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Flexural Bond Strength Analysis of Dry vs. Water Saturated Burnt Clay Brick Prisms: Pilot Study

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Abstract

To improve the bond strength between burnt clay bricks and mortar, SANS 227 recommends moistening or wetting the clay bricks prior to construction or laying of mortar beds. One may argue that the informal construction sector generally fails to comply with this recommendation,

as there are many uninformed and un-skilled building applicators and operators. The study examined the effect of substandard practices by contrasting dry versus water saturated burnt clay bricks. Between 2017 and 2020, 122 clay brick prisms were constructed. Prisms were constructed comprising six courses in stack bond fashion and were subject to two-point flexure load testing at 28 days in order to assess the flexural bond strength. This pilot study reports up to a 21-fold difference in flexural bond strength between dry and water-saturated bricks. The findings of the study affirm the importance of moisture on the flexural bond strength in clay masonry construction and flexure design and suggest further investigation on full-scale models to ascertain the ramifications of inadequate preparation work on masonry.

Keywords

Dry clay bricks **Water saturated clay bricks** **Wetted clay bricks**

Flexural bond strength **Burnt clay bricks**

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