

## **Correlation between water absorption capacity and compressive strength in ceramic matrices with addition of tannery sludge**

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Currently the most used technique for final disposal of residues is the Stabilization by Solidification, which consists in adding the toxic residue in a binder material, forming a solid matrix capable of reducing its mobility and toxicity. Being analyzed from tests such as water absorption capacity and compressive strength. A factorial planning with two factors (curing time and percentage of industrial waste) was carried out with the addition of central points to model the obtained data. It were adopted 7 and 28 days of cure, and 5 and 20% of industrial waste were used, totaling four experiments at the factorial points and three tests at the central points. Samples were prepared using simple Portland cement, sand, gravel and sludge, which were submitted to tests of water absorption capacity and compressive strength. Subsequently, the obtained data were evaluated and modeled using the *Minitab 17.0 Software*, determining the correlation between the water absorption capacity and the compressive strength. By fixing the percentage of residue, the value of R was equal to -1, indicating a perfect negative correlation, that is, when the cure time varies, the resistance to compression increases for both 7 days and 28 days. The best experiment (5% residue and 28 days), corresponding to the two factors was the treatment with 16.9 MPa and 10.01% absorption capacity. The value of R (Pearson's Correlation) was -0.87 showing a strong and negative correlation between compressive strength and water absorption capacity. When the water capacity decreases, the compressive strength increases and vice versa, characterizing the negative value of R (-0.87).