



Steel

50NILYW

13MoCrNiV42-16-14

Melting: vacuum induction melted and consumable electrode remelted steel

SPECIFICATIONS

European Standards:

- 13MoCrNiV42-16-14
- Numerical designation: B61

UNS: K91231

AMS: 6278

COMPOSITION

Carbon.....	0.13
Molybdenum.....	4.25
Chromium.....	4.15
Nickel.....	3.40
Vanadium.....	1.20

TYPICAL MECHANICAL PROPERTIES

- Annealed condition: heat to 830°C followed by slow cooling.
 - Brinell hardness: 230

HEAT TREATMENT REFERENCE

- Oil quench from 1095°C. Sub-zero treatment (-70/-80°C).
Temper at 550°C:

(Properties beneath the carburized layer)

- UTS: 1400 N/mm²
- 0.2 % Yield strength: 1200 N/mm²
- Elongation (5d): 13 %

APPLICATIONS

For service temperature up to 400°C:

- Aerospace bearings
- Gear assembly (integrated runway ...).

CHARACTERISTICS

- After carburizing and quenching, sub-zero treatment and tempering, the surface hardness is approx. 700 HV.
- The good temper resistance of this steel allows it to be used with a duplex treatment (carburising + quenching + nitriding) to obtain a good case depth and surface hardness of more than 900 HV.

HEAT TREATMENT

- Carburizing:
 - 950°C approx.
- Harden:
 - Heat to 1050/1100°C
 - Gas, oil quench or salt bath
- Sub-zero treatment
- Temper
 - After carburizing and hardening the steel is tempered between 520°C and 550°C as required.

PHYSICAL PROPERTIES

- Density: 7.9
- Mean coefficient of expansion in m/m.°C:
 - between 20°C and 200°C: 10.8×10^{-6}
 - between 20°C and 400°C: 11.6×10^{-6}
 - between 20°C and 600°C: 12.6×10^{-6}
- Critical points:
 - Ac 1: 738°C
 - Ac 3: 960°C

FORGING

- 1100/900°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.