

Investigation of the abrasion behaviour of gnp and b4c reinforced magnesium composites

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In this study, 0.5% nano GNP (graphene nanoparticle) and 15% B4C reinforced composites with AZ71 Mg alloy matrix were produced and extruded by melt-based induction casting. The microstructure, mechanical and dry abrasion behavior of the produced composites was investigated. While Nano GNP is used because they exhibit high thermal conductivity and low friction coefficient, B4C particle has benefited from its high strength. In addition, another purpose of choosing B4C and GNP; Due to the high wettability between B4C, GNP and Mg matrix, the interfacial bond between the composite matrix and the reinforcement is also strong to obtain a final product. The abrasion tests of the extrusion specimens were carried out by measuring the weight loss under a constant 20 N load, at a constant speed of 100 mm/sec and a total sliding distance of 1000 m in a back-and-forth abrasion test device. In the studies, although the hardness value of the AZ71+15%B4C composite is high, the abrasion behavior of the nano Graphene reinforced AZ71+0.5%GNP composite has improved because it reduces the friction coefficient.