



## Improving Surface Hardness of the Aluminum Plate by Adding Alumina Powder by Friction Stir Process

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**Abstract :** Research is carried out on the effect of introducing Alumina particles  $Al_2O_3$ , which has increased the mechanical properties of 6063 Aluminium alloy. This can be achieved by incorporating the ceramic particles on the surface of the metals/alloys via FSP technique. During the process, Alumina particles are dispersed in the surface of AA 6063 Al alloy. After dispersion, it was evaluated from the micro hardness results that the strength of the surface composite that underwent the friction stir process displayed a value that was about 1.7 times higher when compared to the areas that were unprocessed. A fairly uniform distribution of reinforcements in the respective matrix is noticed. The improvements made on mechanical properties of AA 6063 alloy combined with  $Al_2O_3$  can be widely used in aircraft applications.

**Keywords:** Surface Hardness of the Aluminum Plate, Alumina Powder, Friction Stir Process.

G.Britto Joseph *et al* /International Journal of ChemTech Research, 2016,9(8),pp 587-593.

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