

# STAINLESS STEEL

## 321 - 1.4541



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Stainless steel 321, with the designation 1.4541, is a type of austenitic stainless steel that has a high resistance to carbide precipitation and oxidation when exposed to high temperatures. It is stabilised with titanium and has a titanium content of at least five times the carbon content, which prevents intergranular corrosion.

#### KEY FEATURES

- High temperature resistance
- Good corrosion resistance
- Weldability
- Creep and stress rupture properties
- Good formability and ductility

#### CHEMICAL PROPERTIES

| Chromium (Cr) | Nickel (Ni)  | Manganese (Mn) | Silicone (Si) | Titanium (Ti) | Nitrogen (N) | Carbon (C)   | Phosphorus (P) | Sulphur (S)  |
|---------------|--------------|----------------|---------------|---------------|--------------|--------------|----------------|--------------|
| <b>17-19%</b> | <b>9-12%</b> | <b>2%</b>      | <b>1%</b>     | <b>0.7%</b>   | <b>0.1%</b>  | <b>0.08%</b> | <b>0.045%</b>  | <b>0.03%</b> |

#### MECHANICAL PROPERTIES

|                                       |            |
|---------------------------------------|------------|
| Tensile strength (N/mm <sup>2</sup> ) | <b>515</b> |
| Yield strength (N/mm <sup>2</sup> )   | <b>205</b> |
| Elongation (% in 4D)                  | <b>40</b>  |
| Hardness - Rockwell (HRB) max         | <b>95</b>  |
| Hardness - Brinell (HB) max           | <b>217</b> |

#### PHYSICAL PROPERTIES

|                                       |                   |             |
|---------------------------------------|-------------------|-------------|
| Density (kg/m <sup>3</sup> )          | <b>7900</b>       |             |
| Modulus of elasticity (Gpa)           | <b>193</b>        |             |
| Mean coefficient of thermal expansion | 0-100°C (µm/m/°C) | <b>16.6</b> |
|                                       | 0-350°C (µm/m/°C) | <b>17.2</b> |
|                                       | 0-538°C (µm/m/°C) | <b>18.6</b> |
| Thermal conductivity                  | at 100°C (W/m.K)  | <b>16.1</b> |
|                                       | at 500°C (W/m.K)  | <b>22.2</b> |
| Specific Heat 0-100°C (J/kg.K)        | <b>500</b>        |             |
| Electrical resistivity (nΩ.m)         | <b>720</b>        |             |
| Melting point (°C)                    | <b>1450</b>       |             |

#### MARKET SECTORS



**Food & Beverage Industry**

Equipment, industrial kitchens



**Chemical Processing**

Reactors, vessels, piping, heat exchangers



**Oil & Gas Industry**

Components, pipelines, tubing



**Power Generation**

Boiler tubes, heat exchangers



**Automotive Industry**

Exhaust systems, catalytic converters



**Aerospace Industry**

Aircraft exhaust stacks, components