

**THE MICROSTRUCTURE AND MECHANICAL  
BEHAVIOR OF ALUMINUM ALLOY 6061 WITH THE  
ADDITION OF Al-5Ti-1B AND Al-5Ti-0.25C GRAIN  
REFINER MASTER ALLOYS**

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Grain refinement process is one of the most applicable methods in improving mechanical behavior of Aluminum based alloys. The improvements in microstructure and mechanical behavior of aluminum alloy 6061 the addition of Al-5Ti-1B master alloy and of Al-5Ti-0.25C master alloy were compared.

A complete characterization study on master alloys was conducted, present phases and its grain shapes were recorded. A parametric study estimated a suitable working condition for application of grain refiners on AA6061. The optimum working conditions estimated were 0.4 mg/kg of refiner quantity, 720 oC casting temperature and 5 minutes holding time. The AA6061 average grain size was reduced from 123 micron to 66 micron in average. The hardness of the treated aluminum alloy 6061 increased by nearly 44% when compared to the original allot.