

The Effects of Salt in Zeeland Clay on Cob

AUTHOR

Grace Pantjadarma Phan

AFFILIATIONS

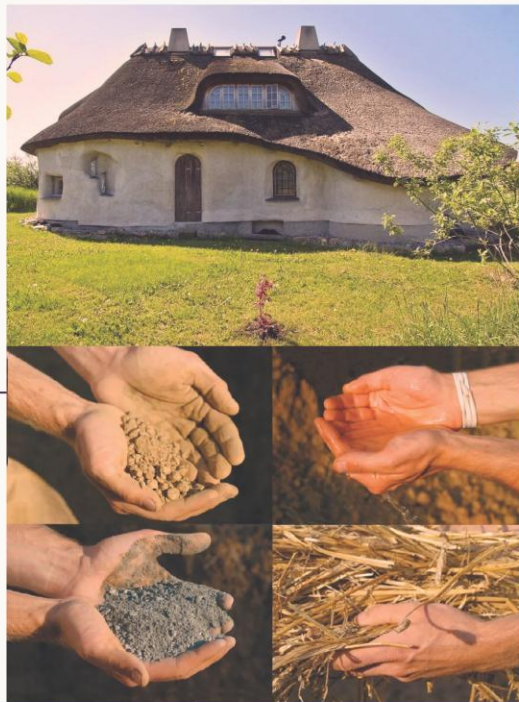


INTRODUCTION

With a sustainable view on building practice, potential of building earth construction using local clay in Zeeland is studied. In relation, the coming of tidal and storm floods affect soil salinization of the region.

OBJECTIVE

Discover the effects of **salt** on local clay in the application of earth building (cob) by: comparing results of strength and thermal insulation, between **normal** and **less** salt samples, also with the effect of **humidity**.



METHODOLOGY

- Sieve Analysis (clay): to determine grain type and particle distribution of soil sample
- Soluble Salt Content (%): determine salt quantity in soil with TDS (Total Dissolved Solids)



Stage 1

- Practical Tests (Ball & Linear Shrinkage): optimum cob mix ratio (sand : clay)



Stage 2 (characterize cob mix)

- Sieve Analysis & Plasticity Test: to determine particle distribution and workability of soil mix

Stage 3

- Clay Desalinization: for less salt samples (bucket-water)

Make cob samples and simple humid box

- Compression Test: for compressive strength
- Thermal Conductivity Test: for thermal insulation

Figure 1
Particle Distribution Graph

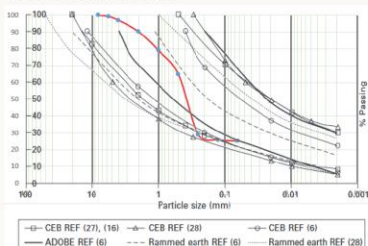
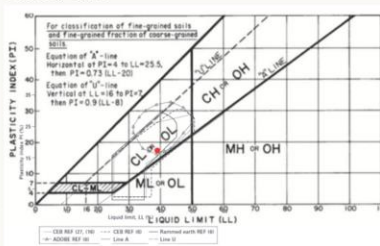


Figure 2
Plasticity Chart



Adapted from Schroeder, 2012.

RESULTS

- Salt content of local clay: 1,066%

In comparison, the limit of total soluble salt allowed in the German Code DIN 18945 is 0.12% (Schroeder, 2012).

- Optimum Cob Mix Ratio: 3:1 (sand : clay)
- Sieve Analysis and Plasticity Test (Cob Mix) (see Figure 1 and 2)
- Compression test and thermal conductivity test have not been executed yet

CONCLUSION

Due to the lack of test results that have not been performed, conclusion to the research can not yet be made.

REFERENCES

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- Schroeder, H. (2012). Modern earth building codes, standards and normative development. In Elsevier eBooks (pp. 72–109). <https://doi.org/10.1533/9780857096166.1.72>