

REVIEWER'S REPORT

Manuscript No.: IJAR-54558

Title: MICROSTRUCTURAL CHARACTERISTICS OF BIOSOURCED CONCRETES REINFORCED WITH SUGAR CANE BAGASSE FIBERS: CASE OF ETTRINGITE FORMATION AND C-S-H PROPAGATION.

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revision ... ✓

Do not accept (Reasons below)

Rating	Excel.	Good	Fair	Poor
Originality			✓	
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: NIKHIL GUPTA

Date: 29/10/25

Title and Abstract Strengths

The title is informative and precise, clearly indicating the material studied (SBC fiber concrete) and the key phenomena (ettringite formation and C-S-H propagation).

Weaknesses-

The abstract repeats the TGA result (TGA results showed vice).

The phrasing is somewhat mechanical; it lacks emphasis on the novelty or significance of the findings.

Quantitative results (e.g., exact mass loss from TGA, temperature thresholds, etc.) are missing.

Suggested Revision

The study investigates the influence of sugarcane bagasse fibers (up to 0.17% by weight) on the micro structural evolution and thermal stability of bio-sourced concretes. Using SEM, TGA, and IR spectroscopy, we observed stable C-S-H propagation and controlled ettringite formation, with thermal resistance maintained beyond 500 °C. The findings confirm that limited incorporation of bagasse fibers enhances thermal durability without compromising micro structural integrity, supporting their use in sustainable construction materials.

Introduction

Weaknesses

Literature review is too brief and lacks quantitative comparisons or recent citations (post-2020).

The transition between thermal effects, bagasse reactivity, and hydration chemistry could be smoother.

Some sentences are overly general Bio-based materials possess hygroscopic properties.

The novelty or research gap is not explicitly stated — what is new compared to existing bagasse-concrete studies?

Weaknesses

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We used the materials and methods described in our previous article— This is insufficient; the reader should have at least a concise summary of key parameters (cement type, water–cement ratio, mix proportions, fiber characteristics, curing method, etc.).

No information about fiber treatment which is crucial for understanding interfacial bonding.

Suggestions-

Include a brief but complete mix design table.

Describe how fiber dispersion was ensured.

Indicate the number of samples analyzed for each test.

Correct figure numbering (there's no Figure 4 mentioned).

Results and Discussion

Weaknesses

The section mixes literature review and your results without clear separation.

SEM figures are referenced but not interpreted quantitatively (e.g., pore size, fiber–matrix interaction).

Missing

The manuscript currently ends abruptly in the results section. A short Conclusion section should be added summarizing the main findings:

To improve:

- 1. Add missing quantitative data (TGA, IR spectra, SEM analysis).*
- 2. Expand the literature review and clarify novelty.*
- 3. Include a separate conclusion.*
- 4. Improve figure presentation and numbering.*
- 5. Refine English and remove redundancy.*