

The Behavior of Concrete Cylinders Confined by JFRP Composites: Effect of KOH Solution

Yasmina Ed-Dariy¹, Nouzha Lamdouar¹, Toufik Cherradi¹, Ancuta Rotaru², Marinela Barbuta², Petru Mihai², Loredana Judele²

¹ Mohammadia School of Engineers, Mohammed V University of Rabat,
Ibn Sina Avenue, Rabat, Morocco

yasminaeddariy@research.emi.ac.ma ; nlamdouar@gmail.com ; tcherradi@gmail.com ;

² Faculty of Civil Engineering and Building Services, Gheorghe Asachi Technical University of Iasi,
Bulevardul Profesor Dimitrie Mangeron 67,700050, Iasi, Romania
arotaru502@yahoo.com , barbuta31bmc@yahoo.com , petru.mihai@tuiasi.ro, ljudele@yahoo.co.uk

Abstract - The objective of this experimental study is to evaluate the effect of treated and untreated Jute fibers on the behavior of concrete members. Fifteen samples of concrete reinforced by JFRP are subjected to a compression test. The main issues investigated are the ultimate load, and the effect of treatment on fiber morphology. It has shown that the treatment of fibers by 2% of Potassium hydroxide during 24h in a liquor ratio of 10:1 decreases the maximum load capacity. On the other hand, the reinforcement of concrete members using untreated Jute Fibers Reinforced Polymer (JFRP) increases the maximum load capacity. As well as the augmentation of the number of layers of fibers fabric increases the maximum load capacity of concrete of 36.6% and 57.3% in the case of C3-JFRP-2L, C3-JFRP-3L respectively.

Keywords: Jute-FRP composites, epoxy resin, reinforcement, alkaline treatment, adhesion, concrete.