

SPECIFICATIONS

European standards:

- NiCr20Co13Mo4Ti3Al
- Numerical designation: 2.4654

- AIR : NC 20 K 14
- WL : 2.4654
- UNS : N07001
- AMS : 5706 - 5708 - 5709

COMPOSITION

Carbon.....	< 0.06
Chromium.....	19.00
Colbalt.....	13.50
Molybdenum.....	4.00
Titanium.....	3.00
Aluminum.....	1.90
Nickel.....	Base

TYPICAL MECHANICAL PROPERTIES

On metal supplied ready for use:

- Tensile test at ambient temperature:
 - UTS: 1270 N/mm²
 - 0.2 % Yield strength: 850 N/mm²
 - Elongation (5d): 25 %
- Tensile test at 600°C:
 - UTS: 1150 N/mm²
 - 0.2 % Yield strength: 710 N/mm²
 - Elongation (5d): 30 %
- Tensile test at 800°C:
 - UTS: 690 N/mm²
 - 0.2 % Yield strength: 640 N/mm²
 - Elongation (5d): 29 %
- Tensile test at 1000°C:
 - UTS: 200 N/mm²
 - 0.2 % Yield strength: 140 N/mm²
 - Elongation (5d): 25 %
- Creep:

Temperature in °C	Average load in N/mm ² causing creep fracture in 1000 hrs
600	730
700	430
750	305
800	190
850	105

APPLICATIONS

- Aerospace industry: turbine blades and discs, fasteners for high temperature environments.
- Marine and land-based machines: gas turbine blades.

CHARACTERISTICS

Precipitation hardened, nickel-based superalloy with:

- Excellent corrosion resistance.
- Very good mechanical properties up to 950°C.

HEAT TREATMENT

- Solution treatment & precipitation heat treatment:
1020°C / 4 hrs / Air cool + 850°C / 4 hrs / Air cool + 760°C / 16 hrs / Air cool.

PHYSICAL PROPERTIES

- Density:
 - at 20°C: 8.20
 - at 400°C: 8.10
 - at 800°C: 7.95
- Mean coefficient of expansion in m/m.°C:
 - between 20°C and 200°C: 12.6×10^{-6}
 - between 20°C and 400°C: 13.3×10^{-6}
 - between 20°C and 600°C: 14.2×10^{-6}
 - between 20°C and 800°C: 15.7×10^{-6}
- Modulus of elasticity in N/mm²:
 - at 20°C: 209×10^3
 - at 200°C: 202×10^3
 - at 400°C: 191×10^3
 - at 600°C: 179×10^3
 - at 800°C: 163×10^3
- Thermal conductivity in W.m/m².°C:
 - at 20°C: 10.5
 - at 200°C: 12.7
 - at 400°C: 15.7
 - at 600°C: 19.0
 - at 800°C: 22.5
 - at 1000°C: 27.0
- Specific heat in J/g.°C:
 - at 20°C: 0.51
 - at 200°C: 0.55
 - at 400°C: 0.59
 - at 600°C: 0.63
 - at 800°C: 0.67
 - at 1000°C: 0.72

FORGING

- 1200/800°C

Contact:

www.aubertduval.com

The data provided in this document represent typical or average values rather than maximum or minimum guaranteed values. The applications indicated for the grades described are given as guidance only in order to help the reader in his personal assessment. Please note that these do not constitute a guarantee whether implicit or explicit as to whether the grade selected is suited to specific requirements. Aubert & Duval's liability shall not under any circumstances extend to product selection or to the consequences of that selection.