

STAINLESS STEEL

416S21 - 1.4005



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416S21 is a martensitic stainless steel grade known for its exceptional machinability and moderate corrosion resistance. It is a variant of the standard 416 stainless steel with added sulphur to enhance its free-machining properties. Its chemical composition makes it suitable for precision machining operations. However, the trade-off is slightly reduced corrosion resistance compared to other stainless steels.

KEY FEATURES

- Excellent machinability
- Moderate corrosion resistance
- Good strength and hardness
- Can be heat-treated
- Magnetic in annealed & hardened conditions

CHEMICAL PROPERTIES

| Chromium (Cr) | Nickel (Ni) | Manganese (Mn) | Silicone (Si) | Sulphur (S) | Carbon (C) | Phosphorus (P) | Iron (Fe) |
|---------------|-------------|----------------|---------------|-------------------|-------------------|----------------|-------------|
| 12-14% | 1.5% | 1.5% | 1% | 0.15-0.35% | 0.08-0.15% | 0.06% | rest |

MECHANICAL PROPERTIES

| | |
|---------------------------------------|----------------|
| Tensile strength (N/mm ²) | 515-690 |
| Yield strength (N/mm ²) | 275-380 |
| Elongation (% in 4D) | 20-30 |
| Hardness - Rockwell C (HRC) max | 25-35 |
| Hardness - Brinell (HB) max | 200-260 |

PHYSICAL PROPERTIES

| | | |
|---------------------------------------|-------------------|-------------|
| Density (kg/m ³) | 7750 | |
| Modulus of elasticity (Gpa) | 200 | |
| Mean coefficient of thermal expansion | 0-100°C (µm/m/°C) | 10.3 |
| | 0-350°C (µm/m/°C) | 10.7 |
| | 0-538°C (µm/m/°C) | 11.1 |
| Thermal conductivity | at 100°C (W/m.K) | 26.0 |
| | at 500°C (W/m.K) | 30.0 |
| Specific Heat 0-100°C (J/kg.K) | 460 | |
| Electrical resistivity (nΩ.m) | 580 | |
| Melting point (°C) | 1450 | |

MARKET SECTORS



Automotive Industry

Engine and transmission parts, fasteners, valve components



Chemical Processing

Pump shafts, valves, fittings



Kitchen Equipment

Cutlery, knife blades, other household items



Medical Devices

Surgical tools, dental instruments, implant components



Engineered Components

Screws, bolts, fasteners, valves, fittings



Aerospace Industry

Screws, bolts, rivets used in aircraft construction