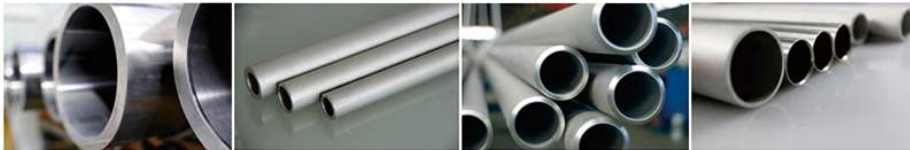


Stainless Steel Seamless Pipe

品名 Item	材质 Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	内外表面 状态 Surface
奥氏体不锈钢 Austenitic Stainless Steel	304/L/H/LN, 316/L/H/LN/TI, 321/H, 317/L/LN, 347/H, 310S/H, 309S	OD6-38*0.5-6MM	38M	冷拔或冷轧 Cold-rolled or Cold Drawn	固熔状态 ANNEALING	GB, ASME, ASTM, JIS, EN, DIN, GOST	光亮管、酸洗 钝化、精抛光、 拉丝 Bright Tube, Pickling Passivation, Finishing Polish, Wiredrawing
		OD42-168*2-30MM	18M				
		OD219-325*3-45MM	14M				
		OD377-764*5-60MM	14M				
超级奥氏体 Super Austenitic Stainless Steel	N08904 (904L), S31254, S30432, S31042, N08367(6Mo)	OD12-325*0.8-20MM	12M	冷拔或冷轧 Cold-rolled or Cold Drawn	固熔状态 ANNEALING	GB, ASME, ASTM, JIS, EN, DIN, GOST	光亮管、酸洗 钝化、精抛光、 拉丝 Bright Tube, Pickling Passivation, Finishing Polish, Wiredrawing
超级双相钢 Super Duplex Stainless Steel	S31500, S32101, S32003, S32304, S31803, S32205, S32750, S32760	OD12-325*0.8-20MM	12M				
高温镍合金 High Temperature Nickel Alloy Pipe	N02200, N02201, N04400, N06600, N06690, N06625, N06985(G3), N08028, N08800, N08810, N08811, N08825, N10276, N10624, N10629, N10675	OD12-325*0.8-20MM	12M				



/不锈钢卫生级管 Stainless Steel Sanitary Grade Pipe

品名 Item	材质 Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	内外表面 状态 Surface
无缝卫生级管 Seamless Sanitary Grade Pipe	304, 304L, 316L	OD12-325*0.5-12MM	12M	精轧、机械抛光 Precision Rolling, Mechanical Polishing	硬态抛光 或软态抛光 Hard or Soft Polishing	GB, ASME, ASTM, JIS, EN, DIN, GOST	精抛400# Polished 400grit, 0.2μ
焊接卫生级管 Welded Sanitary Grade Pipe				自动在线焊接、 内外整平、机械抛光 Automatic On- line Welding, Mechanical Polishing			



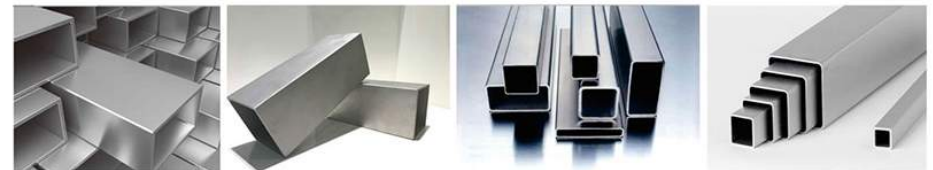
Stainless Steel Welded Tube

品名 Item	材质 Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	内外表面 状态 Surface
奥氏体不锈钢 Austenitic Stainless Steel	304/L/H/LN, 316/L/H/LN/TI, 321/H, 317/L/LN, 347/H, 310S/H, 309S, N08904 (904L)	OD12-630*0.5-16MM	12M	自动在线焊接 Automatic On- line Welding	固熔酸洗 或焊态 Solid Solution Pickling or As-welded Condition	GB, ASME, ASTM, JIS, EN, DIN, GOST	酸洗钝化、 精抛光 Pickling Passivation, Finishing Polish
		OD168-3000*2-100MM	12M				
超级双相钢 Super Duplex Stainless Steel	S31803, S32205, S32750, S32760	OD12-3000*2-60MM	12M	单支卷制 自动焊接 Single Rolling Automatic Welding			
高温镍合金 High Temperature Nickel Alloy Pipe	N02200, N02201, N04400, N06600, N06690, N06625, N06985(G3), N08028, N08800, N08810, N08811, N08825, N10276	OD12-3000*2-30MM	12M				



/不锈钢矩形管 Stainless Steel Rectangular Tube

品名 Item	材质 Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	内外表面 状态 Surface
无缝矩形管 Seamless Rectangular Tube	304/L/H, 316/L/H/TI, 321/H	20*20-400*400*2-30	12M	冷拔成型 Cold drawing forming	硬态或固 溶软态	GB, ASME, ASTM, JIS, EN, DIN, GOST	酸洗钝化、 精抛光、 拉丝 Pickling Passivation, Finishing Polish, Wiredrawing
焊接矩形管 Welded Rectangular Tube	304/L/H, 316/L/H/TI, 321/H	20*20-400*400*0.5-15	12M	□□□□ Rolling welding	焊态抛光 或固溶软态	GB, ASME, ASTM, JIS, EN, DIN, GOST	酸洗钝化、 精抛光、 拉丝 Pickling Passivation, Finishing Polish, Wiredrawing



Super Duplex Stainless Steel Pipe

超级双相不锈钢管拥有铁素体和奥氏体两项组织，综合了许多

(Super) Duplex stainless steels have a mixed microstructure of austenite

材质 Grade	C MAX	Si MAX	Mn MAX	P MAX	S MAX	Cr	Ni	Mo	N	Cu MAX
S32205	0.03	1.0	2.0	0.03	0.02	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	0.50
S31803	0.03	1.0	2.0	0.03	0.02	22.0-23.0	4.5-6.5	3.0-3.5	0.14-0.20	0.50
S32750	0.03	0.8	1.2	0.035	0.02	24.0-26.0	6.0-8.0	3.0-5.0	0.24-0.32	0.50

材质 Grade	密度 Density g/cm	温度 Temperature °C	膨胀系数 Coefficient Of Thermal Expansion Mm/m°C	固溶温度 Annealing Temperature °C	抗拉强度 Tensile Strength >Pm(Mpa)Min	屈服强度 Yield Strength Rp0.2(> Mpa)Min	延伸率 Elongation Min %
S32205	7.8	20-100	13.7	1025-1100	655	485	25
S31803	7.8	20-100	13.7	1025-1100	655	485	25
S32750	7.8	20-100	11.5	1025-1125	800	550	15



High Temperature Nickel Alloy Tube

宝丰通过多年的自主研发高温镍基合金制管工艺，充分掌握各种

Baofeng Steel Group has fully grasp the various material performances

品名 Item	材质Material	规格范围Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	内外表面状态 Surface
高温镍基合金 High Temperature Nickel Alloy Pipe	N02200, N02201, N04400, N06600, N06690, N06625, N06985(G3), N08028, N08800, N08810, N08811, N08825, N10276, N10624, N10629, N10675	OD12-325*0.8-20MM	12M	冷轧 Cold-rolled	固熔状态 Annealing	GB, ASME, ASTM, JIS, EN, DIN, GOST	光亮管、酸洗钝化、精抛光、拉丝 Bright tube, Pickling Passivation, Finishing Polish, Wiredrawing

高温镍基合金的化学成分、物理力学性能参数、钢管的生产标准详见下表



Stainless steel U - tube / straight tube for boiler heat exchangers



材质Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	外径公差 OD Tolerance	壁厚公差 W.T. Tolerance	探伤方式 Inspection	备注 Remark
304/L/H/LN, 316/L/H/LN/Ti, 321/H, 317/L/LN, 347/H, 310S/H, 309S, 904L	OD14-89* 0.5-12MM	38M	冷拔或冷轧 Cold-rolled or Cold Drawn	固熔酸洗或光亮退火 Annealing Pickling or Bright Annealing	GB13296, ASTM A213	±0.2mm	±8%	100% ET、UT 和水压 100%ET, UT and Hydraulic Pressure	可加工成U型管和盘管 Can be processed into U Tube and Pipe Coil
S31803, S32205, S32750, S32760	OD14-89* 0.8-12MM	38M							

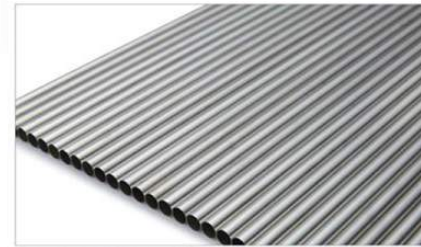
材质Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	外径公差 OD Tolerance	壁厚公差 W.T. Tolerance	探伤方式 Inspection	备注 Remark
304/L/H/LN, 316/L/H/LN/Ti, 321/H, 317/L/LN, 347/H, 310S/H, 309S, 904L	OD14-89* 0.5-12MM	38M	冷拔或冷轧 Cold-rolled or Cold Drawn	固熔酸洗或光亮退火 Annealing Pickling or Bright Annealing	GB13296, ASTM A213	±0.2mm	±8%	100% ET、UT 和水压 100%ET, UT and Hydraulic Pressure	可加工成U型管和盘管 Can be processed into U Tube and Pipe Coil
S31803, S32205, S32750, S32760	OD14-89* 0.8-12MM	38M							

Stainless Steel Long Pipe Coil



Precision stainless steel seamless pipe

材质Grade	规格范围 Size Range	最长长度 Max Length	加工工艺 Processing Technic	交货状态 Delivery status	执行标准 Standard	外径公差 OD Tolerance	壁厚公差 W.T. Tolerance	探伤方式 Inspection	备注 Remark
304/L/H/LN, 316/L/H/LN/Ti, 321/H, 317/L/LN, S31803, S32205, S32750	OD14-89* 0.5-12MM	12M	精轧 Precision Rolling	光亮退火 Bright Annealing	EN10216-5 DIN2391	±0.5%D or ±0.1mm take the maximum	±0.5% or±0.1mm take the maximum	100%ET, UT和水压 Hydraulic Pressure	可预弯加工 Pre-bending processing
	OD6-89* 0.8-12MM								



Grade	UNS Designation	C	Mn	P	S	Si	Cr	Ni	Mo	Ti	Nb	Ta max	N	Other
TP304	S30400	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0						
TP304L	S30403	0.035 ^o	2.00	0.045	0.030	1.00	18.0-20.0	8.0-13.0						
TP304H	S30409	0.04-0.10	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0						
TP304N	S30451	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0					0.10-0.16	
TP304LN	S30453	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-12.0					0.10-0.16	
TP309S	S30908	0.08	2.00	0.045	0.030	1.00	22.0-24.0	12.0-15.0	0.75					
TP309H	S30909	0.04-0.10	2.00	0.045	0.030	1.00	22.0-24.0	12.0-15.0						
TP309Cb	S30940	0.08	2.00	0.045	0.030	1.00	22.0-24.0	12.0-16.0	0.75			10 ^o Cmin, 1.10max		
TP309Hcb	S30941	0.04-0.10	2.00	0.045	0.030	1.00	22.0-24.0	12.0-16.0	0.75			10 ^o Cmin, 1.10max		
TP310S	S31008	0.08	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0	0.75					
TP310H	S31009	0.04-0.10	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0						
TP310Cb	S31040	0.08	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0	0.75			10 ^o Cmin, 1.10max		
TP310Hcb	S31041	0.04-0.10	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0	0.75			10 ^o Cmin, 1.10max		
TP316	S31600	0.08	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00					
TP316L	S31603	0.035 ^o	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00					
TP316H	S31609	0.04-0.10	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00					
TP316Ti	S31635	0.08	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.00-3.00	5 ^o (C+N) 0.70			0.10	
TP316N	S31651	0.08	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00				0.10-0.16	
TP316LN	S31653	0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00				0.10-0.16	
TP317	S31700	0.08	2.00	0.045	0.030	1.00	18.0-20.0	11.0-15.0	3.00-4.00					
TP317L	S31703	0.035	2.00	0.045	0.030	1.00	18.0-20.0	11.0-15.0	3.00-4.00					
TP321	S32100	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0		F			0.10	
TP321H	S32109	0.04-0.10	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0		4 ^o (C+N)min; 0.70max			0.10	
TP347	S34700	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0			G			
TP347H	S34709	0.04-0.10	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0			H			
TP347LN	S34751	0.005-0.020	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0			0.20-0.50 ^o		0.06-0.10	
TP348	S34800	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0			G	0.10		
TP348H	S34809	0.04-0.10	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0			H	0.10		

组织类型	序号	GB/T 20878 统一数字代号	牌号	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	N	其他	
奥氏体型	1	S30210	12Cr18Ni9	0.15	1.00	2.00	0.035	0.030	8.00-10.00	17.00-19.00				0.10	
	2	S30408	06Cr19Ni10	0.08	1.00	2.00	0.035	0.030	8.00-10.00	18.00-20.00					
	3	S30403	022Cr19Ni10	0.03	1.00	2.00	0.035	0.030	8.00-12.00	18.00-20.00					
	4	S30458	06Cr19Ni10N	0.08	1.00	2.00	0.035	0.030	8.00-11.00	18.00-20.00				0.10-0.16	
	5	S30478	06Cr19Ni9NbN	0.08	1.00	2.50	0.035	0.030	7.50-10.50	18.00-20.00				0.15-0.30	Nb:0.15
	6	S30453	022Cr19Ni10N	0.03	1.00	2.00	0.035	0.030	8.00-11.00	18.00-20.00				0.10-0.16	
	7	S30908	06Cr23Ni13	0.08	1.00	2.00	0.035	0.030	12.00-15.00	22.00-24.00					
	8	S31008	06Cr25Ni20	0.08	1.50	2.00	0.035	0.030	19.00-22.00	24.00-26.00					
	9	S31608	06Cr17Ni12Mo2	0.08	1.00	2.00	0.035	0.030	10.00-14.00	16.00-18.00	2.00-3.00				
	10	S31603	022Cr17Ni12Mo2	0.03	1.00	2.00	0.035	0.030	10.00-14.00	16.00-18.00	2.00-3.00				
	11	S31609	07Cr17Ni12Mo2	0.04-0.10	1.00	2.00	0.035	0.030	10.00-14.00	16.00-18.00	2.00-3.00				
	12	S31668	06Cr17Ni12Mo2Ti	0.08	1.00	2.00	0.035	0.030	10.00-14.00	16.00-18.00	2.00-3.00				Ti:5C-0.70
	13	S31658	06Cr17Ni12Mo2N	0.08	1.00	2.00	0.035	0.030	10.00-13.00	16.00-18.00	2.00-3.00			0.10-0.16	
	14	S31653	022Cr17Ni12Mo2N	0.03	1.00	2.00	0.035	0.030	10.00-13.00	16.00-18.00	2.00-3.00			0.10-0.16	
	15	S31688	06Cr18Ni12Mo2Cu2	0.08	1.00	2.00	0.035	0.030	10.00-14.00	17.00-19.00	1.20-2.75	1.00-2.50			
	16	S31683	022Cr18Ni14Mo2Cu2	0.03	1.00	2.00	0.035	0.030	12.00-16.00	17.00-19.00	1.20-2.75	1.00-2.50			
	17	S31708	06Cr19Ni13Mo3	0.08	1.00	2.00	0.035	0.030	11.00-15.00	18.00-20.00	3.00-4.00				
	18	S31703	022Cr19Ni13Mo3	0.03	1.00	2.00	0.035	0.030	11.00-15.00	18.00-20.00	3.00-4.00				
	19	S32168	06Cr18Ni11Ti	0.08	1.00	2.00	0.035	0.030	9.00-12.00	17.00-19.00					Ti:5C-0.70
	20	S32169	07Cr19Ni11Ti	0.04-0.10	0.75	2.00	0.035	0.030	9.00-13.00	17.00-20.00					Ti:4C-0.60
	21	S34778	06Cr18Ni11Nb	0.08	1.00	2.00	0.035	0.030	9.00-12.00	17.00-19.00					Nb:10C-1.10
	22	S34779	07Cr18Ni11Nb	0.04-0.10	1.00	2.00	0.035	0.030	9.00-12.00	17.00-19.00					Nb:8C-1.10
铁素体型	23	S11348	06Cr13Al	0.08	1.00	1.00	0.035	0.030	0.60	11.50-14.50				Al:0.10-0.30	
	24	S11510	10Cr15	0.12	1.00	1.00	0.035	0.030	0.60	14.00-16.00					
	25	S11710	10Cr17	0.12	1.00	1.00	0.035	0.030	0.60	16.00-18.00					
	26	S11863	022Cr18Ti	0.03	0.75	1.00	0.035	0.030	0.60	16.00-19.00					Ti:5C-0.10-1.00
27	S11972	019Cr19Mo2NbTi	0.025	1.00	1.00	0.035	0.030	1.00	17.50-19.50	1.75-2.50			0.035	Ti:5C-0.10-1.00 (Ti+Nb): [0.20+4(C+N)] -0.80	
马氏体型	28	S41008	06Cr13	0.08	1.00	1.00	0.035	0.030	0.60	11.50-13.50					
	29	S41010	12Cr13	0.15	1.00	1.00	0.035	0.030	0.60	11.50-13.50					

Chemical Composition
化学成分

C max	Si max	Mn max	P max	S max	Cr	Ni	Mo	N max	Cu max
0.02	1.0	2.0	0.040	0.030	19.0-23.0	23.0-28.0	4.0-5.0	0.10	1.0-2.0

Density & Coefficient of Expansion
密度和线膨胀系数

密度 Density	温度 Temperature	线膨胀系数 Coefficient of Expansion
8.24g/cm ³	20-100°C	15.0*10 ⁻⁶ k-1µm/m°C
	20-200°C	15.6*10 ⁻⁶ k-1µm/m°C
	20-300°C	16.1*10 ⁻⁶ k-1µm/m°C

Physical Properties
力学性能

状态 Condition	抗拉强度 Tensile Strength ≥Rm(Mpa)	非比例延伸强度 Yield Strength Rp0.2(≥Mpa)	纵向伸长率 Elongation Min
退火Annealing 1100-1040°C	520-720	230	35

Available Size Range for Seamless
产品尺寸范围

Pipe/Tubes	外径OD	壁厚Thickness
	OD:6-114mm	WT:0.5-15mm

序号 No.	德国 DIN牌号	C max	Si max	Mn max	P max	S max	Cr	Mo	Ti	Cu max	Fe max	Al max	Ni	Co max	W	V	Mg	Nb	Li	杂质 总和	mark
1	MonelK500 (UNS NO5500)	W-Nr.2.4360	0.3	0.5	2	0.024				28-34	2.5		>=63								
2	Monel400 (UNS NO440)	W-Nr.2.4	0.3	0.5	2	0.024			0.35-0.85	28-34	2.5	2.3-3.15	63-66								
3	N2		0.005	0.003	0.002	0.001				0.001	0.007		>=99.98				0.003			0.02	
4		2.4068	0.01	0.03	0.002	0.001				0.015	0.04		>=99.9				0.001			0.1	
5	NO2200 (N6)	2.4066	0.1	0.1	0.05	0.005				0.06	0.1		>=99.6				0.1			0.5	
6	N8		0.2	0.15	0.2	0.015				0.15	0.3		>=99				0.02			0.35	
7	DN		0.02-0.10	0.02-0.1	0.05	0.005				0.06	0.1		>=99.35				0.1			0.3	
8	NY1		0.02	0.1		0.005				0.1	0.1		>=99.7				0.1			0.6	
9	NY2			0.1		0.002-0.01				0.01-0.1	0.1		>=99.4							1	
10	NY3		0.1	0.2		0.005				0.15	0.25		>=99				0.1			0.4	
11	NMg0.1		0.05	0.02	0.05	0.005				0.05	0.07		>=99.6				0.07-0.15				
12	NSi0.19		0.1	0.15-0.25	0.05	0.005				0.05	0.07		>=99.4				0.05			0.5	
13	UNS NO6600 (Inconel 600)	W-Nr.2.4816	0.15	0.5	1	0.015	0.015	14-17		0.5	6-10		>=72								
14	UNS NO6601 (inconel 601)	W-Nr.2.4815	0.1	0.5	1.5	0.02	0.015	21-25		1	余量	1.0-1.7	58-63								
15	Hastelloy C276 (UNS N10276)	W-Nr.2.4819	0.01	0.08	1	0.04	0.03	14.5-16.5	15-17		4-7	余量	2.5	3-4.5	0.35						
16	Hastelloy C		0.08	1	1	0.04	0.03	14.5-16.5	15-17		4-7	余量	2.5	3-4.5	0.35						
17	Hastelloy C22 (UNS N6022)	W-Nr.2.4602	0.015	0.08	0.5	0.02	0.02	20-22.5	12.5-14.5		2-6	余量	2.5	2.5-3.5	0.35						
18	Hastelloy B-2 (UNS N10665)	W-Nr.2.4617	0.02	0.1	1.0	0.04	0.03	1.0	26-30		2-7	余量	1.0								
19	Hastelloy B		0.05	1.0	1.0	0.04	0.03	1.0	26-30		4-6	余量	2.5		0.2-0.4						
20	UNS NO6625 (Inconel 625)	W-Nr.2.4856	0.1	0.5	0.5	0.015	0.015	20-23	8-10	0.4	0.5	5	>=58						3.15-4.15	0.4	
21	UNS NO7718 (Inconel 718)	W-Nr.2.4668	0.08	0.35	0.35		0.01	17-21	2.8-3.3	0.7-1.15	0.3	余量	0.2-0.8	50-55	1				4.75-5.5		
22	UNS NO8825 (Incoloy 825)	W-Nr.2.4858	0.05	0.5	1	0.02	0.03	19.5-23.5	2.5-3.5	0.6-1.2	1.5-3	余量	38-46								
23	UNS NO8800 (Incoloy 800)	1.4876	0.1	1	1.5		0.015	19-23	0.15-0.6	0.75	余量	0.15-0.6	30-35							Al+Ti =0.85-1.20	
24	UNS NO8810 (Incoloy 800H)	1.4958	0.05-0.1	1	1.5		0.015	19-23	0.15-0.6	0.75	余量	0.15-0.6	30-35							Al+Ti =0.85-1.20	
25	UNS NO8811 (Incoloy 800HT)	1.4959	0.06-0.1	1	1.5		0.015	19-23	0.15-0.6	0.75	余量	0.15-0.6	30-35							Al+Ti =0.85-1.20	

序号 No.	美国 UNS牌号	德国 DIN牌号	密度 Density (g/cm ³)	熔点 (°C) Melting point	合金和状态 Alloy and state	抗拉强度 Tensile Strength (Rm N/mm ²)	屈服强度 Yield Strength (Rp0.2N/mm ²)	延伸率 (A%) Elongation	布氏硬度 HB Brinell Hardness
1	Monel400 (UNS NO440)	W-Nr.2.4	8.83	1300-1390		480	170	35	
2	MonelK500 (UNS NO5500)	W.-Nr.2.4360	8.84	1316-1400		960	390	20	
3	NO2200	2.4066	8.9	1500-1600	200.201	380	100	40	
4	NO2201	2.4068							
5	UNS NO6600 (Inconel 600)	W.-Nr.2.4816	8.4	1370-1425	退火处理 Annealing treatment	550	240	30	≤195
					固溶处理 Solution treatment	500	180	35	≤185
6	UNS NO6601 (Inconel 601)	W.-Nr.2.4815	8.1	1320-1370	退火处理 Annealing treatment	650	300	30	
					固溶处理 Solution treatment	600	240	30	≤220
7	Hastelloy C276 (UNS N10276)	W.-Nr.2.4819	8.9	1325-1370	Hastelloy C/ C276	690	283	40	
8	Hastelloy C								
9	Hastelloy C22 (UNS N6022)	W.-Nr.2.4602	8.9	1325-1370	Hastelloy C/ C22	690	283	40	
10	Hastelloy B-2 (UNS N10665)	W.-Nr.2.4617	9.24	1330-1380	Hastelloy B-2	690	310	40	
11	Hastelloy B								
12	UNS NO6625 (Inconel 625)	W.-Nr.2.4856	8.4	1390-1350	625	760	345	30	≤220
13	UNS NO7718 (Inconel 718)	W.-Nr.2.4668	8.2	1260-1340	固溶处理 Solution treatment	965	550	30	≤363
14	UNS NO8825 (Incoloy 825)	W.-Nr.2.4858	8.1	1370-1400	825	500	220	30	
15	UNS NO8800 (Incoloy 800)	1.4876	8.0	1350-1400	800	500	210	35	
16	UNS NO8810 (Incoloy 800H)	1.4958	8.0	1350-1400	800H	450	180	35	

合金 Alloy	UNS	标准产品形式 Standard Product Forms						
		管材 Tube & Pipe		板材 Sheet & Plate	棒材 Rod & Bar	带(条)材 Strip	(焊)丝材 Welding wire	锻件 Forging
		无缝 Seamless	焊管 Welded					
Alloy 200	N02200	N10002	B725/B730	B162	B160	B162		
Alloy 201	N02201	S66286	B725/B730	B162	B160	B162		
Monel 400	N04400	B161/B163		B127 AMS 4544	B164 AMS 4675/4730			B564
Hastelloy X	N06002	B622 AMS 5587/5588	B619/B622 AMS 5588	B435 AMS 5536	B572 AMS 5754	B435		
Hastelloy C22	N06022	B622	B619/B626	B575	B574	B575		B564
Inconel 602CA	N06025	B163/B167	B516/B517/ B546	B168	B166	B168	B166	B564
Inconel 600	N06600	B163/B167 AMS 5580	B163/516/517 AMS	B168 AMS 5540	B166 AMS 5665	B168 AMS 5540	B166	B564
Inconel 601	N06601	B163/B167/ B829		B168 AMS 5870	B166	B168	B166	B564
Inconel 625	N06625	B444 AMS 5581	B704/B705 AMS 5581	B443 AMS 5599	B466 AMS 5666	B443 AMS 5599		B564
Nimonic 80A	N07080				B637			B637
Inconel 718	N07718	AMS 5589/ 5590		B670 AMS 5596/5597	B637 AMS 5662/5664	B670 AMS 5596/5597		B637
Inconel X750	N07750	AMS 5582/ 5583	AMS 5582/ 5583	AMS 5542/ 5598	B637 AMS 5667/5670/5671		AMS 5542/ 5598	B637
Alloy 20	N08020	B729	B464/B468/ B474	B463	B472/B473	B463	B471/B473/ B475	B462
Alloy 28	N08028	B668				B709		
Alloy 31	N08031	B622	B619/B626	B625	B581/B649	B625	B649	B564
Incoloy 800	N08800	B163/B407	B163	B409 AMS 5871	B408	B409 AMS 5871		B564
Incoloy 800H	N08810	B163/B407	B514	B409 AMS 5871	B408	B409 AMS 5871		B564
Incoloy 800HT	N08811	B163/B407	B515	B409 AMS 5871	B408	B409 AMS 5871		B564
Incoloy 825	N08825	B163/B423	B163/B704/ B705	B424	B425	B424		
904L	N08904	B677/A269/ A312	B673/B674/ A249/A312	B625/A240/ A480	B469/A479	B625/A240/ A480	B649/A479	A484
Incoloy 926	N08926	B677	B673/B674	B625	B649	B625	B649	
Hastelloy C276	N10276	B622	B619/B626	B575	B574	B575		B564
Hastelloy B2	N10665	B722	B619/B626	B333	B335	B333		
Monelk-500	N05500			B865	AMS 4676	B865		
Invar 36	K93600			B338/B753		B388/B753		
N-155				AMS 5532/ 5585	AMS 5532/ 5585	AMS 5769/ 5794		
L-605				AMS 5537	AMS 5759/ 5796	AMS 5537		
Hastelloy C (NS 333)	N10002			B334 AMS 5530	B336 AMS 5750	B334 AMS 5530		
A286(GH3132)	S66286			AMS 5525/ 5735	AMS 5731/5732/ 5737/5726/5804	AMS 5525/ 5735		A453

标准 Standard 项目Item	ASTM A213/A213M	ASTM A269/A269M	ASTM A312/A312M	ASTM A789/A789M	ASTM A790/A790M
材质Grade	TP304 TP304L TP304H+ TP309S TP309H+ TP310S TP310H+ TP316 TP316L TP316H TP316Ti TP317 TP317L TP321 TP321H+ TP347 TP347H+	TP304 TP304L TP316 TP316L TP317 TP321 TP347 N08904	TP304 TP304L TP304H+ TP309S TP309H TP310S TP310H TP316 TP316L TP316H TP316Ti TP317 TP317L TP321 TP321H+ TP347	S31260 S31803 S32205 S32304 S32750 S32760	S31260 S31803 S32205 S32304 S32750 S32760
屈服强度 Yield Point (Mpa)	≥170Mpa, ≥205Mpa		≥170; ≥205	≥450; ≥485; ≥550	≥450; ≥485; ≥550
抗拉强度 Tensile Strength (Mpa)	≥480Mpa, ≥515Mpa		≥480; ≥515	≥620; ≥690; ≥655; ≥750; ≥800	≥620; ≥690; ≥655; ≥750; ≥800
延伸率 Elongation(100%)	≥35%		≥35%	≥25; ≥15	≥25; ≥15
压扁试验 Flattening Test (mm)	H=1.09t/(0.09+t/D) 并试验完好性	H=1.09t/(0.09+t/D)	H=1.09t/(0.09+t/D) 并试验完好性		H=1.09t/(0.09+t/D) 并试验完好性
扩口试验 Flaring Test	内径扩张率 为21-68%D	a=600, 扩口率21-68%D		ASTM A450, 内径扩张率≥10%	
晶粒度 Grain Size	*** ** ASTM E112, * 7#或更粗, ** 6#或更粗		H级钢号按ASTM112:7级 或更粗(310H6级或更粗)	协议要求 (铁素体含量45-55%)	协议要求 (铁素体含量45-55%)
水压 Hydraulic Test (Mpa)	D Pmax ≤25.4 7 25.4~38.1 10 38.1~50.8 14 50.8~76.2 17 76.2~127 24 ≥127 31	水压试验 P=220.6S/D 用户指定 可由无损 探伤代替	P=2St/D, S=50%Rp0.2; D≤88.9, Pmax≤17; D>88.9, Pmax≤19 超声波、涡流、 水压任选一种	P=220.6t/D, 可用E213超声波 或E426水压代替; 需协商	P=2St/D, S=50%Rp0.2; D≤88.9, Pmax≤17; D>88.9, Pmax≤19 超声波、涡流、 水压任选一种
退火Heat Treatment	Requirement	Requirement	Requirement	Requirement	Requirement
外径公差 Tolerance For O.D. (mm)	O.D.Range(D) 允许偏差 ≤25.4 ±0.10 25.4~38.1 ±0.15 >38.1~<50.8 ±0.20 50.8~<63.5 ±0.25 63.5~<76.2 ±0.30 76.2~101.6 ±0.38 >101.6~190.5 +0.38/-0.64 >190.5~228.6 +0.38/-1.14	O.D.Range(D) 允许偏差 ≤12.7 ±0.13 >12.7~38.1 ±0.13 >38.1~88.9 ±0.25 >88.9~139.7 ±0.38 >139.7~203.2 ±0.76	O.D.Range(D) 允许偏差 10.29~48.26 +0.4/-0.8 >48.26~114.3 +0.8/-0.8 >114.3~219.08 +1.6/-0.8 >219.08~457.2 +2.4/-0.8 >457.2~660.4 +3.2/-0.8 >660.4~864 +4.0/-0.8 >864~1219.2 +4.8/-0.8	O.D.Range(D) 允许偏差 ≤12.7 ±0.13 >12.7~31.8 ±0.13 >31.8~88.9 ±0.25 >88.9~139.7 ±0.38 >139.7~203.2 ±0.76	外径 允许偏差 10.29~48.26 +0.4/-0.8 >48.26~114.3 +0.8/-0.8 >114.3~219.08 +1.6/-0.8 >219.08~457.2 +2.4/-0.8
壁厚公差 Tolerance For W.T. (mm)	壁厚S 允许偏差 ≤38.1 ±20%,-0 >38.1 ±22%,-0	壁厚S 允许偏差 ≤12.7 ±15% >12.7~203.2 ±10%	壁厚S 允许偏差 10.29~73.03 +20%/-12.5% 88.9~457.2 (t/D≤5%) +22.5%/-12.5% 88.9~457.2 (t/D>5%) +15%/-12.5%	壁厚S 允许偏差 ≤12.7 ±15% >12.7~203.2 ±10%	壁厚S 允许偏差 10.29~73.03 +20%/-12.5% 88.9~457.2 (t/D≤5%) +22.5%/-12.5% 88.9~457.2 (t/D>5%) +15%/-12.5%
弯曲度Bending (mm/m)	D≤127,0.833 127<D≤203.2,1.25 203.2<D≤323.9,1.67	D≤127,0.833 127<D≤203.2,1.25 203.2<D≤323.9,1.67	D≤127,0.833 127<D≤203.2,1.25 203.2<D≤323.9,1.67	D≤127,0.833 127<D≤203.2,1.25 203.2<D≤323.9,1.67	Reasonably Straight
硬度Hardness	当壁厚为平均壁厚时, 壁厚公差为10%S	HRB≤90,t<1.65mm 可做表格或HV 内径<6.4, t≤0.51可不做	HRB≤290 (S32750/S32760≤300) HRC≤30(S32750≤32)	HRB≤290 (S32750/S32760≤300) HRC≤30(S32750≤32)	HRB≤290 (S32750/S32760≤300) HRC≤30(S32750≤32)

标准 Standard 项目Item	ASTM B677	EN10216-5	JIS-G3463	GB13296-2007	GB/T14976-2002
材质Grade	UNS N08904(904L)		SUS304TB/SUS304HTB/ SUS304LTB/SUS309TB/ SUS309STB/SUS310TB/ SUS316TB/SUS316HTB/ SUS316LTB/SUS316STB/ SUS317TB/SUS317LTB/ SUS321TB/SUS321HTB/ SUS347TB/SUS347HTB/ SUS329J1TB/ SUS329J3TB/ SUS329J4TB/ SUS316TTB/	0Cr18Ni9/0Cr19Ni10/ 1Cr18Ni9/1Cr19Ni10/ 0Cr17Ni12Mo2/ 0Cr17Ni14Mo2/ 1Cr18Ni12Mo2Ti/ 1Cr18Ni12Mo3Ti/ 1Cr18Ni9Ti/0Cr19Ni10Ti/ 1Cr18Ni11Ti/1Cr18Ni9/ 0Cr18Ni10Ti/1Cr18Ni11Nb/ 1Cr17Ni12Mo2/ 0Cr18Ni12Mo2Ti/ 1Cr18Ni12Mo3Ti/ 0Cr19Ni13Mo3/ 1Cr18Ni12Mo3Ti/ 0Cr25Ni20/2Cr25Ni20/ 0Cr19Ni13Mo3/	0Cr18Ni9/0Cr19Ni10/ 1Cr18Ni9/1Cr19Ni10/ 0Cr17Ni12Mo2/0Cr17Ni14Mo2/ 1Cr18Ni12Mo2Ti/ 1Cr18Ni12Mo3Ti/ 1Cr18Ni9Ti/0Cr19Ni10Ti/ 1Cr18Ni11Ti/1Cr18Ni9/ 0Cr18Ni10Ti/1Cr18Ni11Nb/ 1Cr17Ni12Mo2/ 0Cr18Ni12Mo2Ti/ 1Cr18Ni12Mo3Ti/ 0Cr19Ni13Mo3/ 1Cr18Ni12Mo3Ti/ 0Cr25Ni20/2Cr25Ni20/ 0Cr19Ni13Mo3/
屈服强度 Yield Point (Mpa)	≥220	≥180; ≥160; ≥195; ≥200; ≥205; ≥190; ≥210; ≥230; ≥185; ≥450; ≥400; ≥500; ≥550	≥205; ≥175; ≥390; ≥450	≥175; ≥205	≥175; ≥205
抗拉强度 Tensile Strength (Mpa)	≥490	≥640; ≥700; ≥600; ≥800; ≥500; ≥510; ≥520; ≥490; ≥470; ≥460	≥520; ≥480; ≥590; ≥620	≥480; ≥520; ≥550	≥480; ≥520; ≥550
延伸率 Elongation(100%)	≥35	≥20; ≥22; ≥25; ≥35; ≥40; ≥45	≥27; ≥30; ≥35; ≥10; ≥13; ≥18	≥35; ≥40	≥35; ≥40
压扁试验 Flattening Test (mm)		H=1.09t/(0.09+t/D)并试验 完好性; D>150mm不做	H=1.09t/(0.09+t/D) 并试验完好性	S≤10mm, H=1.09S/(0.09+S/D)	选做S≤10mm, H=1.09S/(0.09+S/D)
扩口试验 Flaring Test		a=600, 扩口率9-17%D, T<10mm不做	a=600, 扩口率20%D	S≤10mm, GB/T242, a=600, 扩口率:18%D	选做S≤10mm, GB/T242, a=300 400 600 扩口10%D
晶粒度 Grain Size			JIS G0551 7#或更粗	90	
水压 Hydraulic Test (Mpa)	P=2St/D, S=20000Psi(138Mpa); 超声波、涡流、 水压任选一种	试验压力7Mpa; 或P=2St/D; 公式中S=70%Rp0.2; 可做涡流代替	P=2St/D,公式中R=Mr/4; 可用无损探伤代替	8	GB/T241, P=25R/D 式中R=40%Rm, Pmax=20, 可用涡流探伤GB/T7735 A级或GB/T5777C12.5 代替水压
退火Heat Treatment	Requirement	Requirement	Requirement	Requirement	Requirement
外径公差 Tolerance For O.D. (mm)	外径(D) 允许偏差 10~<16 ±0.13 16~38 ±0.19 >38~76 ±0.25 >76~114 ±0.38 >114~152 ±0.51 >152~168 ±0.64 >168~219 ±0.79 >219~356 +1.57/-0.79 >356~610 +3.18/-0.79	外径 允许偏差 D3 ±0.7%与±0.30mm 选较大者执行 D4 ±0.5%与±0.10mm 选较大者执行	外径(D) 允许偏差 <60 ±0.25 60~<80 ±0.30 80~<100 ±0.40 100~<120 +0.4/-0.6 120~<160 +0.4/-0.8 160~<200 +0.4/-1.2 ≥200 +0.4/-1.6	外径(D) 允许偏差 6~30 +0.15/-0.2 >30~50 ±0.30 >50 ±0.75%D	外径 普通级 较高级 6~10 ±0.20 ±0.15 >10~30 ±0.30 ±0.20 >30~50 ±0.40 ±0.30 >50 ±0.9%D ±0.8%D
壁厚公差 Tolerance For W.T. (mm)	壁厚S 允许偏差 10~<16 ±15% 16~114 ±10% >114~219 ±12.5% >219~610 +15%/-12.5%	壁厚S 允许偏差 T3 ±10%与±0.20mm 选较大者执行 T4 ±7.5%与±0.15mm 选较大者执行	壁厚S 允许偏差 D<40,t<2 +0.4/0 D<40,t≥2 +20%t-0 D≥40 +20%t-0	壁厚S 允许偏差 ≤38 +20%,-0 >38 +22%,-0	壁厚S 普通级 较高级 ≤3 ±0.14%S +12.5S -10%S >3 +12.5S ±10%S
弯曲度Bending (mm/m)	Reasonably Straight	≤0.0015L (管长)及3mm/m	实用性平直	≤1.5mm/m	S≤15 ≤1.5mm/m S>15 ≤2mm/m
硬度Hardness	HRB≤290 (S32750/S32760≤300) HRC≤30(S32750≤32)		HRB≤90(特殊要求)		可选硬度试验HRB≤90 协商, 外径≤38mm的约交装置用 壁厚允许偏差可按±0.10%交 货, 外径>38mm的约交装置用 壁厚允许偏差可按±0.11%交货

▼ Outer Diameter and Wall Thickness
AISI B36.10 B36.19

公称直径		AISI B36.10 B36.19																	
ND	NPS	D	Sch5S	Sch10S	Sch10	Sch20	Sch30	Sch40S	STD	Sch40	Sch60	Sch80	XS	Sch80S	Sch100	Sch120	Sch140	Sch160	XXS
6	1/8	10.3	-	1.24	-	-	-	1.73	1.73	1.73	-	2.41	2.41	2.41	-	-	-	-	-
8	1/4	13.7	-	1.65	-	-	-	2.24	2.24	2.24	-	3.02	3.02	3.02	-	-	-	-	-
10	3/8	17.1	-	1.65	-	-	-	2.31	2.31	2.31	-	3.20	3.20	3.20	-	-	-	-	-
15	1/2	21.3	1.65	2.11	-	-	-	2.77	2.77	2.77	-	3.73	3.73	3.73	-	-	-	4.78	7.47
20	3/4	26.7	1.65	2.11	-	-	-	2.87	2.87	2.87	-	3.91	3.91	3.91	-	-	-	5.56	7.82
25	1	33.4	1.65	2.77	-	-	-	3.38	3.38	3.38	-	4.55	4.55	4.55	-	-	-	6.35	9.09
32	1 1/4	42.2	1.65	2.77	-	-	-	3.56	3.56	3.56	-	4.85	4.85	4.85	-	-	-	6.35	9.70
40	1 1/2	48.3	1.65	2.77	-	-	-	3.68	3.68	3.68	-	5.08	5.08	5.08	-	-	-	7.14	10.15
50	2	60.3	1.65	2.77	-	-	-	3.91	3.91	3.91	-	5.54	5.54	5.54	-	-	-	8.74	11.07
65	2 1/2	73.0	2.11	3.05	-	-	-	5.16	5.16	5.16	-	7.01	7.01	7.01	-	-	-	9.53	14.02
80	3	88.9	2.11	3.05	-	-	-	5.49	5.49	5.49	-	7.62	7.62	7.62	-	-	-	11.13	15.24
90	3 1/2	101.6	2.11	3.05	-	-	-	5.74	5.74	5.74	-	8.08	8.08	8.08	-	-	-	-	-
100	4	114.3	2.11	3.05	-	-	-	6.02	6.02	6.02	-	8.56	8.56	8.56	-	11.13	-	13.49	17.12
125	5	141.3	2.77	3.4	-	-	-	6.55	6.55	6.55	-	9.53	9.53	9.53	-	12.7	-	15.88	19.05
150	6	168.3	2.77	3.4	-	-	-	7.11	7.11	7.11	-	10.97	10.97	10.97	-	14.27	-	18.26	21.95
200	8	219.1	2.77	3.76	-	6.35	7.04	8.18	8.18	10.31	12.7	12.7	12.7	15.09	18.26	20.62	23.01	22.23	22.23
250	10	273.1	3.40	4.19	-	6.35	7.80	9.27	9.27	12.70	15.09	12.70	12.70	18.26	21.44	25.40	28.58	25.40	25.40
300	12	323.9	3.96	4.57	-	6.35	8.38	9.53	9.53	10.31	14.27	17.48	12.70	12.70	21.44	25.40	28.58	33.32	25.40
350	14	355.6	3.96	4.78	6.35	7.92	9.53	-	9.53	11.13	15.09	19.05	12.70	-	23.83	27.79	31.75	35.71	-
400	16	406.4	4.19	4.78	6.35	7.92	9.53	-	9.53	12.70	16.66	21.44	12.70	-	26.19	30.96	36.53	40.49	-
450	18	457.2	4.19	4.78	6.35	7.92	11.13	-	9.53	14.27	19.05	23.83	12.70	-	29.36	34.93	39.67	45.24	-
500	20	508.0	4.78	5.54	6.35	9.53	12.70	-	9.53	15.09	20.62	26.19	12.70	-	32.54	38.10	44.45	50.01	-
550	22	559	4.78	5.54	6.35	9.53	12.70	-	9.53	-	22.23	28.58	12.70	-	34.93	41.28	47.63	53.98	-
600	24	610	5.54	6.35	6.35	9.53	14.27	-	9.53	17.48	24.61	30.96	12.70	-	38.89	46.02	52.37	59.54	-
650	26	660	-	-	7.92	12.70	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-
700	28	711	-	-	7.92	12.70	15.88	-	9.53	-	-	-	12.70	-	-	-	-	-	-
750	30	762	6.35	7.92	7.92	12.70	15.88	-	9.53	-	-	-	12.70	-	-	-	-	-	-
800	32	813	-	-	7.92	12.70	15.88	-	9.53	17.48	-	-	12.70	-	-	-	-	-	-
850	34	864	-	-	7.92	12.70	15.88	-	9.53	17.48	-	-	12.70	-	-	-	-	-	-
900	36	914	-	-	7.92	12.70	15.88	-	9.53	19.05	-	-	12.70	-	-	-	-	-	-
950	38	965	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-
1000	40	1016	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-
1050	42	1067	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-
1100	44	1118	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-
1150	46	1168	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-
1200	48	1219	-	-	-	-	-	-	9.53	-	-	-	12.70	-	-	-	-	-	-