



SIMULATION OF CASTING TECHNOLOGIES FOR Al-Si-Cu PLATE CASTING

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Abstract

During the casting of aluminium alloys, the susceptibility to form oxide films is high, due to the turbulent flow of the melt and constant exposure of new surface area. This has impact on the properties of the material and the service life of the casting components. Also, hydrogen solubility in the solid state are very low, which ends up being rejected and causing porosity. After pouring, when solidification occurs, another phenomenon arises called shrinkage. This requires excess molten metal to be fed during this phase change to eliminate or reduce the effect of volumetric changes. Filling and feeding during aluminium casting is therefore of paramount importance, and careful steps need to be undertaken to reduce possible defects in the castings. The objective is to apply studied literature guides and rules and simulate the casting process of aluminium alloys, and understand how certain defects are occurring during this process. This is a preliminary study towards the understanding of the “macro evolution” of Al-Si-Cu alloy during solidification, which will be the bases for the study of microsegregation of the specified alloy.

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