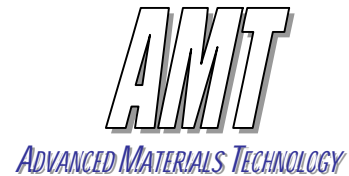


Aluminum alloys

Category:

High temperature strength
Nanocrystalline



Aluminum-alloy Al-MS95B

Aluminum alloy Al-MS95B is a nanocrystalline high temperature Aluminum alloy made via powder metallurgy. The nanocrystalline structure is stable up to 400°C. The high strength that stays stable even after hundreds of hours thermal exposure makes Al-MS95B very attractive for high temperature applications.

General properties

- Very high strength at elevated temperatures
- Higher modulus than standard alloys
- Excellent machining behavior
- High fatigue strength at elevated temperatures

Comparison with Standard alloys A4032, A2618

- Advantages:** - 20% higher stiffness, A4032
- 35% higher fatigue than A4032, A2618
- Disadvant.:** - higher density

Chemical Composition: Al-Cu-Ni-Fe

Mechanical properties, Physical data

Density: 2.92 g/cm³

CTE: 19 x 10⁻⁶

Tensile strength (20°C): 630 MPa

Yield strength (20°C): 580 MPa

Elastic Modulus: 92 GPa

Hardness (HV30): >170

Thermal conductivity: 145 W/mK

Applications

- Pistons
- Structural parts
- Connecting rods
- Hydraulic valve blocs

Delivery form

- Bars
- Billets
- Plates
- Extrusions

Typical properties of Al-MS95B

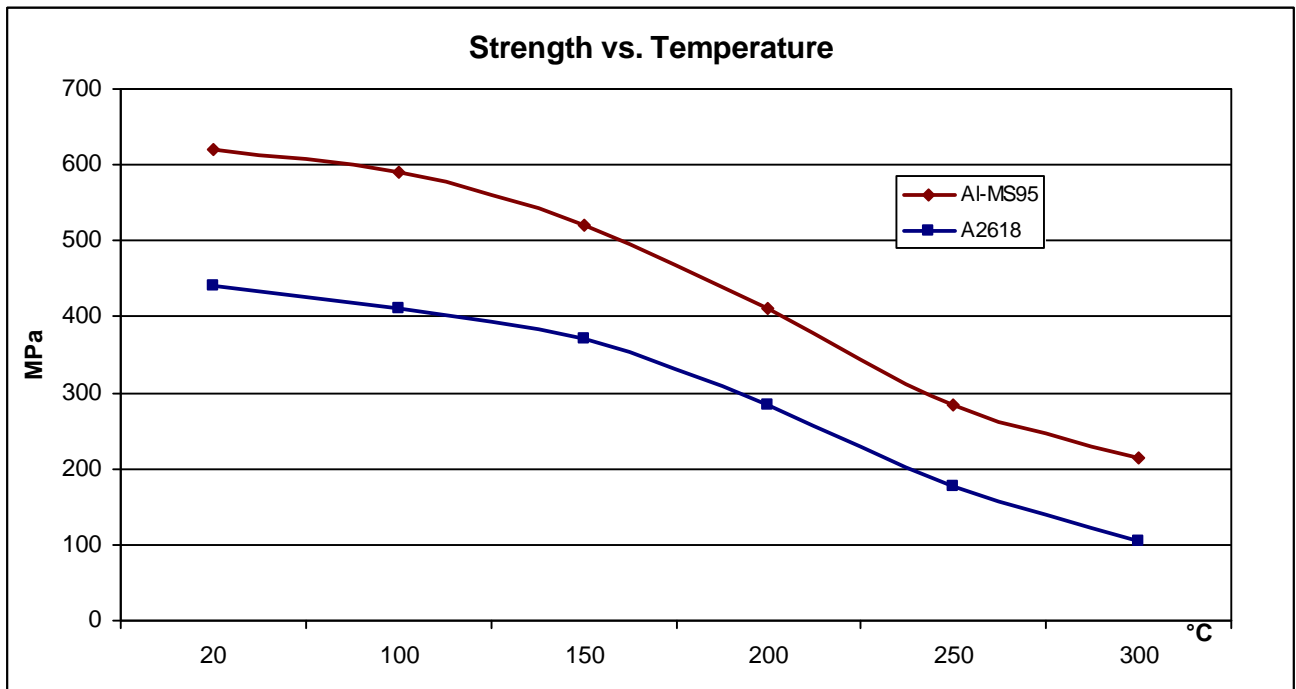


Fig. 1: Strength versus temperature of Al-MS95B and A2618.

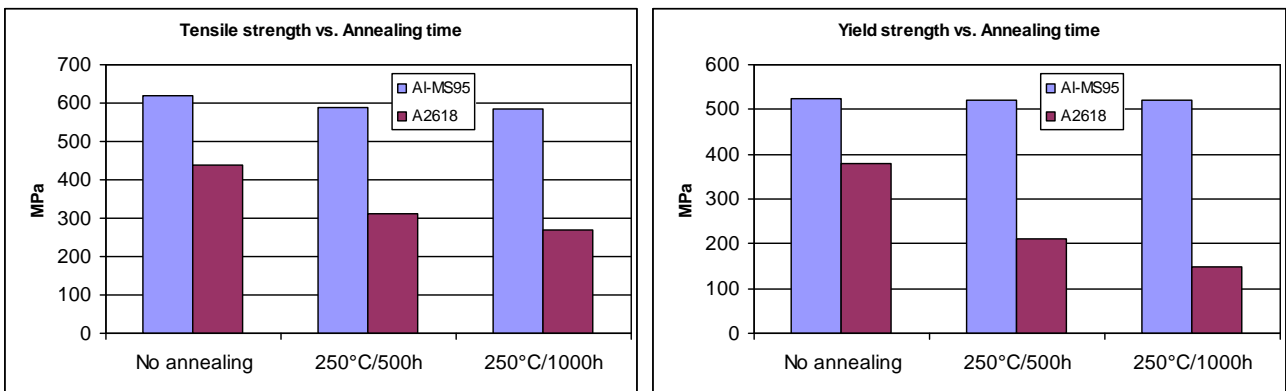


Fig. 2: Tensile and Yield strength of Al-MS95 and A2618 after different annealing times.

Temperature/°C	R= -1	Elongation
Rt	218 MPa	6%
150	205 MPa	12%
250	194 MPa	27%
300	164 MPa	32%

Fig. 3: Fatigue strength, Elongation of Al-MS95