AUBERT&DUVAL

Nickel-based Alloy

PYRAD44DW

X8NiCrMoTi42

Consumable electrode remelted version

SPECIFICATIONS

European standard:

- X8NiCrMoTi42

WL : 2.4662
UNS : N09901
BS : HR53

COMPOSITION

Carbon	≤0.10
Nickel	42.00
Iron	35.00
Chromium	13.00
Molybdenum	5.50
Titanium	2.90
Cobalt	≤ 1.00

TYPICAL MECHANICAL PROPERTIES

On metal supplied ready for use:

- Tensile test at ambient temperature:
  - UTS: 1200 N/mm^2
  - 0.2 % Yield strength: 890 N/mm^2
  - 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 %
200	1150	860	-
400	1090	820	-
500	1045	795	14
600	1000	770	13
700	880	710	15

- Creep:

Temperature in °C	Average load in N/mm^2 causing creep fracture in 1000 hrs
600	580
650	440
700	310
750	190
800	65

APPLICATIONS

- Gas turbine parts.
- Compressor discs.
- Rotors.

CHARACTERISTICS

Precipitation hardened, refractory alloy with:

- Very good resistance to oxidation at temperatures between 550°C and 750°C.

HEAT TREATMENT

- Solution treatment and ageing:
  1090°C / water + 770°C / Air cool +710°C / Air cool

PHYSICAL PROPERTIES

- Density:
  - at 20°C: 8.2
  - at 400°C: 8.1
  - at 800°C: 7.9

- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 200°C: 14.10×10^{-6}
  - between 20°C and 400°C: 14.70×10^{-6}
  - between 20°C and 600°C: 15.55×10^{-6}
  - between 20°C and 800°C: 16.75×10^{-6}

- Modulus of elasticity in N/mm^2:
  - at 20°C: 206×10^3
  - at 200°C: 194×10^3
  - at 400°C: 177×10^3
  - at 600°C: 159×10^3
  - at 800°C: 142×10^3

- Thermal conductivity in $W.m/m^2.°C$:
  - at 20°C: 13
  - at 200°C: 15
  - at 400°C: 17
  - at 600°C: 19

FORGING

- 1175/900°C

Contact:

www.aubertduval.com