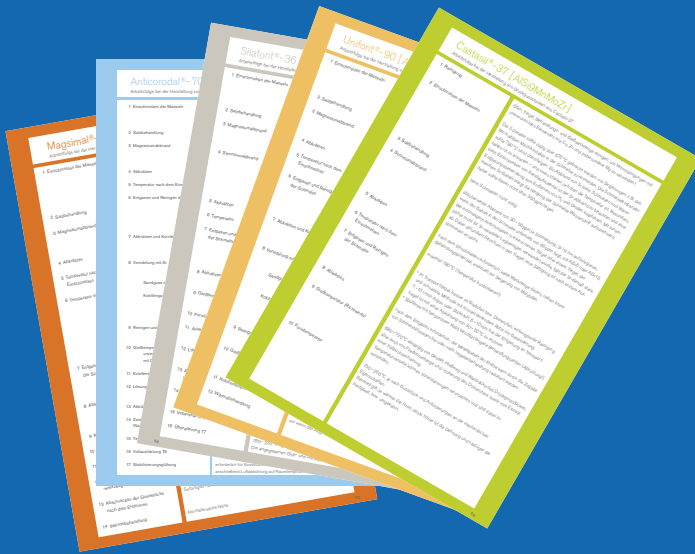


Processing data sheets



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	The crucibles used must not release any silicon to the alloy (maximum silicon content 0.14%). Hot cracking sensitivity increases at higher silicon contents. The crucible usually has to be rinsed with Al99.5 or AlMg alloy for this purpose. Melting down should take place as quickly as possible in an efficient furnace so that zinc and magnesium melting loss, gas absorption and oxidation of melts remain low. Pre-heated ingots and returns should be replenished in small quantities. The high chrome content may result in segregation at low holding temperatures below 670°C combined with long standing times. Salt treatment is not needed when melting
2 Magnesium burnout	Melting loss of 0.1% per fusion usually occurs and can be ignored
3 Skimming	Needed after melting down
4 Temperature after melting down	Maximum of 820 °C (check temperature!)
5 Degassing and refining the melts	<p>When using an impeller or gas flushing lance, the high temperature loss during treatment should be taken into account. Recommended starting temperature: > 780 °C</p> <ul style="list-style-type: none"> • Effective refining and fastest method using quick-running gas rotor, 7 – 10 l/min argon or nitrogen, 3 – 6 min • Gas flushing lance with fine porous head, needs longer treatment times <p>A DI of less than 1 µ can be easily achieved and maintained with effective refining</p>
6 Skimming and grain refining	<p>Is not needed with Castadur-30 after melting down ingot material</p> <p>After a longer holding phase and with a high use of returns, a small addition of grain refiners is recommended, e.g. grain refiner tablets or AlTi5B1 wire (0.5 kg/t) can be added just before pouring</p>
7 Modification	Superfluous as contains no silicon
8 Pouring temperature (approx. values) Sand casting Gravity die casting	<p>Varies depending on casting method, design, size and wall thickness of castings:</p> <p>720 – 760 °C (recommendation 730 °C)</p> <p>730 – 760 °C (recommendation 750 °C)</p>
9 Model design	<p>Shrinkage of 1.0 – 1.3%</p> <p>The high centre line formation of blowholes must be remedied by specific solidification. The ingate and feeder head design should be selected accordingly</p>
10 Gravity die temperature	250 – 400 °C depending on casting; at high gravity die temperatures, fewer cracks form; we therefore recommend: 350 °C
11 Removal of casting	<p>When removed from the moulding box or gravity die, castings are still very soft. Castings with accurate measurements must be removed with care</p>

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.



RHEINFELDEN ALLOYS GmbH & Co. KG

A company of the ALUMINIUM RHEINFELDEN group

Sales and Customer Support

Friedrichstraße 80

D-79618 Rheinfelden

Tel. +49.7623.93-490

Fax +49.7623.93-546

alloys@rheinfelden-alloys.eu

www.rheinfelden-alloys.eu

