

عنوان مقاله:

Effect of Thickness on Fracture Toughness of Al6061-Graphite

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خلاصه مقاله:

This research work presents the study on fracture behavior of Al6061 with graphite particulate composite produced by the stir casting technique. The materials selected for the proposed work is Al6061 and graphite particles. Compact tension (CT) specimens were utilized to determine fracture toughness for different thickness of composite. In the present work, optimizing the parameters of the compact tension specimens is carried out using Taguchi method. Four parameters and two factors are considered to optimize the parameters. Factors considered are material composition and a/W ratio. From the Taguchi analysis, on compact tension specimens, Al6061-9%graphite is the optimized composition and fracture toughness is maximum for a/W ratio = 0.45. All the compact tension specimens of different thickness (B = 4, 5, 7, 10, 12, 15, 18 and 20mm) of a/W=0.45 were tested to find the fracture toughness. From the results, it was observed that the K_q reduces with increment in thickness to width (B/W) proportions and found to stay consistent for B/W≥0.3. This consistent estimation of K_q for B/W≥0.3 prevail the plane strain fracture toughness (K_{Ic}) of the composite.

کلمات کلیدی:

Al6061-graphite, MMC, fracture toughness, CT Specimens, Taguchi analysis

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