and process temperature control
- Flow Measurement & Sensing

Solutions

- Long length coils
- PVC and TPU Coatings
- Heavy-wall tubing for high pressure applications
- Precision cutting and fabrication

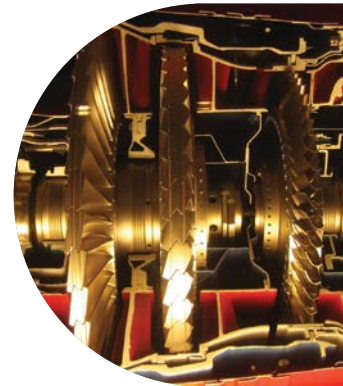
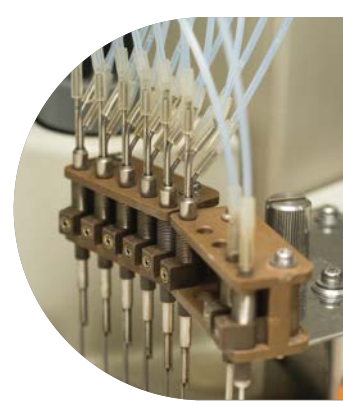
AEROSPACE & DEFENSE

Applications

- Fuel Lines
- Hydraulic Lines
- Gas Return Tubes for Automatic Weapons
- Mechanical Fasteners

Solutions

- Aerospace Material Specification (including Military Standards)
- Compliance with stringent military specifications
- Precision cutting and bending



DATE	LOCATION	PRODUCT	TYPE	QUANTITY
2017	TX, USA	316L: 3/8" OD x .035"WT and 3/8" OD x .065" WT	Seamless Coils	16,000 ft
2017	TX, USA	316L: .125"OD x .028"WT	Seamless Coils	14,400 ft
2017	CA, USA	316L: 1"OD x .139"WT	Seamless Coils	3,960 ft
2017	Turkey	316L: 3/8OD x .035WT and 3/8ODx .065WT	Seamless Coils	39,000 ft
2017	China	316L: 10mm OD x 1mm WT	Seamless coils with local PVC coating	94,000 meters
2016	China	IN825: 1/4" x 0.049" & 3/8" x 0.065"	Seamless coil tubing with PVC coating	66,800 meters
2016	USA	C6MOS0500S-5 UNS S31254: .500" OD x .065" WT	Seamless Coils	1,811 meters
2015	Republic of Korea	S6MOS0472S-5 UNS S31254: 12 mm OD x 1 mm WT, 6 meter lengths	Seamless Straight Lengths	2,184 meters
2015	China	316L: 8 mm OD x 1 mm WT, 8 mm OD x 1.5 mm WT, 12 mm OD x 1.5 mm WT & 12 mm OD x 2 mm WT	Seamless Coils	100,000 meters
2015	India	316L: 0.250" OD x 0.035" WT	Seamless Coils	38,400 meters
2014	Korea	316L: 1/4" x 0.035", 1/2" x 0.065", 8 mm OD x 1 mm WT, 12 mm OD x 1.5 mm WT & 15 mm OD x 1.5 mm WT	Seamless Coils	125,000 meters
2014	India	316L: 0.250" OD x 0.035" WT	Seamless Coils	89,400 meters
2014	Qatar	Inconel 625: 6 mm OD x 1 mm WT & 12 mm OD x 1.5 mm WT	Seamless Coils	1,000 meters
2014	Republic of Korea	Inconel 825: 0.250" OD x 0.028" WT, 0.375" OD x 0.035" WT, 0.500" OD x 0.049" WT & 0.750" OD x 0.065" WT	Seamless Coils	2,140 meters
2014	Republic of Korea	Monel 400: 0.375" OD x 0.035" WT, 0.500" OD x 0.049" WT & 0.750" OD x 0.065" WT Inconel 825: 0.375" OD x 0.035" WT	Seamless Coils	7,260 meters
2014	China	316L: 0.250" OD x 0.049" WT, 0.500" OD x 0.049" WT, 0.500" OD x 0.083" WT & 0.750" OD x 0.065" WT	Seamless Straight Lengths	17,438 meters
2014	China	316L: 0.375" OD x 0.065" WT	Seamless Straight Lengths	2,052 meters
2014	China	0.250" OD x 0.065" WT	Seamless Coils	840 meters
2013	Republic of Korea	Inconel 600: .500" OD x 0.049" WT Inconel 825: 0.500" OD x 0.049" WT	Seamless Straight Lengths	3,696 meters
2013	China	321L: 15 mm OD x 1.5 mm WT	Seamless Coils	32,000 meters
2013	Kingdom of Saudi Arabia	Monel 400: 0.250" OD x 0.049" WT	Seamless Coils	90,000 meters
2013	China	304L: 12 mm OD x 1.5 mm WT	Seamless Coils	18,347 meters
2012	China	Inconel 825: 0.250" OD x 0.065" WT	Seamless Coils	900 meters
2012	United Arab Emirates	316/316L: 0.375" OD to 0.500" OD	Seamless Coils and Straight Lengths	62,000 meters
2012	United Arab Emirates	316/316L: .375" OD to 0.500" OD	Seamless Coils and Straight Lengths	16,080 meters

Detailed project reference lists are available upon request.

MASS

	LB	KG	TON (SHORT)	TON (METRIC)
1 LB	1	0.4536	0.0005	0.0004540
1 KG	2.20462	1	0.0011	0.0010
1 TON (SHORT)	2000	907.1847	1	0.90718
1 TON (METRIC)	2204.623	1000	1.1023	1

PRESSURE

	PSI	BAR	PA	ATM	MHG
1 PSI	1	0.06895	6.895E+03	0.06805	0.05171
1 BAR	14.50	1	1.0E+05	0.9869	0.7501
1 PA	1.45E-03	1.00E-05	1	9.8690E-06	7.50E-07
1 ATM	14.70	1.01325	1.01325E+05	1	0.76
1 MHG	19.34	1.3332	1.33E+05	1.3158	1

LENGTH

	CM	M	IN	FT	YARDS
1 CENTIMETER	1	0.01	0.3937	0.0328	0.0109
1 METER	100	1	39.37	32.81	1.0936
1 INCHES	2.540	0.0254	1	0.0833	0.0278
1 FEET	30.48	0.3048	12	1	0.3333
1 YARDS	91.44	0.9144	36	3	1

TEMPERATURE

°F to °C = 5/9 (°F-32°)	°C to °F = 9/5 (°C)+32°
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