

INCONEL 718

INCONEL alloy 718 (UNS N07718/W.Nr. 2.4668) is a high–strength, corrosion–resistant nickel chromium material used at –423° to 1300°F.

The age–hardenable alloy can be readily fabricated, even into complex parts. Its welding characteristics, especially its resistance to postweld cracking, are outstanding.

The ease and economy with which **INCONEL Alloy 718** can be fabricated, combined with good tensile, fatigue, creep, and rupture strength, have resulted in its use in a wide range of applications. Examples of these are components for liquid fuelled rockets, rings, casings and various formed sheet metal parts for aircraft and land–based gas turbine engines, and cryogenic tankage. It is also used for fasteners and instrumentation parts.

PHYSICAL CONSTANTS AND THERMAL PROPERTIES

Limiting Chemical Compositions (%)

• Nickel (plus Cobalt)	50.00–55.00
• Chromium.....	17.00–21.00
• Iron	Balance*
• Niobium (plus Tantalum).....	4.75–5.50
• Molybdenum	2.80–3.30
• Titanium.....	0.65–1.15
• Aluminium	0.20–0.80
• Cobalt	1.00 max.
• Carbon.....	0.08 max.
• Manganese	0.35 max.
• Silicon	0.35 max.
• Phosphorus.....	0.015 max.
• Sulfur.....	0.015 max.
• Boron	0.006 max.
• Copper.....	0.30 max

Physical Constants

• Density, lb/in ³	
• Annealed.....	0.296
• Annealed and Aged	0.297

- Melting Range.....2300–2437°F(1260–1336°C)
- Specific Heat at 70°F, Btu/lb °F (at 21°C, J/kg °C)0.104 (435)
- Curie Temperature, °F (°C)
- Annealed Material.....<–320 (<–196)
- Annealed and Aged Material–170 (–112)
- Permeability at 200 oersted and 70°F
- Annealed Material.....1.0013
- Annealed and Aged Material1.0011

Specification

INCONEL Alloy 718 is designated at UNS N07718, UNS N07719, and Werkstoff Nr. 2.4668. It is listed in NACE MR– 01–75 for oil and gas service.

Rod, Bar, Wire and Forging Stock:

- ASTM B637, ASME SB637,
- AMS 5662, AMS 5663, AMS 5664, AMS 5832, AMS 5914, AMS 5962
- ASME Code Case 1993, ASME Code Case 2206, ASME Code Case 2222
- AECMA PrEN 2404, AECMA PrEN 2405, AECMA PrEN 2952, AECMA PrEN 2961, AECMA PrEN 3219, AECMA PrEN 3666
- ISO 9723, ISO 9724, ISO 9725
- DIN 17752–17754.

Plate, Sheet and Strip:

- ASTM B670, ASTM B906 & ASME SB670, ASME SB906
- SAE AMS 5596, SAE AMS 5597, SAE AMS 5950
- AECMA PrEN 2407, AECMA PrEN 2408
- ISO 6208
- DIN 17750.

Pipe and Tube

- SAE AMS 5589, SAE AMS 5590
- ASME Code Case N–253
- DIN 17751.

Welding Product

- INCONEL Filler Metal 718 – AWS 5.14 / ERNiFeCr–2.

Others

- ASME Code Case N–62, ASME Code Case N– 208
- DIN 17744.

