



# **Tribological Behavior of Sri Lankan Quartz**

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## Abstract

Quartz is the most common mineral on the face of the Earth. It is frequently is the primary mineral, >98%. It is also the most varied in terms of varieties, colors and forms. [4].Owing to its high thermal and chemical stability and abundance, quartz is widely used in many large-scale applications related to abrasives, foundry materials, ceramics, and cements.[1]

However industrial use of Sri Lankan quartz has not been tried so far at a commercial scale. It is high erosive wear resistance should be investigated before it applying to the industrial applications. Thus it can be a advantages for the industry because can use low natural quartz for the applications.

The main objectives of this study were to investigate the tribological properties of natural quartz, especially slurry erosive wear resistance. Furthermore, it was aimed at investigating the tribological properties of Sri Lankan quartz and fills the gap of knowledge on tribological properties of Sri Lankan quartz.

Experiments were performed to compare the resistance to erosion under a fixed set of experimental conditions. Natural quartz (Rose, Smoky, Milky, Citrine), Synthetic quartz were used as sample materials. Synthetic quartz was used as the controller material to ensure test conditions. For this study simple slurry pot tester was constructed and SiC and distilled water were used as the erodent particles and the fluid respectively. Erosion of the specimens was determined as a function of time by measuring the mass loss.

This study showed that Sri Lankan natural quartz specimens are comparable or having a wear resistance half of the synthetic quartz wear resistance. Especially the citrine show considerable lower slurry erosion hence higher resistance for wear than other natural quartz types (Rose, Smoky, and Milky). When considering the fact that Sri Lankan quartz is abundant having no commercial value, this study will possibly open industrial opportunities for those cheaper but better wear resistive materials. Further mineralogical and tribological investigations are being carried out in order to explore the potentiality of them for industrial applications.