

Datasheet

Experience

Utilising our unique strength of being both a welded and seamless tube manufacturer gives our customers complete product flexibility - from welded, welded and redrawn to seamless tubes.

With supply experience far exceeding typical ISO/ASTM/ASME/TÜV standards, Fine Tubes continue to evolve corrosion resistant alloys for the increasing hostile high temperature and corrosive operating environments where maximising operating efficiency demands total product reliability.

Applications as diverse as Heat Exchangers and Flow Meters, measurement systems and Hydraulic Cylinder tubes are all supplied to the highest specification integrity.



Applications

Seamless Tubes.

Coils and Straight Lengths

- Shell & tube heat exchangers
- Condensers
- Flow meters
- Hydraulic and pneumatic systems
- Measurements systems
- Acetic acid plants

Welded Tubes.

Coils and Straight Lengths

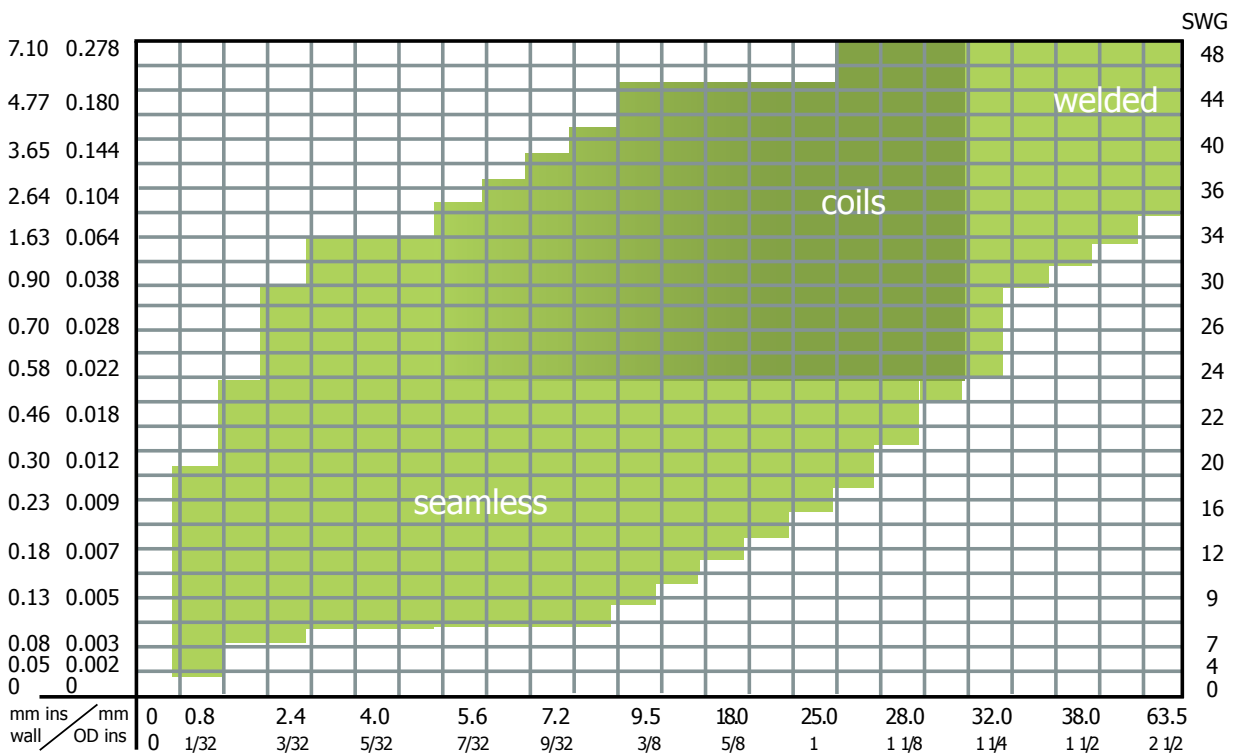
- Shell & tube heat exchangers
- Condensers
- Evaporators
- Control and instrumentation
- Acetic acid plants
- Pulp and paper plants

Welded and Redrawn Tubes.

All Fine Tubes welded tubes can be cold redrawn to improve weld homogenization and further enhance the mechanical and corrosion performance.



Size Range



chemical process

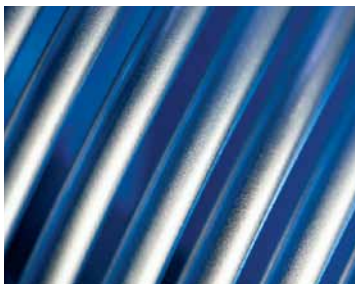
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Production Facilities



- Cold pilger mills
- Cold drawing benches
- Tube welding mills - inline weld mills
- Controlled atmosphere heat treatment
- Pickling and passivation plant
- Hydrostatic and pressure testing
- Radiographic examination
- NDT Ultrasonic and Eddy Current testing

Supply Forms



Fine Tubes have an almost unique capability to be able to cold redraw the products they produce.

This process is available in both straight lengths and coils and can be readily applied to both welded tubes as well as seamless.

Cold redrawing enhances the metallurgical condition of the material and allows for very specific tolerances and dimensions to be achieved.

Cold redrawing of the HAZe in welded tube in many alloys stimulates better weld homogenization and improves the mechanical and corrosion resistance performance.

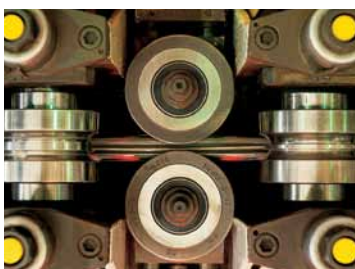
Flexibility in Processing



Fine Tubes hold a unique position where we can offer a full range of products from the most cost effective solutions of direct welded stainless steel through the range of high temperature and corrosion resistant alloys to seamless materials across our extensive alloy range.

All Fine Tubes welded products are 100% Eddy Current tested during the welding process and additionally 100% re-tested when redrawn to the final size required. All seamless products are also 100% Eddy Current tested.

Surface Finish and internal Electropolishing



Much of our range of redrawn seamless products can be offered with defined ID surface finishes down to Ra 0.40 μm (16 CLA).

All of the above product range can also be electropolished internally to further improve the surface and enhance corrosion resistance and cleanliness.

Quality Approvals



Process and quality control of Fine Tubes products is critical in respect of consistently achieving the highest standards for all applications. Strict quality controls are applied at every stage of the processing operations. Our integrated QA system means we can offer full integrity and traceability on all our products.

We have BS EN ISO 9001 and BS EN ISO 14001 approvals. Fine Tubes can supply to AD2000 Merkblatt W0/TRD100, 97/23/EC (PED) - TÜV, NACE MR-0175 and ASME Section III NCA 3800 for class 1 seamless instrumentation tube.

Fine Tubes has Nadcap approvals for: Nadcap (Heat Treatment) reaccredited at Merit Status by P.R.I., Nadcap (NDT) reaccredited at Merit Status by P.R.I. and Nadcap (Welding) reaccredited by P.R.I.

Fine Tubes Grade Chart

e116 - chemical process

ALLOY UNS No.	Werkstoffe	Chemical analysis %													Density		Temper		Tensile Rm (min)			Yield Rp 0.2% (min)			Elong. % min	Hardness HV	Application
		C	Mn	Ni	Cr	Fe	Mo	Ti	Nb	N	Al	Other	g/cm ³	lb/in ³	ksi	MPa	ksi	MPa	ksi	MPa							
316L S31603	1.4404	0.035 max	2.0 max	10.0-13.0	16.0-18.0	bal	2.0-2.5										7.93	0.286	ANN	70	485	25	170	35	200 max	Standard AOD melt austenitic stainless steel grade. 316L with minimum molybdenum content of 2.5%.	
	1.4435					2.5-3																					
316Ti S31635	1.4571	0.080 max	2.0 max	10.0-14.0	16.0-18.0	bal	2.0-3.0	5X+C+N -0.700		0.10 max						7.93	0.286	ANN	70	485	25	170	35	200 max	Austenitic stainless steel with addition of 0.5% Ti to improve alloy stability at temperatures above 800°C.		
904L N08904	1.4539	0.020 max	2.0 max	23.0-28.0	19.0-23.0	bal	4.0-5.0									8	0.289	ANN	70	485	40	275	35	200 max	Stainless steel with higher resistance to general, pitting & crevice corrosion than 316L.		
6 Mo S31254	1.4547	0.020 max	1.0 max	17.5-18.5	19.5-20.5	bal	6.0-6.5			0.18-0.22						8	0.289	ANN	98	675	45	310	35	230 max	Super-austenitic stainless steel with good resistance to pitting and crevice corrosion.		
Duplex S31803	1.4462	0.030 max	2.0 max	4.5-6.5	21.0-23.0	bal	2.5-3.5			0.08-0.20						7.8	0.281	ANN	90	620	65	450	25	290 max	High mechanical strength and good resistance to localised cracking & chloride stress corrosion.		
Super Duplex S32750	1.441	0.030 max	1.2 max	6.0-8.0	24.0-26.0	bal	3.0-5.0			0.24-0.32						7.79	0.28	ANN	116	800	80	550	15	310 max	Superduplex alloy combining excellent strength with good corrosion resistance in high chloride and seawater environments.		
Super Duplex S32760	1.4501	0.020 max	1.0 max	6.0-8.0	24-26	bal	3.0-4.0			24-32						7.70	0.278	ANN	109	750	73.5	507	35	310 max			
Alloy 22 N06022	2.4602	0.015 max	0.5 max	bal	20-22.5	2.0-6.0	12.5-14.5									8.61	0.311	ANN	100	690	45	310	45	270 max	Excellent sour service corrosion resistance combined with a very high pitting index.		
Alloy 276 N10276	2.4819	0.02 max	1.0 max	bal	14.5-16.5	4.0-7.0	15.0-17.0									8.9	0.321	ANN	100	690	41	283	40	210 max	Excellent sour service corrosion resistance.		
Alloy 59 N06059	2.4605	0.010 max	0.5 max	bal	22.0-24.0	1.5 max	15.0-16.5			0.10-0.40						8.60	0.311	ANN	100	690	45	310	45	270 max	Excellent in Sour Service Environments. Highly resistant to Chloride, Sea Waters and Acids.		
Alloy 400 N04400	2.436	0.30 max	2.0 max	63.0-70.0		2.5 max										8.83	0.319	ANN	70	480	28	195	35	180 max	General purpose Ni alloy with a good combination of strength, ductility & corrosion resistances.		
Alloy 600 N06600	2.4816	0.15 max	1.0 max	72.0 min	14.0-17.0	6.0-10.0										8.42	0.304	ANN	80	550	35	240	30	200 max	Very good combination of strength & oxidation resistance.		
Alloy 625 N06625	2.4856	0.10 max	0.5 max	bal	20.0-23.0	5.0 max	8.0-10.0				0.40 max					8.44	0.305	ANN	120	827	60	414	30	260 max	Nickel alloy with very good resistance to pitting, crevice corrosion & sour well environments.		
Alloy 718 N07718	2.4668	0.08 max	0.4 max	50.0-55.0	17.0-21.0	bal	2.80-3.30			0.20-0.80						8.19	0.296	HT	185	1275	150	1034	12	331 min	Age hardenable, high strength nickel alloy with good sour well corrosion resistance.		
Alloy 800 N08800	1.4876	0.15 max	1.5 max	30.0-35.0	19.0-23.0	39.5 min	0.15-0.60				0.15-0.60					8	0.289	ANN	75	517	30	207	30	200 max	Resistant to stress corrosion & good in aqueous media.		
Alloy 800H N08810	1.4876	0.05-0.10	1.5 max	30.0-35.0	19.0-23.0	39.5 min	0.15-0.60				0.15-0.60					8.08	0.292	ANN	75	517	30	207	30	200 max	Excellent high temperature creep resistance, combined with oxidation and carburisation resistance.		
Alloy 825 N08825	2.4858	0.05 max	1.0 max	38.0-46.0	19.5-23.5	bal	2.5-3.5				0.20 max					8.1	0.292	ANN	85	586	35	241	30	209 max	Very good sour well and chloride stress corrosion cracking resistance.		
CP Grade 2 R50400	3.7035	0.08 max				0.30 max		bal		0.03 max						4.51	0.163	ANN	50	345	40-65	275-450	20		Very high strength to weight ratio combined with excellent seawater corrosion resistance.		
Ti 3Al/2.5V Grade 9 R56320	3.7194	0.08 max				0.25 max		bal		0.03 max						4.48	0.162	CWSR	125	860	105	725	10		High strength to weight ratio. Excellent corrosion resistance.		

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Heat Exchanger / Condenser Tubes

Fine Tubes manufacture a range of specific heat exchanger and condenser tubes in the following grades: alloy C276, alloy C22, alloy 600, duplex, super duplex, stainless steels. These high performance tubes are available in a range of standard sizes specifically for the chemical process industry:

19.05mm OD	X	1.22mm wall	in lengths up to 20m (65.62ft).
25.40mm OD		1.65mm wall	
38.10mm OD		2.11mm wall	
		2.64mm wall	

We can offer the manufacture of our heat exchanger and condenser tubes to the following specifications:

Specification	Alloy	Testing
ASTM B622	C276 (UNS N10276)	Seamless Eddy Current Tested
ASTM B626	C276 (UNS N10276) and C22 (UNS N06022)	IA Welded and Annealed - 100% Eddy Current Tested IB Welded, Sized and Annealed - 100% Eddy Current Tested IIA Welded and cold worked - 100% Eddy Current Tested IIB Welded and Cold Worked - 100% Eddy Current and Hydrostatically Tested
ASTM A789	Duplex (UNS S31803) and Super Duplex (UNS S32760 and S32750)	Seamless, Welded, Welded redrawn - 100% Eddy Current Tested
ASTM B516	Alloy 600 (UNS N06600)	Welded and Welded redrawn Class 1 - 100% Eddy Current Tested Class 2 - 100% Eddy Current and Pressure Tested
ASTM A213 ASTM A269	Stainless Steels	Seamless - 100% Eddy Current Tested



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