

# Commercial Proposal for Supply

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## Stainless Steel Pipe, Tube, and Valve Systems for Food-Grade and Chemical-Resistant Applications



*Food-grade stainless steel AISI grades chart*



*Stainless steel metal pricing and procurement*

### Introduction

Stainless steel pipe, tube, and valve systems are critical components in process piping for food processing, chemical, pharmaceutical, and cosmetic industries. Requirements for tubing are exceptionally stringent: the internal surface must be absolutely smooth ( $R_a \leq 0.8$  micrometers) to eliminate product stagnation zones and prevent microbiological contamination. For pharmaceutical applications, electropolished surfaces with  $R_a \leq 0.4$  micrometers are mandatory per ASME BPE and FDA guidelines.

### Supply Chain Pain Points and Solutions

**Pain Point 1: Internal Surface Roughness Non-Compliance.** Industrial AISI 304 tubing with internal surface roughness  $R_a > 1.6$  micrometers creates conditions for product adhesion and bacterial biofilm development. Food industry standards require  $R_a \leq 0.8$  micrometers; pharmaceutical standards demand  $R_a \leq 0.4$  micrometers.

*Solution:* Metal-Asia.pw supplies tubing with electropolished internal surfaces (EP) guaranteeing roughness  $R_a$  0.3-0.5 micrometers. For pharmaceutical applications, DIN 11850 and ASME BPE-compliant tubing is delivered with Certificate 3.1 and surface roughness protocol.

**Pain Point 2: Fitting-to-Pipe Grade Mismatch.** Suppliers frequently pair AISI 316 tubing with AISI 304 fittings to reduce cost. At welded joints, a galvanic couple forms between dissimilar alloys, accelerating localized corrosion and compromising system integrity.

*Solution:* Mandatory grade matching — AISI 316 tubing requires AISI 316 fittings with minimum 2% molybdenum content. Spectrometric verification of fitting chemical composition is performed for every batch.

**Pain Point 3: Absence of Food-Contact Certifications for Valves.** Ball valves and gate valves without FDA, EHEDG, or 3-A Sanitary Standards certification are not permitted for installation in food processing facilities in the EU, North America, or any market requiring HACCP compliance.

*Solution:* Valve supply exclusively with food-contact compliance certificates. Preparation of material declarations, surface finish certificates, and pressure test documentation per EN 12266 and API 598.

### Product Range — Pipe and Tube

Product Type	Steel Grades	Outer Diameter, mm	Wall Thickness, mm	Length, mm	Surface	International Standard
Seamless cold-drawn tube	AISI 304/304L	6 – 219	0.5 – 12	4000-7000	BA, EP	ASTM A269, DIN 17455
Seamless cold-drawn tube	AISI 316/316L	6 – 219	0.5 – 12	4000-7000	BA, EP	ASTM A269, DIN 17455
Electric resistance welded (ERW)	AISI 304	10 – 3048	0.5 – 20	6000	2B, BA	ASTM A249, ASTM A554
Electric resistance welded (ERW)	AISI 316	10 – 3048	0.5 – 20	6000	2B, BA	ASTM A249, ASTM A554
Square hollow section	AISI 304	10x10 – 200x200	1.0 – 8.0	6000	2B, No.4	EN 10219
Rectangular hollow section	AISI 304	20x10 – 300x200	1.0 – 8.0	6000	2B, No.4	EN 10219
DIN 11850 food-grade tube	AISI 304/316	10 – 104	1.0 – 3.0	6000	EP (Ra<0.8)	DIN 11850
SMS dairy tube	AISI 304/316	25 – 104	1.0 – 3.0	6000	EP (Ra<0.8)	SMS 3008
ASME BPE pharmaceutical tube	AISI 316L	6 – 152	0.89 – 3.05	6000	EP (Ra<0.4)	ASME BPE

### Product Range — Valves and Fittings

Product Name	Steel Grades	Size Range	Pressure Rating	Standard	Application
90-degree elbows	AISI 304/316	10 – 200 mm	16-40 bar	DIN 2605, ISO 3419	Food process piping

Product Name	Steel Grades	Size Range	Pressure Rating	Standard	Application
Equal tees	AISI 304/316	10 – 200 mm	16-40 bar	DIN 2615, ISO 3419	Pipeline branching
Slip-on flanges	AISI 304/316	DN10 – DN300	PN16-PN40	EN 1092-1	Pipe-to-equipment connection
Weld neck flanges	AISI 304/316	DN10 – DN300	PN16-PN100	EN 1092-1	High-pressure applications
2-way ball valves	AISI 316	DN10 – DN100	PN16-PN63	ISO 5211, EN 12516	Flow isolation
3-way ball valves	AISI 316	DN10 – DN50	PN16-PN40	ISO 5211, EN 12516	Flow diversion
Knife gate valves	AISI 304	DN50 – DN300	PN10	EN 12266	Slurry and powder regulation
Coupling unions	AISI 304/316	10 – 100 mm	16-40 bar	DIN 2986	Pipe joining
Cross fittings	AISI 304/316	10 – 100 mm	16-40 bar	DIN 2616	4-way branching
Concentric reducers	AISI 304/316	10 – 200 mm	16-40 bar	DIN 2616	Diameter transition

### Technical Parameters – Pipe and Tube

Parameter	Seamless AISI 304 CD	ERW AISI 304	Seamless AISI 316 CD
Outer diameter range	6 – 219 mm	10 – 3048 mm	6 – 219 mm
Diameter tolerance	+/- 0.1 mm (up to 38 mm)	+/- 0.5%	+/- 0.1 mm
Wall thickness	0.5 – 12 mm	0.5 – 20 mm	0.5 – 12 mm
Wall tolerance	+/- 10%	+/- 10%	+/- 10%
Internal roughness (EP)	Ra 0.3-0.8 micrometers	Ra 0.8-1.6 micrometers	Ra 0.3-0.8 micrometers
Tensile strength	515 MPa	515 MPa	515 MPa
Hydrostatic test pressure	1.5 x PN	1.5 x PN	1.5 x PN
International standard	ASTM A269, DIN 17455	ASTM A249, ASTM A554	ASTM A269, DIN 17455

## HS Codes for Pipe, Tube, and Valves

Product Description	HS Code	Typical Duty Rate
Seamless cold-drawn tubes AISI 304/316	7304.41.000	0-5%
Electric resistance welded tubes AISI 304/316	7306.40.200	0-5%
Pipe fittings (elbows, tees, reducers)	7307.29.300	0-5%
Stainless steel flanges	7307.21.000	0-5%
Ball valves, stainless steel	8481.80.610	0-5%
Gate valves, stainless steel	8481.80.190	0-5%

## Metal-Asia.pw Global Procurement Services

Metal-Asia.pw delivers comprehensive stainless steel supply chain solutions from China, designed for international distributors, EPC contractors, and industrial OEMs:

- **Global Procurement Management:** Consolidated sourcing across multiple certified mills with single-point accountability
- **Supply Chain Compliance:** Full adherence to ASTM, EN, ASME, ISO, FDA, and destination-market regulatory requirements
- **Third-Party Quality Assurance:** Independent inspection by SGS, Bureau Veritas, or TUV; NDT (UT, RT, PT, MT), chemical analysis, and dimensional verification
- **Customs & Trade Compliance:** Accurate HS code classification, origin certification, and customs documentation for EU, North America, Middle East, Southeast Asia, and Latin America
- **Logistics & Freight Management:** Multimodal sea/rail/road/air freight with FOB, CIF, DAP, and DDP Incoterms options
- **Technical Documentation:** Mill Test Certificates 3.1/3.2 per EN 10204, material safety data sheets, inspection reports, and compliance declarations

For detailed service specifications, visit [Metal-Asia.pw](https://Metal-Asia.pw).

## FAQ — Frequently Asked Questions

1. How can I verify genuine AISI 304 food-grade stainless steel and avoid counterfeit material?

Authentic AISI 304 contains 18-20% chromium and 8-10.5% nickel. Counterfeit products often substitute nickel with manganese (AISI 201 grade). AISI 201 contains only 14-16.5% chromium and 1-1.5% nickel, leading to corrosion within 6-12 months in food-contact environments. Metal-Asia.pw performs on-site spectrometric analysis at the manufacturer's facility in China before shipment. Every batch is accompanied by a Mill Test Certificate 3.1 per EN 10204 with actual chemical composition data.

2. Which stainless steel grade is suitable for chloride-containing environments such as salt brine or seawater?

For aggressive chloride environments — including salt solutions, seawater, and vinegar production — AISI 316 (UNS S31600) with 2-3% molybdenum content is the industry standard. Molybdenum enhances pitting and crevice corrosion resistance by a factor of 3-5 compared to AISI 304. For extreme marine or chemical applications, AISI 316L or super-austenitic AISI 904L is recommended.

### 3. What international standards apply to stainless steel procurement and compliance?

Key standards for global supply chains: ASTM A240 (sheet and plate), ASTM A269/A312 (seamless and welded pipes), ASTM A276 (bars and shapes), EN 10088 (European stainless steel grades), EN 10204 (inspection certificates), ISO 7153-1 (surgical instruments), ASME Section VIII (pressure vessels). Metal-Asia.pw ensures full compliance with destination-market standards, including FDA, EHEDG, and 3-A Sanitary Standards for food-contact applications.

### 4. What is the typical lead time for stainless steel deliveries from China?

Standard delivery from order confirmation to arrival at the client's designated port or warehouse ranges from 35-50 days for sea freight. Urgent air freight deliveries for small-gauge or critical components are available within 7-14 days. For large-scale industrial projects, we recommend procurement planning with a 60-day buffer to accommodate production scheduling and ocean freight consolidation.

### 5. What quality control procedures does Metal-Asia.pw implement during procurement?

Our multi-stage quality assurance protocol includes: spectrometric analysis of chemical composition at the mill, ultrasonic testing (UT) for internal defects, visual surface inspection per ASTM A480, dimensional verification with calibrated gauges, and third-party inspection by SGS, Bureau Veritas, or TUV upon client request. All results are documented in the Mill Test Certificate and inspection reports.

### 6. What HS codes apply to stainless steel imports for customs clearance?

Primary HS codes for international trade: 7219.33 (cold-rolled sheets <3mm), 7219.24 (hot-rolled sheets), 7304.41 (seamless pipes), 7306.40 (welded pipes), 7222.40 (bars and rods), 7307.29 (pipe fittings), 8481.80 (valves). Metal-Asia.pw provides full customs documentation support, including correct HS classification, country of origin certificates, and compliance declarations for EU, North American, Middle Eastern, and Southeast Asian markets.

### 7. Can I order custom cutting, forming, and surface finishing?

Yes. Our partner manufacturing facilities in China offer: CNC laser cutting (tolerance +/- 0.1 mm), press brake bending up to 180 degrees, surface polishing to mirror finish (Ra 0.2 micrometers), TIG/MIG welding with argon backing, and electropolishing for pharmaceutical-grade surfaces (Ra <0.4 micrometers). Minimum order quantity for custom fabrication starts at 500 kg per specification.

### 8. What supply chain risks does Metal-Asia.pw mitigate for international buyers?

Common procurement risks from China include: grade substitution (AISI 201 sold as AISI 304), thickness deviation beyond ASTM tolerances, missing or fraudulent certificates, customs delays due to incorrect documentation, and warranty disputes for defective material. Metal-Asia.pw eliminates these risks through direct mill relationships, independent pre-shipment inspection, full documentation compliance, bonded warehousing options, and contractual warranty terms with refund or replacement guarantees.

## Contact Information

For all inquiries regarding food-grade and chemically resistant stainless steel procurement:

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