

Preparation of Porous Red Clay Tile with Self Cleaning Effect

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The research was manufactured red clay tile with a self-cleaning effect. Pure red clay tile had characterization being adhered stains easily on the surface due to the porous pore structures and high adsorption ability. TiO₂ layer with photo-degradation ability was coated on the surface of the red clay tile in order to prevent being polluted the surface of the tile by stain. In this study, the red clay tile was coated a low-firing glaze as a buffer layer in order to coat nanosized photocatalytic sol on the surface of the tile with micrometer sized pore structures before coating of photocatalytic TiO₂ sol. The nanosized photocatalytic TiO₂ sol was synthesized from TTIP as a starting material by sol-gel method. The synthesized TiO₂ sol was coated on the glazed layer on the red clay tile, dried, and calcined. As the result, the red clay tile coated TiO₂ layer with anatase crystalline phase on the buffer layer, could be possessed self cleaning ability against stains. Photocatalytic activity of coated TiO₂ layer was estimated by photocatalytic degradation using methylene blue (MB) under visible light irradiation. As a result of analysis of the photocatalytic characterization, photodegradation reaction of methylene blue was completed within 10 min.