

Review of: "Shear performance of polypropylene fiber reinforced high-strength self-compacting concrete beams"

Alireza Ashori

Potential competing interests: No potential competing interests to declare.

Here is my assessment of the strengths and weaknesses of the research article:

Strengths:

- The article investigates an important research area - using polypropylene fibers to improve the properties of self-compacting concrete. This is a novel combination that has not been extensively studied before.
- The study is quite comprehensive, looking at both fresh properties (passing ability, viscosity, filling ability) as well as hardened properties (compressive strength, tensile strength, shear strength) of the fiber-reinforced self-compacting concrete. A range of polypropylene fiber percentages was tested.
- The experimental methodology is clearly explained and seems sound. Standard tests were used to evaluate the concrete properties.
- The results are presented clearly through tables and graphs. The findings that polypropylene fibers improve tensile/shear properties while decreasing compressive strength are logical.

Weaknesses:

- The concrete mixing procedure is not described. Details should be provided on the mixing equipment used, mixing times, fresh concrete testing samples taken, etc.
- It's unclear if the same batch of concrete was used to cast all specimens or if separate batches were mixed. Batch-to-batch variability could affect results.
- The curing conditions and age at testing for the concrete specimens are not specified. Curing has a significant impact on properties.
- The type of testing machines and specific test procedures followed for the compression, tension, and beam shear tests are not mentioned. This could introduce variability.
- The tests done do not evaluate key fresh properties like passing ability and segregation resistance. Additional tests may be needed to fully characterize the self-compacting concrete.
- The presented results are averages of only 2 specimens. More replicates may be needed to obtain statistically

meaningful results and reduce variability.

- Error bars representing the range/standard deviation are not shown in the plots. This would help indicate result variability.
- Details of first crack load and ultimate failure mode are not provided for the tested beams. These are useful results.
- The effect of fiber inclusion on compressive strength appears quite large. More testing may be needed to confirm this.
- The measured hardened concrete properties are not clearly correlated with the presented mix proportions in Table 1.
- Comparisons to previous research results are limited. More discussion of how the results align with literature is needed.

Here are some of the main weaknesses I see in the English language and flow of the paper:

- Grammatical errors in some sentences (incorrect verb tenses, missing words, etc.)
- Awkward or unclear phrasing in parts - sentences could be restructured to improve readability
- Use of informal language/phrasing in a few places, such as "looks for"
- Need for proofreading to fix minor typos/spelling errors
- Improper or inconsistent punctuation in some areas
- Use of different terminology for the same thing - e.g. "polypropylene fibrous concrete" vs "polypropylene fiber concrete"
- The introduction lacks background on self-compacting concrete and the use of fibers - this context needs to be provided
- The overall flow and logical progression of sections could be improved
- The methodology jumps right into the materials used without any overview of the experimental program
- Details on specimens are given before the testing procedures - this order should be switched
- There are some large unbroken chunks of text - more paragraph breaks needed
- The discussion and conclusion are underdeveloped compared to the results section
- The implications and applications of the research are not highlighted at the end
- Citation formats and styles are inconsistent
- Headings do not clearly distinguish between sections