

浙江鑫通达特钢制造有限公司

www.xtd-ss.com



XINTONGDA SPECIAL STEEL

卓越的不锈钢 双相钢 镍基合金无缝管生产商

High Performance Stainless Steel ,Duplex Steel and Nickel Alloy Pipe & Tube Manufacturer



浙江鑫通达特钢制造有限公司

Zhejiang Xintongda Special Steel Manufacturing Co., Ltd.

地址: 浙江省丽水市松阳县西屏街道瑞阳大道209号

Add: NO. 209 RUIYANG ROAD, XIPING STREET, SONGYANG COUNTY, LISHUI CITY,
ZHEJIANG PROVINCE 323400 CHINA

TEL: +86-577-88877003 (export department) +86-577-86862205 (domestic department)

FAX: +86-577-86635318

Http: www.xtd-ss.com

E-mail: info@xtd-ss.com

我们的产品应用于..... OUR PRODUCTS ARE APPLIED TO...



XINTONGDA SPECIAL STEEL

鑫通达特钢为造船厂，炼油，石油，化工，电站，采矿，海上平台，航空航天，造纸等行业提供流体过程连接解决方案，并提供满足及解决客户严苛工况问题的管道产品。

Xintongda Special Steel provides fluid process connection solutions for marine (ship building), oil refining, petroleum, chemical industry, power station, mining, off-shore, aerospace, papermaking and other industries, and also provides pipeline products to meet and solve customers' problems under harsh working conditions.

关于我们 ABOUT US

浙江鑫通达特钢制造有限公司位于浙江省丽水市松阳县西屏街道瑞阳大道209号，紧邻宁波上海两大世界级港口，交通运输便捷。公司注册资金10000万元，固定资产8000万元，占地面积20000平方米。

公司持有国家质检总局颁发的 A2 类压力管道制造许可证及ABS, PED 证书、AD2000证书，并通过了ISO9001认证、ISO14001认证、ISO45001认证、BV船级社认证、NORSOK挪威国家石油标准M650认证、DNV挪威船级社认证、EAC(CU-TR)俄罗斯认证，浙江制造品字标认证等，并于2021年获得省高新技术企业及省科技型企业。

本公司主要致力于双相钢 2205(S32205/S31803)、超级双相钢 2507(S32750)、S32760、S32550；超级奥氏体特种不锈钢 904L、S31254(254SMO)、奥氏体 304/L/H、310/H/S、314、316/L/H/Ti、317L、321/H、347/H；以及镍合金200、400、600、625、800、800H、825、1.4529(926)，合金N10276、N06022、N10665、N10675等材质无缝圆管、方管和精轧管的生产与销售。

公司常备 304/304L、316L、310S、321、904L、254SMO、2205、2507、625、N10276等材质的无缝管库存10,000吨以上，可定制切割。

旗下子公司“福建腾奇管业科技有限公司”位于福建省宁德市周宁县李墩工业园区。公司注册资金1580万元，占地面积20700.43平方米。子公司配备年产15000吨不锈钢无缝管生产线，可根据客户需求，定制生产各种材质大口径不锈钢无缝管(可生产最大外径尺寸中1016mm)。

尺寸范围：

外径：6-1016mm

壁厚：1-65mm

公司产品符合GB/T14976、GB/T13296、GB/T21833等国家标准和美标ASTM/ASME、日标JIS、德标DIN、欧标EN、俄罗斯GOST等国际标准。

公司全体员工与时俱进，不断创新，以振兴民族工业为己任，为提升我国装备制造业水平尽一份力。以质量求生存，以技术创新求发展，用户的满意是我们永远的追求。



Zhejiang Xintongda Special Steel Manufacturing Co., Ltd. is located at Songyang County, Zhejiang Province of China. Up to now, we've passed the certificates of ABS, PED, AD2000, GOST, BV, ISO9001, ISO14001, ISO45001, and NORSOK-M650, EAC (CU-TR), GOST (RUSSIA), DNV, NORSOK M650 etc.

We have more than 30 years of experience of manufacturing Austenitic Stainless Steel 304/L/H, 310/H/S, 314, 316/L/H/Ti, 317L, 321/H, 347/H; Super Austenitic Stainless Steel 904L, S30815 (253MA), S31254 (254SMO); Duplex and Super Duplex Stainless Steel UNS S31803, UNS S32205, UNS S32750, UNS S32760, UNS S32550; Nickel Alloy Inconel 800 (UNS N08800), 800H (UNS N08810), 825 (UNS N08825), 600 (UNS N06600), 625 (UNS N06625), Monel 400 (UNS N04400), Alloy N10276, N06022, N10665, N10675 etc.

XTP is a comprehensive enterprise which focuses on piercing and cold drawn, annealing (bright annealing) and pipe production, and has 13 invention patents and utility model patents. We have more than 20 cold drawn and cold-rolled production machines which can achieve 25,000tons annual output.

We have kinds of grade of different size in stock, including 304/304L, 316L, 310S, 321, 904L, 254SMO, 2205, 2507, 625, N10276 etc. Customize to required length is acceptable.

Another subsidiary and production base is in Fujian Province, with mill name "Fujian Tengqi Pipe Tech Co., Ltd." The mill's annual output reach to 15000tons, by registered capital of 15.8 million yuan and 20700.43m². The factory is specialized in larger OD pipes up to 1016mm.

Our products comply with the standards of ASTM A312, ASTM A213, ASTM A269, ASTM A789, ASTM A790, ASTM B622, ASTM B163, ASTM B167, ASTM B444, EN 10216-5, GB/T21833, GB/T13296, GB/T14976, etc.

Size range:
OD: 6-1016mm
WT: 1-65mm

"Surviving on quality, developing on benefits, rewarding customers with Honestly and trustworthiness" is our motto. We are striving to become a world-class pipe manufacturer, providing high-quality



诚信经营 科技创新

浙江鑫通达特钢制造有限公司

Zhejiang Xintongda Special Steel Manufacturing Co., Ltd.

企业证书 Certificate



Certificate Number 48933-7737620-006

Effective Date 19 August 2025
Expiry Date 19 August 2031
ABS Port Office CN QZ Zhoushan Branch P
Company's Website www.xtd-ss.com

CERTIFICATE OF Manufacturing Assessment

This is to certify that the undersigned evaluated the manufacturing quality procedures of **Zhejiang Xintongda Special Steel Manufacturing Co., Ltd.** located at **No. 209 Ruiyang Avenue, Xiping Street, Songyang County, Lishui City, Zhejiang Province, P. R. China**

The quality monitoring systems during production were verified to reflect the specific surveys, required by the ABS Rules, Guides, the associated Specifications and Standards for the manufacture of **Pipe, Stainless Steel**

This manufacturer presented a sample or specimen of the product, representative of the "type" approved for the purpose of verifying that the "type" has been manufactured in conformance with the Manufacturer's Product Design Assessment(s).

This Certificate is manufacturer and location specific and is subject to annual audits. Consult the ABS Type Approval website to confirm the continued validity of this certificate and the status of products.

The ABS Office issuing the certificate is to be kept updated with changes to the production methods, quality control systems, products and models and any changes made.

Electronically Signed By **Luo, Jiang-Hu, CN QZ Zhoushan Branch P**

Annual Endorsement
First Second Third Fourth

Surveyor

WVO and Date

NOTE: This Certificate evidences compliance with one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping and is issued solely for the use of the Bureau, its committees, its clients or other authorized entities. This Certificate is a representation only that the structure, item of material, equipment, machinery or any other item covered by this Certificate has met one or more of the Rules, guides, standards or other criteria of American Bureau of Shipping as of the date of issue. Parties are advised to review the Rules for the scope and conditions of classification and to review the survey reports for a fuller description of any restrictions or limitation on the vessel's service or surveys. The validity, applicability and interpretation of this Certificate is governed by the Rules and standards of American Bureau of Shipping who shall remain the sole judge thereof. Nothing contained in this Certificate or any notation hereon in contemplation of this Certificate shall be deemed to relieve any designer, builder, owner, manufacturer, seller, supplier, repairer, operator or other entity of any warranty express or implied.

TA-MA-CERT REV 101.00 Page 1 of 1

ABS

Electronically published by ABS London.
Reference WO0072545638, dated 25-Aug-2026

CERTIFICATE NUMBER 26-0072545638-PDA
EFFECTIVE DATE 11-Mar-2026
EXPIRY DATE 10-Mar-2031
ABS TECHNICAL OFFICE GCD Materials

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of **ZHEJIANG XINTONGDA SPECIAL STEEL MANUFACTURING CO.,LTD.** located at **NO. 209 RUIYANG AVENUE, XIPING STREET, SONGYANG COUNTY, , LISHUI, China, 323400**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Pipe, Stainless Steel**
Model: **ASTM A312 TP304L, TP316L, TP310S, with O.D. 323.9 X W.T. 12.7 mm, O.D. 168.3 X W.T. 7.11 mm, O.D. 10 X W.T. 1.0 mm; ASTM A790 S32205, S32750, with O.D. 323.9 X W.T. 12.7 mm, O.D. 168.3 X W.T. 7.11 mm, O.D. 10 X W.T. 1.0 mm**

Endorsements: **5 - Unit Certification Required**
Tier:

This Product Design Assessment (PDA) Certificate remains valid until 10-Mar/2031 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping
Nikolaos (Nikos) Vriellos, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement 01010

Certificate of Product Design Assessment Rev.3
of 1 Page 1

Sensitivity: Internal & Restricted

ABS

design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

1. ABS Rules for Building and Classing Marine Vessels (2026): 1A-1-4/7.7, 1A-1-A3, 1A-1-A4, 2-3-12, 2-3-13, 4-6-1, 4-6-2
2. ABS Rules for Building and Classing Offshore Units (2026): 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, 4-2-1, 4-2-2
3. ABS Requirements for Materials and Welding for Stainless Steels (2022)

ASTM A312/A312M (2025) ASTM A790/A790M (2024)

NA

NA

NA

NA

Model Certificate # Issue Date Expiry Date

26-0072545638-PDA 11-MAR-2026 10-MAR-2031

ABS

Manufacturer Qualification Statement

TÜV SÜD Certification and Testing (China) Co., Ltd Beijing Branch
Certified that the company

Zhejiang Xintongda Special Steel Manufacturing Co., Ltd.
No. 209, Ruiyang Avenue, Xiping Street, Songyang County, Lishui City, Zhejiang Province, P. R. China

Has been assessed with respect to the requirements specified in

Norsok M-650 Ed.4 on Qualification of Manufacturers of Special Materials

As a material manufacturer for the scope of **Seamless stainless pipe** with designation

**ASTM A780 UN S32205, S31803 NORSOK M-630 MDS D41 Rev.6
ASTM A780 UN S32750 NORSOK M-630 MDS D51 Rev.6
ASTM A312 TP310S
ASTM A312 N08904**

The scope of qualification, application/limitation, terms and condition is described in the annex to this statement, further scope details are mentioned in the QTR with No.:

**IS-BJ-FA2024-XTD-001
IS-BJ-FA2024-XTD-002
IS-BJ-FA2024-XTD-003
IS-BJ-FA2024-XTD-004**

This statement is valid through May 27, 2029.

Statement No.: NORSOK-IS-BJ-990419-24-01
Beijing, May 26, 2024

TÜV SÜD Certification and Testing (China) Co., Ltd
Beijing Branch.
Lu Bingjian
M Building, No.7 Wangjing Zhongnancun North Road, Beijing, China
100102 Beijing, P. R. China

NORSOK M650

TYPE APPROVAL DATABASE

Company Name Details

Company Information
ZHEJIANG XINTONGDA SPECIAL STEEL MANUFACTURING CO.,LTD.
NO. 209 RUIYANG AVENUE, XIPING STREET, SONGYANG COUNTY
LISHUI
323400
China
Tel +86-13587686960
Fax
Email: info@xtd-ss.com
Website: www.xtd-ss.com

Additional Company / Plant Detail
This product doesn't have a Confirmation of Type Approval.

Certificate Number Category Expiry Date

Product Pipe, Stainless Steel

Model ASTM A312 TP304L, TP316L, TP310S, with O.D. 323.9 X W.T. 12.7 mm, O.D. 168.3 X W.T. 7.11 mm, O.D. 10 X W.T. 1.0 mm; ASTM A790 S32205, S32750, with O.D. 323.9 X W.T. 12.7 mm, O.D. 168.3 X W.T. 7.11 mm, O.D. 10 X W.T. 1.0 mm

Endorsements

Tier 5 - Unit Certification Required

Intended Service Marine and Offshore Applications - Processing Piping Only.

Description Standard/Grade: A312TP304/304L & TP316/316L, A790, S31803/S32205, S32750
Manufacturing Process: Cold Drawing and Cold Rolling
Delivery Condition: Solution Treated

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Ratings

For Duplex Stainless Steels: Outer Diameter: Max. 323.9 mm, Wall Thickness: Max. 12.7 mm.
Service temperature, pressure, etc. are subject to piping system design review, is not included in this PDA.

Service Restrictions

1. Unit Certification is required for this product used in Piping Class I & II except for hydraulic piping. Otherwise, Unit Certification is not required for this product.
2. Materials for Liquefied Gas Carrier are to comply with Section 5C-8-6 of the Marine Vessel Rules. Materials for vessels using Gases or other Low-Flashpoint Fuels are to comply with the applicable requirements of Section 5C-13-7 of the Marine Vessel Rules. Materials for vessels intended to carry refrigerated cargoes are to comply with the applicable requirements of Part 6, Chapter 2 of the Marine Vessel Rules.
3. Pipes are not to be used for CNG (refer to 7-1/4 of ABS Guide for Vessels Intended to Carry Compressed Natural Gases in Bulk) and structural pipes without prior notice to ABS.
4. In order to unit certify the material, the pipes/tubes are to be tested for all the applicable mechanical tests and witnessed to the satisfaction of an attending ABS Surveyor to meet the requirements of approved grades and standards/Rules.
5. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. Before delivery, completed components should be descaled, pickled, and passivated in compliance with ASTM A380.
3. Each length of pipe of all grades is to be hydrostatically tested at the mill in accordance with the 2-4/9.2 of ABS Requirement for Materials and Welding of Stainless Steels. When specified by the purchaser, seamless pipe is to be subjected to a nondestructive electrical test in accordance with 2-3-12/31 of the ABS Rules for Materials and Welding (Part 2). When each pipe is hydrostatically tested as a regular procedure during the process of manufacturing, an affidavit covering this test may be accepted by the Surveyor.
4. The pipes are to be reasonably straight, free from defects, and have a workmanlike finish. At a minimum, the finished pipe is to be visually inspected at the same frequency as that required for the tension test for the applicable grade. Welding repair to the pipe is not to be carried out without the purchaser's approval and is to be the Surveyor's satisfaction.
5. Identification markings are to be legibly stenciled, stamped, or rolled on each pipe, except that in the case of small diameter pipe which is bundled, the required markings are to be placed on a tag securely attached to the bundle.
6. Pipes and tubes are to be inspected and tested in the presence of the Surveyor in accordance with reference Specifications.
7. This Product Design Assessment is not for piping system design review.
8. Product to be installed in accordance with Manufacturer's Recommendations.

Notes, Drawing and Documentation

Drawing No. XTD-ABS-PDA Application Document, XTD-ABS-PDA Application Document, Revision: -, Pages: 16
Drawing No. 6867267, Prototype Test Reports from Zhejiang Xintongda Special Steel Manufacturing Co., Ltd, dated 20250814, Revision: -, Pages: 47

ABS

Page 1 / 2

RECOGNITION FOR BV MODE II SCHEME

Zhejiang Xintongda Special Steel Manufacturing Co., Ltd.
Lishui - CHINA

Summary of the range of the recognition which is detailed in the subsequent page(s):
Seamless Stainless Steel Pipe

This certificate will expire on: **06 Jul 2028**

For BUREAU VERITAS, At BV SHANGHAI, on 22 Jun 2024, Hong Zhang

This certificate was created electronically and is valid without signature

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veritas.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgment, fault or negligence committed by personnel of the Society or its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veritargroup.com/veritarsmb/ppr/viewPublicPdf/Recognition/jpg?b=6494&cmx>
BV Mod. Ad.E 697 June 2017 This certificate consists of 2 page(s)

BV

Page 2 / 2

Certificate number: SMS.W.II/127133B.0

THE SCHEDULE OF RECOGNITION

1. RANGE OF THE RECOGNITION

The products corresponding to the categories listed in the table below are to be certified individually or per batch by Bureau Veritas Marine & Offshore in compliance with the applicable requirements (BV products as defined in NR320).

Generic product	Description
PIPE / TUBE AND FITTINGS	Seamless austenitic stainless steel & Duplex stainless steel S31204 & S32750/S32205(S31803) with max diameter 325mm, max wall thickness 10.31mm

2. LIMITATIONS

The certificates listed in the range of recognition are to be valid, as applicable.
Bureau Veritas Marine & Offshore is to be informed immediately of any modification to manufacturing facilities and associated quality procedures in order to agree on appropriate actions.
Zhejiang Xintongda Special Steel Manufacturing Co., Ltd. has to apply for the periodical audits as agreed with Bureau Veritas Marine & Offshore.

3. PERIMETER OF CERTIFICATION

Quality system of following site(s) has been assessed:
Zhejiang Xintongda Special Steel Manufacturing Co., Ltd. - Lishui - CHINA

4. REMARKS

Work's address: No.209, Ruiyang Avenue, Xiping Street, Songyang County, Lishui City, Zhejiang Province, China

*** END OF CERTIFICATE ***

The electronic version is available at: <http://www.veritargroup.com/veritarsmb/ppr/viewPublicPdf/Recognition/jpg?b=6494&cmx>
BV Mod. Ad.E 697 June 2017 This certificate consists of 2 page(s)

BV

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DNVDNV

PED AD2000

PED AD2000

LRLR

PED AD2000

PED AD2000

企业证书 Certificate



ISO9001



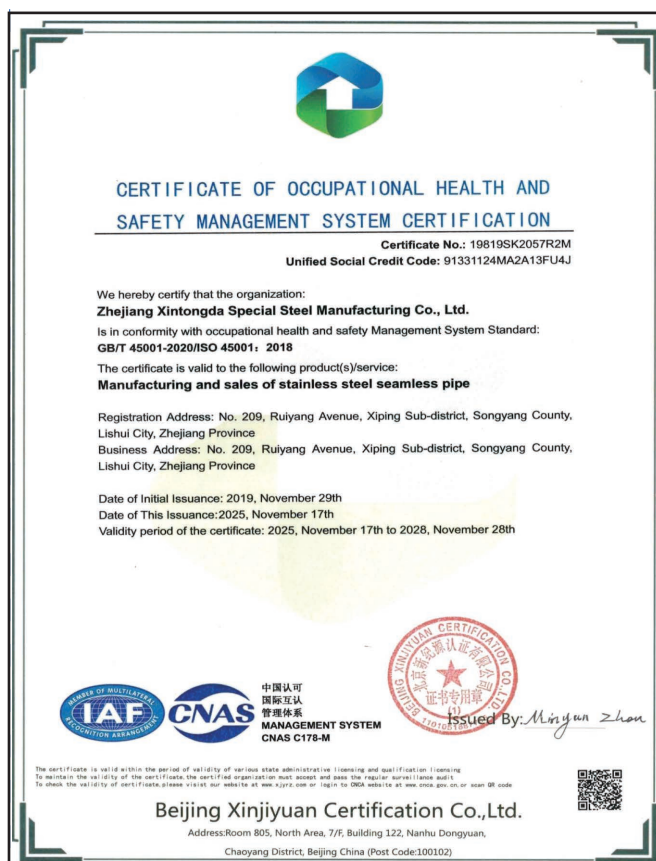
ISO14001



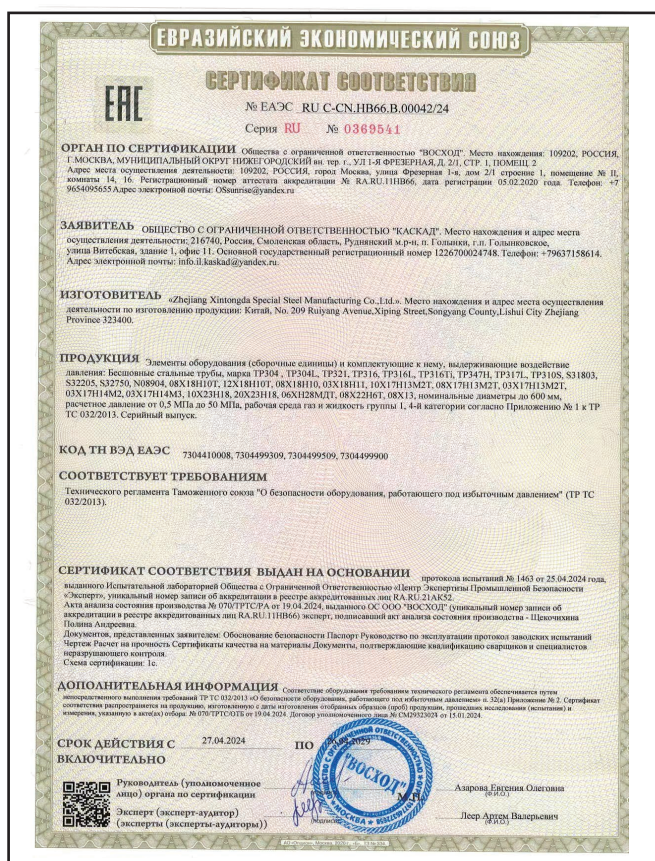
GOST



GOST



ISO45001



EAC(TC-UR)



创新型中小企业证书



专精特新中小企业证书

生产设备 Production Equipment

鑫通达投资数亿元新增自动化设备，通过国际化的生产设施，生产出符合国际标准的优质钢材产品。欲善其工，必先利其器，欲成其事，必先诚其意，精良的设备代表着一个企业拥有强大的生产能力和卓越的质量保证。先进精密的生产设备保证了产品的质量。规范的管理体系保证了鑫通达的生产加工实力。

Xintongda has invested several hundred million RMB to implement automated production equipment in order to produce global standard high-quality steel products by the internationalization of the production facilities.

To excel in work, one must first sharpen the tools; to accomplish a task, one must first be sincere in intention. The sophisticated equipment represents a company's strong production capacity and excellent quality assurance.

Our advanced and sophisticated production equipment ensures the quality of pipes and tubes and standard management system ensures the production and processing strength of Xintongda.



我们的目标是提升质量，我们的保证是优化检测。

鑫通达可根据产品标准或客户要求，对钢管做无损测试和有损测试，测试内容包括成分测试，超声波测试，磁性测试，晶间腐蚀测试，硬度测试，拉伸测试，屈服强度，耐腐蚀性等。我们检验员还根据产品标准的技术条件和客户要求进行检查成品的内外表面、形状、弯曲度、端面长度、外径和壁厚，以满足客户的要求。

XTD will conduct NDT/NDE including PMI, UT, RT, IGC, HT etc, and Destructive Test including Flattening Test, Hardness Test, Corrosion Test, Flaring Test, Tensile Test etc, the inspection are strictly controlled by requirements of the standard of the clients.

According to the technical conditions and requirements of the product standard, we will always check the inner and outer surface of pipe, the shape, bending degree, length, outer diameter and wall thickness one by one in order to meet customers' requirements.



1.(SUPER) AUSTENITIC STAINLESS STEEL SEAMLESS PIPE AND TUBE
(超级) 奥氏体不锈钢无缝钢管

Material:
304 304L 304H 309 309S 310 310S 310S 314 316 316L 316H 316Ti 316LN
317L 321 321H 347 347H N08904 (904L) N08367 S30432 S31042 253MA 254SMO 654SMO ……

Specifications:
OD: 6-1016mm, THK: 1-65mm, L: max to 18mtr
Special specifications are available as required.

Executive standard:
GB/T 14976-2012 流体输送用不锈钢无缝钢管
GB/T 13296-2013 锅炉、热交换器用不锈钢无缝钢管
EN 10216-5 Seamless Steel Tubes for Pressure Purposes-Technical Delivery Conditions——Part 5: Stainless Steel Tubes
ASTM A312 Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
ASTM A213 Standard Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes
ASTM A269 Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
ASTM A358 Standard Specification for Electric-Fusion-Welded Austenitic Chromium-Nickel Stainless Steel Pipe for High-Temperature Service and General Applications
GOST 9940 Seamless Hot-Deformed Tubes Made from Corrosion-Resistant Steel Specifications
GOST 9941 Seamless Cold and Warm-Deformed Tubes Made from Corrosion-Resistant Steel Specification
JIS G3459 Stainless Steel Pipes
JIS G3463 Stainless Steel Tubes For Boiler and Heat Exchanger

2.(SUPER) DUPLEX STEEL SEAMLESS PIPE AND TUBE.
(超级)双相钢无缝管

Specifications:
OD: 6-720mm, THK: 1-65mm, L:max to 18mtr
Special specifications are available through negotiation.

Material:
S31803, S32205,S32550, S32750, S32760, S31500, S32001, S32003, S32304.

Executive standard:
GB/T 21833.1-2020 奥氏体铁素体型双相不锈钢无缝钢管(第1部分：热交换器用管)
GB/T 21833.2-2020 奥氏体铁素体型双相不锈钢无缝钢管(第2部分：流体输送用管)
EN10216-5 Seamless Steel Tubes for Pressure Purposes-Technical Delivery Conditions——Part 5: Stainless Steel Tubes
ASTM A789 Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Tubing for General Service
ASTM A790 Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe

3.NICKEL ALLOY SEAMLESS PIPE AND TUBE.
镍基合金无缝管

Specifications:
OD: 6-457mm, THK: 1-65mm, L:max to 18mtr
Special specifications are available as required

Material:
Nickel: 200(N02200,2.4066), 201(N02201, 2.4068).....
Monel: 400(N04400, 2.4360, K-500(N05500, 2.4375)
Inconel: 600(N06600, 2.4816), 601(N06601, 2.4851), 625(N06625, 2.4856), 718(N07718,2.4668)
Incoloy: 800(N08800, 1.4876), 800H(N08810, 1.4876), 800HT(N08811, 1.4876), 825(N08825, 2.4858)
Alloy: N10276, 2.4819, N06022, 2.4602, N10665, 2.4617, N10675, 2.4600
Other nickel alloy material also available

Executive standard:
EN 10216-5 Seamless Steel Tubes for Pressure Purposes-Technical Delivery Conditions——Part 5: Stainless Steel Tubes
ASTM B161 Standard Specification for Nickel Seamless Pipe and Tube
ASTM B163 Standard Specification for Seamless Nickel and Nickel Alloy Condenser and Heat-Exchanger Tubes
ASTM B165 Standard Specification for Nickel-Copper Alloy Seamless Pipe and Tube
ASTM B167 Standard Specification for Nickel-Chromium-Aluminum Alloys, Nickel-Chromium-Iron Alloys, Nickel-Chromium-Cobalt-Molybdenum Alloy, Nickel-Iron-Chromium-Tungsten Alloy, and Nickel-Chromium-Molybdenum-Copper Alloy Seamless Pipe and Tube
ASTM B407 Standard Specification for Nickel-Iron-Chromium Alloy Seamless Pipe and Tube
ASTM B423 Standard Specification for Nickel-Iron-Chromium-Molybdenum-Copper Alloy Seamless Pipe and Tube
ASTM B444 Standard Specification for Nickel-Chromium-Molybdenum-Niobium Alloys and Nickel-Chromium-Molybdenum-Silicon Alloy Pipe and Tube
ASTM B622 Standard Specification for Seamless Nickel and Nickel-Cobalt Alloy Pipe and Tube
ASTM B729 Standard Specification for Seamless Nickel-Iron-Chromium-Molybdenum-Copper Nickel Alloy Pipe and Tube

TUBE& PIPE APPLICATION STANDARD (ASTM)
无缝管产品应用标准 (ASTM 美标)

Material	UNS	TUBE(SMLS)	PIPE(SMLS)
TP304	S30400	ASTMA213	ASTMA312
TP304L	S30403	ASTMA213	ASTMA312
TP309S	S30908	ASTMA213	ASTMA312
TP310	S31000	ASTMA213	ASTMA312
TP310S	S31008	ASTMA213	ASTMA312
TP314	S31400	ASTMA213	ASTMA312
TP316	S31600	ASTMA213	ASTMA312
TP316L	S31603	ASTMA213	ASTMA312
TP316Ti	S31635	ASTMA213	ASTMA312
TP316N	S31651	ASTMA213	ASTMA312
TP316LN	S31653	ASTMA213	ASTMA312
TP317	S31700	ASTMA213	ASTMA312
TP317L	S31703	ASTMA213	ASTMA312
TP321	S32100	ASTMA213	ASTMA312
TP321H	S32109	ASTMA213	ASTMA312
TP347	S34700	ASTMA213	ASTMA312
310MoLN	S31050	ASTMA213	ASTMA312
904L	N08904	ASTMA213	ASTMA312
2205	S31803/S32205	ASTM A789	ASTMA790
255	S32550	ASTM A789	ASTMA790
2507	S32750	ASTM A789	ASTMA790
2760	S32760	ASTM A789	ASTMA790
/	N10276	ASTM B622	ASTM B622
/	N06022	ASTM B622	ASTM B622
Nickel 200	N02200	ASTM B163	ASTM B161
Nickel 201	N02201	ASTM B163	ASTM B161
Monel 400	N04400	ASTM B163	ASTM B165
Inconel 600	N06600	ASTM B163	ASTM B167
Inconel 625	N06625	ASTM B444	ASTM B444
Incoloy 800	N08800	ASTM B163	ASTM B407
Incoloy 800H	N08810	ASTM B163	ASTM B407
Incoloy 800HT	N08811	ASTM B163	ASTM B407
Incoloy 825	N08825	ASTM B163	ASTM B423
253 SMA/F 45	S30815	ASTMA213	ASTMA312
254 SMO	S31254	ASTMA213	ASTMA312

(Super)Austenitic Stainless Steel Chemical Composition
(超级)奥氏体不锈钢化学成分表

GRADE	UNS Designation	ASTM A312 Chemical Requirement (Max)											Other
		碳C	锰Mn	磷P	硫S	硅Si	铬Cr	镍Ni	钼Mo	钛Ti	铜Cu	铝Al	
TP304	S30400	0.080	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0	/	/	/	/	/
TP304L	S30403	0.035	2.00	0.045	0.030	1.00	18.0-20.0	8.0-13.0	/	/	/	/	/
TP304H	S30409	0.04-0.1	2.00	0.045	0.030	1.00	18.0-20.0	8.0-11.0	/	/	/	/	/
253MA	S30815	0.05-0.1	0.80	0.040	0.030	1.4-2.0	20.0-22.0	10.0-12.0					N:0.14-0.20 Ce:0.03-0.08
TP309S	S30908	0.080	2.00	0.045	0.030	1.00	22.0-24.0	12.0-15.0	0.75	/	/	/	/
TP310S	S31008	0.080	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0	0.75	/	/	/	/
TP310H	S31009	0.04-0.1	2.00	0.045	0.030	1.00	24.0-26.0	19.0-22.0	/	/	/	/	/
254SMO	S31254	0.020	1.00	0.030	0.010	0.80	19.5-20.5	17.5-18.5	6.0-6.5		0.5-1.0		N:0.18-0.25
TP316	S31600	0.080	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.0-3.0	/	/	/	/
TP316L	S31603	0.035	2.00	0.045	0.030	1.00	16.0-18.0	10.0-14.0	2.0-3.0	/	/	/	/
TP316Ti	S31635	0.080	2.00	0.045	0.030	0.75	16.0-18.0	10.0-14.0	2.0-3.0	5(C+N)-0.7	/	/	N:≤0.1
TP317	S31700	0.080	2.00	0.045	0.030	1.00	18.0-20.0	11.0-15.0	3.0-4.0	/	/	/	/
TP317L	S31703	0.035	2.00	0.045	0.030	1.00	18.0-20.0	11.0-15.0	3.0-4.0	/	/	/	/
TP321	S32100	0.080	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0	/	5(C+N)-0.7	/	/	N:≤0.1
TP321H	S32109	0.04-0.1	2.00	0.045	0.030	1.00	17.0-19.0	9.0-12.0	/	4(C+N)-0.7	/	/	N:≤0.1
654SMO	S32654	0.020	2.0-4.0	0.030	0.005	0.50	24.0-25.0	21.0-23.0	7.0-8.0		0.3-0.6		N:0.45-0.55
TP347	S34700	0.080	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0	/	/	/	/	Nb:10C-1.0
TP347H	S34709	0.04-0.1	2.00	0.045	0.030	1.00	17.0-19.0	9.0-13.0	/	/	/	/	Nb:8C-1.0
Alloy 20	N08020	0.070	2.00	0.045	0.035	1.00	19.0-21.0	32.0-38.0	2.0-3.0	/	3.0-4.0	/	Nb+Ta:8C-1
800	N08800	0.100	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	/	/	0.750	0.15-0.6	/
800H	N08810	0.05-0.1	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	/	0.15-0.60	0.750	0.15-0.6	/
800HT	N08811	0.06-0.1	1.50	0.045	0.015	1.00	19.0-23.0	30.0-35.0	/	0.25-0.60	0.750	0.25-0.60	Ti+Al:0.85-1.2
904L	N08904	0.020	2.00	0.040	0.030	1.00	19.0-23.0	23.0-28.0	4.0-5.0	/	1.0-2.0	/	N:≤0.1
926	N08926	0.020	2.00	0.030	0.010	0.50	19.0-21.0	24.0-26.0	6.0-7.0	/	0.5-1.5	/	N:0.15-0.25

(Super)Duplex Steel Chemical Composition
(超级)双相钢化学成分表

GRADE	UNS Designation	ASTM A790 Chemical Requirement (Max)									
		碳C	锰Mn	磷P	硫S	硅Si	镍Ni	铬Cr	钼Mo	氮N	铜Cu
	S31500	0.03	1.2-2.0	0.03	0.03	1.4-2.0	4.2-5.2	18.0-19.0	2.5-3.0	0.05-0.1	
	S31803	0.03	2.0	0.03	0.02	1.0	4.5-6.5	21.0-23.0	2.5-3.5	0.08-0.2	
2205	S32205	0.03	2.0	0.03	0.02	1.0	4.5-6.5	22.0-23.0	3.0-3.5	0.14-0.2	
	S32520	0.03	1.5	0.035	0.02	0.8	5.5-8.0	24.0-26.0	3.0-5.0	0.2-0.35	0.5-3.0
255	S32550	0.04	1.5	0.04	0.03	1.0	4.5-6.5	24.0-27.0	2.9-3.9	0.1-0.25	1.5-2.5
	S32707	0.03	1.5	0.035	0.01	0.5	5.5-9.5	26.0-29.0	4.5-5.0	0.3-0.5	1.0
2507	S32750 ¹	0.03	1.2	0.035	0.02	0.8	6.0-8.0	24.0-26.0	3.0-5.0	0.24-0.32	0.5
	S32760 ²	0.03	1.0	0.03	0.01	1.0	6.0-8.0	24.0-26.0	3.0-4.0	0.2-0.3	0.5-1.0

1. PREN: Cr+3.3Mo+16N≥41
2. PREN: Cr+3.3(Mo+0.5W)+16N≥41

Nickel Alloy Chemical Composition
镍基合金化学成分表

GRADE	UNS Designation	Standard (Pipe)	Chemical Requirement (Max)													
			碳C	锰Mn	磷P	硫S	硅Si	镍Ni	铬Cr	钼Mo	铜Cu	铁Fe	钛Ti	铝Al	钴Co	Other
Nickel 200	N02200	B161	0.15	0.35		0.010	0.35	min 99.0			0.25	0.4				
Nickel 201	N02201	B161	0.02	0.35		0.010	0.35	min 99.0			0.25	0.4				
Monel 400	N04400	B165	0.30	2.00		0.024	0.50	min 63.0			28.0-34.0	2.5				
Monel K-500	N05500		0.20	1.50		0.015	0.50	min 63.0	14.0-17.0		27.0-34.0	0.5-2.0	0.3-1.0	2.2-3.5		
Inconel 600	N06600	B167	0.15	1.00		0.015	0.50	min 72	21.0-25.0		0.50	6.0-10.0				
Inconel 601	N06601	B167	0.10	1.50		0.015	0.50	58.0-63.0			1.00	Bal		1.0-1.7		
Inconel 625	N06625	B444	0.10	0.50	0.015	0.015	0.50	min 58	20.0-23.0	min 8-10		5.0	0.4	0.4	1.0	铌Nb+钽Ta: 3.15-4.15
Inconel 718	N07718	B983	0.08	0.35	0.015	0.015	0.35	50.0-55.0	17.0-21.0	2.8-3.3	0.30	BAL	0.65-1.15	0.2-0.8	1.0	硼B:≤0.006; 铌Nb:4.75-5.5
Incoloy 800	N08800	B407	0.10	1.50	0.045	0.015	1.00	30.0-35.0	19.0-23.0		0.75	min 39.5	0.15-0.6	0.15-0.6		
Incoloy 800H	N08810	B407	0.05-0.1	1.50	0.045	0.015	1.00	30.0-35.0	19.0-23.0		0.75	min 39.5	0.15-0.6	0.15-0.6		
Incoloy 800HT	N08811	B407	0.06-0.1	1.50	0.045	0.015	1.00	30.0-35.0	19.0-23.0		0.75	min 39.5	0.25-0.6	0.25-0.6		铝Al+钛Ti:0.85-1.2
Incoloy 825	N08825	B423	0.05	1.00		0.030	0.50	38.0-46.0	19.5-23.5	2.5-3.5	1.5-3.0	min 22.0	0.6-1.2			
/	N10276	B622	0.01	1.00	0.040	0.030	0.08	BAL	14.5-16.5	15.0-17.0		4.0-7.0			2.5	钨W:3.0-4.5; 钒V:≤0.35
/	N06022	B622	0.015	0.50	0.020	0.020	0.08	BAL	20.0-22.5	12.5-14.5		2.0-6.0			2.5	钨W:2.5-3.5; 钒V≤0.35
/	N10665	B622	0.02	1.00	0.040	0.030	0.10	BAL	1.0	26.0-30.0		2.0		0.1-0.5	1.0	
/	N10629	B622	0.01	1.50	0.040	0.010	0.05	BAL	0.5-1.5	26.0-30.0	0.50	1.0-6.0			2.5	

Comparison Table For Chinese And Foreign Stainless Steel Grades
中外不锈钢牌号对照表

NO	GRADE	UNS	GB		JIS	ISO	DIN/EN	GOST
			ISC	NEW				
1	304	S30400	S30408	06Cr19Ni10	SUS 304	X5CrNi18-10	1.4301	08X18H10
2	304L	S30403	S30403	022Cr19Ni10	SUS 304L	X2CrNi19-11	1.4307	03X18H10
3	309S	S30908	S30908	06Cr23Ni13	SUS 309S	X12CrNi23-13	1.4833	10X23H13
4	310	S31000	S31020	20Cr25Ni20	SUS 310	X15CrNi25-21	1.4841	20X25H20C2
5	310S	S31008	S31008	06Cr25Ni20	SUS 310S	X8CrNi25-21	1.4845	/
6	314	S31400	S38340	16Cr25Ni20Si2	/	X15CrNiSi25-21	1.4841	/
7	316	S31600	S31608	06Cr17Ni12Mo2	SUS 316	X5CrNiMo17-12-2	1.4401	08X16H11M3
8	316L	S31603	S31603	022Cr17Ni12Mo2	SUS316L	X2CrNiMo17-12-2	1.4404	03X17H14M2
9	316Ti	S31635	S31668	06Cr17Ni12Mo2Ti	SUS 316Ti	X6CrNiMoTi17-12-2	1.4571	08X17H13M2T
10	316N	S31651	S31658	06Cr17Ni12Mo2N	SUS 316N	/	1.4406	/
11	316LN	S31653	S31653	022Cr17Ni12Mo2N	SUS 316LN	X2CrNiMoN17-11-2	1.4429	/
12	317	S31700	S31708	06Cr19Ni13Mo3	SUS 317	/	1.4449	/
13	317L	S31703	S31703	022Cr19Ni13Mo3	SUS 317L	X2CrNiMo19-14-4	1.4438	03X16H15M3
14	321	S32100	S32168	06Cr18Ni11Ti	SUS 321	X6CrNiTi18-10	1.4541	08X18H10T
15	321H	S32109	S32169	07Cr19Ni11Ti	SUS 321 HTP	X7CrNiTi18-10	1.4878	12X18H10T
16	347	S34700	S34778	06Cr18Ni11Nb	SUS 347	X6CrNiNb18-10	1.4550	08X18H12B
17	310MoLN	S31050	S31053	022Cr25Ni22Mo2N		X1CrNiMoN25-22-2	1.4466	/
18	904L	N08904	S31782	015Cr21Ni26Mo5Cu2	SUS 890L	X1NiCrMoCu25-20-5	1.4539	/
19	2205	S31803/S32205	S22253	022Cr22Ni5Mo3N	SUS 329J3L	X2CrNiMoN22-5-3	1.4462	/
20	255	S32550	S25554	03Cr25Ni6Mo3Cu2N	SUS 329J4L	X2CrNiMoCuN25-6-3	1.4507	/
21	2507	S32750	S25073	022Cr25Ni7Mo4N	UR 47N+	X2CrNiMoN25-7-4	1.4410	/
22	2760	S32760	S27603	022Cr25Ni7Mo4WCoN	SUS329J2L	X2CrNiMoCuWN25-7-4	1.4501	/
23	Alloy 276/C276	N10276	H10276	NS3304	/	/	2.4819	/
24	Alloy 22/C22	N06022	H 06022	NS3308	/	/	2.4602	/
25	Monel 400	N 04400	H 04400	NS6400	/	/	2.4360	/
26	Inconel 600	N 06600	/	NS3102	NCF 600	/	2.4816	/
27	Inconel 625	N 06625	/	NS3306	NCF 625	/	2.4856	/
28	Incoloy 825	N 08825	/	NS1402	NCF 825	/	2.4858	/
29	Incoloy 800	N 08800	/	NS 1101	NCF 800	/	1.4876	/
30	254/254SMO	S31254	S31252	015Cr20Ni18Mo6CuN	SUS 312L	X1CrNiMoN20-18-7	1.4547	/
31	253 SMA/F 45	S30815	/	/	/	X7CrNiSiN21-11	1.4835	/
32	654 SMO	S32654	S32652	015Cr24Ni22Mo8Mn3CuN	/	X1CrNiMoCuN24-22-8	1.4652	/

TEST ITEMS OF COMMON PRODUCT STANDARDS.
常见产品标准的检测需求

Standard	chemistry	stretch	Impact test		flatten	spin over	curve	hardness	Corrosion test		Metallographic examination			ET	UT	HT	size	facade	Remark
			-196	tempe- rature					interg- ranular	Point corrosion	Inclusions	grain size	ferr- olites						
GB/T 14976-2012	√	√	X	X	X	X	X	X	√	X	X	X	X	X	X	√	√	√	HT can be replaced by ET or UT
GB 13296-2013	√	√	X	X	√	√	X	X	√	X	X	X	X	X	√	√	√	√	HT can be replaced by ET
GB 5310-2008	√	√	X	√	√	X	√	√	X	X	√	√	X	X	√	√	√	√	
GB 9948-2013	√	√	X	√	√	√	X	√	√	X	X	X	X	X	√	√	√	√	HT can be replaced by ET or MFL
ASTMA312	√	√	X	X	√	X	X	X	X	X	X	X	X	X	X	√	√	√	HT can be replaced by ET or UT
ASTMA213	√	√	X	X	√	√	X	√	X	X	X	√	X	X	√	√	√	√	HT can be replaced by ET
ASTMA269	√	√	X	X	√	√	X	√	X	X	X	X	X	X	X	√	√	√	HT can be replaced by ET or UT
JISG3459	√	√	X	X	√	X	X	X	X	X	X	√	X	X	X	√	√	√	HT can be replaced by ET or UT
JISG3463	√	√	X	X	√	√	X	X	X	X	X	√	X	X	X	√	√	√	HT can be replaced by ET or UT
DN 17456	√	√	X	X	X	X	X	X	X	X	X	X	X	X	X	√	√	√	
DN 17458	√	√	X	X	√	√	X	X	X	X	X	X	X	X	√	√	√	√	Flattening or flaring
GB/T 21833.1-2020	√	√	X	X	√	√	X	√	√	√	X	X	√	√	√	√	√	√	HT can be replaced by ET or UT
GB/T 21833.2-2020	√	√	X	X	√	X	X	√	√	√	X	X	√	√	√	√	√	√	HT can be replaced by ET or UT
ASTMA790	√	√	X	X	√	X	X	√	X	X	X	X	X	X	√	√	√	√	HT can be replaced by ET or UT

SURFACE POLISHING VS ROUGHNESS OF STAINLESS STEEL SEAMLESS TUBE.
不锈钢无缝管表面抛光与粗糙度的对照表。

Grit Size	Ra(μm)		Marking Mark	N(ISO)
目数				
60#	3.2	125	▽▽	N8
180#	1.6	63	▽▽▽	N7
220#	1.2	48	▽▽▽	
250#	0.8	32	▽▽▽	N6
300#	0.4	16	▽▽▽	N5
350#	0.25	10	▽▽▽	
400#	0.2	8	▽▽▽▽	N4
600#	0.1	4	▽▽▽▽	N3

外径尺寸和壁厚表(美标)ANSIB36.10、B36.19M
ASME ANSI B36.10/B36.19 Size Chart

公称通径 Nominal Pipe Size		外径 Outside Diameter	公称壁厚 Nominal Wall Thickness							
NPS inch	DN	(ODmm)	Sch5s	Sch10s	Sch10	Sch20	Sch30	Sch40s	STD	Sch40
1/8	6	10.3	—	1.24	—	—	—	1.73	1.73	1.73
1/4	8	13.7	—	1.65	—	—	—	2.24	2.24	2.24
3/8	10	17.1	—	1.65	—	—	—	2.31	2.31	2.31
1/2	15	21.3	1.65	2.11	—	—	—	2.77	2.77	2.77
3/4	20	26.7	1.65	2.11	—	—	—	2.87	2.87	2.87
1	25	33.4	1.65	2.77	—	—	—	3.38	3.38	3.38
1-1/4	32	42.2	1.65	2.77	—	—	—	3.56	3.56	3.56
1-1/2	40	48.3	1.65	2.77	—	—	—	3.68	3.68	3.68
2	50	60.3	1.65	2.77	—	—	—	3.91	3.91	3.91
2-1/2	65	73.0	2.11	3.05	—	—	—	5.16	5.16	5.16
3	80	88.9	2.11	3.05	—	—	—	5.49	5.49	5.49
3-1/2	90	101.6	2.11	3.05	—	—	—	5.74	5.74	5.74
4	100	114.3	2.11	3.05	—	—	—	6.02	6.02	6.02
5	125	141.3	2.77	3.40	—	—	—	6.55	6.55	6.55
6	150	168.3	2.77	3.40	—	—	—	7.11	7.11	7.11
8	200	219.1	2.77	3.76	—	6.35	7.04	8.18	8.18	8.18
10	250	273.1	3.40	4.19	—	6.35	7.80	9.27	9.27	9.27
12	300	323.9	3.96	4.57	—	6.35	8.38	9.53	9.53	10.31
14	350	355.6	3.96	4.78	6.35	7.92	9.53	—	9.53	11.13
16	400	406.4	4.19	4.78	6.35	7.92	9.53	—	9.53	12.70
18	450	457.2	4.19	4.78	6.35	7.92	11.13	—	9.53	14.27
20	500	508.0	4.78	5.54	6.35	9.53	12.70	—	9.53	15.09
22	—	558.8	4.78	5.54	6.35	9.53	12.70	—	9.53	—
24	600	609.6	5.54	6.35	6.35	9.53	14.27	—	9.53	17.48
26	—	660.4	—	—	7.92	12.70	—	—	9.53	—
28	700	711.2	—	—	7.92	12.70	15.88	—	9.53	—
30	—	762.0	6.35	7.92	7.92	12.70	15.88	—	9.53	—
32	800	812.8	—	—	7.92	12.70	15.88	—	9.53	17.48
34	—	863.6	—	—	7.92	12.70	15.88	—	9.53	17.48
36	900	914.4	—	—	7.92	12.70	15.88	—	9.53	17.48
38	—	965.2	—	—	—	—	—	—	9.53	—
40	1000	1016.0	—	—	—	—	—	—	9.53	—
42	—	1066.8	—	—	—	—	—	—	9.53	—
44	1100	1117.6	—	—	—	—	—	—	9.53	—
46	—	1168.4	—	—	—	—	—	—	9.53	—
48	1200	1219.2	—	—	—	—	—	—	9.53	—

外径尺寸和壁厚表(美标)ANSIB36.10、B36.19M
ASME ANSI B36.10/B36.19 Size Chart

公称通径 Nominal Pipe Size		外径 Outside Diameter	公称壁厚 Nominal Wall Thickness								
NPS inch	DN	(ODmm)	Sch60	Sch80s	XS	Sch80	Sch100	Sch120	Sch140	SCH160	XXS
1/8	6	10.3	—	2.41	2.41	2.41	—	—	—	—	—
1/4	8	13.7	—	3.02	3.02	3.02	—	—	—	—	—
3/8	10	17.1	—	3.20	3.20	3.20	—	—	—	—	—
1/2	15	21.3	—	3.73	3.73	3.73	—	—	—	4.78	7.47
3/4	20	26.7	—	3.91	3.91	3.91	—	—	—	5.56	7.82
1	25	33.4	—	4.55	4.55	4.55	—	—	—	6.35	9.09
1-1/4	32	42.2	—	4.85	4.85	4.85	—	—	—	6.35	9.70
1-1/2	40	48.3	—	5.08	5.08	5.08	—	—	—	7.14	10.15
2	50	60.3	—	5.54	5.54	5.54	—	—	—	8.74	11.07
2-1/2	65	73.0	—	7.01	7.01	7.01	—	—	—	9.53	14.02
3	80	88.9	—	7.62	7.62	7.62	—	—	—	11.13	15.24
3-1/2	90	101.6	—	8.08	8.08	8.08	—	—	—	—	—
4	100	114.3	—	8.56	8.56	8.06	—	11.13	—	13.49	17.12
5	125	141.3	—	9.53	9.53	9.53	—	12.70	—	15.88	19.05
6	150	168.3	—	10.97	10.97	10.97	—	14.27	—	18.26	21.95
8	200	219.1	10.31	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.23
10	250	273.1	12.70	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40
12	300	323.9	14.27	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40
14	350	355.6	15.09	—	12.70	19.05	23.83	27.79	31.75	35.71	—
16	400	406.4	16.66	—	12.70	21.44	26.19	30.96	36.53	40.49	—
18	450	457.2	19.05	—	12.70	23.83	29.36	34.96	39.67	45.24	—
20	500	508.0	20.62	—	12.70	26.19	32.54	38.10	44.45	50.01	—
22	—	558.8	22.23	—	12.70	28.58	34.93	41.28	47.63	53.98	—
24	600	609.6	24.61	—	12.70	30.96	38.89	46.02	52.37	59.54	—
26	—	660.4	—	—	12.70	—	—	—	—	—	—
28	700	711.2	—	—	12.70	—	—	—	—	—	—
30	—	762.0	—	—	12.70	—	—	—	—	—	—
32	800	812.8	—	—	12.70	—	—	—	—	—	—
34	—	863.6	—	—	12.70	—	—	—	—	—	—
36	900	914.4	—	—	12.70	—	—	—	—	—	—
38	—	965.2	—	—	12.70	—	—	—	—	—	—
40	1000	1016.0	—	—	12.70	—	—	—	—	—	—
42	—	1066.8	—	—	12.70	—	—	—	—	—	—
44	1100	1117.6	—	—	12.70	—	—	—	—	—	—
46	—	1168.4	—	—	12.70	—	—	—	—	—	—
48	1200	1219.2	—	—	12.70	—	—	—	—	—	—

COMPARISON OF DIFFERENT STANDARD TOLERANCE
各类标准的公差对照表

STANDARD	OD(D)	TOLERANCE(MM)		THICKNESS(S)	TOLERANCE	LENGTH	TOLERANCE
	MM	COMMON HIGH		MM		MM	MM
JIS3459 hot-finished smls pipe	D<50	±0.50		S<4	±0.5		
	D≥50	±1.0%		S≥4	±12.5%		
JIS3459 cold-finished smls pipe	D<30	±0.3		S<2	±0.2		
	D≥30	±1.0%		S≥2	±10.0%		
JISG3463 hotfinished smls pipe	100<D	+0.4/-0.8		D<100, S<2	/	D<50,L<7M	+7/0
				D<100, 2≤S<2.4	+40%/0	D<50,7<L<10M	+10/0
				D<100, 2.4≤S<3.8	+35%/0		
				D<100, 3.8≤S<4.6	+33%/0		
	100≤D<120	+0.4/-1.2		D<100, 4.6≤S	+28%/0	D<50,10<L<13M	+13/0
				D>100, S<2	/	D<50,13M<L	+15/0
				D>100, 2≤S<2.4	/		
				D>100, 2.4≤S<3.8	+35%/0		
	160≤D<200	+0.4/-1.8		D>100, 3.8≤S<4.6	+33%/0	D>50,7<L<7M	+10/0
	200≤D	+0.4/-2.4		D>100, 4.6≤S	+28%/0		
JISG3463 Cold finished smls pipe	<60	+0.4/-0.8		D<40, S<2.0	+0.4/0	D>50,7<L<10M	+13/0
	60≤D<80	±0.3		D<40, S≥2.0	+20%/0		
	80≤D<100	±0.4		D≥40	+22%/0		
	100≤D<120	+0.4/-0.6				D>50,10M<L	+15/0
	120≤D<160	+0.4/-0.8					
	160≤D<200	+0.4/-1.2					
	200≤D	+0.4/-1.6					
GB/T14975 热轧(挤、扩)钢管	D<76.1	+1.25%	±0.6	所有壁厚，普通级PA	+15%/-12.5%		
	76.1<D<139.7	+1.5%	±0.8				
	139.7<D<273.1	+1.5%	±1.2	所有壁厚，高级PC	±12.5%		
	273.1<D<323.9	+1.5%	±1.6				
	D≥323.9	+1.5%	±0.6%				
GB/T14975 冷拔(扎)钢管	D<12.7	±0.3	±0.1	所有壁厚，普通级PA	+12.5%/-10%		
	12.7<D<38.1	±0.3	±0.15				
	38.1<D<88.9	±0.4	±0.3				
	88.9<D<139.7	±0.9%	±0.4				
	139.7<D<203.2	±0.9%	±0.8	所有壁厚，高级PC	±10%		
	203.2<D<219.1	±0.9%	±1.1				
	219.1<D<323.9	±0.9%	±1.6				
GB/T14976 热轧(挤、扩)钢管	D≥323.9	±0.9%	±0.5%				
	68<D<159	1.25%	+1%	S<15			
		D>159		±1.5%	S≥15		
					Smin<15		
				Smin≥15			
GB/T14976 冷拔(扎)钢管	6<D<10	±0.2	±0.15	S≤3			
	10≤D<30	±0.3	±0.2				
	30≤D<50	±0.4	±0.3	S>3			
	50≤D<219	0.85%	0.75%				
	D>219	0.9%	0.8%				

COMPARISON OF DIFFERENT STANDARD TOLERANCE
各类标准的公差对照表

STANDARD	OD(D)	TOLERANCE(MM)	THICKNESS(S)	TOLERANCE	LENGTH	TOLERANCE	
	MM	COMMON HIGH	MM		MM	MM	
GB/T13296 热拔(挤压)钢管	D≤140	±1.25%	Smin, ≤4	+0.9/0			
			Smin, >4	+25%/0			
	D>140	±1.0%	S _s ≤4	±0.45			
			S _s >4	+12.5%/-10%			
GB/T13296 冷拔(扎)钢管	D≤25	±0.1	D≤38, Smin	+20%/0			
	25<D≤40	±0.15					
	40<D≤50	±0.2					
	50<D≤65	±0.25	D>38, Smin	+22%/0			
	65<D≤75	±0.3					
	75<D≤100	±0.38	D≤38, S	±10%			
	100<D≤159	+0.38/-0.64	D>38, S	±11%			
	D>159	±0.5%					
EN 10216-5 HFD	30≤D≤219.1(D2)	±1.0% or ±0.5mm, whichever is the greater (取较大者)	T1, T≤4	±15% or ±0.6mm, whichever is the greater(取较大者)	L≤6M	+5/0	
			T2	±12.5% or ±0.4mm, whichever is the greater(取较大者)			
	219.1<D≤610 (D1)	±1.5% or ±0.75mm, whichever is the greater (取较大者)	T≤0.05D	+22.5%/-15%	6<L≤12	+10/0	
			T1, 0.05D<T≤0.09D	±15% or ±0.6mm, whichever is the greater(取较大者)			
			T2, T>0.09D	±12.5% or ±0.4mm, whichever is the greater(取较大者)	L>12	+by agreement/0	
EN 10216-5 CFD	D3(D≤219.1)	±0.75% or ±0.3mm, whichever is the greater (取较大者)	T3	±10% or ±0.2mm, whichever is the greater(取较大者)			
	D4(D≤219.1)	±0.5% or ±0.1mm, whichever is the greater (取较大者)	T4	±7.5% or ±0.15mm, whichever is the greater(取较大者)			
A213 HFD	D≤100	+0.4/-0.8	D<100,S≤2.4	+40%/0	HFD, all size	+5.0/0	
		+0.4/-1.2	D<100,2.4<S≤3.8	+35%/0			
		+0.4/-1.6	D<100,3.8<S≤4.6	+33%/0			
	100<D≤200	+0.4/-1.2	D<100,S>4.6	+28%/0			
		200<D≤225	+0.4/-1.6	D>100,2.4<S≤3.8			+35%/0
				D>100,3.8<S≤4.6			+33%/0
	D>100,S>4.6	+28%/0					
A213 CFD	D<25	±0.10	D≤38.1	+20%/0	CFD, D<50.8	+3.0/0	
	25≤D≤40	±0.15					
	40<D<50	±0.20					
	50≤D<65	±0.25					
	65≤D<75	±0.30	D>38.1	+22%/0	CFD, D≥50.8	+5.0/0	
	75≤D≤100	±0.38					
	100<D≤200	+0.38/-0.64					
	200<D≤225	+0.38/-1.14					

COMPARISON OF DIFFERENT STANDARD TOLERANCE
各类标准的公差对照表

STANDARD	OD(D)	TOLERANCE(MM)	THICKNESS(S)	TOLERANCE	LENGTH	TOLERANCE
	MM	COMMON HIGH	MM		MM	MM
A269	D≤13	±0.13	D≤13	±15%	D<38	+3.2/0
	13<D<38	±0.13	13<D<356	±10%	D≥38	+4.8/0
	38≤D<89	±0.25				
	89≤D<140	±0.38				
	140≤D<203	±0.76				
	203≤D<305	±1.01				
	305≤D<356	±1.26				
A270	D≤25	±0.13	for thk≥1.24, the OD tolerance, per to the table; for THK<1.24, the OD tolerance shall be negotiated	±12.5%	D≤100	+3.0/0
	25<D≤50	±0.20			100<D≤300	+5.0/0
	50<D≤75	±0.25				
	75<D≤100	±0.38				
	100<D<140	±0.38				
	140≤D<200	±0.75				
	200≤D≤300	±1.25				
A312	10.3≤D≤48.3	+0.4/-0.8	10.3≤D≤73.0	+20%-12.5%	For all sizes	+6.0/0
	48.3<D≤114.3	+0.8/-0.8	88.9≤D≤457.2, t/D≤5%	+22.5%/-12.5%		
	114.3<D≤219.1	+1.6/-0.8	88.9≤D≤457.2, t/D>5%	+15%/-12.5%		
	219.1<D≤457.2	+2.4/-0.8	D≥508.0, t/D≤5%, SMLS	+22.5%/-12.5%		
	457.2<D≤660.4	+3.2/-0.8	D≥508.0, t/D>5%, SMLS	+15%/-12.5%		
	660.4<D≤863.6	+4.0/-0.8	D≥508.0, WLD	+17.5%/-12.5%		
863.6<D≤1219.2	+4.8/-0.8					
A789	D<12.7	±0.13	S(ave): ±15%	S(Min):+30%/0	OD<38.1	+3.0/0
	12.7≤D<38.1	±0.13	S(ave): ±10%	S(Min):+20%/0	OD≥38.1	+5.00/0
	38.1≤D<88.9	±0.25				
	88.9≤D<139.7	±0.38				
	139.7≤D≤203.2	±0.76				
A790	10.3≤D≤48.3	+0.4/-0.8	10.3≤D≤73.0	+20%/-12.5%	For all sizes	+6.0/0
	48.3<D≤114.3	+0.8/-0.8	88.9≤D≤457.2, t/D≤5%	+22.5%/-12.5%		
	114.3<D≤219.1	+1.6/-0.8	88.9≤D≤457.2, t/D>5%	+15.0%/-12.5%		
	219.1<D≤457.2	+2.4/-0.8	D≥508.0, t/D≤5%, SMLS	+22.5%/-12.5%		
	457.2<D≤660.4	+3.2/-0.8	D≥508.0, t/D>5%, SMLS	+15.0%/-12.5%		
	660.4<D≤762.0	+4.0/-0.8	D≥508.0, WLD	+17.5%/-12.5%		
A249	D<25.4	+0.1/-0.11	SMLS S(ave):±10%	D≤38.1, SMLS S(Min):+20%/0	D<50.8	+3.0/0
	25.4≤D≤38.1	±0.15		D>38.1, SMLS S(Min):+22%/0		
	38.1<D≤50.8	±0.20				
	50.8≤D≤63.5	±0.25				
		63.5≤D≤76.2				
	76.2≤D≤101.6	±0.38				
	101.6≤D≤190.5	+0.38/-0.64				
	190.5<D≤228.6	+0.38/-1.14				
B161 (Cold-worked Pipe and Tube)	D≤10	±0.10	S(ave):±15%	S(Min):+30%/0	OD<50.8: +3.2/-0 OD≥50.8: +4.8/-0 Details refer to B829	
	10<D<16	±0.13				
	16≤D≤38	±0.19				
	38<D≤76	±0.25	S(ave):±10%	S(Min):+22%/0		
	76<D≤114	±0.38				
	114<D≤152	±0.51				
	152<D≤168	±0.64				
	168<D≤219	±0.79				
	219<D≤356	+1.57/-0.79	S(ave):+15%/-12.5%	S(Min):+30%/0		
356<D≤610	+3.18/-0.79					

COMPARISON OF DIFFERENT STANDARD TOLERANCE
各类标准的公差对照表

STANDARD	OD(D)	TOLERANCE(MM)	THICKNESS(S)	TOLERANCE	LENGTH	TOLERANCE
	MM	COMMON HIGH	MM		MM	MM
B161 (Hot-finished Tube)	19≤D≤38	+0.4/-0.8	for nominal wall:±12.5%	for min wall:±28.5%/0	OD<50.8: +3.2/-0 OD≥50.8: +4.8/-0 Details refer to B829	
	38.1<D<102	±0.8				
	102<D≤235	+1.6/-0.8				
B161 (Hot-worked Pipe)	25≤D<48	±0.38	for nominal wall: +16%/-12.5%	for min wall:±28.5%/0		
	48≤D<114	±0.51				
	114≤D<165	±0.64				
	165≤D≤235	±0.79				
B163 (N02200,N02201, N04400)	12.7≤D<15.9	+0.13/0	ave. ±12.5%	min:±25.0%/0	Cut-to-length	+3.2/-0
	15.9≤D≤38.1	±0.13	ave. ±10.0%	min:±20.0%/0		
	38.1<D≤76.2	±0.25	ave. ±10.0%	min:±22.0%/0		
B163(for rest)	12.7≤D<15.9	±0.13	ave. ±12.5%	min:±25.0%/0	Cut-to-length: >9.1m	+6.4/0
	15.9<D≤38.1	±0.19	ave. ±10.0%	min:±20.0%/0		
	38.1<D≤76.2	±0.25	ave. ±10.0%	min:±22.0%/0		
B444 (Cold-worked Pipe and Tube)	10≤D<16	±0.13	S(ave):±15%	S(Min) :+30%/0	OD<50.8: +3.2/-0 OD≥50.8: +4.8/-0 Details refer to B829	
	16<D≤38	±0.19	S(ave):±10%	S(Min) :+22%/0		
	38<D≤76	±0.25				
	76<D≤114	±0.38				
	114<D≤152	±0.51				
	152<D≤168	±0.64				
	168≤D<219	±0.79				
	219<D≤356	+1.57/-0.79	S(ave):+15%/-12.5%	S(Min) :+30%/0		
356<D≤610	+3.18/-0.79					
B622 (Cold-worked Pipe and Tube)	D≤10	±0.10	S(ave):±15%	S(Min) :+30%/0	OD<50.8: +3.2/-0 OD≥50.8: +4.8/-0 Details refer to B829	
	10<D<16	±0.13				
	16≤D≤38	±0.19				
	38<D≤76	±0.25	S(ave):±10%	S(Min) :+22%/0		
	76<D≤114	±0.38				
	114<D≤152	±0.51				
	152<D≤168	±0.64	S(ave):±12.5%	S(Min) :+28%/0		
	168<D≤219	±0.79				
	219<D≤356	+1.57/-0.79				
356<D≤610	+3.18/-0.79					
B622 (Hot-finished Tube)	19≤D≤38	+0.4/-0.8	for nominal wall:±12.5%	for min wall:±28.5%/0	OD<50.8: +3.2/-0 OD≥50.8: +4.8/-0 Details refer to B829	
	38.1<D<102	±0.8				
	102<D≤235	+1.6/-0.8				
B622 (Hot-worked Pipe)	25≤D<48	±0.38	for nominal wall: +16%/-12.5%	for min wall:±28.5%/0		
	48≤D<114	±0.51				
	114≤D<165	±0.64				
	165≤D≤235	±0.79				
B729 (Cold-worked)	D≤10	±0.1	D<16,S(Ave)	±15%	D<50.8	+3.2/0
	10<D<16	±0.13	16<D≤114,S(Ave)	±10%		
	16<D≤38	±0.19	114<D≤219,S(Ave)	±12.5%		
	38<D≤76	±0.25	219<D≤610,S(Ave)	±15%/-12.5%		
	76<D≤114	±0.38	D<16,S(Min)	+30%/0	D≥50.8	+4.8/0
	114<D≤152	±0.51	16<D≤114,S(Min)	+22%/0		
	152<D≤168	±0.64	114<D≤219,S(Ave)	+28%/0		
	168<D≤219	±0.79	219<D≤610,S(Ave)	+30%/0		
	219<D≤356	+1.57/-0.79				
	356<D≤610	+3.18/-0.79				
B729 (Hot-finished)	19<D≤38	-0.5	All size, S(Ave)	±12.5%	D<50.8	+3.2/0
	38.1<D≤102	±0.8	All size, S(Min)	+28.5%/0	D≥50.8	+4.8/0
	102<D≤235	+1.6/-0.8				

Mechanical Character Properties
机械性能表

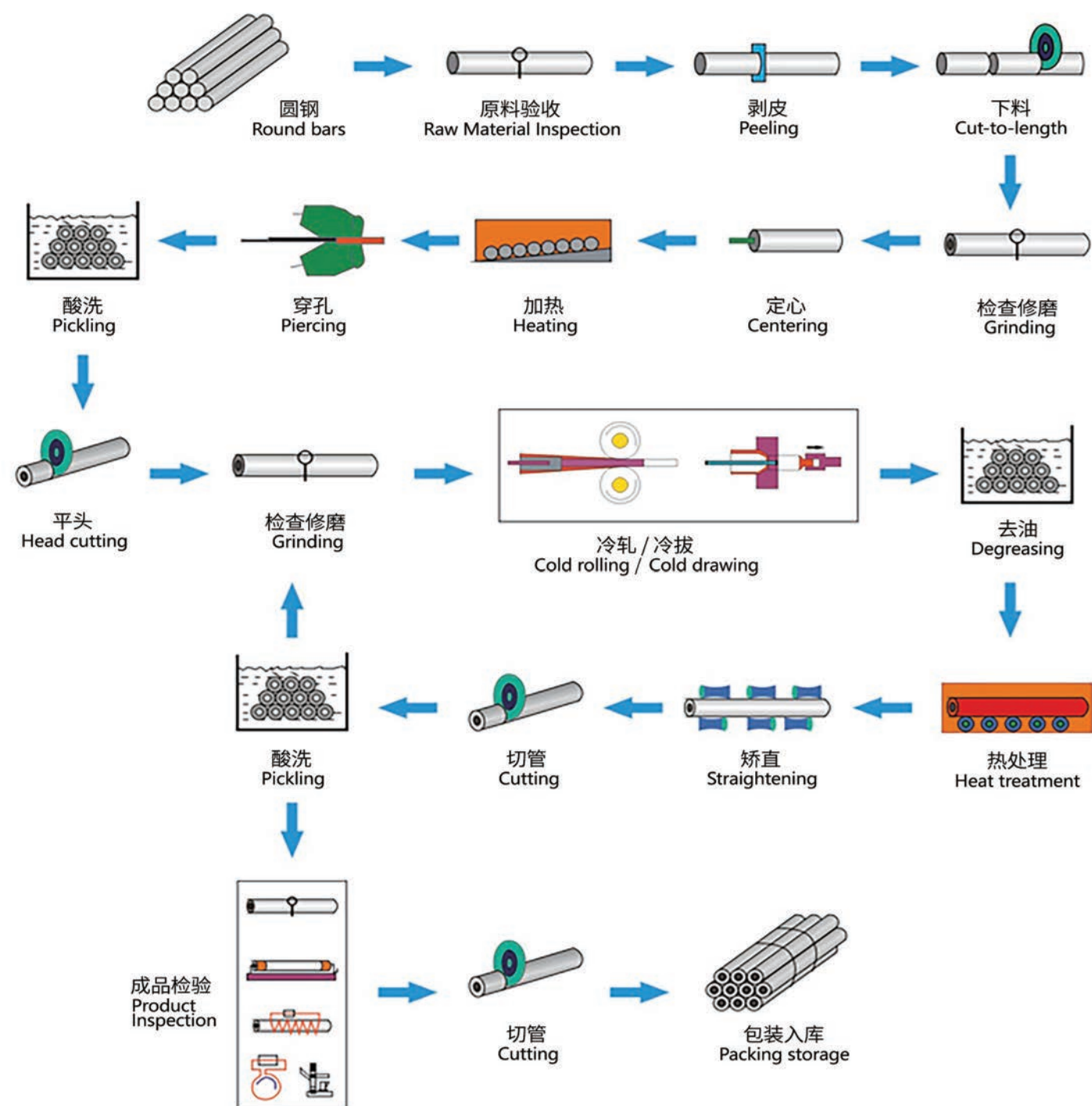
Grade	Condition&Size	Standard	Heat Treating Temp. ;min	Tensile Strength	Yield Strength	Elongation
				Min, Mpa	Min, Mpa	Min,%
TP304		A312	1040℃	515	205	35
TP304L		A312	1040℃	485	170	35
TP304H	Cold Finished	A312	1040℃	515	205	35
TP304H	Hot Finished	A312	1040℃	515	205	35
253MA		A312	1040℃	600	310	35
TP309S		A312	1040℃	515	205	35
TP310S		A312	1040℃	515	205	35
TP310H		A312	1040℃	515	205	35
254SMO	≤5mm	A312	1150℃	675	310	35
254SMO	>5mm	A312	1150℃	655	310	35
TP316		A312	1040℃	515	205	35
TP316L		A312	1040℃	485	170	35
TP316Ti		A312	1040℃	515	205	35
TP317		A312	1040℃	515	205	35
TP317L		A312	1040℃	515	205	35
TP321	≤9.5mm	A312	1040℃	515	205	35
TP321	>9.5mm	A312	1040℃	485	170	35
TP321H	Cold Finished;≤9.5mm	A312	1100℃	515	205	35
TP321H	Cold Finished;>9.5mm	A312	1100℃	480	170	35
TP321H	Hot Finished;≤9.5mm	A312	1050℃	515	205	35
TP321H	Hot Finished;>9.5mm	A312	1050℃	480	170	35
654SMO		A312	1150℃	750	430	35
TP347		A312	1040℃	515	205	35
TP347H	Cold Finished	A312	1100℃	515	205	35
TP347H	Hot Finished	A312	1050℃	515	205	35
Alloy 20		A312	925-1010℃	550	240	30
N08800	cold work annealed	A312	1040℃	515	205	30
N08800	hot finished annealed	A312	1040℃	450	170	30
N08810		A312	1120℃	450	170	30
N08811		A312	1150℃	450	170	30
N08904		A312	1100℃	490	215	35
N08926		A312	1100-1150℃	650	295	35
S31500		A790	980-1040℃	630	440	30
S31803		A790	1020-1100℃	620	450	25
S32205		A790	1020-1100℃	655	450	25
S32520		A790	1080-1120℃	770	550	25
S32550		A790	1040℃ min	760	550	15
S32707		A790	1080-1120℃	920	700	25
S32750		A790	1025-1125℃	800	550	15
S32760		A790	1070-1140℃	750	550	25

Mechanical Character Properties
机械性能表

Grade	Condition&Size	Standard	Tensile Strength	Yield Strength	Elongation
			Min, Mpa	Min, Mpa	Min, Mpa
N02200	Annealed: OD≤127mm	B161	380	105	35
N02200	Annealed: OD>127	B161	380	80	40
N02200	Stress-Relieved: All size	B161	450	275	15
N02201	Annealed: OD≤127mm	B161	345	80	35
N02201	Annealed: OD>127mm	B161	345	70	40
N02201	Stress-Relieved: All size	B161	415	205	15
N04400	Annealed: OD≤127mm	B165	480	195	35
N04400	Annealed: OD>127mm	B165	480	170	35
N04400	Stress-Relieved: All size	B165	585	380	15
N06600	Hot-worked or hot worked annealed; OD≤127mm	B167	550	205	35
N06600	Hot-worked or hot worked annealed; OD>127mm	B167	515	170	35
N06600	Cold-worked annealed; OD≤127mm	B167	550	240	30
N06600	Cold-worked annealed; OD>127mm	B167	550	205	35
N06601	Cold-worked annealed or hot-worked annealed	B167	550	205	30
N06625	Grade 1	B444	827	414	30
N06625	Grade 2(Solution Annealed)	B444	690	276	30
N07718	Solution Ann+prechard	B983	1034	862	20
N08800	Cold-worked annealed	B407	520	205	30
N08800	Hot-finished annealed or hot-finished	B407	450	170	30
N08810	Hot-finished annealed or cold-worked annealed	B407	450	170	30
N08811	Hot-finished annealed or cold-worked annealed	B407	450	170	30
N08825	hot-finished annealed	B423	517	172	30
N08825	cold-worked annealed	B423	586	241	30
N10276		B622	690	283	40
N06022		B622	690	310	45
N10665		B622	760	350	40
N10629		B622	760	350	40

无缝管工艺流程图

MANUFACTURING PROCESS OF SEAMLESS TUBES&PIPES



连续成型焊管生产工艺流程

CONTINUOUS MANUFACTURING PROCESS OF WELDED PIPES & TUBES

