

## Evaluation of Water Quality on the Strength of Simple Concrete: Case Study of Wells in Jipijapa, Manabí, Ecuador

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**Abstract :** This study investigates the influence of three types of water on the compressive strength of plain concrete, focusing on water from three wells in Jipijapa, Manabí, Ecuador: Joa water, highly sulfur-containing; Chade 1 water, with low sulfur content; and Chade 2 water, very brackish. Compression tests were performed at 7, 14 and 28 days to evaluate how these types of water affect the structural strength of the concrete. The results show that brackish and sulfur water have a significant negative impact on concrete strength, while Chade 1 and Chade 2 water, while initially improving strength, exhibit inconsistencies in their long-term effectiveness. These findings are in contrast to previous studies that indicate the potential corrosion and degradation of concrete when using water with high sulfate and chloride concentrations. In a region like Jipijapa, where drinking water scarcity is a constant concern, these findings are key to optimize construction practices and explore sustainable alternatives for the use of non-potable water, thus contributing to the preservation of limited water resources.

**Keywords :** compressive strength, plain concrete, sulfur water, brackish water, water quality

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