

Frictional Behavior of Glass Epoxy and Aluminium Particulate Glass Epoxy Composites Sliding against Smooth Stainless Steel Counterface

Authors : Pujan Sarkar

Abstract : Frictional behavior of glass epoxy and Al particulate glass-epoxy composites sliding against mild steel are investigated experimentally at normal atmospheric condition. Glass epoxy (0 wt% Al) and 5, 10 and 15 wt% Al particulate filled glass-epoxy composites are fabricated in conventional hand lay-up technique followed by light compression moulding process. A pin on disc type friction apparatus is used under dry sliding conditions. Experiments are carried out at a normal load of 5-50 N, and sliding speeds of 0.5-5.0 m/s for a fixed duration. Variations of friction coefficient with sliding time at different loads and speeds for all the samples are considered. Results show that the friction coefficient is influenced by sliding time, normal loads, sliding speeds, and wt% of Al content. In general, with respect to time, friction coefficient increases initially with a lot of fluctuations for a certain duration. After that, it becomes stable for the rest of the experimental time. With the increase of normal load, friction coefficient decreases at all speed levels and for all the samples whereas, friction coefficient increases with the increase of sliding speed at all normal loads for glass epoxy and 5 wt% Al content glass-epoxy composites. But for 10 and 15 wt%, Al content composites at all loads, reverse trend of friction coefficient has been recorded. Under different tribological conditions, the suitability of composites in respect of wt% of Al content is noted, and 5 wt% Al content glass-epoxy composite reports as the lowest frictional material at all loads compared to other samples.

Keywords : Al powder, composite, epoxy, friction, glass fiber

Conference Title : ICCM 2020 : International Conference on Composite Materials

Conference Location : Tokyo, Japan

Conference Dates : April 23-24, 2020