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不锈钢无缝管
STAINLESS STEEL SEAMLESS PIPE

温州利昶丰科技有限公司

WENZHOU LEAPROF TECHNOLOGY CO., LTD.

LEAPROF TECHNOLOGY

COMPANY PROFILE
企业简介

温州利昶丰科技有限公司是一家从事不锈钢生产加工，国内外销售为一体的专业服务型公司，集各种不锈钢管道产品为一体，提供各种材质换热管、不锈钢精密管、汽车摩托车用管、仪表电热用管、卫生级管、工业用管以及配套的闸阀、球阀、止回阀、蝶阀、控制阀等系列产品，为国内外客户提供一站式不锈钢管道产品服务。

执行标准： ASTM304, 304L, 316L; DIN1.4301, 1.4307, 1.4404等

公司坚持以"质量为先、诚信为本"的经营宗旨，热忱欢迎国内外客商、各界人士惠顾、洽谈和合作，携手共进、互利共赢。

OUR STRENGTH

我们的实力

研发能力

致力于镍铬合金以及不锈钢深加工产品的技术研发，通过新旧动能转换，延长产业链条，提高产品附加值，生产产品精良、稳定、加工性能佳，受到市场一致好评。

制造能力

自有生产基地，公司追求生产的准确性、精化性，不断完著自己的精益生产方式包括每一个零部件，都严格按标准精心打造，确保产品的高品质。

检测能力

拥有进口直读光谱仪、超声波探伤、涡流探伤、低温冲击试验、水压试验机等先进的检测设备，从原材料到生产工艺到检验检测方法都进行严格、有效的控制。

服务能力

致力于提供完善的售前、售中、售后服务，我们的销售团队全天在线，我们的工程师随时待命，以确保能快速回复您的询问，并给予专业的建议和贴心的售后服务。

STAINLESS STEEL SEAMLESS PIPE

不锈钢无缝管

规格Size range :
Φ6mm-630mm x 0.8mm-80mm

材质Material :
GB(China Standard) : 0Cr18Ni9Ti, 0Cr18Ni9, 0Cr25Ni20, 00Cr19Ni10, OCr17Ni12Mo2
00Cr17Ni14Mo2, OCr18Ni12Mo2Ti, 0Cr19Ni13Mo3, 00Cr19Ni13Mo3

ASTM/ASME material: 304/304L, 316/316L, 316Ti, 321/H, 309S/H, 310S/H, 317/L, 347/H
N08904, S31254, 800/H, S31803, 32205, S32750, S32760

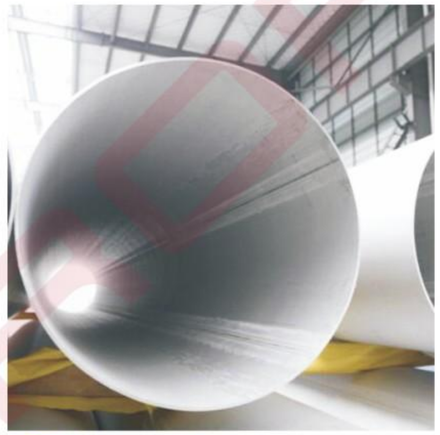
STAINLESS STEEL WELDED PIPE

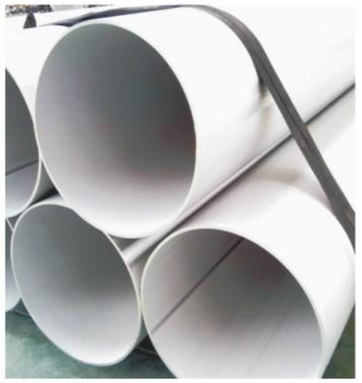
不锈钢焊管

规格Size range :
Φ6mm-2020mm x 0.6mm- 100mm

材质Material :
GB(China Standard) : 0Cr18Ni9Ti, 0Cr18Ni9, 0Cr25Ni20, 00Cr19Ni10,
OCr17Ni12Mo2, 00Cr1 7Ni14Mo2,
OCr18Ni12Mo2Ti, 0Cr19Ni13Mo3, 00Cr 19Ni13Mo3

ASTM/ASME material: 304/L/H, 316/L/H, 316Ti, 321/H, 309S/H, 310S/H,
317/L, 347/H , N08904, S31254, 800/H, S31803,
32205, S32750, S32760





INDUSTRIAL APPLICATION FIELD

工业应用领域

耐蚀合金
CORROSION RESISTANT ALLOY
金属材料在腐蚀介质中所具有的抵抗介质侵蚀的能力，称耐蚀性。采用合金化方法获得耐蚀合金：提高金属或合金的热力学稳定性；加入易钝化合金元素：加入促使合金表面生成致密腐蚀产物保护膜的合金元素。用于海洋与化学加工设备、泵、阀门零部件、容器等。

双相不锈钢
DUPLEX STAINLESS STEEL

沉淀硬化钢
PRECIPITATION HARDENING STEEL

高温合金
HIGH TEMPERATURE ALLOY
高温合金主要用于制造航空、舰艇和工业用燃气轮机的涡轮叶片、导向叶片、涡轮盘、高压压气机盘和燃烧室等高温部件。还用于制造航天飞行器、火箭发动机、核反应堆、石油化工设备以及煤的转化等能源转化装置。

特殊不锈钢
SPECIAL STAIN L ESS STEEL
耐空气、蒸汽、水等弱腐蚀介质和酸、碱、盐等化学浸蚀性介质腐蚀的钢。有圆钢、管件、锻件、法兰等，在高温下强度高，变形抗力大，增加了锻造成形的难度，适合制造螺栓、排气阀等。可定做各种非标材料。

TEXTURE OF WOOD

材质

镍200 UNS 2200 / W Nr 2. 4060
99.6%高精度镍，有良好的机械性能，良好的耐水腐蚀，用于在食品、合成纤维、苛性碱等处理时保持产品的纯度，也用于化工海运容器、电器电子部件、航空航天和导弹元件。

NICKEL 200, UNS N02200 / W. Nr 2. 4060
Commercially pure wrought nickel (99.6%) with good mechanical properties andaqueous corrosion resistance. useful for maintaining product purity in the handling offoods, synthetic fibers, and caustic alkali. Other application include chemicalshipping drums, electrical and electronic parts, aerospace and missile components.

镍201 UNS 2201 / W Nr 2. 4061
近似镍200，但有少量碳元素来防止在315°C高温上的细粒度的脆化。主要应用于腐蚀性的蒸发器、燃烧皿、 镀金棒材和电子元件。

NICKEL 201, UNS N02201/ W. Nr. 2. 4061
Similar to Nickel 200 but with low carbon controlled to prevent inter granularembrittlement at above 315C . Typical applications arecaustic evaporators,combustion boats, plater bars, and electronic components.

400合金UNS N04400 / W Nr 2. 4360
镍铜合金，在大范围温度下有高强度和强韧性，在许多腐蚀环境下有出色的抗腐蚀功能。许多领域应用，特别是在轮船制造和化工制造。

ALLOY 400, UNS N04400 / W. Nr. 2. 4360
Is a Ni-Cu Alloy with high strength and toughness over a wide temperature rangeand excellent resistance to many corrosive environment. Used in many fields,especially Marine and Chemicalprocessing.

K-500合金UNS N05500 / W Nr 2. 4375
镍铜合金，除具有合金400的优秀耐腐蚀性外，通过添加铝和钛来增强强度和硬度。

ALLOY K-500, UNS N05500 1 W. Nr. 2. 4375
Is a Ni-Cu Alloy which combines the excellent corrosion resistance of Alloy 400with the added advantages of greater strength and hardness by adding aluminumand titanium following with age hardening,

718合金UNS N07718 / W Nr 2. 4668
沉淀硬化的镍铬合金，耐腐蚀，耐氧化，耐高温700°C下都保持高强度。有良好的拉力、韧性和稳定性，可焊接。广泛用于石油石化、燃气涡轮等许多工业领域。

ALLOY 718, UNS N07718 / W.. Nr. 2. 4668
Is a precipitation hardened Ni-Cr alloy which has high strength and corrosionresistant for service temperature up to 700C. It can be fabricated, combined withgood tensile, fatigue, creep, and rupture strength. Used in a wide range Olapplications (Oil & Gas, Gas Turbines, and many Industrial fields)

X-750合金UNS N07750 / W Nr 2. 4669
沉淀硬化的镍铬合金，耐腐蚀，耐氧化，耐高温700C下都保持高强度。甚至到低温都有良好的性能，广泛用于工业领域。

ALLOY X-750, UNS N07750 / W. Nr. 2. 4669
Is a precipitation hardened Ni-Cr alloy used for its corrosion and oxidation resistanceand high strength at temperatures to 7009C . has excellent properties down tocryogenic temperatures. used in a wide variety of industrial fields.

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80A合金UNS N07080 / W Nr 2. 4952和2. 4631
加钛铝碳元素的沉淀硬化的镍铬合金，工作温度可到815° C，用于燃气涡轮元件(叶片、圆环和圆盘)，螺栓和核电锅炉管。

ALLOY 80A, UNS N07080 / W. Nr. 2. 4952 & 2. 4631
Is a precipitation hardened Ni-Cr alloy, strengthened by additions of titanium, alunminumand carbon, developed for service at temperatures UP to 815'C. sed for gas turbinecomponents (blades, rings and discs), bolts, nuclear boiler tube supports.

600合金UNS N06600 / W Nr 2. 4816
镍铬铁合金，许多有机成分和无机成分组合致使此合金耐腐蚀。耐高温时的氧化，以及其他腐蚀环境下的氧化。从低温到1095° C都应用，广泛用于化工、造纸、热处理、航空和核电等工业领域。

ALLOY 600, UNS N06600 / W. Nr. 2. 4816
Is a Ni-Cr-Fe Alloy, it has resistance to corrosion by many organic and inorganiccompounds. Resistance to oxidizing conditions at high temps. or in corrosive solutions.used In a variety of applications involving temperatures from' cryogenic to above1095'C. in wide range industrial fields (Chemical, Pulp and Paper. Heat Treating. Aircraft,and Nuclear Power Generation).

690合金UNS N06690 / W Nr 2.4642
镍铬铁合金，在许多腐蚀水质环境和高温环境都有良好的耐腐蚀性，耐高温性。高强度，良好的冶金稳定性。用于氮酸制造、煤气化设备、石油化工和核电等领域。

ALLOY 690, UNS N06690 / W. Nr. 2. 4642
Is a Ni-Cr-Fe alloy with excellent resistance to many corrosive aqueous media and hightemperature atmospheres, has high strength, good metallurgical stability. use for variousapplications (Nitric Acid production,Coal GasificationUnits,Petrochemical Processing,Nuclear Power Generationl).

X合金UNS N06002 / W Nr
镍铬铁合金，加工时添加" 了抗氧化物质。良好的加工性能，高温时有强度。在高温650, 760， 870° C放 1600小时后有良好的柔软性。在石油化工应用有良好的耐裂缝腐蚀。广泛用于涡轮机，热处理和化工。

ALLOY x, UNS N06002 / W. Nr.
Is a Ni-Cr-Fe alloy that possesses an exceptional combination of oxidation resistance,fabric ability and high temperature strength. good ductility after prolonged exposure attemperatures of 650, 760 and 870'C for 16,000 hours. It also has resistance to stresscorrosion cracking in petrochemical applications. Widely use in gas turbine engines forcombustion zone components, Heat Treating Industries and Chemical Processing.

020合金UNS N08020
镍铬铁合金，在含硫酸的化工环境有出色的耐腐蚀性，在含氯化物，氮酸和磷酸的环境有有效的耐腐蚀性。应用于水质腐蚀环境。

ALLOY 020, UNS N08020
Is a Ni-Cr-Fe Alloy, it has excellent corrosion resistance in chemical environmentscontaining sulfuric acid, and useful resistance to environments containing chlorides, nitricacid, and phosphoric acid. Applications for alloy 020 requiring resistance to aqueouscorrosion are essentially the same as those for Alloy 825.

028合金UNS N08028 / W Nr 2. 453
含不锈钢成份的合金，用于腐蚀环境，在酸性环境，硫酸环境和盐性环境都有耐腐蚀性。用于化工和石油化工工业。

ALLOY 028, UNS N08028 / W. Nr. 2. 453
Is a highly alloyed austenitic stainless steel offering resistance to a variety Of corrosivemedia resistance to both oxidizing and reducing acids and salts. resistance to sulfuric acid.Used in the chemical and petrochemical processing industry

625合金UNS N06625 / W Nr 2. 4856
镍铬钼合金，高强度，良好的加工性能，出色的耐腐蚀性。耐点状和裂缝腐蚀。良好的耐疲劳性。高拉伸强度，耐氯离子裂缝腐蚀。从低温到982° C都可用。广泛用于工业领域。

ALLOY 625, UNS N06625 / W. Nr. 2. 4856
Is a Ni Cr Mo Alloy with high strengh, excellent fabric ability and outstanding corrosionresistance. freedom from local attack (pitting and crevice corrosion), high corrosion fatiguestrength, high tensile strength, and resistance to chloride ion stress corrosion cracking.Service temperatures range from cryogenic to 982C. used in wide range industrial fields.

725合金UNS N07725
沉淀硬化的镍铬钼合金，合金625的升级版，强度是625的两倍。耐腐蚀性同625.抗氢气，氯气和二氧化碳的腐蚀，使得此合金用于酸性气体工业。抗海水的点状和裂缝腐蚀，使得此合金用于做轮船的紧固件。

ALLOY 725, UNS N07725
Is a precipitation hardened Ni-Cr-Mo Alloy, an upgrade version of Alloy 625. The strengthof alloy 725 is twice than annealed alloy 625. It has essentially the same corrosionresistance· as alloy 625. Used for hangers, landing nipples, side pocket mandrels andpolished bore receptacles in sour gas service, where it resists the effects of hydrogensulfide, chlorides and carbon dioxide. also attractive for high strength fasteners in marineapplications, where it resists corrosion, pitting and crevice attack in sea Water.

686台金UNS N06686 / W Nr 2. 4606
单相镍铬钼钨合金，在苛刻的环境有出色的耐腐蚀性。耐点状和裂缝腐蚀。用于化工，污染控制，造纸和废物处理。

ALLOY 686, UNS N06686 / W. Nr. 2. 4606
Is a single phase, austenitic Ni-Cr-Mo-W Alloy which has outstanding corrosion resistancein a range of severe environments. Has resistance to general, pitting and crevice có rrosionincreases with the alloying (Cr+Mo+W) content. Used for resistance to aggressive media inchemical processing, pollution control, pulp and paper manufacture, and wastemanagement applications.

C-4合金UNS N06455 / W Nr 2.4610
镍铬钼合金，在高温下有出色的稳定性，良好的柔软性，良好的耐腐蚀性。在甚至到1038° C都有出色的耐裂缝腐蚀，耐氧化。广泛用于化工，如污染的热矿酸，溶剂，氯化物，氯介质，干氯化物，乙酸，无水醋酸，海水和盐水。

ALLOY C-4, UNS N06455 / W. Nr. 2.4610
Is a Ni-Cr-Mo alloy with outstanding high temperature stability, high ductility and corrosionresistance, has excellent resistance to stress corrosion cracking and to oxidizing,atmospheres up to 1038C. has exceptional resistance to wide variety of chemical processenvironments. include hot contaminated mineral acids, solvents, chlorine and chlorinecontaminated media (organic and inorganic), dry chlorine, formic and aceticacids,aceticanhydride, and seawater and brine solutions.

TEXTURE OF WOOD

材质

C-22合金UNS N06022 / W Nr 2. 4602

添加钨的镍铬钼合金，出色的耐点状和裂缝腐蚀。用于化工，高温环境和海水盐水环境。

C-2000合金UNS N06200 / W Nr 2.4675

添加铜的镍铬钼合金，在大范围的温度下耐所有酸。耐点状和裂缝腐蚀。用于化工、制药、供暖系统。

G-30合金UNS N06030 / W Nr 2.4603

镍铬钼合金，在磷酸、硫酸、硝酸等高氧化酸性环境有超级耐腐蚀性。用于化工和石油化工。

G-35合金UNS N06035 / W Nr 2.4643

镍铬钼合金，在潮湿的酸性环境，氧化酸性环境，碱性的介质和氯离子介质的环境有良好的耐腐蚀性。

800合金UNS N08800 / W Nr 1.4876

镍铁铬合金，对许多介质有耐腐蚀性.耐裂缝腐蚀。 抗氧化。使用温度直到816° C。用于石油和天然气化工，石油化工，造纸，电力等腐蚀和高温环境。

800H合金UNS N08810 / W Nr 1. 4958

镍铁铬合金，比合金800强度更好。含碳量是0.05%-0.10%，铝+钛是0.30%- 1.20%。高温下有良好强度。

800HT合金UNS N08811 / W Nr 1. 4959

镍铁铬合金，压力性能比合金800H好。含碳量是0.06% - 0.10%，铝+钛是0.85%-1.20%。

825合金UNS N08825 / W Nr 2.4858

添加钼、铜和钛的镍铁铬合金，耐点状和裂缝腐蚀。在氧化物质和盐性物质有耐腐蚀性。用于化工、污染控制、石油和天然气，酸制造、酸洗、原子能燃料回收、辐射废物处理。用途类似合台020.

925合金UNS N09925

添加钼、铜、钛和铝的镍铁铬合金，是合金825的升级版，有更好的强度。用于气井井下和地表管道等元件，也用于紧固件、轮船、水泵、高强度配件系统。

B-2合金UNS N10665

镍钼合金，对氢酸有出色的耐腐蚀性，也耐氢氯酸、硫酸、乙酸、磷酸。耐点状和裂缝腐蚀。

B-3台金UNS N10675 / W Nr 2.4600

镍钼合金，列氢酸有出色的耐腐蚀性，也耐氢氯酸、硫酸、乙酸、磷酸等酸性介质。

C-276合金UNS N102765 / W Nr 2.4819

镍钼铬合金，耐点状和裂缝腐蚀性能出色，耐氧化环境，温度可到1038° C。大量用于化工制造设备，使用在强氧化物，热质环境(有机和无机的)，氯化物、海水盐水环境的化工设备。

ALLOY C-22, UNS N06022 / W. Nr. 2. 4602

Is a Ni-Cr-Mo alloy with addition of Tungsten, It has outstanding resistance to pitting, crevice corrosion,and stress corrosion cracking. oxidizing aqueous media including wet chlorine and mixtures containingnitric acid or oxidizing acids with chloride ions. used in wide variety of chemical process environments,including strong oxidizers such as ferric and cupric chlorides, chlorine, hot contaminated solutions(organic and inorganic), formic and acetic acids, acetic anhydride, and seawater and brine solutions.

ALLOY C-2000, UNS N06200 / W. Nr. 2. 4675

Is a Ni-Cr-Mo alloy with addition of Copper, to provide enhanced temperature capability in sulfuric acid,hydrofluoric acid, and dilute hydrochloric acid. It has resistance to all acids (especially Hydrochloric,sulfuric, hydrofluoric) over large temperature range. Also has resistance to piting, crevice attack, andstress corrosion cracking. Used in Chemical processing, Pharmaceutical, and Flue Gas Desulfurizationsystems.

ALLOY G-30, UNS N06030 / W. Nr. 2. 4603

Is a Ni-Cr-Mo alloy which has superior corrosion resistance to commercial phosphoric, sulfuric,nitric / hydrochloric, nitric / hydrofluoric acids and other complex environments containing highlyoxidizing acids. Used in Chemical and petrochemical processing.

ALLOY G-35, UNS N06035 / W. Nr.2. 4643

Is a Ni-Cr-Mo alloy with outstanding corrosion resistance to. wet process phosphoric acid, otheroxidizing acids, alkalis, and chloride bearing media.

ALLOY 800, UNS N08800 / W. Nr. 1. 4876

Is a Ni-Fe-Cr Alloy with general corrosion resistance to many aqueous media and stress corrosioncracking. Resistance to oxidation, carburization, and sulfidation along with rupture and creep strength atelevated temperatures. for service up to 816C. used in a variety of applications involving exposure tocorrosive environments and high temperatures in Oil and Gas, Chemical & Petrochemical processing,Paper & Pulp, Power Generations.

ALLOY 800H, UNS N08810 / W. Nr. 1. 4958

Is a Ni-Fe- -Cr Alloy which has higher design stresses than Alloy 800 (ASME Code Case · 1325 7)Carbon is 0.05 to 0.10%, Aluminum+Titanium is 0:30 to 1.20% also an average. grain size of ASTM 5,orcoarser. Have superior creep and rupture strength during extended high temperatureexposure.

ALLOY 800HT, UNS N08811 / W. Nr.1. 4959

Is a Ni-Fe-Cr Alloy, it has higher maximum allowable design stresses than Alloy 800H Carbon is 0.06 to0.10%, Aluminum+Titanium is 0.85 to 1 .20% It also has higher creep and strèss rupture properties thanAlloy 800H.

ALLOY 825, UNS N08825] W. Nr. 2. 4858

Is a Ni--Fe-Cr Alloy with additions of Mo, Cu, and Ti. has resistance to chloride ion stress corrosioncracking, pitting and crevice corrosion, reducing environments, variety of oxidizing substances andoxidizing salt. General and localized corrosion under diverse conditions. Usedin chemical processing, pollution control, oil and gas recovery, acid production, pickling operations,nuclear fuel reprocessing,, and handling of radioactive wastes. Applications for alloy 825 are similar tothose for Alloy 020.

ALLOY 925, UNS N09925

Is a Ni-Fe-Cr Alloy with additions of molybdenum, copper, titanium and aluminum. an upgrade versionof Alloy 825 with higher strength obtainable by age hardening. resistance to sulfide stress cracking andstress corrosion cracking in sou (H2S containing) crude oil and natural gas. used for down hole andsurface gas well components including tubular products, valves, hangers, landing nipples, tool jointsand packers. The alloy is also useful for fasteners, marine and pump shafting and highstrength pipingsystems.

ALLOY B-2, UNS N10665

Is a Ni-Mo alloy with excellent resistance to hydrochloric acid at all concentrations and temperatures. Italso withstands hydrogen chloride, sulfuric, acetic and phosphoric acids. The alloy has excellentresistance topitting, to stress corrosion cracking and to knife line and heat affected zone attack.

ALLOY B-3, UNS N10675 / W. Nr. 2. 4600

Is a Ni-Mo Alloy with excellent resistance to hydrochloric acid at all concentrations and témperatures. Italso withstands sulfuric, acetic. formic and phosphoric acids, and other non oxidizing media.

ALLOY C-276, UNS N10276 / W. Nr.2. 4819

Is a Ni-Mo-cr Alloy has excellent resistance to pitting, stress corrosion cracking, and oxidizingatmospheres up to 1038 deg. C. resistance to a wide variety of chemical process environments,including strong oxidizers, hot contaminated medla (organic and inorganic), chlorine, formic and aceticacids, acetic anhydride, and seawater and brine solutions.

MATERIAL STELECTION

材料故障

Chemical Composition

Nickel		Ni	Fe	Cu	Mn	C	Si	S
Nickel 200	N02200	99.0 min	0.4 max	0.25 max	0.35 max	0.15 max	0.35 max	0.010 max
Nickel 201	N02201	99.0 min	0.4 max	0.25 max	0.35 max	0.02 max	0.35 max	0.010 max

Ni-Cu Alloy		Ni	Cu	Fe	Mn	C	Si	S	Al	Ti
Alloy 400	N04400	63.0 min	28.0 34.0	2.5 max	2.0 max	0.30 max	0.50 max	0.024 max		
Alloy K-500	N05500	63.0 min	27.0 33.0	2.0 max	1.5 max	0.18 max	0.50 max	0.010 max	2.30 3.15	035 0.85

Ni-Cr-Fe Alloy		Ni	Cr	Fe	Mo	Cu	Mn	C	Si	S	P	Nb+Ta	Co	W
Alloy 600	N06600	72.0 min	14.0 17.0	6.0 10.0		0.50 max	1.00 max	0.15 max	0.50 max	0.015 max				
Alloy 690	N06690	58.0 min	27.0 31.0	7.0 11.0		0.50 max	0.50 max	0.05 max	0.50 max	0.015 max				
Alloy X	N06002	Remainder	20.5 23.0	17.0 20.0	8.0 10.0	Remainder	1.00 max	0.05 0.15	1.00 max	0.030 max	0.040 max		0.50 2.50	0.20 1.00
Alloy 020	N08020	32.0 38.0	19.0 21.0	Remainder	2.0 3.0	3.0 4.0	2.00 max	0.07 max	1.00 max	0.035 max	0.045 max	8xC 1.00		
Alloy 028	N08028	30.0 34.0	26.0 28.0	Remainder	3.0 4.0	0.60 1.40	2.50 max	0.03 max	1.00 max	0.030 max	0.030 max			

Ni-Cr Alloy		Ni	Cr	Fe	Mo	Nb+Ta	Al	Ti	Mn	C	Si	S	P	Cu	Co	B
Alloy 718	N07718	50.0 55.0	17.0 21.0	Remainder	2.8 3.3	4.75 5.50	0.20 0.80	0.65 1.15	0.35 max	0.08 max	0.35 max	0.015 max	0.015 max	0.30 max	1.00 max	0.006 max
Alloy X-750	N07750	70.0 min	14.0 17.0	5.0 9.0		0.70 1.20	0.40 1.00	2.25 2.75	1.00 max	0.08 max	0.50 max	0.010 max		0.50 max	1.00 max	
Alloy 80A	N07080	Remainder	18.0 21.0	3.0 max			0.50 1.80	1.80 2.70	1.00 max	0.10 max	1.00 max	0.015 max				

Ni-Cr-Mo Alloy		Ni	Cr	Mo	Fe	Mn	C	Si	S	P	Nb+Ta	Al	Ti	Cu	W	Co	V
Alloy 625	N06625	58.0 min	20.0 23.0	8.0 10.0	5.0 max	0.50 max	0.10 max	0.50 max	0.015 max	0.015 max	3.15 4.15	0.40 max	0.40 max				
Alloy-725	N07725	55.0 59.0	19.1 22.5	7.0 9.5	Remainder	0.35 max	0.03 max	0.20 max	0.010 max	0.015 max	2.75 4.00	0.35 max	1.00 1.7				
Alloy 686	N06686	Remainder	19.0 23.0	15.0 17.0	5.0 max	0.75 max	0.01 max	0.08 max	0.020 max	0.040 max			0.02 0.25		3.00 4.40		
Alloy C-4	N06455	Remainder	14.0 18.0	14.0 17.0	3.0 max	1.00 max	0.015 max	0.08 max	0.030 max	0.040 max			0.70 max			2.00 max	
Alloy C-22	N06022	Remainder	20.0 22.5	12.5 14.5	2.0 6.0	0.50 max	0.015 max	0.08 max	0.020 max	0.020 max					2.50 3.50	2.50 max	0.35 max
Alloy C-2000	N06200	Remainder	22.0 24.0	15.0 17.0	3.0 max	0.50 max	0.01 max	0.08 max	0.010 max	0.025 max		0.50 max		1.30 1.90		2.00 max	
Alloy G-30	N06030	Remainder	28.0 31.5	4.0 6.0	13.0 17.0	1.50 max	0.03 max	0.80 max	0.020 max	0.040 max	0.30 1.50			1.00 2.40	1.50 4.00	5.00 max	
Alloy G-35	N06035	Remainder	32.25 34.25	7.6 9.0	2.0 max	0.50 max	0.05 max	0.60 max	0.015 max	0.030 max		0.40 max		0.30 max	0.60 max	1.00 max	0.20 max

Ni-Fe-Cr Alloy		Ni	Fe	Cr	Mn	C	Si	S	P	Al	Ti	Mo	Cu	Nb	Al+Ti
Alloy 800	N08800	30.0 35.0	39.5 min	19.0 23.0	1.5 max	0.10 max	1.00 max	0.015 max		0.15 0.60	0.15 0.60		0.75 max		
Alloy-800H	N08810	30.0 35.0	39.5 min	19.0 23.0	1.5 max	0.05 0.10	1.00 max	0.015 max		0.15 0.60	0.15 0.60		0.75 max		
Alloy 800HT	N08811	30.0 35.0	39.5 min	19.0 23.0	1.5 max	0.06 0.10	1.00 max	0.015 max		0.15 0.60	0.15 0.60		0.75 max		0.85 1.20
Alloy 825	N08825	38.0 46.0	22.0 min	19.5 23.5	1.0 max	0.05 0.10	0.50 max	0.030 max		0.20 max	0.60 1.20	2.5 3.5	1.50 3.00		
Alloy 925	N09925	42.0 46.0	22.0 min	19.5 22.5	1.0 max	0.03 max	0.50 max	0.030 max	0.030 max	0.10 0.50	1.90 2.40	2.5 3.5	1.50 3.00	0.50 max	

Ni-Mo Alloy		Ni	Mo	Cr	Fe	Mn	C	Si	S	P	W	Co	V	Cu	Al	Ti	Nb	Ta	Zr
Alloy B-2	N10665	Remainder	26.0 30.0	1.0 max	2.0 max	1.0 max	0.02 max	0.10 max	0.030 max	0.040 max		1.00 max							
Alloy B-3	N10675	65.0 min	27.0 32.0	1.0 3.0	1.0 3.0	3.0 max	0.01 max	0.10 max	0.010 max	0.030 max	3.00 max	3.00 max	0.20 max	0.20 max	0.50 max	0.20 max	0.20 max	0.20 max	0.10 max

Ni-Mo-Cr Alloy		Ni	Mo	Cr	Fe	Mn	C	Si	S	P	W	Co	V
Alloy C-276	N10276	Remainder	15.0 17.0	14.5 16.5	4.0 7.0	1.00 max	0.01 max	0.08 max	0.030 max	0.040 max	3.00 4.50	2.50 max	0.35 max

TYPICAL MECHANICAL PROPERTIES
典型机械性能

Alloy	UNS Designation	EN / DIN W.Nr.	Condition	Tensile Strength		Yield Strength		Elongation	Hardness NACE MR-0175
				ksi	Mpa	ksi	Mpa	%	
Nickel									
Nickel 200	N02200	2.4066	Annealed	55	380	15	105	40	
Nickel 201	N02201	2.4068	Annealed	50	345	10	70	40	
Ni-Cu Alloy									
Alloy 400	N04400	2.4360	Annealed	70	483	25	172	35	HRC 35 max
Alloy K-500	N05500	2.4375	Aged	140	965	100	690	20	HRC 27-35
Ni-Cr Alloy									
Alloy 718	N07718	2.4668	Aged	185	1275	150	1034	12	HRC 35-40
Alloy X-7 50	N07750	2.4669	Aged	170	1170	115	790	18	HRC 35 max
Alloy 80A	N07080	2.4952	Aged	135	930	90	620	20	
Ni-Cr-Fe Alloy									
Alloy 600	N06600	2.4816	Annealed	80	552	35	241	30	HRC 35 max
Alloy 690	N06690	2.4642	Annealed	85	586	35	241	30	
Alloy X	N06002	2.4665	Aged	100	690	35	241	35	HRC 35 max
Alloy 020	N08020	...	Annealed	90	620	45	300	40	HRC 32 max
Alloy 028	N08028	1.4563	Annealed	73	500	31	214	40	HRC 33 max
Ni-Cr-Mo Alloy									
Alloy 625	N06625	2.4865	Annealed	120	827	60	414	30	HRC 35 max
Alloy 725	N07725	...	Aged	150	1034	120	827	20	HRC 43 max
Alloy 686	N06686	2.4606	Sol.Annealed	100	690	45	310	45	HRC 40 max
Alloy C-4	N06455	2.4610	Sol.Annealed	100	690	40	276	40	
Alloy C-22	N06022	2.4602	Sol.Annealed	100	690	45	310	45	HRC 40 max
Alloy C-2000	N06200	2.4675	Sol.Annealed	100	690	41	283	45	
Alloy G-3 0	N06030	2.4603	Sol.Annealed	100	690	45	310	60	HRC 41 max
Alloy C-3 5	N06035	2.4643	Sol.Annealed	85	586	35	241	30	
Ni-Fe-Cr Alloy									
Alloy 800	N08800	1.4876	Annealed	75	517	30	207	30	HRC 35 max
Alloy 800H	N08810	1.4958	Annealed	65	448	25	172	30	HRC 35 max
Alloy 800HT	N08811	1.4959	Annealed	65	448	25	172	30	HRC 35 max
Alloy 825	N08825	2.4858	Annealed	85	586	35	241	30	HRC 35 max
Alloy 925	N09925	...	Aged	140	965	110	758	18	HRC 35 max
Ni-Mo Alloy									
Alloy B-2	N10665	...	Annealed	110	760	51	350	40	
Alloy B-3	N10675	2.4600	Annealed	110	760	51	350	40	
Ni-Mo-Cr Alloy									
Alloy C-27 6	N10276	2.4819	Annealed	100	690	41	283	40	HRC 35 max

规格

Nickel	UNS No	Forgings Billet / Bar for Reforging Bar, Rod, Wire	Plate Sheet Strip	Smls Pipe & Tube Condenser & Heat Exchanger Tube	Fittings ASTM B366	Flanges Forged Fittings Valve Parts	Material for Oilfield Equipment
Nickel							
Nickel 200	N02200	ASTM B564, ASTM B160	ASTM B162	ASTM B161, ASTM B163	WPN		
Nickel 201	N02201	ASTM B160	ASTM B162	ASTM B161, ASTM B163	WPNL		
Ni-Cu Alloy							
Alloy 400	N04400	ASTM B564, ASTM B164	ASTM B127	ASTM B165, ASTM B163	WPNC		NACE MR-017 5
Alloy K-500	N05500	ASTM B865					NACE MR-017 5
Ni-Cr Alloy							
Alloy 718	N07718	ASTM B637, AMS 5662, AMS 5663				ASTM B637	NACE MR-017 5, API 6A718
Alloy X-7 50	N07750	ASTM B637, AMS 5667				ASTM B637	NACE MR-017 5, API 6A718
Alloy 80A	N07080	ASTM B637				ASTM B637	
Ni-Cr-Fe Alloy							
Alloy 600	N06600	ASTM B564, ASTM B472, ASTM B166	ASTM B168	ASTM B167, ASTM B163	WPNCI		NACE MR-017 5
Alloy 690	N06690	ASTM B564, ASTM B166	ASTM B168	ASTM B167, ASTM B163			
Alloy X	N06002	ASTM B472, ASTM B572, ASTM B5754	ASTM B435	ASTM B622	WPHX		NACE MR-017 5
Alloy 020	N08020	ASTM B472, ASTM B473	ASTM B463	ASTM B729	WP20CB	ASRM V462	
Alloy 028	N08028	EN 10088-2	ASTM B709	ASTM B668			NACE MR-017 5
Ni-Cr-Mo Alloy							
Alloy 625	N06625	ASTM B564, ASTM B472, ASTM B446	ASTM B443	ASTM B444	WPNCMC		NACE MR-017 5
Alloy 725	N07725	ASTM B637, ASTM B805				ASTM B637	NACE MR-017 5, API 6A718
Alloy 686	N06686	ASTM B564, ASTM B574	ASTM B575			ASTM B462	NACE MR-017 5
Alloy C-4	N06455	ASTM B574	ASTM B575	ASTM B622	WPHC4		
Alloy C-22	N06022	ASTM B564, ASTM B472, ASTM B574	ASTM B575	ASTM B622	WPHC22	ASTM B462	NACE MR-017 5
Alloy C-2000	N06200	ASTM B564, ASTM B472, ASTM B574	ASTM B575	ASTM B622	WPHC200	ASTM B462	
Alloy G-3 0	N06030	ASTM B472, ASTM B581	ASTM B582	ASTM B622	WPHG30	ASTM B462	NACE MR-017 5
Alloy C-3 5	N06035	ASTM B564, ASTM B472, ASTM B574	ASTM B575	ASTM B622	WPHG35	ASTM B462	
Ni-Fe-Cr Alloy							
Alloy 800	N08800	ASTM B564, ASTM B408	ASTM B409	ASTM B407, ASTM B163	WPNIC		NACE MR-017 5
Alloy 800H	N08810	ASTM B564, ASTM B408	ASTM B409	ASTM B407, ASTM B163	WPNIC10		NACE MR-017 5
Alloy 800HT	N08811	ASTM B564, ASTM B408	ASTM B409	ASTM B407, ASTM B163	WPNIC11		NACE MR-017 5
Alloy 825	N08825	ASTM B564, ASTM B425	ASTM B424	ASTM B423, ASTM B163	WPNICMC		NACE MR-017 5
Alloy 925	N09925	ASTM B637				ASTM B637	NACE MR-017 5, API 6A718
Ni-Mo Alloy							
Alloy B-2	N10665	ASTM B564, ASTM B472	ASTM B333	ASTM B622	WPHB-2	ASTM B462	
Alloy B-3	N10675	ASTM B564, ASTM B472, ASTM B335	ASTM B333	ASTM B622	WPHB-3	ASTM B462	
Ni-Mo-Cr Alloy							
Alloy C-27 6	N10276	ASTM B564, ASTM B472, ASTM B574	ASTM B575	ASTM B622	WPHC-27 6	ASTM B462	NACE MR-017 5

SEAMLESS AND WELDED FERRITIC/AUSTENITIC STAINLESS STEEL NOMINAL TUBES
无缝及焊接的铁素体/奥氏体不锈钢公称管

化学成分要求

UNS 标号①	C ≤	Mn ≤	P ≤	S ≤	Si ≤	Ni	Cr	Mo	N	Cu	其他
S31803	0030	20	0030	0020	10	4.50 ~ 6.50	21.0 ~ 23.0	2.50 ~ 3.50	0.08 ~ 0.20	...	...
S31500	0.030	1.2 ~ 2.00	0.030	0.030	1.40 ~ 2.00	425 ~ 525	180 ~ 190	2.50 ~ 3.00	0.05 ~ 0.10	...	...
S32550	0.040	1.5	0.040	0.030	1.0	5.50 ~ 6.50	24.0 ~ 27.0	2.90 ~ 3.90	0.10 ~ 0.25	1.5 ~ 2.5	...
S31200	0.030	2.0	0.045	0.030	1.0	5.50 ~ 6.50	24.0 ~ 26.0	1.20 ~ 2.00	0.14 ~ 0.20	...	...
S31260②	0.030	1.00	0.030	0.030	0.75	5.50 ~ 7.50	24.0 ~ 26.0	2.50 ~ 3.50	0.10 ~ 0.30	0.20 ~ 0.80	W0.10 ~ 0.50
S32304	0.030	2.50	0.040	0.040	1.0	3.0 ~ 5.5	21.5 ~ 24.5	0.05 ~ 0.60	0.05 ~ 0.20	0.50 ~ 0.60	...
S39274	0.030	1.0	0.030	0.020	0.80	6.0 ~ 8.0	24.0 ~ 26.0	2.50 ~ 3.50	0.24 ~ 0.32	0.20 ~ 0.80	W1.50 ~ 2.50
S32750	0.030	1.2	0.035	0.020	0.80	6.0 ~ 8.0	24.0 ~ 26.0	3.0 ~ 5.0	0.24 ~ 0.32	≤0 .5	...
S32760	0.05	1.00	0.030	0.010	1.00	6.0 ~ 8.0	24.0026.00	3.00 ~ 4.00	0.20 ~ 0.30	0.50 ~ 1.00	W0.50 ~ 1.00 40min.②
S32900	0.08	1.00	0.040	0.030	0.75	2.50 ~ 5.00	23.0028.00	1.00 ~ 2.00	...	...	...
S32950②	0.03	2.00	0.035	0.010	0.60	3.50 ~ 5.20	26.00 ~ 29.00	1.00 ~ 2.50	0.15 ~ 0.35	...	...
S39277	0.025	0.80	0.025	0.002	0.80	6.5 ~ 8.00	24.00 ~ 26.00	3.00 ~ 4.00	0.23 ~ 0.33	1.2 ~ 2.0	W0.8 ~ 1.2
S32520	0.030	1.5	0.035	0.020	0.80	5.5 ~ 8.0	24.00 ~ 26.00	3.00 ~ 5.00	0.20 ~ 0.35	0.5 ~ 3.00	...

① 根据ASTM E527和SAE J1086实用规程，建立了新的UNS标号。

② %Cr+3.3%M0+16x%N.

拉伸性能和硬度要求

UNS标号	抗拉强度 ≥ ，ksi(Mpa)	屈服强度 ≥ ，ksi(Mpa)	2in，或50mm 伸长率，≥ ，%	硬度，≤	
				布氏	洛氏C
S31803	90(620)	65(450)	25	290	30.5
S31500	92(630)	64(440)	30	290	30.5
S32550	110(760)	80(550)	15	297	31.5
S31200	100(690)	65(450)	25	280	...
S31260②	100(690)	65(450)	25	...	...
S32304	87(690)	58(400)	25	290	30.5
S39274	116(690)	80(550)	15	310	...
S32750	116(800)	80(550)	15	310	32
S32760	109-130(> 250~895)	80(550)	25	270	...
S32900	90(620)	70(485)	20	271	28
S32950②	100(690)	70(480)	20	290	30.5
S39277	120(825)	90(620)	25	290	30
S32520	112(770)	80(550)	25	310	...

① 在A790/A790M-87以前，S31260的数值是：抗拉强度92ksi，　屈服强度54ksi.

② 在A790/A790M-87以前，UNS　S32950的抗拉强度值是90ksi.

APPROXIMATE COMPARISON TABLE OF STAINLESS STEEL GRADES BETWEEN CHINA AND SOME COUNTRIES
中国与部分国家的不锈钢号近似对照表

钢类 Type	钢号Steel grades						规格	常用标准
	中国（GB）		美国AISI (ASTM)	日本JIS (Japan)	德国(Germany)		Specification	Common
	旧牌号	新牌号			DIN17006	DIN17007	D-SMM	Standard
不锈钢无缝管 Stainless steel seamless tube	0Cr18Ni9	06Cr19Ni10	304/S30400	SUS304	X5CrNi18-10	1.4301	外径OD: 6mm-630mm 壁厚WT: 0.8mm-80mm	GB/T14975-2002
	00Cr19Ni10	022Cr19Ni10	304L/S30403	SUS304L	X2CrNi19-11	1.4306		GB/T14976-2002
	0Cr25Ni20	06Cr25Ni20	310S/3008	SUS310S	X12CrNi25-21	1.4845		GB13296-91
	0Cr17Ni12Mo2	06Cr17Ni12 Mo2	316/S31600	SUS316	X5CrNiMo17-12-2	1.4401		国外标准（部分）
	00Cr17Ni14 Mo2	02Cr17Ni14 Mo2	316L/S31603	SUS316L	X2CrNiMo18-14-3	1.4435		ASTM A213/A213 M
	0Cr19Ni13 Mo3	06Cr19Ni13 Mo3	317/S31700	SUS317	X5CrNiMo11-13-3	1.4449		ASTM A312/A312M
	00Cr19Ni13 Mo3	022Cr19Ni13 Mo3	317/S31703	SUS317L	X2CrNiMo18-16-4	1.4438		JIS G 3459
	1Cr18Ni9Ti	06Cr18Ni11 Ti	321/S32100	SUS321	X12CrNiTi18-9	1.4878		DIN 2462
	0Cr18Ni10 Ti	06Cr18Ni11 Ti			X6CrNiTi18-10	1.4541		
	0Cr18Ni11 Nb	06Cr18Ni11 Nb	347/S34700	SUS347	X12CrNiNb18-10	1.4550		
不锈钢焊管 Stainless steel Welded tube	0Cr18Ni9	0Cr19Ni10	304/S30400	SUS304	X5CrNi18-10	1.4301	外径OD: 6mm-630mm 壁厚WT: 0.8mm-80mm	GB/T12770-91
	00Cr19Ni10	022Cr19Ni10	304L/S30403	SUS304L	X2CrNi19-11	1.4306		GB/T12771-2000
	0Cr25Ni20	06Cr25Ni20	310S/3008	SUS310S	X12CrNi25-21	1.4845		HG20537.2-92
	0Cr17Ni12Mo2	06Cr17Ni12 Mo2	316/S31600	SUS316	X5CrNiMo17-12-2	1.4401		HG20537.3-92
	00Cr17Ni14 Mo2	02Cr17Ni12 Mo2	316L/S31603	SUS316L	X2CrNiMo18-14-3	1.4435		HG20537.4-92
	0Cr19Ni13 Mo3	06Cr19Ni13 Mo3	317/S31700	SUS317	X5CrNiMo11-13-3	1.4449		国外标准（部分）
	00Cr19Ni13 Mo3	022Cr19Ni13 Mo3	317/S31703	SUS317L	X2CrNiMo18-16-4	1.4438		ASTM A312/A312 M
	1Cr18Ni9Ti	06Cr18Ni9 Ti	321/S32100	SUS321	X12CrNiTi18-9	1.4878		ASTM A688/A688M
	0Cr18Ni10 Ti	06Cr18Ni10 Ti			X6CrNiTi18-10	1.4541		JIS G 3468
	0Cr18Ni11 Nb	06Cr18Ni11 Nb	347/S34700	SUS347	X12CrNiNb18-10	1.4550		DIN 2462

NATIONAL STANDARD COMPARISON TABLE
国标对照表

公称直径 Nomina diameter	外径 Outside diameter	Sch 5s	Sch 10s	Sch 20s	LG	Sch 20	Sch 30	STD	Sch 40	Sch 60	XS	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160
15	18	1.6	2.1	2.6	-	-	-	-	2.9	-	-	3.6	-	-	-	4.5
20	25	1.6	2.1	2.6	-	-	-	-	2.9	-	-	4.0	-	-	-	5.6
25	32	1.6	2.8	3.2	-	-	-	-	3.2	-	-	4.5	-	-	-	6.3
32	38	1.6	2.8	3.2	-	-	-	-	3.6	-	-	5.0	-	-	-	7.1
40	45	1.6	2.8	3.2	-	-	-	-	3.6	-	-	5.0	-	-	-	7.1
50	57	1.6	2.8	3.6	-	3.2	-	-	4.0	-	-	5.6	-	-	-	8.8
65	76	2.0	3.0	3.6	-	4.5	-	-	5.0	-	-	7.1	-	-	-	10.0
80	89	2.0	3.0	4.0	-	4.5	-	-	5.6	-	-	8.0	-	-	-	11.0
90	-	2.0	3.0	4.0	-	4.5	-	-	5.6	-	-	8.0	-	-	-	12.5
100	108	2.0	3.0	4.0	-	5.0	-	-	5.9	-	-	8.8	-	11.0	-	14.2
125	133	2.9	3.4	5.0	-	5.0	-	-	6.3	-	-	10.0	-	12.5	-	16.0
150	159	2.9	3.4	5.0	-	5.6	-	-	7.1	-	-	11.0	-	14.2	-	17.5
200	219	2.9	4.0	6.3	-	6.3	7.1	-	8.0	10.0	-	12.0	16.0	17.5	20.0	22.2
250	273	3.6	4.0	6.3	-	6.3	8.0	-	8.8	12.5	-	16.0	17.5	22.2	25.0	28.0
300	325	4.0	4.5	6.3	-	6.3	8.8	-	10.0	14.2	-	17.5	22.2	25.0	28.0	32.0
350	377	4.0	5.0	-	8.0	8.0	10.0	10.0	11.0	16.0	13.0	20.0	25.8	28.0	32.0	36.0
400	426	4.0	5.0	-	8.0	8.0	10.0	10.0	12.5	17.5	13.0	22.2	28.5	30.0	36.0	40.0
450	480	4.0	5.0	-	8.0	8.0	11.0	10.0	14.2	20.0	13.0	25.0	30.0	36.0	40.0	45.0
500	529	5.0	5.6	-	8.0	10.0	12.5	10.0	16.0	20.0	13.0	28.0	32.0	40.0	45.0	50.0
550	-	5.0	5.6	-	8.0	-	-	10.0	-	-	13.0	30.0	-	-	-	-
600	630	5.6	6.3	-	8.0	-	-	10.0	17.5	-	13.0	32.0	-	-	-	-
650	-		-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
700	720	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
750	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
800	820	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
850	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
900	920	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
950	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1000	1020	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1050	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1100	1150	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1150	-	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-
1200	1220	-	-	-	8.0	-	-	10.0	-	-	13.0	-	-	-	-	-

COMPARISON TABLE OF COMMON DOMESTIC AND FOREIGN STANDARD SIZES FOR STAINLESS STEEL SEAMLESS PIPES

不锈钢无缝管常用国内外标准尺寸对照表

GB13296-2013			GB/T14976-2012				ASTM A213/A213M			ASTM A312/A312M	
外径偏差(mm)	外径	允许偏差	类别	外径	允许偏差		类别	外径	允许偏差	外径	允许偏差
					普通级	高级					
	6～30	+0.15/-0.20	挤压管	68～159	±1.25%D	±1.0%D	热精整管	≤1.01.6	+0.4/-0.8	10.3～48.3	+0.40/-0.80
	>30～50	±0.30		>159～426	±1.5%D			>101.6～190.5	+0.4/-1.2	>48.3～114.3	+0.80/-0.80
	>50	±0.75%D						>190.5～228.6	+0.4/-1.6	>114.3～219.1	+1.60/-0.80
			冷拔(轧)管	6～10	±0.20	±0.15	冷精整管	<25.4	+0.1/-0.1	>219.1～457	+2.40/-0.80
				>10～30	±0.30	±0.20		25.4～38.1	+0.15/-0.15	>457～660.4	+3.20/-0.80
				>30～50	±0.40	±0.30		>38.1～50.8	+0.2/-0.2	>660.4～864	+4.00/-0.80
				>50	±0.9%D	±0.8%D		≥5 0.8～63.5	+0.25/-0.25	>864～1219	+4.80/-0.80
								≥6 3.5～76.2	+0.3/-0.3		
								≥7 6.2～101.6	+0.38/-0.38		
								>101.6～190.5	+0.38/-0.64		
								>190.5～228.6	+0.38/-1.14		
壁厚偏差(mm)	壁厚	允许偏差	类别	壁厚	允许偏差		类别	壁厚	允许偏差	壁厚	允许偏差
	D≤38.1	+20%S/0%S			普通级	高级		≤2.4	+40%/-0	103～73	+20S%/-12.5S%
	D>38.1	+20%S/0%S	挤压管	<15	+15%S/-12.5%S	±12.5%S	热精整管	>2.4～4.6	+35%/-0	88.9～457,S/D≤5%	+22.5S%/-12.5S%
				≥15	+20%S/-15%S			>3.8～4.6	+33%/-0	88.9～457,S/D>5%	+15.0S%/-12.5S%
			冷拔(轧)管	≤3	±14%S	+12.5S/-10%S		>4.6	+28%/-0	≥508,S/D≤5 %	+22.5S%/-12.5S%
	冷拔(轧)热交换器管，正公差交货			>3	+12.5S/-10%S	±10%S	冷精整管	外径≤38.1mm	+20%/-0	≥508,S/D>5%	+15.0S%/-12.5S%
								外径>38.1mm	+22%/-0		

DIN17456				DIN17458			ASTM A789/A789M	
外径偏差(mm)	外径	公差等级	允许偏差	外径	公差等级	允许偏差	外径	允许偏差
	da≤2191	D2	±1%，最小±0.5mm	da≤2191	D2	±1%，最小±0.5mm	≤1 2.7	±1 3
							>12.7～38.1	±0.13
		D3	±0.75%，最小±0.3mm		D3	±0.75%，最小±0.3mm	>38.1～88.9	±0.25
							>88.9～139.7	±0.38
		D4	±0.5%，最小±0.1mm		D4	±0.5%，最小±0.1mm	>139.7～203.2	±0.76
壁厚偏差(mm)	壁厚	公差等级	允许偏差	壁厚	公差等级	允许偏差	外径	壁厚允许偏差★
	da≤2191	T3	±10%，最小±0.2mm	da≤2191	T3	±10%，最小±0.2mm	≤1 2.7	±15%
							>12.7～38.1	±10%
		T4	±7.5%，最小±0.15mm		T4	±7.5%，最小±0.15mm	>38.1～88.9	±10%
							>88.9～139.7	±10%
							>139.7～203.2	±10%
							★薄壁管的定义及壁厚偏差见标准	

COMPARISON TABLE OF DIMENSIONAL TOLERANCES FOR STAINLESS STEEL WELDED PIPES

不锈钢焊管尺寸公差对照表

流体输送用不锈钢焊接钢管标准GB/T12771-2008			
外径允许偏差			
类别	外径D	允许偏差	
		较高级	普通级
焊接状态	全部尺寸	±0.5%D或±0.20两者取较大值	±0.5%D或±0.20两者取较大值
热处理状态	<40	±0.20	±0.30
	≥40-<65	±0.30	±0.40
	≥65-<90	±0.40	±0.50
	≥90-<168.3	±0.80	±1.00
	≥168.3-<325	±0.75%D	±1%D
	≥325-<610	±0.6%D	±1%D
	≥610	±0.6%D	±0.7%D或±0.1两者取较大值
冷拔(轧)状态、磨抛光状态	<40	±0.15	±0.20
	≥40-<60	±0.20	±0.30
	≥60-<100	±0.30	±0.40
	≥100-<200	±0.4%D	±0.5%D
	≥200	±0.5%D	±0.75%D
壁厚允许偏差			
壁厚S	壁厚允许偏差		
≤0.5	±0.10		
>0.5-1.0	±0.15		
>1.0-2.0	±0.20		
>2.0-4.0	±0.30		
>4.0	±10%S		

机械结构用不锈钢焊接标准GB/T12770-2002				
外径允许偏差				
类别	外径	允许偏差		
		高级	较高级	普通级
焊接状态W	<20	±0.13	±0.20	±0.30
	≥20-<50	±0.25	±0.40	±0.50
	≥50	±0.6%D	±0.8%D	±1.0%D
热处理状态T	<13	±0.10	±0.20	±0.25
	≥13-<25	±0.13	±0.20	±0.40
	≥25-<40	±0.25	±0.30	±0.60
	≥40-<63	±0.30	±0.50	±0.80
	≥63-<90	±0.51	±0.60	±1.0
	≥90-<159	±0.64	±0.80	±1.0
	≥159-<300	±0.7%D	±0.8%D	±1.0%D
	≥300-<500	±0.8%D	±1.0%D	±1.25%D
	≥500	按协议	按协议	按协议
冷拔(轧)状态WC、磨抛光状态SP	>25	±0.10	±0.12	±0.15
	≥25-<40	±0.13	±0.15	±0.18
	≥40-<50	±0.15	±0.18	±0.20
	≥50-<60	±0.18	±0.20	±0.23
	≥60-<90	±0.25	±0.28	±0.30
	≥90-<100	±0.30	±0.35	±0.40
	≥100-<200	按协议	±0.4%D	±0.5%D
	≥200	按协议	按协议	按协议
壁厚允许偏差				
钢板(带)料状态	壁厚	允许偏差		
热轧钢板(带)或热轧纵剪钢带	≤4.0	±10%S		
	>4.0	±10%S		
冷轧钢板(带)或热轧纵剪钢带	≤0.5	±0.05		
	>0.5-1.0	±0.11		
	>1.0-2.0	±0.17		
	>2.0-3.0	±7%S		
	≥3.0-4.0	±6%S		
	>4.0-5.0	±5%S		

STEEL PIPE SIZE SCH INCH COMPARISON TABLE
钢管尺寸-SCH英寸对照表

NOMINAL PIPE SIZE		外经	壁厚												
A	B	ASME	SCH10	SCH20	SCH30	STD	SCH40	SCH60	XS	SCH80	SCH100	SCH120	SCH140	SCH160	XXS
15	1/2"	21.3	2.11		2.41	2.77	2.77		3.73	3.73				4.78	7.47
20	3/4"	26.7	2.11		2.41	2.87	2.87		3.91	3.91				5.56	7.82
25	1"	33.4	2.77		2.9	3.38	3.38		4.55	4.55				6.35	9.09
32	1.1/4"	42.2	2.77		2.97	3.56	3.56		4.85	4.85				6.35	9.7
40	1.1/2"	48.3	2.77		3.18	3.68	3.68		5.08	5.08				7.14	10.15
50	2"	60.3	2.77		3.18	3.91	3.91		5.54	5.54				8.74	11.07
65	2.1/2"	73	3.05		4.78	5.16	5.16		7.01	7.01				9.53	14.02
80	3"	88.9	3.05		4.78	5.49	5.49		7.62	7.62				11.13	15.25
90	3.1/2"	101.6	3.05		4.78	5.74	5.74		8.08	8.08					
100	4"	114.3	3.05		4.78	6.02	6.02		8.56	8.56		11.13		13.49	17.12
125	5"	141.3	3.4			6.55	6.55		9.53	9.53		12.7		15.88	19.05
150	6"	168.3	3.4			7.11	7.11		10.97	10.97		14.27		18.26	21.95
200	8"	219.1	3.76	6.35	7.04	8.18	8.18	10.31	12.7	12.7	15.09	18.26	20.62	23.01	22.23
250	10"	273	4.19	6.35	7.8	9.27	9.27	12.7	12.7	15.09	18.26	21.44	25.4	28.68	25.4
300	12"	323.8	1.57	6.35	8.38	9.53	10.31	14.27	12.7	17.48	21.44	25.4	28.58	33.32	25.4
350	14"	355.6	6.35	7.92	9.53	9.53	11.13	15.09	12.7	19.05	23.83	27.79	31.75	35.71	
400	16"	406.4	6.35	7.92	9.53	9.53	12.7	16.66	12.7	21.44	26.19	30.96	36.53	40.19	
450	18"	457.2	6.35	7.92	11.13	9.53	14.27	19.05	12.7	23.19	39.36	34.93	39.67	45.24	
500	20"	508	6.35	9.53	12.7	9.53	15.09	20.62	12.7	26.19	32.54	38.1	44.45	50.01	
550	22"	588.8	6.35	9.53	12.7	9.53		22.23	12.7	28.58	34.93	41.28	47.63	53.98	
600	24"	609.6	6.35	9.53	14.27	9.53	17.48	24.61	12.7	30.96	38.89	46.02	52.37	59.54	
650	26"	660.4	7.92	12.7		9.53			12.7						
700	28"	711.2	7.92	12.7	15.88	9.53			12.7						
750	30"	762	7.92	12.7	15.88	9.53			12.7						
800	32"	812.8	7.92	12.7	15.88	9.53	17.48		12.7						
850	34"	863.6	7.92	12.7	15.88	9.53	17.48		12.7						
900	36"	914.4	7.92	12.7	15.88	9.53	19.05		12.7						
950	28"	965.2				9.53			12.7						
1000	40"	1016				9.53			12.7						
1050	42"	1066.8				9.53			12.7						
1100	44"	1117.6				9.53			12.7						
1150	46"	1168.4				9.53			12.7						
1200	48"	1219.2				9.53			12.7						

CHEMICAL COMPOSITION TABLE OF STAINLESS STEEL IN VARIOUS COUNTRIES
各国不锈钢化学成分表

无缝不锈钢常用标准常见钢钟化学元素含量														
标准	钢钟	C	Mn	P	S	Si	Cr	Ni	Mo	N	Cu	Ti	Al	Nb
A312	TP304	0.08	2.00	0.045	0.030	1.00	18.0-20.0	80-11.0						
	TP304L	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-13.0						
	TP304H	0.04-0.10	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0						
	TP310S	0.08	2.00	0.045	0.030	1.00	24.026.0	19.0-22.0	0.75					
	TP316	0.08	2.00	0.045	0.030	1.00	16.0-18.0	11.0-14.0	2.00-3.00					
	TP316L	0.035	2.00	0.045	0.030	1.00	6.0-18.0	10.0-14.0	2.00-3.00					
	TP316H	0.04-0.10	2.00	0.045	0.030	1.00	6.0-18.0	11.0-14.0	2.00-3.00					
	TP321	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0		0.10		5C-0.70		
	N0894	0.020	2.00	0.040	0.030	1.00	19.0-23.0	23.0-28.0	4.0-5.0	0.10	1.00-2.00			
A312	TP3604	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0						
	TP304L	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-12.0						
	TP304H	0.04-0.10	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0						
	TP310S	0.08	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0						
	TP316	0.08	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00					
	TP316L	0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00					
	TP316H	0.04-0.10	2.00	0.045	0.030	1.00	16.0-18.0	11.0-14.0	2.00-3.00					
	TP321	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0				5(C+N)-0.70		
A269	TP304	0.08	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0						
	TP304L	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-12.0						
	TP316	0.08	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.00-3.00					
	TP316L	0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.0-15.0	2.00-3.00					
	TP321	0.08	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0				5(C+N)-0.70		
	N0894	0.020	2.00	0.040	0.030	1.00	19.0-23.0	23.0-28.0	4.0-5.0	0.10	1.00-2.00			
A268	TP405	0.08	1.00	0.040	0.030	1.00	0.50	11.5-14.5					0.10-0.30	
	TP410	0.15	1.00	0.040	0.030	1.00		11.5-13.5						
	TP430	0.12	1.00	0.040	0.030	1.00		16.0-18.0						
	TP446	0.20	1.50	0.040	0.030	1.00	0.75	23.0-27.0		0.25				
A789	S31803	0.030	2.00	0.030	0.020	1.00	4.5-6.5	21.0-23.0	2.5-3.5	0.08-0.20				
	S32205	0.030	2.00	0.030	0.020	1.00	4.5-6.5	22.0-23.0	3.0-3.5	0.14-0.20				
EN 10216-5	1.4301	0.07	2.00	0.040	0.015	1.00	17.00-19.50	8.00-10.50		0.11				
	1.4307	0.030	2.00	0.040	0.015	1.00	17.50-19.50	8.00-10.00		0.11				
	1.4401	0.07	2.00	0.040	0.015	1.00	16.50-18.50	10.00-13.00	2.00-2.50	0.11				
	1.4404	0.030	2.00	0.040	0.015	1.00	16.50-18.50	10.00-13.00	2.0-2.50	0.11				
	1.4541	0.08	2.00	0.040	0.015	1.00	17.00-19.00	9.00-12.00				5C-0.70		
	1.4335	0.08	2.00	0.040	0.015	1.00	24.00-26.00	20.00-22.00	0.11	0.20				
	1.4462	0.03	2.00	0.035	0.015	1.00	21.00-23.00	4.50-6.50	2.50-3.50	0.10-0.22				
JIS G3463-94	SUS3.4	0.08	2.00	0.040	0.030	1.00	18.00-20.00	8.00-11.00						
	SUS304L	0.030	2.00	0.040	0.030	1.00	18.00-20.00	9.00-13.00						
	SUS316	0.08	2.00	0.040	0.030	1.00	16.00-18.00	10.00-14.00	2.00-3.00					
	SUS316;	0.030	2.00	0.040	0.030	1.00	16.00-18.00	12.00-16.00	2.00-3.00					
	SUS310S	0.08	2.00	0.040	0.030	1.50	24.00-26.00	19.00-22.00						
	SUS321	0.08	2.00	0.040	0.030	1.00	17.00-20.00	9.00-13.00				≥5 C%		
	SUS405	0.08	1.00	0.040	0.030	1.00	11.50-14.50						0.10-0.30	
	SUS410	0.15	1.00	0.040	0.030	1.00	11.50-13.50							
	SUS430	0.12	1.00	0.040	0.030	0.75	16.00-18.00							