

## Impact Properties of Self-Hardening Aluminium Alloy (AlZn10Si8Mg) at Elevated Temperatures

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Self-hardening aluminium alloy AlZn10Si8Mg represents an innovative class of light aluminium alloys and they present high mechanical properties, which make them suitable for many applications in different industrial fields, especially in transport industry. The most important and relevant feature of the self-hardening alloys is related to their good performance, without the need of any heat treatment: they are subjected to a natural ageing phenomenon at room temperature after a storage period of about 7-10 days. The possibility to avoid the heat treatment represents an important benefit, contributing to considerably reduce both the production cost of some components and the amount of energy. Furthermore, without heat treatment the risk of component's deformation during the production is eliminated.

The Charpy impact energy of experimental cast alloy was measured at -196°C, -20°C, 20°C, 50°C, 100°C, 150°C, 200°C, 250°C, 300°C, 350°C and 400°C in terms of the total absorbed energy. Effect of temperature to microstructural changes and fracture surface on the impact toughness was investigated. A combination different analytical techniques (light microscopy upon black-white etching, scanning electron microscopy (SEM) upon deep etching) were therefore been used for the identification of the various phases.

**Keywords:** aluminium cast alloy, microstructure, impact energy, fracture surface

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