DETERMINATION THE EFFECT OF PORE CHARACTERISTICS ON ENGOBE PERMEABILITY

Betül YILDIZ*; Ali KÜÇÜK*
*Yurtbay Seramik, Oklubalı Köyü İnönü/Eskişehir, TÜRKİYE
byildiz@yurtbay.com.tr; akucuk@yurtbay.com.tr

Four important parameters have to be considered for designing engobe; i-opacity ii-water permeability; iii-convenient thermal expansion coefficient with body and glaze; iv- sufficient sintering behaviour for body gas output. Insufficient permeability of engobe compositions cause a water mark problem which is used to describe "darkening" of the glazed ceramic tile surface, when the porous tile body absorbs water. It is well known that the engobe parameters' effect the permeability are; the thickness of the layer, opacity and open pores.

This study was undertaken with a view to establishing a better understanding how the shape and quantity of the porosity affected the engobe permeability. In the study; engobe permeability was determined by examining two factors; mark formation rate and L* index of the ink mark after a certain period of immersion. Engobe compositions with different frit quantity were prepared by using industrial raw materials. After applying the engobe and transparent glaze on body; the compositions were fired in monoporoza wall tile kiln in Yurtbay Seramik Company. Pressed pellets of engobe compositions were also prepared and sintered for Archimedes Test. Image analyze method and Archimedes experiments were used comparatively for determining the quantity of porosity. Porosity shape (aspect ratios) were investigated by image analyze method.

By this study; besides contributing a better understanding of the relationship between porosity and permeability of engobe; it also indicates the optimum porosity range for wall tile engobe for a specific monoporoza wall tile body.

Keywords: Engobe, Microstructure, Permeability, Pore Characteristics