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TITLE OF PROJECT:

Study of the Effects of Inclusion of Recycled SAP for Internal Curing of Concrete.

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ABSTRACT (150-300 words):

Concrete, as a widely used construction material, is prone to various issues such as early-age shrinkage, cracking, and reduced durability. Internal curing, a technique aimed at providing a continuous source of moisture within the concrete matrix, has emerged as a promising solution to address these challenges. This study investigates the utilization of hydrogel (as a recycled form of SAP) derived from ice gel packs as an Internal Curing Agent (ICA) in concrete. Ice gel packs, commonly used for cold therapy (in many industries such as medical field, cold storages etc) contain Superabsorbent Polymers (SAPs) that can absorb and release moisture. By repurposing these gel packs, this study explores the feasibility and effectiveness of the hydrogel in internal curing, evaluating its impact on workability, strength development, water absorption and its optimal amount/dosage (i.e. percentage replacement of cement) etc.

This study also investigates the mix design considerations, and potential challenges

associated with incorporating hydrogel into concrete. The findings shows that the compressive strength, split tensile strength, flexural strength at 28 days were increased by 9.83%, 8.94% and 17.52% respectively. Also the optimum dosage of SAP was found 0.7%(which is percentage replacement of cement). These findings contribute to advancing knowledge on the use of ice gel pack-derived hydrogel for internal curing, paving the way for more sustainable and durable concrete structures.



KEYWORDS: Internal Curing (IC) , Internal curing agent(ICA), Superabsorbent polymers (SAP)

CATEGORY: Concrete Technology and Building Materials.