Sheep Strength II: Using Sheep Wool To Reinforce Concrete – Finding the Most Effective, Market Friendly Form of Sheep Wool as a Strengthening Agent for Concrete in Comparison to Polypropylene Fibers

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The aim of our project this year is to find the optimum form of sheep wool as a strengthening agent in concrete, its real-life applications and financial feasibility. Our intention is to create an eco-friendly strengthening agent compared to polypropylene fibres and find a new use for sheep wool as its value is at an all-time low. To do this we made 16 types of concrete - 1 polypropylene batch as a control and 15 batches with 15 variations of sheep wool, using different types, quantities and processing methods to investigate the effect that processing and concentration of wool has on the concrete. For our testing, we did nine different industry tests to get a full understanding of how the sheep wool impacts the usability of the concrete and we analysed the results and their implications. Our tests looked at different characteristics of concrete such as slump, compressive strength, tensile strength, surface hardness, resistivity/absorption, specific heat capacity, density, and internal composition. After our testing we concluded that the raw wool at the smallest quantity is the most effective, convenient and cheapest reinforcement in concrete with additional properties such as increased imperviability and thermal properties. This led to the conclusion that our wool could be used industrially for its tensile strength e.g. in paving, bridges, its corrosion resistance e.g. coastal areas, as well as in housing as a thermal battery e.g. underfloor heating.

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