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RECYCLING OF POST-CONSUMPTION PACKAGING GLASS INTO CLAY BRICKS

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Industrialized component wastes, regularly discarded by the society, are increasingly contributing to the environmental pollution, such as post-consumption packaging glass. A possible solution could be its incorporation into a clay body to fabricate common fired ceramics for civil construction. The objective of this work is to evaluate the effect of the incorporation of this waste, up to 30wt.% at different particle size, in technological properties of clayey body used to fabricate bricks and roofing tiles. This glass powder was tested for X-ray fluorescence, DTA/DTG, scanning electron microscopy and optical dilatometry. Specimens were uniaxially pressed at 25 MPa and fired at 900°C. The technological properties were evaluated in terms of water absorption, linear shrinkage, and flexural rupture strength. The microstructure of the ceramics was evaluated by SEM. The results indicated that the waste incorporation improved both the ceramic water absorption and the mechanical strength. Finally, this work indicated that clay brick production is a viable and technically advantageous alternative for recycling this type of waste, also bringing real benefits to the quality of ceramics.