(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :01/11/2022

(21) Application No.202241062269 A
(43) Publication Date : 04/11/2022

(54) Title of the invention : EFFECT OF RECYCLED AGGREGATE CONCRETE ON ELEVATED TEMPERATURE FOR LOWER GRADES (M20, M25)

(51) International classification	:C04B0028040000, G01N0033380000, C04B0035634000, C08J0005040000, C04B0018140000
(86) International Application No Filing Date	:PCT// :01/01/1900
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
Studying the mechanical and thermal characteristics of concrete made with recycled aggregates when it is heated is the goal of the work. Replacement of recycled aggregate with crushed aggregates and M-sand as river sand were taken into consideration in order to reduce construction debris and industrial waste. M20 and M25, a lower grade of concrete, were selected. Three classifications were used: category I (0% RAC with M20, M25), category II (40% RAC with M20, M25), and category III (60% RAC with M20, M25) with M-sand being used as a 100% replacement. Mechanical properties were investigated by exposing samples to temperatures of 100°C and 200°C for intervals of 1 hour, 2 hours, 3 hours, and 4 hours. Micro-structure analysis was also carried out using SEM and XRD. The properties of concrete were found to be improved by the addition of M-sand and recycled aggregate. In comparison to 0% replacement, 40% and 60% replacement of recycled aggregate with crushed aggregate resulted in concrete that performed better in terms of its mechanical and thermal properties. When recycled aggregate concrete (RAC) is exposed to temperatures between 100°C and 200°C, there is an increase in the strength of the concrete, but no colour change is seen. Concrete. It has been demonstrated through research on the mechanical properties of concrete that structural elements can use recycled aggregate in place of natural aggregate to the tune of 60%.

No. of Pages : 28 No. of Claims : 5