

ALLOY A356.2

Aluminum alloy A356.2 is a widely used aluminum-silicon-magnesium alloy in the casting industry, known for its excellent casting properties. It is extensively used in the automotive and aerospace sectors due to its versatile nature and outstanding combination of mechanical properties. A356.2 offers good corrosion resistance, excellent dimensional stability, and can be heat-treated to enhance its performance. It also boasts good weldability, a high strength-to-weight ratio, and ease of casting and machining. Common applications include automotive engine components, aerospace parts, and structural castings.

APPLICATIONS

- Engine components
- Cylinder heads
- Intake manifolds
- Aerospace components
- Structural castings
- High-performance parts
- Motor Housings
- Valve bodies

Chemical Composition

Limit by weight %

- Silicon (Si): 6.5 - 7.5%
- Magnesium (Mg): 0.25 - 0.45%
- Iron (Fe): 0.15% max
- Copper (Cu): 0.2% max
- Manganese (Mn): 0.10% max
- Zinc (Zn): 0.10% max
- Titanium (Ti): 0.20% max
- Nickel (Ni): 0.05% max
- Tin (Sn): 0.05% max
- Others (each): 0.05% max
- Others (total): 0.15% max
- Aluminum (Al): Balance

Mechanical Properties

The mechanical properties of A356.2 can vary based on the temper or heat treatment condition. Here are the typical properties for the as-cast, T51 and T6 conditions:

• As-Cast (F Condition)

- Tensile Strength: 150-180 MPa (21.7-26.1 ksi)
- Yield Strength: 80-120 MPa (11.6-17.4 ksi)
- Elongation: 3-6% Hardness: 60-70 HB

• Heat Treated (T51 Condition)

- Tensile Strength: 220-250 MPa (31.9-36.3 ksi)
- Yield Strength: 150-180 MPa (21.7-26.1 ksi)
- Elongation: 4-8% Hardness: 75-85 HB

• Heat-Treated (T6 Condition)

- Tensile Strength: 280-320 MPa (40.6-46.4 ksi)
- Yield Strength: 190-240 MPa (27.5-34.8 ksi)
- Elongation: 3-6%
- Hardness: 90-105 HB