

THESIS SUPERVISOR FORM



1. Identification of the student:

Student:	Lavina jain
Thesis:	Determination of component ratio in a historic lime-based mortar
1 st Institution:	University of Minho
2 nd Institution:	Czech Technical University in Prague, Czech Republic
Academic year:	2017/2018

2. Identification of the supervisor:

Name:	Jan Válek
Institution:	Institute of Theoretical and Applied Mechanics, AV ČR, v. v. i.
Position:	Head of research unit

3. General comments

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A recent experimental research carried out at ITAM provided the possibility to study samples of mortars made as copies of historic floor structures. This “reverse engineering” allowed assessment of the methods that are commonly used for analysis of historic mortars and to confirm their validity for various types of lime-based binders: air lime, NHL both mixed with sand and crushed brick, and hot mixed binders versus slaked dry slaked. More specifically the assessment aimed at the determination of binder to aggregate ratio of these various types mortars and this formed the main research and experimental approach described in the Thesis of Ms. Lavina Jain.

Ms. Lavina undertook the given tasks and carried out the analytical study on samples collected at the experimental site. The tests were carried out as “blind” so the mixing ratio and some other details were not known to her when she did the analysis in order to objectively evaluate the methods and their results.

Ms. Lavina carried out a brief literature review related to historic lime-based binders and mixing proportions. The review did not intentionally cover the subject completely as the main interest was in the practical laboratory and analytical work. However, the presented review could have been organised in a clearer way with the focus on the mixing ratio and moreover, the referencing to literature is sometimes too general or unclear.

The analytical procedures included acid dissolution test, optical and SEM microscopy and thermal analysis. In addition, ICP was used to analyse the filtrated solutions from the dissolution test. Ms. Lavina carried out the laboratory work independently. All the tests were carefully executed and Ms. Lavina proved her good understanding of the importance to determine meaningful values and ability to independently carry out the analytical work.

The analytical tests, such as TA, SEM and ICP, were carried out in collaboration with the experts who operate the instruments. In these cases, the important aspect of the research was also to understand the technique and to be able to interpret the results. The composition of the filtrates was determined by ICP instrument in CET to where Ms. Lavina travelled and the analysis was carried out in cooperation with the local experts. This provided an added value as a training in scientific cooperation.

The Thesis cover sufficiently the main aims, applied procedures and the analytical results. The text is reasonably structured and the reader can assess the obtained values or the applied methodology. There are however some limitations in the clarity of description and presentation of the results. This fact hinders the proper discussion of the obtained results and restricts the conclusions.

Ms. Lavina has learnt about the scientific writing style and requirements during the last three months but there are still some formal mistakes in the Thesis including the referencing of literature and structuring the information that are being explained to the readers.

Overall the experimental program contributed to the defined aims. The obtained results are reliable and useful for any further studies. Ms. Lavina is capable to carry out similar laboratory tests and experimental work. She is able to analyse historic mortars and understands the limitation of the tests in a broader sense. Her ability to analyse the obtained results and draw relevant conclusions is satisfactory and will improve with the newly gained knowledge.

Overall I grade her approach, laboratory work quality of the Thesis as C – good.

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4. Grade

Use the following scale

A (excellent)	B (very good)	C (good)	D (satisfactory)	E (sufficient)	F (fail)
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Institute of Theoretical and Applied Mechanics, AV ČR, v. v. i., Prague

July 12, 2018

The Supervisor,

(Jan Válek)