ABSTRACT

Effect of Ag_2O addition on colouring parameters and the gloss of an opaque glaze

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The elimination of light transparency is crucial for frit glazes when the glaze is desired to be whitened. This is achieved by making use of opacifiers. In this experimental work, the effect of different additions of Ag_2O on colour variation and gloss of a white opaque glaze commonly used in the production of ceramic ware was investigated at 1040^o, 1090^o and 1140^oC. Ag_2O was produced from $AgNO_3$ which was a dental service and photographic processing waste. Major crystalline phases present in the final glazes were qualitatively determined by X-ray diffraction. The microstructural evolution of the final glazes and their elemental distribution were investigated by Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray Analysis (EDXA), respectively. The data gathered showed that Ag_2O additions did not have a great effect on the opacity of the final glazes in the compositional range of the present study. Additionally, it was shown that incorporating Ag_2O in the glaze recipe lowered the sintering temperature of opaque glaze from 1140^o to 1040^oC that will contribute favourably in terms of high energy cost as a viable alternative.

Keywords: Opaque glaze, Ag_2O, Colour, Gloss, Glaze recipe