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3. Chapter

The Essence of Intermetallic Phases in AA6061/Clay Composites

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Abstract

Aluminium alloy is applied in a variety of products, including structural supports, engine components, cooking utensils and beverage cans. AA6061 aluminium alloy strengthened with different percentages of clay in the range of 2 to 8 wt.% at 75 and 150 μm was produced. SEM/EDS analysed the impact of clay particles in AA6061 used to characterized surface morphology. XRD analysis of the prepared samples showed aluminium silicate, silicon IV oxide and aluminium oxide intermetallic phases at different peaks in the matrix alloy. The result depicts enriched hardness, tensile strength and percentage elongation of developed material to about 15.1%, 5.5% and 16.7%, respectively. The mechanical properties revealed higher results compared with AA6061 aluminium alloy. It was observed that intermetallic phases play a major role in supporting the reinforcement of AA6061 aluminium alloy.

Keywords

- **AA6061 aluminium alloy**
- **Clay**
- **SEM/EDS**
- **Stir casting method**

- **Mechanical properties**
- **XRD**

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