Novelis Shipbuilding Alloys

Alustar® and AA5059

Royal Huisman, Sea Eagle II
by Tom Van Oossanen

Our knowledge and service

To guarantee a quality of our products on the highest level, a quality assurance system according to the most demanding standards e. g. ISO 9001 and ISO/TS 16949 has been established at the plant in Koblenz.

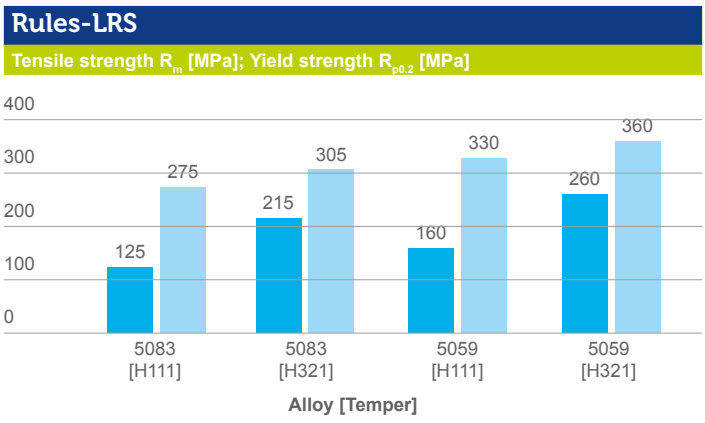
This ensures not only a constant quality of the plates but also its continuous improvement. Additionally, the mechanical properties of the material are extensively controlled during production according to the highest requirements placed. This includes e. g. the checking of the corrosion behavior of the plates by established corrosion tests procedures as well as with the help of metallographically investigations on the microstructure. Qualifications according to ABS, DNV, LRS and NK represent our knowledge and excellent service.

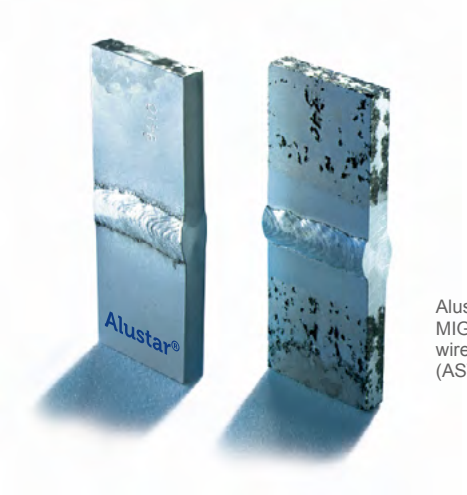
Our shipbuilding alloy Alustar®

We developed Alustar® specifically to address the requirements for building ships, sailing yachts and other naval vessels. Our product offers significantly higher strength than other standard products which allows new ways of designs or downgauging to reduce weight. Of course, it has still a high level of corrosion resistance, as well as weldability and formability.

Characteristics

- High strength
- High corrosion resistance
- Good weldability
- Good formability
- Available in a high thickness range and in very wide and long dimensions
- Qualifications according to ABS, DNV, LRS and NK





Alustar® and AA5083 MIG-welded with AA5183 filler wire after ASSET test (ASTM G66)

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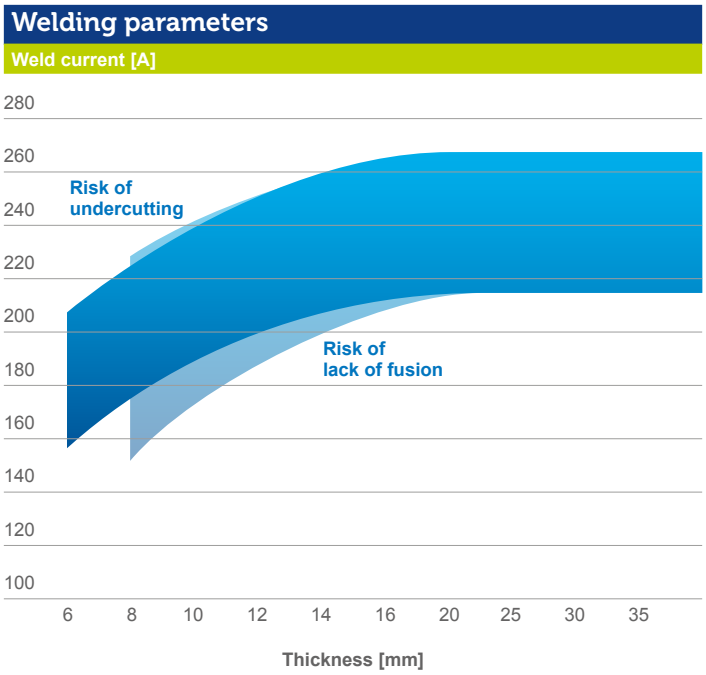
Welding parameters



Welding parameters

The figure shows the welding parameters for MIG specifically pulsed arc welding of Alustar®. Depending on the wall thickness the welding current is adjustable in a wide range using shielding gas Argon but also a mixture of Argon and Helium.

These welding parameters are based on the experience of various shipyards. They have been also applied for procedure tests under the supervision of classification societies.

As with the alloy AA 5083 the application of Argon and Helium shielding gas mixtures on Alustar® leads to a larger range of the applicable welding current compared to Argon, thus minimizing the risk of lack of fusion.

- Filler alloy: AA 5183 ø1.2 mm
  Shielding gas: Argon [100%]
  Weld shape: Butt weld
  Weld speed: 0.6 – 1 m/min
- Filler alloy: AA 5183 ø1.2 mm
  Shielding gas: Argon [25%] + Helium [75%]
  Weld shape: Butt weld
  Weld speed: 0.6 – 1.3 m/min

Typical strength properties for various tempers[1]

Alloy	Temper	Gauge [mm]	Tensile strength R_m [MPa]	Yield strength $R_{p0.2}$ [MPa]	Elongation A [%]
AA5059	H111	12.5 - 40	333	175	25
AA5059	H321	4 - <12.5	380	320	12

[1]Measured at room temperature, test direction LT

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