

Introduction to 5454 Aluminum Alloy:

5454 aluminum alloy is a wrought aluminum-magnesium alloy that offers excellent corrosion resistance and high strength. It is commonly used in various applications where both strength and resistance to corrosion are critical factors. The alloy is known for its remarkable weldability, making it suitable for a range of fabrication processes.

Chemical Composition of 5454 Aluminum Alloy:

- Magnesium (Mg): 2.4 - 3.0%
- Chromium (Cr): 0.05 - 0.25%
- Manganese (Mn): 0.50 - 1.0%
- Iron (Fe): 0.40% max
- Silicon (Si): 0.25% max
- Copper (Cu): 0.10% max
- Zinc (Zn): 0.20% max
- Titanium (Ti): 0.20% max
- Others: 0.05% each, 0.15% total

Physical Properties of 5454 Aluminum Alloy:

- Density: 2.68 g/cm³ (0.097 lb/in³)
- Melting Point: 607 - 649°C (1125 - 1200°F)
- Thermal Conductivity: 138 W/m·K (960 BTU-in/hr-ft²·°F)
- Electrical Conductivity: 33.6 MS/m (209 BTU-in/hr-ft²·°F)

Mechanical Properties of 5454 Aluminum Alloy:

- Tensile Strength: 190 - 250 MPa (27.6 - 36.3 ksi)
- Yield Strength: 100 - 150 MPa (14.5 - 21.8 ksi)
- Elongation: 15 - 25%
- Modulus of Elasticity: 69 GPa (10,000 ksi)
- Hardness (Brinell): 63 HB

Applications of 5454 Aluminum Alloy:

1. Marine Industry: Due to its exceptional corrosion resistance, 5454 alloy is widely used in shipbuilding and other marine applications where exposure to saltwater and harsh environmental conditions is prevalent.
2. Automotive Industry: The alloy's high strength and corrosion resistance make it suitable for manufacturing automobile components such as panels, body structures, and fuel tanks.
3. Welded Structures: 5454 alloy's excellent weldability allows it to be used in various welded structures, including pressure vessels, storage tanks, and pipelines.
4. Pressure Vessels: The alloy's combination of strength and corrosion resistance makes it suitable for

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pressure vessel applications, including those in chemical and petrochemical industries.

5. Transportation Industry: 5454 alloy is employed in the manufacturing of trailers, truck bodies, and other transportation-related components.
6. Architectural Applications: The alloy's aesthetics and resistance to corrosion make it suitable for architectural elements in corrosive environments.

5454 aluminum alloy's versatile properties make it a reliable choice for various applications that demand both strength and corrosion resistance.

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.

