

## Casting alloys

# MAXXALLOY® - STRUCTURE

## GBD Al Mg 5 Si 2 Mn Cr

### Properties and application

MAXXALLOY®-Structure is a low-iron aluminium alloy for use in die casting. The long solidifying interval ensures good mould filling. The tendency to warm crack formation is low. Despite the low iron content, the alloy does not tend toward sticking; thanks to the presence of manganese and chromium, even thin-walled parts can be moulded well. When designing the draughts, the higher shrinkage of MAXXALLOY®-Structure during solidification compared to AlSi alloys must be taken into consideration.

Depending on the wall thickness, excellent mechanical properties can be achieved without heat treatment. In particular, the high ductile yield in thin-walled parts should be emphasised. The addition of chromium increases the heat resistance of the cast parts, which sharply reduces distortion during removal from the mould. The alloy is corrosion-resistant and is excellently suited for welding.

The preferred application of MAXXALLOY®-Structure is in die cast parts with a wall thickness of 2 - 4mm. The very good weldability permits the manufacture of complex modules from cast parts and, for example, extruded profiles made from 5000 and 6000 series alloys. Examples of these are structural parts.

### Composition in the block in % by mass:

Si	Fe	Cu	Mn	Mg	Cr	Ti	Other
1.8 – 2.6	0.2	0.02	0.3 – 0.5	5.0 – 6.0	0.1 – 0.3	0.05-0.15	0.02 each

### Guiding values for the achievable mechanical properties:

Wall thickness mm	0.2 Yield strength $R_{p0.2}$ [N/mm <sup>2</sup> ]	Tensile strength $R_m$ [N/mm <sup>2</sup> ]	Ductile yield A 5 [%]	Brinell hardness HB 5/250
2 – 4	150 – 195	270 – 310	12 – 16	85 - 95

These guiding values identify the potential of this alloy, assuming flawless casting (extensively free of pores, sinkholes and oxides). Suitable casting measures (e.g. the use of vacuum) should therefore be provided to avoid such errors in safety parts. Weldability is also influenced by the separators and lubricants used.

Contamination caused during the melting of the pigs can also hamper the mechanical properties. Special care must be paid to this step of the process.

**What advantages does SAG Aluminium Lend offer you:**

- We are an innovative alloy manufacturer
- We offer you high flexibility through compact batch sizes (12 t)
- Customer-supplier relationship based on partnership
- We work together with external partners (research institutes, universities)
- We view material development as our core competence
- Our advice is based on know-how from our own manufacturing and R&D work

Alloy MAXALLOY<sup>®</sup>-STRUCTURE is delivered exclusively in the form of pigs produced through horizontal continuous casting (HCC). In this way, we offer the following advantages:

- Less scrap through maximum metal purity and uniformity
- Clean pigs without oxide inclusions
- No hard non-metallic inclusions
- Low gas content in the pigs thanks to inline degassing during production
- Lower costs through
  - Reduced metal loss during melting
  - Good and safe stackability
  - Low space requirements thanks to compact pig bunches

**Contact:**