

## **Ceramic Tile Waste as Fine Aggregate for Marine Concrete Modules in Sri Lanka**

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Construction waste has a major impact on the environment. Reusing and recycling this waste can reduce the extraction of raw materials and help waste management. Therefore, this study was focused on ceramic tile waste which is released in the squaring process of tile manufacturing to develop a design to protect the coastal area as an end product. A mixed design was based on BS 5328 with M15 and the targeted strength was achieved with the use of cement, water, and aggregates, where fine aggregates were replaced with ceramic tile waste in 25%, 50%, 75%, and 100%. XRD test was conducted to test the constituents of ceramic tile waste. Results indicated that a higher compressive strength was achieved when the replacement was at 25%. No heavy metals were detected in the XRD test. This study concludes that the optimum percentage and the water/cement ratio would be 25% of fine aggregates replaced with ceramic tile waste with a 0.5 W/C ratio. Two designs were introduced and samples were deployed in Polhena beach, Sri Lanka. The growth of corals on the designed structure indicated the appropriateness of the material and the structure of conserving corals.

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