

AA2024 High Strength Aluminum Alloy

AA2024 is a high-strength aluminum alloy in the Al-Cu-Mg series, known for its heat treatability. It is commonly used in aircraft components and other high-load parts operating below 150°C.



Overview

High-Strength Aerospace Alloy

AA2024 is a high-strength aluminum alloy from the Al-Cu-Mg series, engineered for demanding structural applications. It offers excellent mechanical properties, including high tensile strength, and is suitable for heat treatment to enhance its performance. While it is widely used in aerospace components like airframes, ribs, and spars, it requires specific surface treatments like anodizing or cladding to optimize corrosion resistance.

Mechanical Properties

Tensile Strength

390 MPa

Tensile Strength (R_m)

Yield Strength

245 MPa

Yield Strength (R_{0.2})

Chemical Composition

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Element	Content (%)
Copper (Cu)	3.8 - 4.9
Magnesium (Mg)	1.2 - 1.8
Manganese (Mn)	0.30 - 1.0
Silicon (Si)	0.50
Iron (Fe)	0.50
Chromium (Cr)	0.10
Zinc (Zn)	0.25
Aluminum (Al)	Remainder

Technical Characteristics

Processing Characteristics

- Heat treatable for enhanced strength
- Good spot welding performance
- Moderate plasticity in quenched state
- Requires surface protection (anodizing/cladding) for corrosion resistance

Applications

Primary Applications

Aerospace Airframes, Wing Ribs, Wing Spars, Aircraft Skins, Rivets, High-load structural components

Standards

Standard

JIS H4000-1999