

Introduction to 5A06 Aluminum Alloy:

The 5A06 aluminum alloy is a non-heat-treatable aluminum-magnesium alloy that belongs to the 5xxx series of aluminum alloys. It is characterized by its excellent corrosion resistance, high strength, and good weldability. The alloy is commonly used in applications that require both high strength and good formability, making it suitable for various industries.

Chemical Composition of 5A06 Aluminum Alloy:

- Magnesium (Mg): 2.2 - 2.8%
- Chromium (Cr): 0.18 - 0.28%
- Manganese (Mn): 0.2 - 0.6%
- Iron (Fe): 0.35% max
- Silicon (Si): 0.6% max
- Copper (Cu): 0.1% max
- Zinc (Zn): 0.1% max
- Titanium (Ti): 0.2% max
- Others: 0.15% each, 0.05% total

Physical Properties of 5A06 Aluminum Alloy:

- Density: 2.68 g/cm³ (0.097 lb/in³)
- Melting Point: 600°C (1112°F)
- Thermal Conductivity: 159 W/m·K (1100 BTU-in/hr·ft²·°F)
- Electrical Conductivity: 38 MS/m (236 BTU-in/hr·ft²·°F)

Mechanical Properties of 5A06 Aluminum Alloy:

- Tensile Strength: 280 - 310 MPa (40.6 - 45 ksi)
- Yield Strength: 130 - 160 MPa (18.9 - 23.2 ksi)
- Elongation: 14 - 18%
- Modulus of Elasticity: 70 GPa (10,100 ksi)
- Hardness (Brinell): 73 HB

Applications of 5A06 Aluminum Alloy:

1. Aerospace Industry: The alloy's combination of strength and corrosion resistance makes it suitable for aerospace components like aircraft panels and structural parts.
2. Marine Applications: Its excellent resistance to seawater corrosion makes it an ideal choice for marine components such as shipbuilding and offshore structures.
3. Automotive Industry: The alloy is used in automotive parts requiring both strength and corrosion resistance, contributing to lightweight and durable vehicles.
4. Welded Structures: 5A06 alloy's weldability and mechanical properties make it suitable for welded structures like tanks, pipelines, and pressure vessels.

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5. Sporting Equipment: The alloy is employed in the production of sports equipment, including bicycle frames and sporting gear.
6. General Industrial Applications: 5A06 alloy finds its place in various industrial applications like machinery components and equipment parts.

The 5A06 aluminum alloy's balance of strength, corrosion resistance, and formability lends itself to a wide array of applications across industries that prioritize durability and performance.

Please note that the provided information is based on general knowledge, and specific properties or applications may vary based on manufacturing processes and specific alloy variations. Always refer to accurate and updated technical sources for precise information.

