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(71)Name of Applicant :

**1)SWAMI VIVEKANANDA UNIVERSITY**

Address of Applicant :Telinipara, Barasat - Barrackpore Rd, Bara Kanthalia, West Bengal – 700121, India. Barrackpore -----

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

**1)DR. MD ERSHAD**

Address of Applicant :SWAMI VIVEKANANDA UNIVERSITY  
Telinipara, Barasat - Barrackpore Rd, Bara Kanthalia, West Bengal – 700121, India. Barrackpore -----

**2)DR. RANJAN KUMAR**

Address of Applicant :SWAMI VIVEKANANDA UNIVERSITY  
Telinipara, Barasat - Barrackpore Rd, Bara Kanthalia, West Bengal – 700121, India. Barrackpore -----

**3)Mr. Abhishek Dhar**

Address of Applicant :SWAMI VIVEKANANDA UNIVERSITY  
Telinipara, Barasat - Barrackpore Rd, Bara Kanthalia, West Bengal – 700121, India. Barrackpore -----

**4)Mr. Saurabh Adhikari**

Address of Applicant :SWAMI VIVEKANANDA UNIVERSITY  
Telinipara, Barasat - Barrackpore Rd, Bara Kanthalia, West Bengal – 700121, India. Barrackpore -----

**5) Prof. (Dr.) Subhranil Som, Principal**

Address of Applicant : BHAIRAB GANGULY COLLEGE  
2, Feeder Rd, Beehive Garden,Belghoria, Kolkata,  
West Bengal - 700056, India -----

(57) Abstract :

Plastic has become an incredibly versatile material with widespread use in various industries. However, the increasing global population has led to a surge in plastic consumption, resulting in a significant challenge when it comes to disposing of plastic waste. Concurrently, the construction industry is experiencing a shortage of natural aggregate, adding to the complexities faced by the world. To address both issues, one potential solution is to incorporate waste plastics into building construction by partially substituting natural aggregate with plastic waste. While it is not feasible to entirely replace natural coarse aggregate (NCA) with plastic coarse aggregate (PCA), researchers have explored the possibility of partial replacement at different percentages. Studies have investigated replacing 8%, 12%, and 20% of natural coarse aggregates with plastic coarse aggregates. The compressive strength of concrete samples prepared with plastic coarse aggregates has been tested, revealing an increase in compressive strength compared to conventional concrete. Additionally, the corrosion resistance of concrete has been evaluated and found to improve with the addition of plastic waste. By partially replacing natural aggregate with plastic waste in building construction, we can address the challenges associated with plastic waste disposal and mitigate the shortage of natural aggregate. The incorporation of plastic coarse aggregates not only enhances the compressive strength of concrete but also improves its corrosive resistance. This approach offers a sustainable solution that utilizes waste plastics while contributing to the overall strength and durability of construction materials.

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