

## Aluminum alloy

# 7010

Al Zn6MgCu

## 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/mm<sup>2</sup>
  - 0.2 % Yield strength: > 400 N/mm<sup>2</sup>
  - 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/mm<sup>2</sup>
  - 0.2 % Yield strength: > 420 N/mm<sup>2</sup>
  - 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

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- 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.
- 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 (T74 condition)
- Mean specific heat in J/g .°C:
  - between 0°C and 100°C: 0.86
- Electrical resistivity in μΩ.cm<sup>2</sup>/cm:
  - at 20°C: 4.36 (T74 condition)
- Electrical conductivity in S/m:
  - at 20°C: > 23 x 10<sup>6</sup>  
(T74 condition)

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