

TRIBOLOGICAL CHARACTERISTICS OF AL/TiC COMPOSITES USING A BALL-CRATERING METHOD

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ABSTRACT

The aim of the research was to investigate the effect of speed, load and reinforcement on abrasion behavior of Al/TiC composites by ball-cratering abrasion tester. Al/TiC composites were prepared by a stir casting method, with Al 6061 alloy matrix and TiC reinforcement varies from 5 to 20 wt.% with steps of 5 wt.%. A ball-cratering tester was used to determine the 3-body abrasive wear behavior under a different normal load and abrasive particle loading and wear duration. Al/10% TiC composites, Al/15% TiC and Al/20% TiC composites showed excellent abrasive resistance. The higher percentage TiC content avoids plasticity behavior in the composites, which is mainly responsible to severe wear at higher load due to near brittle cracking process. Wear mechanisms were investigated by scanning electron microscopy (SEM).

KEYWORDS: Al/TiC Composites Using a Ball-Cratering Method