The Use of Chicken Feathers as Fibers in Fiber Reinforced Concrete

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The purpose of this experiment was to determine if using chicken feathers as fibers in fiber reinforced concrete could be a potential way to recycle them. My hypothesis was that the feathers would strengthen the concrete, but not as much as steel, glass, or PVA fibers. To test my hypothesis, I used mortar mix to make 24x9x0.5 inch concrete boards. I made two control boards (without any fibers) and two boards each with steel, glass, PVA, and two different concentrations of feather fibers. I tested the strength of these boards by placing weights in the exact middle. The ends of the boards were supported. I recorded how much weight each board supported before it broke. I also performed impact tests on the boards. My results supported my hypothesis. The boards with feather fibers supported more weight than the boards with no fibers. However, they were not as strong as the boards with steel, glass, or PVA fibers. If more testing and research were done, feather fibers could potentially be used as a way to strengthen concrete. This would reduce the waste of feathers, eliminate the processes used to dispose of them, and could be a financially advantageous alternative to using other fibers. More experimenting would have to be done to determine the ideal concentration of feather fibers that would strengthen concrete the most. With other fibers, much experimenting has been done to determine the optimum concentration, aspect ratio, and other factors. The same would need to be done with any potential new fibers that could be used in fiber reinforced concrete.