



REVIEWER'S REPORT

Manuscript No.: IJAR- 57671

Title: Manufacturing Process and Mechanical Testing of Hollow Concrete Blocks Made from a Cement–Glass Powder Mixture

Recommendation:

Accept

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

Reviewer Name: Dr. Ashish Yadav

Detailed Reviewer's Report

Reviewer's Comment for Publication.

Acceptance Comment are mentioned below suitable for the paper titled “Manufacturing Process and Mechanical Testing of Hollow Concrete Blocks Made from a Cement–Glass Powder Mixture”

Reviewer Comments: Accept

Reviewer Comments –

Introduction:

The manuscript addresses an important and contemporary issue related to sustainable construction materials and industrial waste utilization. The introduction effectively highlights the growing need for eco-friendly building materials and the potential of glass powder as a supplementary material in concrete block production. The objectives of evaluating the mechanical and physical performance of hollow concrete blocks under industrial manufacturing conditions are clearly stated. The topic is highly relevant to sustainable civil engineering and waste management practices. Overall, the introduction provides a strong rationale and establishes the significance of the study effectively.

Literature Review:

The literature review adequately discusses previous research on the incorporation of waste glass powder in cementitious materials and its influence on concrete properties. The manuscript successfully explains the environmental and structural advantages of utilizing recycled glass in construction applications. Existing studies related to compressive strength, flexural performance, and durability characteristics are appropriately considered. The review identifies the research gap concerning hollow concrete blocks manufactured under industrial conditions with varying glass powder concentrations. The cited background supports the novelty and practical relevance of the proposed work.

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Solution Approach:

The experimental methodology adopted in the study is systematic, practical, and scientifically appropriate. The authors manufactured hollow concrete blocks of standard dimensions using varying percentages of glass powder replacement (0%, 10%, 15%, and 20%). Conducting the production process at an industrial site enhances the reliability and applicability of the findings under real manufacturing conditions. The curing procedures and laboratory testing methods for compressive strength, flexural strength, and water absorption are clearly defined. The approach effectively combines sustainability objectives with performance evaluation of construction materials.

Results and Discussion:

The results demonstrate that the incorporation of glass powder significantly improves the mechanical and physical properties of hollow concrete blocks. The compressive strength value of 6.40 MPa achieved at 20% glass powder replacement exceeds the minimum requirement specified by NFP 14-301 standards, indicating strong structural performance. Similarly, the flexural strength and water absorption results satisfy the relevant standard requirements, confirming the durability and suitability of the developed blocks. The discussion logically interprets the influence of glass powder on strength enhancement and moisture behaviour. The findings provide valuable insights into the feasibility of sustainable hollow concrete block production.

Conclusion:

The conclusion effectively summarizes the major outcomes of the study and confirms the suitability of glass powder as a sustainable additive in hollow concrete block manufacturing. The manuscript demonstrates that incorporating up to 20% glass powder improves compressive strength, flexural performance, and water absorption characteristics while meeting established standards. The research contributes significantly to sustainable construction practices and industrial waste valorization. The recommendation for future investigation into thermal performance further strengthens the scope of the study. Overall, the manuscript presents a meaningful and practically relevant contribution to construction materials research.