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Patent Search

Invention Title	CARBON-FREE CEMENT: A SUSTAINABLE ALTERNATIVE FOR NEXT-GENERATION CONSTRUCTION
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Abstract:

This invention introduces a carbon-free cement that significantly reduces CO₂ emissions (1–2% compared to ~8% in OPC) by replacing limestone clinker with industrial agricultural wastes. The formulation consists of fly ash, GGBS, rice husk ash, banana peel ash, along with citric acid, jaggery sol, and tamarind extract as natural additives to enhance strength and durability. The cement is cost-effective (₹350 per 50 kg bag), eco-friendly, and supports circular economy principles by transforming waste into construction materials. With compressive strength anticipated to match M20–M30 grade concrete, it offers a sustainable alternative for residential, commercial, and green infrastructure applications.

Complete Specification

- Description:This invention relates to the field of sustainable construction materials, specifically the production of eco-friendly cement utilizing industrial by-product agricultural waste materials such as fly ash, ground granulated blast furnace slag (GGBS), rice husk ash, banana peel ash, citric acid, jaggery solution, and tamarind extract.
- Claims:1. A cement composition comprising 45% fly ash, 25% GGBS, 13% rice husk ash, 7% banana peel ash, 2% citric acid, 4% jaggery sol, and 4% tamarind extract emitting only 1–2% CO₂ during production.
2. A carbon-free cement composition comprising fly ash, GGBS, rice husk ash, banana peel ash, citric acid, jaggery solution, and tamarind extract with only 1–2% CO₂ emissions.
3. The cement of claim 1, wherein banana peel ash and tamarind extract act as novel additives to enhance strength and durability.
4. A method of producing eco-friendly cement using industrial and agricultural waste with reduced reliance on limestone clinker.
5. The cement of claim 1, suitable for general construction and green infrastructure with compressive strength comparable to M20–M30 grade concrete.

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