The Influence of Porosity on Mechanical Properties of Casts Produced from Al - Si Alloys

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The aim of the research was to evaluate influence of porosity size on mechanical properties of AlSi7Mg0.3 (EN AC 42 100) alloy before and after thermal treatment. For the analyses casts of the same production type (forms used for tires production) were used. They were casted employing low-pressure casting technology. Since the negative influence of porosity on mechanical properties of Al alloys is generally known there is no quantitative assessment. In this research relation of porosity size in the structure of AlSi7Mg0.3 alloy and its mechanical properties is verified and quantified. Static tensile testing has proven the relation between porosity size in a structure of an Al material and its mechanical properties. Image analysis was applied in quantitative measurement of the porosity. The measurement was performed on prepared metallographic specimens. Porosity size is considered as a fraction of pore area to the total area of the analyzed specimen and is taken in percentage.

Keywords: porosity, gassing, AlSi7Mg0.3 alloy, mechanical properties**,** intermetallic phases

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