Proceedings of the International E-Conference on Novel Innovations and Sustainable Development in Civil Engineering 2020

ISBN	978-93-88122-14-6	VOL	01
Website	www.veltech.edu.in	eMail	nisdce@veltech.edu.in
Received	13-May-2020	Accepted	28-May-2020
Article ID	NISDCE227	eAID	2020.nisdce.227

DURABILITY STUDIES ON GRAPHENE CONCRETE

Jagadhish B[1] Veerakumar R[2]

[1] PG Student, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Tamil Nadu.
[2] Assistant Professor, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Tamil Nadu.

Abstract: Nanotechnology is emerging as an important advancement in the Material research in the Civil Engineering field. Various studies shows that Graphene, a Nanomaterial is being augumented in the different areas of Civil Engineering such as waste water treatment, concrete and construction areas, etc., Graphene being inert, its oxidised as Graphene Oxide (GO) which is recently invented 2D Nano plane fibre. GO is typically produced through the chemical oxidation and exfoliation of graphite. It contains active functional groups on its nano plane surface, and these groups play a major role during the cement hydration process. Preliminarily, the hydration properties of GO–cement composites have been found to result in a higher hydration rate, which affects both the water demand and workability of the composites. Based on the literature survey some authors have also reported that reinforcing the cement matrix with GO results in the formation of calcium silicate hydrate (C–S–H) gel in the micropores In this project work Graphene Oxide (GO) which is used in the partial replacement of 0.1%, 0.3% and 0.5% of cement to produce a better performance concrete. The various tests like Permeability test, Water absorption test were done in order to compare the durability properties with conventional concrete. This paper presents the comparative study of various durable properties of graphene concrete & conventional concrete including its effects on hydration & workability.

Keywords: *2D Nano plane fibre, Calcium Silicate Hydrate (C–S–H), Exfoliation, Graphene Oxide (GO), Micropores*