



Enhancement of self-healing capability on FRCC using different types of fibers

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Experimental studies are carried out to evaluate the self-healing capability of FRCC using different types of synthetic fibers that have different chemical properties, i.e. poly vinyl alcohol(PVA), ethylene vinyl alcohol(EVOH), polyacetal(POM) and polypropylene(PP). FRCC specimens were subjected to tension tests in order to generate a crack, and the cracked specimens were immersed in water. In order to evaluate the effect of self-healing phenomena, permeability tests and microscopic observation were carried out. Microscopic observation revealed that the high polarity of synthetic composite has high potential of self-healing precipitation around fibers bridging a crack. Moreover, the coefficient of water permeability was generally reduced with this chemical precipitation, especially in the PVA series. However, even when it was confirmed by microscopic observation that precipitation had appeared and filled a crack, we found there is no recovery of water tightness in some cases, i.e. in the EVOH and POM series. It is confirmed that not only the chemical properties of fibers but also the geometrical properties of the crack surface, such as roughness, complexity and continuity, affect the capability of self-healing for water tightness.