

# **Influence of Flue Gas Desulfurization (FGD) Waste as Substitute Feldspar on the Physicomechanical Porcelain Properties**

## **Abstract**

In this work, the influence of flue gas desulfurization (FGD) waste on the physical, mechanical and thermal properties of porcelain samples was investigated. The influence of the flue gas desulfurization (FGD) waste content (0–15 wt.%) which was sintered at a temperature of 1200 °C was also studied. The result showed that the substitution of feldspar by flue gas desulfurization (FGD) waste in porcelain bodies led to an increase in porosity resulted in a decrease in bulk density and mechanical strength when amount of FGD waste increased. Besides, the increasing FGD waste is also contributed to a decrease value in coefficient thermal expansion value which could reduce the thermal shock in porcelain. As a result, the sintered sample with the composition of 5 wt.% of FGD waste (S5) has the potential to be used as a porcelain tile as it meets the requirements of the standard tile (>35 MPa) despite flexural strength decreased. While the composition of 10 wt.% of FGD waste (S10) and 15 wt.% of FGD waste (S15) was found most suitable for developing porous brick because it meets the requirements of the porous brick standard (>2.5 MPa).

## **Keywords**

Brick; Bulk density; Coefficient thermal expansion; Flexural strength; Flue gas desulfurization waste; Porcelain; Porosity; Tile