

“EFFECT OF VIBRATION ON MECHANICAL PROPERTIES OF A356 ALUMINUM ALLOY CASTING”

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ABSTRACT

The experimental investigation on the effect of mechanical vibration parameter (frequency and amplitude) on microstructure and mechanical properties of A356 aluminum alloy casting have been carried out. Mechanical vibrations were applied to A356 aluminum alloy in the frequency and amplitude range of 0 Hz-400Hz and 0-15 μ m respectively. The effect of frequency of vibration on grain refinement and mechanical properties was investigated. The molten alloy filled mould was kept on the vibrating platform which vibrates in the frequency and amplitude range of 0 Hz-400Hz and 0-15 μ m respectively. Vibrating table is coupled with vibration exciter. Mould is properly clamped on the table. Casting is prepared under stationary and vibrating conditions. Test specimens for stationary and vibratory casting were prepared for tensile test and microstructure examination. Tensile test of stationary and vibratory prepared specimens was conducted. It was observed that tensile strength, yield strength and percentage elongation were improved by 26.8%, 17.7% and 52% respectively as compared to that of stationary prepared specimens. Improvement in the properties is attributed to grain refinement of vibratory prepared casting which evident from microstructure photograph.

KEYWORDS: Mechanical Vibration, Microstructure, SEM, Grain Refinement

Received: Oct 30, 2015; **Accepted:** Nov 16, 2015; **Published:** Nov 19, 2015; **Paper Id.:** IJMPERDDEC20157