

STRENGTH FEASIBILITY STUDY OF RECYCLED COARSE AGGREGATE CONCRETE WITH WATER CONTAINING SODIUM HYDROXIDE

CHETNA M. VYAS¹, INDRAJIT. N. PATEL² & DARSHANA. R. BHATT³

¹Assistant Professor & Research Scholar, Department of Civil Engineering, A. D. Patel Institute of Technology,
New Vallabh Vidyanagar, Anand, Gujarat, India

²Professor, Department of Structural Engineering, B. V. M. Engineering College,
Vallabh Vidyanagar, Anand, Gujarat, India

³Associate Professor, Department of Structural Engineering, B. V. M. Engineering College,
Vallabh Vidyanagar, Anand, Gujarat, India

ABSTRACT

This research paper presents the effect of sodium hydroxide (NaOH) present in the curing water on the strength of Recycled Coarse Aggregate Concrete (RCAC). The concrete is produced by mixing of % replacement of Natural Coarse Aggregate by Recycled Coarse Aggregate and curing water containing NaOH of 5% concentration with constant dosages. This research work describes the feasibility of using the Recycled Coarse Aggregate in concrete production as partial replacement of Natural Coarse Aggregate by weight. The Natural Coarse Aggregate has been replaced by Recycled Coarse Aggregate accordingly in the range of 0% (without Recycled Coarse Aggregate), 20%, 40%, 60%, 80% and 100% by weight of Natural Coarse Aggregate for M-35 grade concrete. The compressive strengths were evaluated for 56 days of normal curing and 28 days normal + 28 days 5% NaOH contain water curing. The results show that, the compressive strength of Recycled Coarse Aggregate Concrete (RCAC) has come down with an increase in the % replacement of Natural Coarse Aggregate by Recycled Coarse Aggregate with constant dosages of 5% concentrated NaOH solution at 56 days. Compressive strengths of Recycled Coarse Aggregate Concrete (RCAC) have decreased in the range of 0.74 to 25.45%, when compared with the control specimens. By using Regression Models the ratio between the experimental compressive strength value and the Regression Models predicted values can be compared.

KEYWORDS: Recycled Coarse Aggregate Concrete, Compressive Strength, Regression Models, Sodium Hydroxide