



## Aluminum alloy

# 7020

Al Zn4.5Mg1

## SPECIFICATIONS

Previous AFNOR designation: AZ5G

European standard: EN AW-7020 [Al Zn4.5Mg1]

UNS: A97020

## MECHANICAL PROPERTIES

- Forged T6 condition. Thickness < 100 mm
  - Tensile test at ambient temperature, longitudinal direction
    - UTS: > 350 N/mm<sup>2</sup>
    - 0.2 % Yield strength: > 280 N/mm<sup>2</sup>
    - Elongation (5d): > 10 %
- Forged T652 condition. 100/200mm thickness
  - Tensile test at ambient temperature, longitudinal direction
    - UTS: > 340 N/mm<sup>2</sup>
    - 0.2 % Yield strength: > 275 N/mm<sup>2</sup>
    - Elongation (5d): > 10 %

## COMPOSITION

Zinc .....	4.50
Magnesium .....	1.20
Manganese .....	0.25
Chromium .....	0.22
Zirconium .....	0.14
Aluminum .....	Base

## APPLICATIONS

- Closed-die forgings and forged bars for nuclear, space and defence industries.

## CHARACTERISTICS

- Good weldability.
- Average mechanical strength.
- Good balance between toughness and stress corrosion resistance.
- This alloy is similar to Grade 7005.

## HEAT TREATMENT

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- Solution treatment 470°C
- Water quench
- Naturally aged at ambient temperature (> 7 days)
- Aged at temperature depending on properties required and the section of the component.
- The T6 temper condition is the most common and is defined in Standard NF EN 515.
- It can be stress relieved between solution treatment and aging.
- T652 condition stress relieved by compression before T6 aging is the most common and is defined in Standard NF EN 515.

## PHYSICAL PROPERTIES

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- Density: 2.78
  
- Mean coefficient of expansion in m/m.°C:
  - between 20°C and 100°C:  $23.1 \times 10^{-6}$
  - between 20°C and 200°C:  $24.0 \times 10^{-6}$
  - between 20°C and 300°C:  $25.0 \times 10^{-6}$
  
- Thermal conductivity in W.m/m<sup>2</sup>.°C:
  - at 20°C: 137 (T6 condition)
  
- Mean specific heat in J/g.°C:
  - between 0°C and 100°C: 0.875
  
- Electrical resistivity in  $\mu\Omega$ .cm<sup>2</sup>/cm:
  - at 20°C: 4.93 (T6 condition)
  
- Electrical conductivity in S/m:
  - at 20°C:  $> 22 \times 10^6$  (T76 condition)
  
- Welding:
  - Weldable grade. Please contact the AD Technical Department.

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