ACON (Concrete Organic Additive Based on Opuntia ficus)

Rodriguez Rivera, Jasai

Rivas Cebreros, Francisco

How to obtain an organic additive with an endemic and abundant material in the region? The use of organic compounds as an alternative to decrease the application of chemical compounds which are usually toxic to health and the environment, has increased in recent years. ACON is a concrete additive with organic material, biodegradable, based on Opuntia Ficus (cactus), with the ability to increase the strength of the concrete, increase the impermeability, repel insects and is a thermal material. The mucilage extracted from the Opuntia Ficus presents an alternative for the elaboration and concrete compressive strength it is above the standard average (60%to70% strength) for a traditional blend test.In the tests of resistance made to ACON obtained greater resistance, during the 7 days a resistance of 89.71 kg/cm2 f'c was obtained and at 14 days a resistance of 107.27 kg/cm2 f'c was obtained and at 28 days 147.995 kg/cm² f'c were obtained; it is above the standard average (100 kg/cm² f'c) at 28 days. To date, water dosage for the mortar with ACON has been modified, resulting in 96.96 kg /cm² f'c at 7 days, due to the decrease in water and from 8% to12% of ACON in relation to the total volume. On the other hand, 0.2727 °C cm²/w of thermal resistance was obtained, being lower than the traditional mortar (0.63 °C cm²/w); In addition to repelling the following insects: spiders, crickets, cockroaches and mosquitoes. Finally, the absorption tests in the laboratory are still in the process of being developed.

Awards Won: