

Nickel-based Alloy

PYRAD53NW

NiCr19Fe19Nb5Mo3

SPECIFICATIONS

European standards:

- NiCr19Fe19Nb5Mo3
- Numerical designation: 2.4668

AIR : NC 19 FeNb
 WL : 2.4668
 UNS : N07718
 AMS : 5662 - 5663

COMPOSITION

Carbon.....	0.04
Iron.....	18.50
Chromium.....	18.00
Niobium.....	5.20
Molybdenum.....	3.00
Titanium.....	0.90
Aluminum.....	0.50
Nickel.....	Base

TYPICAL MECHANICAL PROPERTIES

On metal supplied ready for use:

- Tensile test at ambient temperature:
 - UTS: 1360 N/mm²
 - 0.2 % Yield strength: 1120 N/mm²
 - Elongation (5d): 18 %
- Tensile test at 600°C:
 - UTS: 1150 N/mm²
 - 0.2 % Yield strength: 1000 N/mm²
 - Elongation (5d): 19 %
- Tensile test at 700°C:
 - UTS: 1010 N/mm²
 - 0.2 % Yield strength: 900 N/mm²
 - Elongation (5d): 23 %
- Creep:

Temperature in °C	Average load in N/mm ² causing creep fracture in 1000 hrs
600	760
650	540
700	350
750	140

APPLICATIONS

- Aerospace industry: compressor discs.
- Marine and land-based machines.
- Fasteners or diverse components requiring a particularly high yield strength and which must also be stainless or non magnetic.

CHARACTERISTICS

Precipitation hardened, nickel-based superalloy with:

- Good resistance to high temperature oxidation.
- Excellent mechanical properties up to temperatures around 700°C.
- Generally used for parts working within the 600-700°C range.

HEAT TREATMENT

- Solution treatment & Aging:

955°C / 1 hr / Air cool + 720°C / 8 hrs / furnace cooled 50°C / hr from 720 to 620°C + 620°C / 8 hrs / Air cool.

PHYSICAL PROPERTIES

- Density:

- at 20°C:	8.2
- at 400°C:	8.1
- at 600°C:	7.9

- Mean coefficient of expansion in m/m.°C:

- between 20°C and 200°C:	13.5×10^{-6}
- between 20°C and 400°C:	14.2×10^{-6}
- between 20°C and 600°C:	14.9×10^{-6}

- Modulus of elasticity in N/mm²:

- at 20°C:	199×10^3
- at 200°C:	191×10^3
- at 400°C:	178×10^3
- at 600°C:	166×10^3
- at 800°C:	150×10^3

- Thermal conductivity in W.m/m².°C:

- at 20°C:	11
- at 200°C:	14
- at 400°C:	17
- at 600°C:	21
- at 800°C:	24
- at 1000°C:	27

- Specific heat in J/g.°C:

- at 20°C:	0.43
- at 200°C:	0.48
- at 400°C:	0.52
- at 600°C:	0.57
- at 800°C:	0.62
- at 1000°C:	0.67

FORGING

- 1150/900°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.