Specifications

European standard: EN AW-7010 [AlZn6MgCu]
AECMA :
- Designation: AL-P7010
UNS : A97010

Mechanical Properties

- T7452 condition. 125/150 mm thickness:
  - Tensile test at ambient temperature, longitudinal direction
  - UTS:  > 475 N/mm²
  - 0.2 % Yield strength:  > 400 N/mm²
  - Elongation (5d):  > 8 %
  - K1c (L - T direction):  > 27 MPa√m

- T74 condition. 100/125 mm thickness:
  - Tensile test at ambient temperature, longitudinal direction
  - UTS:  > 485 N/mm²
  - 0.2 % Yield strength:  > 420 N/mm²
  - Elongation (5d):  > 7 %
  - K1c (L-T direction):  > 27 MPa√m

Composition

Zinc ....................................................6.20
Magnesium ........................................2.30
Copper ..............................................1.75
Zirconium ..........................................0.13
Aluminum ........................................Base

Applications

- Closed-die forgings and large forged bars for the aerospace industry.
- This alloy has been specifically designed for structural components subject to high fatigue stress and risk of corrosion.

Characteristics

- This alloy of European origin has properties similar to that of American grade 7050. For all over-aged T74 and T76 conditions it achieves a balance between mechanical properties (strength, toughness, fatigue) and resistance to stress corrosion.
HEAT TREATMENT

- Solution treatment.
- Water quench.
- Age depending on properties required and the size of the parts.
- The over-aged T74 and T76 conditions are the most common and are defined in standard NF EN 515.
- Closed-die forgings can be stress relieved between solution treatment and aging.
- T74S2 and T76S2 stress relieved by compression before T74 over-aging, and T7454 and T7654 achieved by further cold closed-die forging, are the most common conditions. These are defined in Standard NF EN 515.

PHYSICAL PROPERTIES

- Density: 2.83

- Modulus of elasticity in N/mm²:
  - at 20°C: 71.5 x 10⁴

- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 100°C: 23.5 x 10⁻⁶
  - between 20°C and 200°C: 24.4 x 10⁻⁶
  - between 20°C and 300°C: 25.4 x 10⁻⁶

- Thermal conductivity in W/m.°C:
  - at 20°C: 154 (T74 condition)

- Mean specific heat in J/g.°C:
  - between 0°C and 100°C: 0.86

- Electrical resistivity in µΩ.cm²/cm:
  - at 20°C: 4.36 (T74 condition)

- Electrical conductivity in S/m:
  - at 20°C: > 23 x 10⁶
    (T74 condition)

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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.