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The Influence of Moisture on the Flexibility of Adhesive Performance

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Abstract

Adhesive mortars are widely used to set porcelain stoneware tiles on building because its bond strength and flexibility properties increase the cladding serviceability. However, its long term performance is not well understood, mainly the polymeric matrix degradation.

This paper, investigates the influence of moisture content on the flexibility of the adhesive mortars, based on the EN 12002 standard, on two adhesives mortars: one produced in laboratory and two other ordinary ones used on the Brazilian market for setting ceramic tiles on façades, and classified as ACIII for the Brazilian standard.

The results shows that: (i) moisture content of the specimens has a high correlation with the flexibility; (ii) moisture content over 6% causes decreases over 50% in flexibility; (iii) the maximum load and the flexibility also show a high correlation; (iv) the logarithmic function best fits the moisture and the flexibility correlations; and (v) that the water immersion increases the matrix rigidity (vi) the bond strength showed an important correlation with the moisture content; (vii) there is an important correlation with the flexibility.