

A5083 H111/H116 Aluminum Sheet for Marine Structural

Overview of GNEE 5083 H111/H116 Aluminum Sheet & Plate

GNEE 5083 aluminum sheet and plate belong to the **Al-Mg series**, representing the highest-strength corrosion-resistant alloys among practical non-heat-treatable aluminum grades. These alloys are highly suitable for welding structures, exhibit excellent seawater resistance, and maintain mechanical properties at low temperatures, making them the preferred choice for marine-grade applications.

Among the temper states, **H111, H112, H116, and H321** are commonly used. Notably, **5083 H116 aluminum sheet** contains up to **4.9% magnesium**, making it a high-magnesium alloy with superior corrosion resistance, particularly suited for underwater ship components.

The **density of 5083 H116** is low, at **2.66 g/cm³**, while its tensile strength exceeds that of some low-carbon steels. It is durable, highly corrosion-resistant, and exhibits excellent welding performance, with minimal cracking or deformation during processing.

Both **5083 H116 and H321** offer better corrosion resistance for marine environments than H111 or H112. While production temperatures differ slightly, their corrosion resistance significantly outperforms other tempers.

Key Factors for Using 5083 H116 in Marine Applications

Lightweight Advantage

Marine aluminum plates typically range from thin sheets over 1.6 mm to thick 5083 H116 sheets over 30 mm. The low density of Al-Mg alloys reduces hull weight while increasing load capacity.

Corrosion Resistance

As an aluminum-magnesium alloy, 5083 H116 provides long-term resistance to highly corrosive seawater environments.

Safety and Structural Integrity

With medium strength, excellent processing and weldability, fatigue resistance, and minimal cracking, 5083 H116 ensures that marine structures maintain required strength and corrosion resistance, guaranteeing vessel safety.

Dimensions and Coil Types

Thickness: 0.2–350 mm

Width: 30–2600 mm

Length: 200–11,000 mm

Mother coil: CC or DC

GNEE aluminum sheets and plates are available in various alloys, offering a range of **weldability, corrosion resistance, and machinability**.

Aluminum Sheet: Metal thicker than foil but under 6 mm, available in forms such as diamond plate, expanded, perforated, and painted.

Aluminum Plate: Metal thicker than 6 mm.

GNEE A5083 H111/H116: Alloy Overview

A5083 is a premium 5xxx series aluminum alloy with magnesium as the primary alloying element, offering **high mechanical strength** and **outstanding corrosion resistance**.

H111: Lightly strain-hardened after annealing; retains ductility for bending, welding, and complex forming. Ideal for high corrosion resistance and stable strength.

H116: Strain-hardened through cold rolling; designed for high-corrosion environments such as seawater. Meets stringent shipbuilding and marine standards.

Advantages of GNEE A5083 H111/H116

High Mechanical Strength

Tensile strength: 275–350 MPa

Yield strength: ≥125 MPa

Hardness: ~75 HB

Excellent Corrosion Resistance

Resistant to marine, chemical, and industrial atmospheric environments

Non-oxidizing and rust-free, maintaining long-term durability and aesthetics

Superior Weldability & Machinability

Suitable for arc welding, gas welding, and resistance welding

CNC cutting, bending, forming, and punching without cracking

Ideal for mass production or custom-engineered applications

Physical Properties and Chemical Composition

Property	Value
Density	2.65 g/cm ³
Melting point	570°C
Thermal expansion	25×10 ⁻⁶ /K
Elastic modulus	72 GPa
Thermal conductivity	121 W/m·K
Electrical resistivity	0.058×10 ⁻⁶ Ω·m

Chemical Composition:

Element	Mg	Si	Fe	Mn	Cr	Zn	Ti	Cu	Others	Al
%	4.0–4.9	≤0.4	≤0.4	0.4–1.0	0.05–0.25	≤0.25	≤0.15	≤0.1	≤0.05	Remainder

Typical Applications

Marine & Shipbuilding: Hulls, high-speed boats, decks, bulkheads; certified by BV, ABS, CCS, LR.

Transportation: Fuel tankers, train carriages, trailers, trucks; lightweight and fuel-efficient.

Mechanical & Structural Engineering: Pressure vessels, welded components, anti-slip plates, aluminum structural construction for civil projects.

GNEE – Trusted Supplier of A5083 Aluminum Sheet

Custom Processing: Pre-cut sheets with thickness 0.5–500 mm, width 100–2800 mm; support CNC cutting and fast delivery.

Guaranteed Quality: Products meet international standards; full certifications including CO, CQ, chemical & mechanical test reports.

Competitive Pricing: Flexible wholesale pricing, technical support, and long-term after-sales service.

Comprehensive Support: Experienced technical team provides material consultation and project support both on-site and remotely.

GNEE ensures reliable quality, timely delivery, and optimized solutions for marine, transportation, and industrial applications.