Patent Search

Invention Title	PROCESS FOR THE PRODUCTION OF CIVIL ENGINEERING CONSTRUCTION PRODUCTS FROM WASTE FOUNDRY SAND USING
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Abstract:

The present invention provides a simple facile and effective process route for the production of high performance civil engineering construction products using waste foundry sand (WFS) with suitable thermosetting aqueous amino resin polymeric binder. The amino resin binder capable of compatible with different substrates are specifically synthesized using appropriate cost competitive chemical precursors at optimized experimental conditions and formulated with varying nature of functional chemical additives, modifiers and reinforcements. The present invention offers a facile route for the development of synthetic amino resin polymeric binder with required properties suitable for converting waste foundry sand (WFS) in to value added civil engineering construction products viz. tiles, bricks, pavers and panels. The construction products fabricated using WFS with amino resin aqueous polymeric binder cured at appropriate temperature conditions possess excellent strength properties suitable for construction applications. Further, the specimens fabricated have been immersed in distilled water for a period of three months and their physicochemical and strength properties have rechecked and there were no significant changes in their properties. The porous nature of the construction product developed in the present invention also contributes to water harvesting application and alleviate problems due to water logging. The present invention is considered to be an outstanding method of environmentally friendly solid waste management and conversion of waste foundry sand into industrially useful value added cost competitive construction products.

Complete Specification

4. DESCRIPTION Field of invention
The present invention is related to process for the production of high performance civil engineering construction products (tiles, bricks, blocks, pavers, panels, etc.) using waste foundry sand (WPS) with suitable thermo-setting aqueous polymeric binder and reinforcements. The present invention offers a novel, facile and cost competitive route for the production of tiles, bricks, pavers and panels from waste foundry sand, which is considered as solid waste material discarded from foundry moulding activities. The present invention paves an avenue to the effective and efficient environmentally friendly method of solid waste management and subsequently also used to produce value added polymeric toughened and reinforced floor tiles?

pavers and panel materials for number of construction and industrial applications. Background of the invention
The present invention is related to new facile and versatile method for the production of tiles, bricks, pavers and panels utilizing waste foundry sand (WFS) with suitable aqueous based thermosetting synthetic polymeric binder developed by the inventor team specifically synthesized for the purpose in order to undergo amenable curing process over the range of temperature between 50°C and 180°C. Further, the polymeric binder synthesized will be highly adherent and compatible with different types of waste foundry sand (WFS), modifiers, formaldehyde scavengers, toughenes and reinforcements and capable of forming three i dimensional cross-linked structural networks, useful for the production of high performance reinforced tile/panel products. This invention provides an effective method and novel way of waste utilization for the production of value added products through economically viable and environmentally friendly approach.
Foundries use virgin sand to prepare metal casting moulds and cores. Foundry sand consists of primarily of clean, uniform sized, high quality silica sand that is bonded to

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