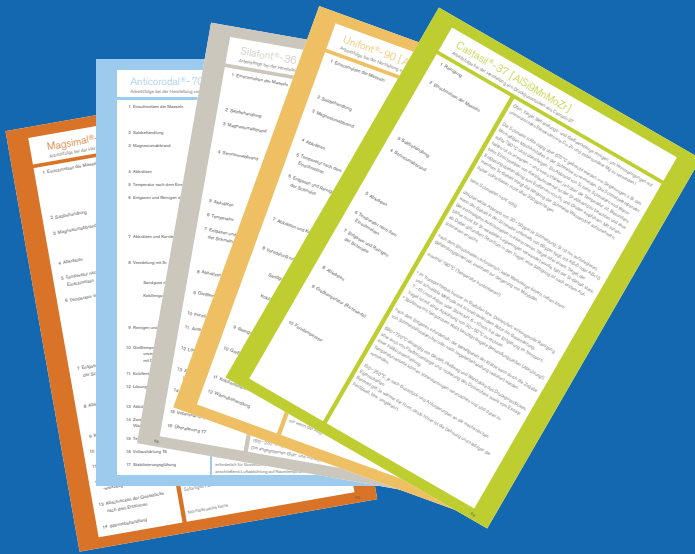


# Processing data sheets



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 efficient furnaces to keep magnesium melting loss, gas absorption and oxidation of melts low; replenish preheated ingots and returns in small volumes to avoid segregation and entrapped oxides; proportion of returns may extend to 50%
2 Salt treatment	Not needed when melting
3 Magnesium burnout	Normally a melting loss of 0.03% per fusion; compensation is only required if the magnesium content of the melts is outside tolerance, add magnesium master alloy or pure magnesium
4 Strontium burnout	Usually melting loss of 30–50 ppm per fusion; Sr should only be added if the Sr content of the melts is less than 80 ppm, add AlSr5 or AlSr10. When fusing for the first time in a new crucible or in a crucible which has not yet been used for Sr-modified alloys, the Sr content falls sharply. Strontium will diffuse into the crucible, saturation is reached after the first fusion
5 Skimming	Needed after melting down
6 Temperature	After melting down maximum of 780 °C for holding temperature
7 Degassing and refining the melts	<ul style="list-style-type: none"> <li>• In the transport crucible, better in a holding crucible or receptacle or in a dosing furnace with bottom blocks; effective refining and fastest method using quick-running rotor for gas feeding, 7–10 l/min argon or nitrogen, 6–10 min</li> <li>• Gas flushing lance with fine porous head, needs longer treatment times (cooling!)</li> <li>• Gas flushing tablets emitting nitrogen in the bell plunger procedure are not very suitable</li> </ul>
8 Skimming	Required after melting down; the metal content of the skimmings may be reduced by adding melt fluxes within or after the impeller treatment
9 Pouring temperature (approx. values)	680–710 °C – depends on design, flow path and wall thickness of high pressure die casting, but also on the length of the flow channel in the dosing furnace and possibly on chamber heating
10 Mould temperature	200–250 °C depending on casting Die surface temperature 250–350 °C
11 Ageing by T5	Water quenching immediately after the casting is taken out as high a temperature as possible (then age as 15)
12 Solution heat treatment	480–490 °C / 2–3 hours; for special components: 400 °C / 0.5 hours
13 Cooling solution heat treatment temperature	In water (10–60 °C) without a delay wherever possible; if cooling in the air, only a significantly lower yield tensile strength can be obtained
14 Delay time before artificial ageing	Only if dressing is needed, usually maximum of 12 hours
15 Full artificial ageing T6	155–170 °C / 2–3 hours
16 Overageing T7	190–230 °C / 2–3 hours The annealing and ageing times stated apply without a heating-up time

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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