

### SPECIFICATIONS

European Standards:

- NiCr20Ti
- Numerical designation: 2.4951

AIR : NC 20 T

BS: HR 203, HR 5

### COMPOSITION

Carbon.....	0.10
Chromium.....	20.00
Iron.....	<5.00
Colbalt.....	<5.00
Copper.....	<0.50
Titanium.....	<0.30
Nickel.....	Base

### TYPICAL MECHANICAL PROPERTIES

On metal supplied ready for use:

- Tensile test at ambient temperature:
  - UTS: 740 N/mm<sup>2</sup>
  - 0.2 % Yield strength: 280 N/mm<sup>2</sup>
  - Elongation (5d): 41 %
- Rapid tensile test at temperature:

Temperature in °C	UTS in (N/mm <sup>2</sup> )	0.2 % Yield strength in (N/mm <sup>2</sup> )	Elongation (5d) in %
200	730	240	-
400	710	210	-
600	620	200	41
700	430	165	48
800	250	130	63
1000	70	50	57

- Creep:

Temperature in °C	Average load in N/mm <sup>2</sup> causing creep fracture in 1000 hrs
600	170
800	28
1000	7

### APPLICATIONS

- Aerospace industry: turbine parts
- Marine and land-based machines: gas turbine blades

### CHARACTERISTICS

Precipitation hardened, nickel-based superalloy with:

- Excellent resistance to oxydation at temperature

## HEAT TREATMENT

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- Solution treatment:  
1050°C / Air cool

## PHYSICAL PROPERTIES

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- Density:
  - at 20°C: 8.30
  - at 400°C: 8.20
  - at 800°C: 8.05
- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 200°C:  $12.7 \times 10^{-6}$
  - between 20°C and 400°C:  $13.6 \times 10^{-6}$
  - between 20°C and 600°C:  $14.6 \times 10^{-6}$
  - between 20°C and 800°C:  $15.5 \times 10^{-6}$
- Modulus of elasticity in N/mm<sup>2</sup>:
  - at 20°C:  $189 \times 10^3$
  - at 200°C:  $185 \times 10^3$
  - at 400°C:  $177 \times 10^3$
  - at 600°C:  $154 \times 10^3$
  - at 800°C:  $105 \times 10^3$
- Thermal conductivity in W.m/m<sup>2</sup>.°C:
  - at 20°C: 11.7
  - at 200°C: 15.5
  - at 400°C: 19.0
  - at 600°C: 23.0
  - at 800°C: 27.0
  - at 1000°C: 31.0
- specific heat in J/g.°C:
  - at 20°C: 0.46

## FORGING

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- 1100/900°C

Contact:

[www.aubertduval.com](http://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.