

# INVESTIGATION OF THE EFFECT OF FIBERS ON BOND PROPERTIES BETWEEN SELF-CONSOLIDATING CONCRETE AND GFRP REBARS

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**Key words:** Hybrid fibers, GFRP rebars, Relative bond strength, Bond toughness, Bond stress-slip relationship.

**Summary.** *This study evaluated the effect of different fiber types (macro steel fibers, macro PP-fibers and micro PP-fibers) on the bond properties between self-consolidating concrete matrix and glass fiber-reinforced polymer (GFRP) rebars. The experimental program was comprised of 18 direct tension pullout specimens. Based on the flexural toughness applied by German guideline and RILEM recommendation, a novel method using the equivalent bond strength to evaluate the bond toughness was proposed in this study. In comparison with plain concrete matrix, the experimental investigation indicated that adding mono-fibers or hybrid fibers (steel fibers and macro PP-fibers) into concrete can enhance the bond strength by 12% ~35%, and also increase the bond toughness between GFRP rebars and concrete matrix. The relative bond strength was determined to analyze the effect of fiber types and fiber dosages. A new model was proposed for predicting of the ascending branch of the bond stress-slip relationship.*