

## Performance Evaluation of Solid Lubricant Characteristics at Different Sliding Conditions

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**Abstract :** In modern industry, mechanical parts are subjected to friction and wear, leading to heat generation, which affects the reliability, life and power consumption of machinery. To overcome the tribological losses due to friction and wear, a significant portion of lubricant with high viscous properties allows very smooth relative motion between two sliding surfaces. Advancement in modern tribology has facilitated the use of applying solid lubricants in various industrial applications. Solid lubricant additives with high viscous thin film formation between the sliding surfaces can adequately wet and adhere to a work surface. In the present investigation, an attempt has been made to investigate and evaluate the tribological studies of various solid lubricants like MoS<sub>2</sub>, graphite, and boric acid at different sliding conditions. The base oil used in this study was SAE 40 oil with a viscosity of 220 cSt at 400C. The tribological properties were measured on pin-on-disc tribometer. An experimental set-up has been developed for effective supply of solid lubricants to the pin-disc interface zone. The results obtained from the experiments show that the friction coefficient increases with increase in applied load for all the considered environments. The tribological properties with MoS<sub>2</sub> solid lubricant exhibit larger load carrying capacity than that of graphite and boric acid. The present research work also contributes to the understanding of the behavior of film thickness distribution of solid lubricant using potential contact technique under different sliding conditions. The results presented in this research work are expected to form a scientific basis for selecting the best solid lubricant in various industrial applications for possible minimization of friction and wear.

**Keywords :** friction, wear, temperature, solid lubricant

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