

Nickel-based Alloy

PER72

NiCr18Co15TiMoAl

SPECIFICATIONS

- NiCr18Co15TiMoAl

COMPOSITION

Carbon.....	0.04
Chromium.....	18.00
Colbalt.....	15.00
Titanium.....	5.00
Molybdenum.....	3.00
Aluminum.....	2.50
Tungsten.....	1.20
Nickel.....	Base

TYPICAL MECHANICAL PROPERTIES

On metal supplied ready for use:

- Tensile test at ambient temperature:
 - UTS: 1530 N/mm²
 - 0.2 % Yield strength: 1150 N/mm²
 - Elongation (5d): 14 %
- Rapid tensile test at temperature:

Temperature in °C	UTS in (N/mm ²)	0.2 % Yield strength in (N/mm ²)	Elongation (5d) in %
600	1430	1100	20
700	1230	1020	20
800	980	750	20
900	550	350	15

- Creep:

Temperature in °C	Average load in N/mm ² causing creep fracture in 1000 hrs
600	950
650	680
700	500
750	335
950	40

APPLICATIONS

- Parts subject to both a hot corrosive environment and to a high level of mechanical stress, such as discs, blades...
- This grade has been predominantly developed in the aerospace industry
- For applications at extremely high temperature it is possible to use other heat treatment conditions to produce significantly different properties (please contact us).

CHARACTERISTICS

Precipitation hardened, nickel-based superalloy with:

- Excellent resistance to high temperature oxydation
- Good mechanical properties at high temperature

HEAT TREATMENT

- Solution treatment & ageing:
1100°C / 4 hrs / Air cool + 650°C / 24 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: 12.9×10^{-6}
 - between 20°C and 600°C: 13.9×10^{-6}
 - between 20°C and 800°C: 14.9×10^{-6}
- Modulus of elasticity in N/mm²:
 - at 20°C: 227×10^3
 - at 400°C: 193×10^3
 - at 700°C: 168×10^3
- Thermal conductivity in W.m/m².°C:
 - at 20°C: 11.0
 - at 200°C: 13.5
 - at 400°C: 16.2
 - at 600°C: 19.0
 - at 800°C: 21.5
 - at 1000°C: 24.5

FORGING

- Please contact us

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.