

Effects of Different Environments on Reinforcement Concrete Corrosion

https://scholar.google.com/citations?user=BgsCFhEAAAAAJ&hl=en#d=gs_md_cita-d&u=%2Fcitations%3Fview_op%3Dview_citation%26hl%3Den%26user%3DBgsCFhEAAAAAJ%26citation_for_view%3DBgsCFhEAAAAAJ%3ATyk-4Ss8FVUC%26tzom%3D-120

Abstract : This research focuses on various forms of steel bar corrosion located in different environments and the factors affecting the corrosion process, both the external (surrounding environment around concrete elements) and the internal environment (concrete itself), as well as on the investigations and tests for this type of damage, in order to develop measurements and recommendations that will reduce harmful investment as much as possible, by increasing the durability and resistance to aggressive environments throughout their life span. The results showed that the concentration (100%-75%) of sulfuric acid decreases more in steel bars diameter than in the second week, but the difference is negligible, and there is no change in the color of precipitation. Concentration (50%-25%) of sulfuric acid also showed decreases in bars diameter than in the second week, but the difference could be omitted, except for the concentration (50%) of sulfuric acid white layer appearance on the steel. In the fourth week, in NaOH, there has been no obvious change in the diameter of steel and an increase was noticed in the deposits substance as well as the appearance of external rust of Steel. HNO₃ with a 25% concentration continued a dramatic corrosion of steel and a large decrease in the diameter of steel was observed, which led to a change in the color of the liquid to brown, due to the fragmentation of steel, and the corrosion of the non-soaked steel. When exposing the reinforcing bars for acid and base at different concentrations to investigate the ultimate tensile stress, a high decrease in the tensile strength of the steel bar was found, due to the concentration of nitric acid (25-50%) compared to the other acids and base, and this decrease is caused by a high degree of corrosion.