ISSN(O): 2320-5407 | ISSN(P): 3107-4928

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: IJAR-54927

Title: IMPACT OF COW DUNG ADDITION ON THE THERMAL AND MECHANICAL PROPERTIES OF NÂ' DJAMENA CLAY

Recommendation:
Accept after major revision .....

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

Reviewer Name: Dr.K.Arumuganainar **Date:** 26.11.2025

Detailed Reviewer's Report

DETAILED REVIEW REPORT

Manuscript Title: *Impact of Cow Dung Addition on the Thermal and Mechanical Properties of N'Djamena Clay*

Journal: IJAR (as per manuscript)

Type: Research Article

Overall Recommendation: *Major Revision Required*

---

1. GENERAL ASSESSMENT

The manuscript explores the influence of cow dung as a bio-based stabilizer on the thermal and mechanical properties of raw earth bricks. The topic is relevant, especially for sustainable, low-cost construction materials in Sahelian regions. The study is experimentally grounded and employs recognized methods such as hot-plate thermal conductivity measurement, flash diffusivity testing, and compressive strength evaluation.

However, the paper requires **major structural, methodological, and editorial improvements** to meet the standards of a high-quality journal publication. Certain sections lack clarity, key numerical data are missing, figures lack captions/details, and the discussion does not deeply compare results with the cited literature.

---

2. STRENGTHS OF THE MANUSCRIPT

1. **Relevant Topic:** Sustainable and low-carbon construction materials are globally important, aligning with SDG 9 and SDG 11.
2. **Use of Local Resources:** The study emphasizes local clay and cow dung—important for affordable housing in Chad.
3. **Established Methods:**
    - Hot plate technique for thermal conductivity.
    - Flash method using Degiovanni's model.
    - Standard compressive strength testing.
4. **Clear Trend in Results:**

    - Thermal properties improve with cow dung addition.
    - Mechanical strength increases significantly.
5. **Potential Practical Impact:** Provides an optimum (10%) stabilizer content for local construction industries.

---

3. MAJOR COMMENTS (Need Revision)

3.1 Abstract

- The abstract is incomplete and contains placeholder text ("……").
- Quantitative results (values of diffusivity, strength improvements, etc.) are mentioned only partially.
- Needs restructuring into:
    - Background
    - Methods
    - Results
    - Conclusion

3.2 Research Gap Not Clearly Stated

While the introduction cites relevant studies, it does not clearly identify:

- What has not been studied in previous research.
- Why cow dung's impact on N'Djamena clay specifically is significant.

3.3 Missing Experimental Details

Several essential details are missing:

a) Material Characterization

- No information on clay composition (Atterberg limits, mineralogy).
- No moisture content or density of cow dung.
- No preparation procedure (mixing, drying time, curing conditions).

b) Thermal Experiments

- Dimensions, boundary conditions, environmental conditions not fully defined.
- No uncertainty analysis or calibration details.

c) Mechanical Tests

- Number of specimens per batch unknown.
- Loading rate not mentioned.
- Standard followed (ASTM/ISO) unclear.

3.4 Figures Need Improvement

- Many figures in the provided PDF are **schematics only** without clear numbering or captions.
- Some figures (like thermograms) are mentioned but not shown in high clarity.
- Axes labels and units are missing or too small.

3.5 Results Section Requires Numerical Tables

Only graphs are provided. The reviewers/journal requires:

- Numerical values of λ, α, Rc in tabular form.
- Standard deviation for each measurement.

3.6 Discussion is Too Brief

Although references are cited, the authors do not:

- Compare numerical results with prior studies.
- Explain the mechanism of improvement quantitatively.
- Discuss limitations (e.g., durability, moisture effects).

3.7 English Language and Grammar

The manuscript requires extensive language editing:

- Verb tense inconsistencies

- Long, unclear sentences
- Repeated phrases
- Incorrect punctuation

3.8 Conclusion Needs Better Structure

The conclusion only restates results. It should also include:

- Implications
- Limitations
- Future work recommendations

---

4. MINOR COMMENTS

1. Keywords should be alphabetically arranged.
2. Units must follow SI standards (e.g., $m^2 \cdot s^{-1}$).
3. Space and formatting consistency needed (extra lines, misaligned text).
4. References should be updated—most citations are old (1990–2015).
5. Figures should include numbering such as “Figure 1: …”, “Figure 2: …”.

---

5. SUGGESTIONS FOR IMPROVEMENT

1. **Rewrite the abstract** with quantitative data and clear structure.
2. **Add complete material characterization** (XRD, plasticity index, granulometry).
3. **Include a methodology workflow diagram.**
4. **Provide numerical tables** for thermal and mechanical results.
5. **Improve figures** with proper resolution and labelled axes.
6. **Expand discussion** with comparisons to Dadi et al. (2016), Meukam et al. (2004), Gaye (1998), etc.
7. **Add a durability study** or mention its need.
8. **Include environmental advantages** of using cow dung as a stabilizer.
9. **Perform statistical analysis** (ANOVA, error bars).

10. **English language proofreading** required throughout.

---

6. FINAL RECOMMENDATION

Recommendation: MAJOR REVISION

The study is valuable and relevant, but the manuscript needs substantial improvements in structure, methodology clarity, result presentation, and language quality before it can be considered for publication.