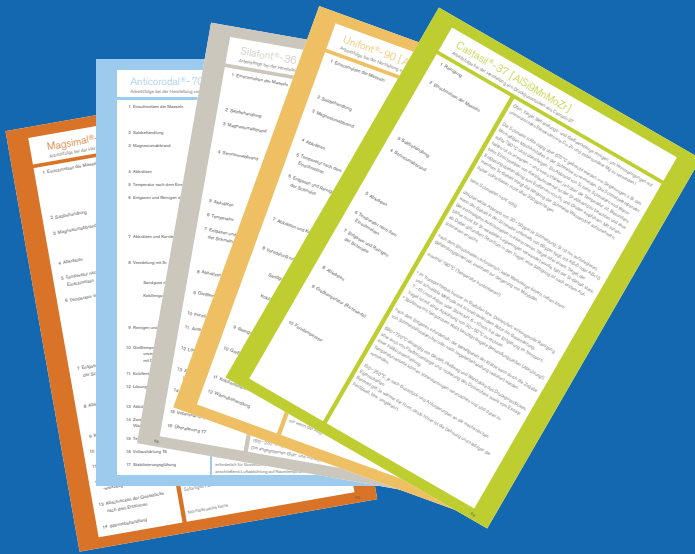


Processing data sheets



RHEINFELDEN ALLOYS provides the following processing data sheets in order to detail how to work with the various alloys. If you use our casting alloys, please feel free to copy the following pages and use them in your company. They contain practical instructions and demonstrate the processes step by step.

Not all alloys are listed here, but the processing data sheet from within the corresponding alloy family can be used, Peraluman-56 can for example also be used for Peraluman-30.

The recommendations correspond to typical foundry circumstances. For example a crucible or shaft melting furnace is considered for melting down; the circumstances in a huge melting furnace may differ from the recommendations. Fine returns should also not be used for primary aluminium high pressure die casting alloys.

The volumes listed here are all percentages by weight, calculated for the charge weight. The temperatures quoted all relate to the temperature of melt, even for casting. The heat treatment recommendations apply for the standard process and may be varied, to minimise distortion for example.

If you have any questions relating to your specific alloy application and processing, please contact our foundry experts.

1 Melting down the ingots	As quickly as possible in powerful furnaces to keep Mg melting loss, gas absorption and oxidation of melts low; replenish preheated ingots and returns in small volumes to avoid segregation and entrapped oxides
2 Salt treatment	Not needed when melting
3 Magnesium burnout	Normally a melting loss of 0.05 mass % per fusion; compensation is required if the Mg content of an Anticorodal-70/-70 dv melt is less than 0.25%; AlMg master or casting alloy or pure magnesium can be added
4 Skimming	Needed after melting down
5 Temperature after melting down	Maximum of 780 °C (check temperature!)
6 Degassing and refining the melts	<ul style="list-style-type: none"> • Effective refining and fastest method using quick-running rotor for gas feeding, 7–10 l/min argon or nitrogen, 6–10 min • Gas flushing lance with fine porous head needs longer treatment times (cooling!) • Gas flushing tablet emitting nitrogen at a rate of 150–350 l nitrogen/kg (bell plunger procedure)
7 Skimming and grain refining	Grain refining for Anticorodal-70 with granular microstructure: after careful skimming grain refining with TiB master alloy or tabletted fluxes on nucleation states of ≥ 9 , i.e. grain surface of less than 2.5 mm ²
8 Modification with Sr	When using permanently modified ingots only if the strontium content has fallen below 0.015%; use AlSr master alloy, preferably one containing just 5% strontium, for modification
Sand casting with Na	<ul style="list-style-type: none"> • With 0.03–0.04 vacuum-packed sodium or 0.2–0.3 exothermic modification tablets or 0.05–0.2 salt granulate (details provided as % of charge weight)
Gravity die casting with Na	<ul style="list-style-type: none"> • Thick-walled gravity die casting and gravity die casting with sand grains: with 0.015–0.025 vacuum-packed sodium or 0.1–0.2 exothermic modification tablets or 0.05–0.2 salt granulate (details provided as % of charge weight) <p>Thin-walled gravity die casting is only modified with sodium in rare cases</p>
9 Refining and skimming	Gas treatment with rotor is the preferred option, e.g. using integrated melt processing while adding sodium-salt granulate and gas refining at the same time
10 Pouring temperature (approx. values)	Depends on design, size and wall thickness of casting
unmodified	720–760 °C
permanently modified	740–780 °C
11 Gravity die temperature	300–400 °C depending on casting
12 Solution heat treatment	520–535 °C for 6–10 hours; for special components: 535–545 °C/24 hours (The annealing and ageing times stated apply without a heating-up time.)
13 Cooling solution heat treatment temperature	In water (10–40 °C) without a delay wherever possible
14 Delay time before artificial ageing	Only if dressing is needed, maximum of 12 hours
15 Partial ageing T64	150–160 °C/2–3 hours for high elongation
16 Full artificial ageing T6	155–165 °C/6–8 hours for high strength
17 Stabilisation annealing	Required for castings with thermal loading: 210–230 °C/6–8 hours, followed by cooling to room temperature in the air

We would like to thank all our business partners who have provided castings or photographs for this publication.

All the details in this publication have been checked and are provided to the best of our knowledge. But just like all technical recommendations for applications, they are not binding, are not covered by our contractual obligations (this also applies to copyrights of third parties) and we do not assume liability for them. In particular they are not promises of characteristics and do not exempt the user from checking the products we supply for suitability for their intended purpose. Reprints, translations and copies, including extracts, require our express approval. New alloy developments made as technology progresses after printing are included in later versions.



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