

# ASTM A182 F321 Specification

## Forged Stainless Steel Flanges, Fittings & Valves

ASTM A182 F321 is a stabilized austenitic stainless steel containing titanium as a stabilizing element. This alloy is commonly used in high-temperature and high-pressure applications due to its excellent resistance to intergranular corrosion and oxidation. ASTM A182 covers forged or rolled alloy and stainless steel pipe flanges, forged fittings, and valves for high-temperature service.

### ASTM A182 F321 Chemical Composition (%)

Element	Minimum	Maximum
Carbon (C)	-	0.08
Manganese (Mn)	-	2.00
Phosphorus (P)	-	0.045
Sulfur (S)	-	0.030
Silicon (Si)	-	1.00
Chromium (Cr)	17.0	19.0
Nickel (Ni)	9.0	12.0
Titanium (Ti)	5x(C) min	0.70

**Note:** The titanium content shall be at least 5 times the carbon content and not more than 0.70%.

### Mechanical Properties (Typical at Room Temperature)

Property	Value
Tensile Strength (min)	515 MPa (75 ksi)
Yield Strength (min, 0.2% offset)	205 MPa (30 ksi)
Elongation (min, in 50 mm)	30%
Hardness (max)	223 HBW or 95 HRB

## Available Forms

ASTM A182 F321 is supplied in the **annealed condition** and is available in:

- Weld Neck Flanges (WNRF)
- Blind Flanges
- Socket Weld & Threaded Flanges
- Slip-On Flanges
- Forged Bars, Discs & Rings
- Tube sheet
- Forged Fittings (Elbows, Tees, Couplings, etc.)

## Key Features of ASTM A182 F321

- Superior resistance to intergranular corrosion (compared to 304/316)
- Excellent oxidation resistance up to ~870° C (1600° F)
- Titanium stabilized to prevent carbide precipitation during welding
- Good weldability and formability
- Suitable for high-temperature pressure vessel and heat exchanger service

## Applications

- Heat Exchangers & Boilers
- Petrochemical Processing
- Piping Systems in Refineries
- Power Generation Equipment
- High-Temperature Chemical Vessels
- Exhaust Manifolds and Superheaters

## Heat Treatment Requirement of ASTM A182 F321

ASTM A182 F321 components shall be **solution annealed** at 950 - 1120° C (1742 - 2048° F) followed by **rapid cooling** (usually water quenching).

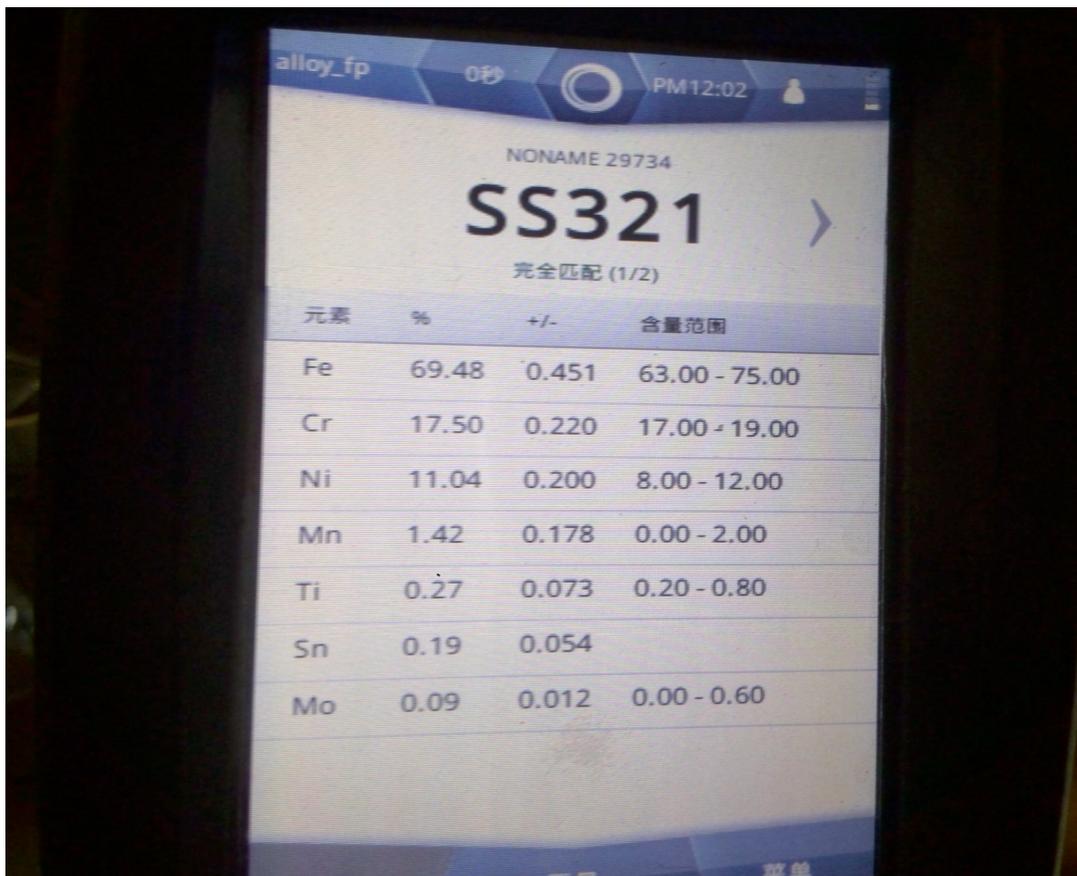
## ASTM A182 F321 Equivalent Grades

### Standard Equivalent Grade

ASTM	A182 F321
UNS	S32100
EN/DIN	1.4541
JIS	SUS 321
ISO	X6CrNiTi18-10

### Documentation & Testing

- Mill Test Certificates (EN 10204 3.1 / 3.2)
- Ultrasonic Testing
- Hardness Testing
- PMI (Positive Material Identification)
- Intergranular Corrosion Testing (IGC)



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NONAME 29734

# SS321

完全匹配 (1/2)

元素	%	+/-	含量范围
Fe	69.48	0.451	63.00 - 75.00
Cr	17.50	0.220	17.00 - 19.00
Ni	11.04	0.200	8.00 - 12.00
Mn	1.42	0.178	0.00 - 2.00
Ti	0.27	0.073	0.20 - 0.80
Sn	0.19	0.054	
Mo	0.09	0.012	0.00 - 0.60

工具 菜单