

Effect of grinding additives in dry grinding of mica in planetary mill

SHAFINAZ SAAD & SYED FUAD S. HASHIM*

School of Materials and Mineral Resources Engineering
 Engineering Campus, Universiti Sains Malaysia, 14300 Nibong Tebal, Penang, Malaysia

*Corresponding author email address: mrsyfuad@usm.my

Abstract: Grinding process of mica was carried on with a laboratory scale planetary mill by varying the operation variables such as grinding period, rotational speed and percentage of grinding media. The ground products were characterized by X-ray Fluorescence (XRF), Particle Size Analyzer (PSA), X-ray Diffraction (XRD), and Scanning Electron Microscope (SEM). The size reduction and structural change of mica take place simultaneously as the planetary mill produces extremely high grinding efficiency except for the extreme condition that contributes to the existence of agglomeration. SEM analysis shows that delamination

and breakage mechanism took place according to the varying operation variables in the planetary mill. XRD patterns, the peak intensities tend to reduce after 40 min for both peaks chosen for analysis and this is due to the long duration of the grinding that influences the crystallinity of mica samples, micronization (size reduction) makes the structure disordered and generates crystal lattice defects. From result and analysis showed that the rotational speed give significant effect on the product produced.

Keyword: dry grinding, grinding additives