

EN AW-5083

Alloy: AlMg4,5Mn
Werkstoffnummer: 3.3547

Product Description

Aluminium alloy 5083 belongs to the 5000-series, characterised by the addition of magnesium (~4.5%) and manganese. It offers outstanding corrosion resistance, excellent weldability, and suitability for cryogenic service to -196 °C . Residual stresses in the stock material may be released during machining of thin features.

Key Characteristics

- Excellent corrosion resistance — seawater and aggressive chemical environments
- Good machinability
- Excellent weldability (MIG and TIG)
- Suitable for cryogenic service to -196 °C
- Not heat-treatable to high strength

Mechanical Properties — EN 485-2

Tensile Strength (Rm)	270–350 MPa
Yield Strength (Rp0.2)	125 MPa (min)
Elongation at Break (A50)	12% (min)
Hardness	~75 HB (Brinell, ISO 6506)
Elastic Modulus (E)	~70 GPa
Density	2.66 g/cm ³
Thermal Conductivity	~117 W/m·K
Coeff. of Thermal Expansion	23.7×10^{-6} /K (20–100 °C)
Melting Range	570–638 °C
Electrical Conductivity	~29% IACS

Chemical Composition — EN 573-3

Silicon (Si)	≤ 0.40%
Iron (Fe)	≤ 0.40%
Copper (Cu)	≤ 0.10%
Manganese (Mn)	0.40–1.00%
Magnesium (Mg)	4.00–4.90%

Chromium (Cr)	0.05–0.25%
Zinc (Zn)	≤ 0.25%
Titanium (Ti)	≤ 0.15%
Aluminium (Al)	Remainder

Machining Notes

Good machinability with carbide tooling. Lower cutting speeds than 6082/7075 recommended due to tendency for built-up edge. Flood coolant advised for walls below 3 mm. Consider roughing in stages for precision parts to manage residual stress release.

Typical Applications

Shipbuilding and marine structures, offshore components, pressure vessels, cryogenic storage, military armour, bridge components, chemical processing equipment.