## Prediction of Solidification Behavior of Al Alloy in a Cube Mold Cavity

Authors : N. P. Yadav, Deepti Verma

**Abstract :** This paper focuses on the mathematical modeling for solidification of Al alloy in a cube mould cavity to study the solidification behavior of casting process. The parametric investigation of solidification process inside the cavity was performed by using computational solidification/melting model coupled with Volume of fluid (VOF) model. The implicit filling algorithm is used in this study to understand the overall process from the filling stage to solidification in a model metal casting process. The model is validated with past studied at same conditions. The solidification process are analyzed by including the effect of pouring velocity and temperature of liquid metal, effect of wall temperature as well natural convection from the wall and geometry of the cavity. These studies show the possibility of various defects during solidification process.

Keywords : buoyancy driven flow, natural convection driven flow, residual flow, secondary flow, volume of fluid

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