



Development of refractory-porous granular for thermal insulating material on ceramic kiln

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Refractory-porous granular for thermal insulating materials was prepared from refractory residues (witch type mullite-cordeirite), fly ash and binder. Then, the mixture was formed to spherical shape by disk granulating machined. After that dried granular was fired at 1300°C to sintering and building pore in the granule. Physical, mechanical and thermal properties were found out. Result was found the best product which refractory residues 75% ball clay as binder 20% and fly ash as porous produce 5%. The properties show that porosity 10.92%, bulk density 2.03 g/cm³, thermal conductivity 0.82 W/m-K, compressive strength 140 kg/cm² and thermal shock resistant over 30 rounds. Mineralogical and chemical properties of the refractory-porous granules were analyzed by X-ray Diffraction (XRD) and X-ray fluorescence (XRF). Microstructures of samples were studied by scanning electron microscopy (SEM).

Keywords: insulating, refractory, porous material, fly ash