Complex evaluation of porosity in A356 aluminium alloy using advanced porosity module

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In this work, the formation of porosity (micro, macro porosity and pipe shrinkage) has been examined under different casting conditions aimed at manipulating cooling rate and pouring temperature of aluminium alloy A356. The results of the experiment will attempt to verify that the solidification rate and pouring temperature have an effect on the formation and character of gas pores in castings from A356 alloy. For this purposes was used advanced porosity module integrated into simulation software ProCAST. Specific casting and mold was designed to be able observe porosity formation. Main aim was to choose the right shape, so all types of porosity occur during solidification. Top part of casting is optimized for creation of pipe shrinkage. Bottom part connected with top part through narrowed area (which will solidifies first and additional feeding will not be possible) is ideal for formation of internal micro and macroporosity.

Keywords: simulation, porosity, aluminum alloys

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