

Granulometric Evaluation of Continental Bentonites and Kaolin for Ceramic Applications

¹Georges-Ivo E. Ekosse and ²Antoine Mulaba-Bafibiandi

¹Geology, Mining and Minerals Programs, University of Limpopo,
Sovenga, P/B X1106 Limpopo Province, 0727 South Africa

²Minerals Processing and Technology Research Group, Department of Extraction Metallurgy,
University of Johannesburg, P.O. Box 17011, Doornfontein, 2028 South Africa

Abstract: Increasing demand for bentonite and kaolin usage in the ceramic industry engineered this study, which focused on understanding the granulometry of some selected continental clayey materials from Botswana, Mozambique, Pakistan, Senegal, South Africa and the United States of America. The Particle Size (PS), Particle Size Distribution (PSD), modal diameter and Specific Surface Area (SSA) of the clayey materials were determined. The results depicted that all samples had particles with Euhedral Spherical Diameter (ESD) which were $\leq 50 \mu\text{m}$ and also contained between 11.2 and 42.5 wt. % of $\leq 2 \mu\text{m}$ fraction of clayey material. The modal diameters ranged from 1 to $13 \mu\text{m}$ and the SSAs were between 4 and $19 \text{ m}^2 \text{ g}^{-1}$. These values are in conformity with those obtained by other researchers and based on their granulometric characteristics; the clayey materials were found to be suitable for use in the ceramic industry.

Key words: Clay, composite clay body, modal diameter, particle size, particle size distribution, sand, silt, specific surface area