



## Aluminum alloy

# 7050

Al Zn6CuMgZr

## 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/mm<sup>2</sup>
    - 0.2 % Yield strength: > 400 N/mm<sup>2</sup>
    - Elongation (5d): > 9 %.
- Closed-die forged T74 condition. 100/125mm thickness
  - Tensile test at ambient temperature, longitudinal direction
    - UTS: > 483 N/mm<sup>2</sup>
    - 0.2 % Yield strength: > 414 N/mm<sup>2</sup>
    - 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

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- 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

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- Density: 2.83
- Modulus of elasticity in N/mm<sup>2</sup>:
  - at 20°C: 71.5 x 10<sup>3</sup>
- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 100°C: 23.5 x 10<sup>-6</sup>
  - between 20°C and 200°C: 24.4 x 10<sup>-6</sup>
  - between 20°C and 300°C: 25.4 x 10<sup>-6</sup>
- Thermal conductivity in W.m/m<sup>2</sup>.°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  $\mu\Omega$ .cm<sup>2</sup>/cm:
  - at 20°C: 4.36 (T76 condition)
- Electrical conductivity in S/m:
  - at 20°C: > 23 x 10<sup>6</sup> (T76 condition)

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