ABSTRACT

The project investigates the effects of partially replacing coarse aggregate with refractory alumina brick waste (20%, 30%, 40%, and 50%) on the mechanical performance of concrete exposed to high temperatures. Alumina brick waste, a by product of refractory industries, is incorporated to promote sustainability and improve heat resistance in concrete. This study focuses on evaluating the compressive strength of concrete mixes before and after thermal exposure to assess their ability to retain strength under elevated temperatures. The use of alumina brick aims to enhance thermal stability while offering an environmentally friendly alternative to conventional aggregates. The objective is to determine the optimal replacement level that ensures structural integrity under high-temperature conditions. The results are expected to provide insights into the potential of refractory waste in producing heat-resistant, sustainable concrete for use in industrial structures and fire-prone environments.