Kanatip Isarakul 2014: Development of Ceramic Tiles by Mixing Rice Husk Ash and Lignite Fly Ash. Master of Science (Environmental Technology and Management), Major Field: Environmental Technology and Management, Department of Environmental Technology and Management. Thesis Advisor: Assistant Professor Jukkrit Mahujchariyawong, Ph.D. 85 pages.

This research is use rice husk ash and lignite fly ash are wastes from processes of rice mill and power plant generating in high volume each year. According to properties of adhesion and high silica content, both are applied to be additive as reinforcement for cement and silica chip pads. This study aims to investigate the feasibility of two-type ash mixing in ceramic tile production and the optimal mixing ratio which can maintain for strength properties as same as conventional ceramic tiles, while reducing the energy consumption in burning process. In this study, ceramic tiles were prepared by mixing rice husk ash and lignite fly ash at ratio 10 30 and 50 % (W/W) within ceramic clay, formula W03. In forming process, hydraulic press was set at 200 bar and imported burn at different temperature; 800 900 1,000 1,100 and 1,200°C. The samples of ash mixing ceramic tiles were tested in physical and mechanical characteristics and compared with the control, non-ash mixing ceramic tiles .The result showed that ceramic tiles with rice husk ash mixture expressed water absorption in the range from 21.60 to 59.16 % and modulus of rupture was 2.05 - 48.76 Kgf/cm^2. While ceramic tiles with lignite fly ash mixture expressed water absorption in the range from 2.18 to 23.70 % and modulus of rupture was 10.00 - 178.74 Kgf/cm^2. When mixing ratio of both ash was higher, water absorption increased but modulus of rupture decreased. Burning temperature affected to the tiles, at 1,200°C tiles were bended and contracted, at low range temperature tiles were expanded. Therefore, the optimal condition for ceramic tile flooring was mixing of lignite fly ash at 10%and burning temperature at 1,200°C and optimal for ceramic tile wall was mixing of rice husk ash at 30% and burning temperature at 1,200°C

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