Stainless Steel Specification Summary

1. Common Grades

- 304 Stainless Steel

- Excellent corrosion resistance, weldability, and formability.

- Common in food processing, dairy, and brewery equipment, as well as piping systems.

- Composition: 18% Chromium, 8% Nickel.

- Tensile Strength: 70,000 psi; Yield Strength: 25,000 psi.

- Applications: Industrial and general sanitary environments.

- 316 Stainless Steel

- Enhanced corrosion resistance, particularly in acidic and chloride-rich environments due to molybdenum content.

- Preferred in marine, pharmaceutical, and chemical processing industries.

- Composition: 16% Chromium, 10% Nickel, 2% Molybdenum.

- Tensile Strength: 70,000 psi; \*\*Yield Strength\*\*: 25,000 psi.

- Applications: Harsh environments, biotech, and pharmaceutical production.

- 316L Stainless Steel

- Low-carbon version of 316, offering better corrosion resistance post-welding, reducing carbide precipitation.

- Ideal for high-purity and sanitary applications.

- Applications: Pharmaceutical, high-purity systems, and environments where sterilization is critical.

2. Mechanical Properties

- 304/316 Stainless Steel

- Tensile Strength: 70,000 psi

- Yield Strength: 25,000 psi

- Elongation: ~40%

- Hardness: Rockwell B70 (typical)

3. Corrosion Resistance

- 304: General corrosion resistance in mild chemicals, food acids, and water environments.

- 316: Superior resistance to chlorides, sulfuric acid, and other aggressive chemicals due to molybdenum content.

- 316L: Added protection from corrosion post-welding, suitable for pharmaceutical and marine applications.

4. Applications

- 304: Food and beverage processing, kitchen equipment, storage tanks, and piping systems.

- 316/316L: Marine, pharmaceutical, biotech, chemical processing, and ultra-pure environments.

There are many types of stainless steel raw materials, and different part numbers are used in various countries. To simplify identification, we’ve summarized these indicators in the following table for easy reference:

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| --- | --- | --- | --- |
| Country /Region | Stainless steel Grade | Common part Numbers | Equivalent Standards |
| USA | 304 | UNS S30400,SAE 304 | ASTM A240,A276,A312 |
|  | 316 | UNS S31600,SAE 316 | ASTM A240,A276,A312 |
|  | 316L | UNS S31603,SAE 316L | ASTM A240,A276,A312 |
| Europe(EN) | 1.4301 | X5CrNi18-10 | EN 10088-2,EN 10088-3 |
|  | 1.4401 | X5CrNiMo17-12-2 | EN 10088-2,EN 10088-3 |
|  | 1.4404 | X2CrNiMo17-12-2 | EN 10088-2,EN 10088-3 |
| Germany(DIN) | 304 | 1.4301(V2A) | DIN 17440,DIN17441 |
|  | 316 | 1.4401(V4A) | DIN 17440,DIN17441 |
|  | 316L | 1.4404(V4A) | DIN 17440,DIN17441 |
| Japan(JIS) | SUS 304 | SUS304 | JIS G4303,JIS G4318 |
|  | SUS 316 | SUS316 | JIS G4303,JIS G4318 |
|  | SUS 316L | SUS316L | JIS G4303,JIS G4318 |
| China(GB) | 304 | 06Cr19Ni10, 0Cr18Ni9 | GB/T 3280, GB/T 4237 |
|  | 316 | 06Cr17Ni12Mo2 | GB/T 3280, GB/T 4237 |
|  | 316L | 022Cr17Ni12Mo2, 00Cr17Ni14Mo2 | GB/T 3280, GB/T 4237 |