

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202141028760 A

(19) INDIA

(22) Date of filing of Application :26/06/2021

(43) Publication Date : 09/07/2021

(54) Title of the invention : THE INFLUENCE OF DIFFERENT TREATMENTS APPLIED TO FLAX FIBERS ON DIFFERENT PROPERTIES OF MORTAR REINFORCED BY THESE FIBERS

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(32) Priority Date	:NA	
(33) Name of priority country	:NA	
(86) International Application No	:NA	
Filing Date	:NA	
(87) International Publication No	: NA	
(61) Patent of Addition to Application	:NA	
Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

THE INFLUENCE OF DIFFERENT TREATMENTS APPLIED TO FLAX FIBERS ON THE DIFFERENT PROPERTIES OF MORTAR REINFORCED BY THESE FIBERS Several solutions for treating flax fibers have been studied in this work. This need for treatment is explained by the high water absorption capacity of flax fibers which disrupts the rheological behavior of cementitious composites in the fresh state but also affects the physical and mechanical properties in the hardened state. Three treatment solutions were explored: atmospheric plasma, mineral cement/slag coating and linseed oil coating. These treatments were optimized before the incorporation of fibers into the mortars. The hygroscopic and hydroscopic behaviors of flax fibers have been studied. It has been found that flax fibers do absorb large amounts of water very quickly (up to 140% by mass). Atmospheric plasma treatment made it possible to modify the kinetics of water absorption but not the retention capacity. Conversely, linseed oil is the only treatment that actually reduces the water absorption capacity while the cement/slag coating treatment does not modify it. It appeared necessary to take into account the presence of the treatment in the interpretation of the results and therefore to relate the measurements to the mass of raw fibers only. Failure to take into account the treatment products could lead to erroneous interpretations.

No. of Pages : 30 No. of Claims : 5