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Role of Heat Treatment on Hardness of Al 6061- AlB2 Metal Matrix Composites

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Abstract

Insitu AlB2 particles with Al6061 combination system increase its hardness strength and abatement in density. Al6061-AlB2 insitu composites were created by exothermic response utilizing premixed halide salt KBF₄ and Na₃AlF₆ (for refining aluminium matrix) by liquid strategy with distinct weight rates of AlB2 particles. The as cast matrix combination and the related insitu are exposed to heat treatment at a required temperature of 535°C for one hour followed by quenching in various media like ice, oil, and water. Then the specimens are exposed to an artificial ageing for 175°C for around 10 hours. Microstructural study was directed on as cast and insitu composite to determine the dissemination of AlB2 particles in the base matrix. The reinforced composite showed improvement in hardness when contrasted with as cast alloy. There has also been some improvement in hardness with increasing AlB2 content. The Al6061-AlB2 particulate composites showed critical improvement in hardness when quenched in ice.

Keywords:

Ageing, AlB2, Hardness, Insitu, MMC, Solutionizing

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