



HEAT TREATMENT

HEAT TREATMENT OF DIE CASTINGS

The influence of different heat treatment parameters, especially the ageing temperature, to the mechanical properties of the alloy Al Si9Cu3 has been investigated systematically. The strength increases up significantly by a combination of natural and artificial ageing.

ALLOY EN 1706 AC-Al Si9Cu3(Fe)(Zn)

- Combination of natural and artificial ageing
- Thermally activated precipitation
- Shorter ageing times
- Increase of mechanical properties
- Higher yield strength, hardness and tensile strength, without scarifying elongation

HRTEM-INVESTIGATIONS

- Sample preparation by focused ion-beam (FIB)
- High resolution images (nm-scale, atom columns)

MATHEMATICAL MODELLING

- Modelling according to Shercliff-Ashby
- GPR-function as approximation of the maximum yield strength
- Optimisation of the heat treatment parameters
- Optimisation of the mechanical properties

