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Phase and structure characteristics of recycled AlZn10Si8Mg cast alloy

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The contribution describes effect of the temperature (20-400°C) on structure and mechanical properties (Brinell hardness and bending impact toughness) of the recycled AlZn10Si8Mg cast alloy. AlZn10Si8Mg cast alloy are used for engine and vehicle constructions, hydraulic unit and mould making without heat treatment. Improved mechanical properties are strongly dependent upon the morphologies, type and distribution of the phases, which are in turn a function of alloy composition and cooling rate. A combination different analytical techniques (light microscopy upon black-white and colour etching, scanning electron microscopy (SEM) upon deep etching, energy dispersive X-ray analysis (EDX) and HV 0.01 microhardness measurement) were therefore been used for the identification of the various phases. It is therefore necessary to study their structure and impact of intermetallic phases on the mechanical properties of aluminium alloys. The paper evaluates change of absorbed energy of impact at different temperature and the effect of structural change and hardness change in alloy during the test. The experiment was realized out using Charpy hammer and Brinell hardness tester.

Keywords: recycled aluminium cast alloy, SEM, intermetallic phases, Brinell hardness, bending impact toughness

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