



Effect of firing condition of reduction atmosphere on physical properties of copper red glaze for automatic kiln

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The purpose of the study was to firing condition of the appearance of copper red glaze at 1230°C for stoneware production. The copper red glaze was used in ground forms (ground for 4 hours) as an additive in seger formula. The experiment started with the seger formula containing basic groups of 0.2mole Feldspar ($\text{KNaO} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$), 0.1mole Calcium carbonate (CaCO_3), 0.1mole Barium carbonate (BaCO_3) and 0.6 mole Zinc oxide (ZnO), media group of 0.25 – 0.40mole Aluminum oxide (Al_2O_3) and acid group of 2.0 – 4.0 mole Silicon dioxide (SiO_2), coloring agent 0.3% copper carbonate (CuCO_3) and 6% Tin oxide (SnO_2) in the mixing ratio and then glazed it by dripping. The physical properties of raw glaze used density of glaze 1.45 g/mm and firing temperature at 1230 °C in reduction atmosphere, then glazed in automatic kiln with liquid gas fuel(LPG). The specimens obtained were tested using optical microscopy, glaze texture, flow of glaze and scanning electron microscopy (SEM). The results showed that the component ratio of 54.8% Feldspar, 4.9% Calcium carbonate, 9.7% Barium carbonate, 24% Zinc oxide, 1.3% Lampang kaolinite, and 5.3% Quartz. It was found that the firing condition and atmosphere to an appearance of red color. A suitably firing condition for copper red glazes was reduction from 950 °C to 1230 °C, reduction to natural firing to maximum temperature and soaking at the highest temperature for 15 minutes.

Keywords: Copper Red Glaze; Reduction Atmosphere; Automatic Kiln