

عنوان مقاله:

EVALUATION OF PRESSURE EFFECT ON HEAT TRANSFER COEFFICIENT AT THE METAL- MOLD INTERFACE
FOR CASTING OF A356 AL ALLOY

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خلاصه مقاله:

Abstract: During solidification and casting in metallic molds, the heat flow is controlled by the thermal resistance at the casting-mold interface. Thus heat transfer coefficient at the metal- mold interface has a predominant effect on the rate of heat transfer. In some processes such as low pressure and die-casting, the effect of pressure on molten metal will affect the rate of heat transfer at least at initial steps of solidification. In this study interfacial heat transfer coefficient at the interface between A356 alloy casting and metallic mold during the solidification of casting under pressure were obtained using the IHCP (Inverse Heat Conduction Problem) method. Temperature measurements are then conducted with the thermocouples aligned in the casting and the metallic mold. The temperature files were used in a finite-difference heat flow program to estimate the transient heat transfer coefficients. The peak values of heat transfer coefficient obtained for no pressure application of A356 alloy is ۲۹۲۳ and for pressure application is ۳۳۴۵. Empirical equation, relating the interfacial heat transfer coefficient the applied pressure were also derived and presented.

کلمات کلیدی:

.Keywords: Air Gap, Metal/Mold Interfacial, Permanent Mold, Heat Transfer Coefficient, IHCP Method

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