



ASM Aerospace Specification Metals Inc.

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Special Metals INCONEL® Alloy 600

Subcategory: Metal; Nickel Base; Superalloy

Key Words: Inconel 600, ASTM B163, ASTM B166, ASTM B167, ASTM B168, ASTM B366, ASTM B516, ASTM B517, ASTM B564, ASTM B751, ASME SB-163, SB-166 - SB-168, SB-564, Boiler Code Sections I, III, VIII, IX, Nickel-Chromium Alloy, NACE MR-01-75; QQ-W-390; MIL-R-5031, MIL-T-23227, MIL-N-23228, MIL-N-23229; AFNOR NC 15 Fe, SAE AMS 5540, 5580, 5665, 5687, 7232; DIN 17742, 17750 - 17754; Werkstoff Nr. 2.4816; VdTUV 305, UNS N06600; BS 3072 - 3076 (NA14)

| Component | Wt. % |
|-----------|-----------|
| C | Max 0.15 |
| Cr | 14 - 17 |
| Cu | Max 0.5 |
| Fe | 6 - 10 |
| Mn | Max 1 |
| Ni | Min 72 |
| S | Max 0.015 |
| Si | Max 0.5 |

Material Notes:

Nickel content above includes cobalt. A nickel-chromium alloy with good oxidation resistance at high temperatures and resistance to chloride-ion stress-corrosion cracking, corrosion by high-purity water, and caustic corrosion. Used for furnace components, in chemical and food processing, in nuclear engineering, and for sparking electrodes. Standard product forms are round, hexagon, extruded section, flats, forging stock, pipe, tube, plate, sheet, strip, and wire.

Data provided by the manufacturer, Special Metals.

| Physical Properties | Metric | English | Comments |
|---------------------|------------------|--------------------------|----------|
| Density | <u>8.47 g/cc</u> | 0.306 lb/in ³ | |

Mechanical Properties

| | | | |
|----------------------------|----------------|-----------|----------|
| Tensile Strength, Ultimate | <u>655 MPa</u> | 95000 psi | Annealed |
|----------------------------|----------------|-----------|----------|

| | | | |
|----------------------------------------------------|----------------|-----------|--------------------------------|
| Tensile Strength, Ultimate at Elevated Temperature | <u>550 MPa</u> | 79800 psi | Annealed prior to test; 550°C |
| Tensile Strength, Yield | <u>310 MPa</u> | 45000 psi | Annealed |
| Tensile Strength, Yield at Elevated Temperature | <u>180 MPa</u> | 26100 psi | Annealed prior to test; 550°C |
| Elongation at Break | <u>45 %</u> | 45 % | Annealed prior to test. |
| Elongation at Break at Elevated Temperature | <u>42 %</u> | 42 % | Annealed prior to test.; 550°C |

Electrical Properties

| | | | |
|------------------------|------------------------|-----------------|----------------------------|
| Electrical Resistivity | <u>0.000103 ohm-cm</u> | 0.000103 ohm-cm | |
| Magnetic Permeability | 1.01 | 1.01 | at 200 oersted (15.9 kA/m) |
| Curie Temperature | <u>-194 °C</u> | -317 °F | |

Thermal Properties

| | | | |
|------------------------|---------------------|----------------------|----------|
| CTE, linear 20°C | <u>13.3 μm/m-°C</u> | 7.39 μin/in-°F | 20-100°C |
| Specific Heat Capacity | <u>0.444 J/g-°C</u> | 0.106 BTU/lb-°F | |
| Thermal Conductivity | <u>14.9 W/m-K</u> | 103 BTU-in/hr-ft²-°F | |
| Melting Point | 1354 - 1413 °C | 2470 - 2580 °F | |
| Solidus | <u>1354 °C</u> | 2470 °F | |
| Liquidus | <u>1413 °C</u> | 2580 °F | |

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.