Specifications

European standard: EN AW-7050 [Al Zn6CuMgZr]
AECMA:
  - Designation: AL-P7050
WL : 3.4144
UNS : A97050

Mechanical Properties

- Forged T7452 condition. 150/175mm thickness
  - Tensile test at ambient temperature, longitudinal direction
  - UTS: > 469 N/mm²
  - 0.2 % Yield strength: > 400 N/mm²
  - Elongation (5d): > 9 %.

- Closed-die forged T74 condition. 100/125mm thickness
  - Tensile test at ambient temperature, longitudinal direction
  - UTS: > 483 N/mm²
  - 0.2 % Yield strength: > 414 N/mm²
  - Elongation (5d): > 7 %
  - K1c (L-T direction): > 27.5 MPa√m

Composition

Zinc..............................6.20
Copper .........................2.30
Magnesium.....................2.30
Zirconium.......................0.12
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 the risk of corrosion.

Characteristics

- This alloy used in the over-aged T74 condition achieves a good balance between mechanical properties (strength, toughness and fatigue) and stress corrosion resistance.
- In the over-aged T76 condition, it is particularly resistant to exfoliation corrosion.
- Its good hardenability makes it suitable for producing thick parts.
HEAT TREATMENT

- Solution treatment 475°C
- Water quench
- Age between 100 and 180°C depending on properties required and the section of the component.
- 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.
- T7452 and T7652 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 10⁹
- 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 (T76 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 (T76 condition)
- Electrical conductivity in S/m:
  - at 20°C: > 23 x 10⁶ (T76 condition)

AUBERT & DUVAL
Tour Maine Montparnasse
33, avenue du Maine • 75755 Cedex 15
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.