

Objective

Aluminium-Bismuth 6xxx alloys are utilized for advanced engine bearing automotive applications which require a high degree of machinability (e.g. transmission valves, brake pistons, etc).

The control over the solidifying microstructure of Al-Bi alloys is critical to the existence of a miscibility gap, where two liquid phases coexist.



Research topics

- To study the influence of cooling rate on structure development and Bi particle distribution.
- To determine the microstructure development during solidification.

Industrial benefits

- The influence of the cooling rate on the microstructure development during solidification is related to the solidification process during DC casting.
- Better distribution and shape of Bi particles is obtained by improving the casting process (e.g. increasing moderately the casting speed).
- Product failure rejection reduced with a factor of 3.

