Fracture surface of recycled AlSi10Mg cast alloy

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Recycled aluminium alloys are made out of aluminium scrap (new or old) and workable aluminium garbage by recycling. Due to the increasing production of recycled aluminium cast alloys is necessary to ensure their strict metallurgical control. The mechanical properties and the microstructure character depends on the chemical composition; melt treatment conditions, solidification rate, casting process and the applied thermal treatment. The mechanical properties depend on the morphologies, type and distribution of Si, Cu, Mg and Fe-phases, on the grain size, DAS and porosity distribution. Improvement of mechanical properties and structure of Al-alloys can often significantly increase the using lifetime of a casting. Different elements are added to achieve the optimum casting and mechanical properties. Modification can be achieved by several methods as faster solidification, mould vibration, melt agitation in mushy state and melt inoculation by using chosen elements like Sr, Na, Sb etc. Present work is focused on study of the effect of Sr-modification on the structure and mechanical properties of recycled AlSi10Mg cast alloy. For study and identification of intermetallic phases' was utilized standard (HF), colour (MA) and deep etching (HCl) in order to reveal the three-dimensional morphology of the silicon particles and intermetallic phases. For element composition of the specimen was used X-ray (EDX) analysis. Finally, the effect of modification on silicon morphology and fracture surface was examined.

Keywords: fracture surface, recycled Al-Si cast alloys, fractographic analysis, intermetallic phases

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