

Accepted Manuscript

Archaeometric study of mortars from the Pisa's Cathedral Square (Italy)

Marco Lezzerini, S. Simona Raneri, Stefano Pagnotta, Stefano Columbu, Gianni Gallelo

PII: S0263-2241(18)30447-0
DOI: <https://doi.org/10.1016/j.measurement.2018.05.057>
Reference: MEASUR 5558

To appear in: *Measurement*

Received Date: 9 April 2018
Revised Date: 14 May 2018
Accepted Date: 15 May 2018

Please cite this article as: M. Lezzerini, S. Simona Raneri, S. Pagnotta, S. Columbu, G. Gallelo, Archaeometric study of mortars from the Pisa's Cathedral Square (Italy), *Measurement* (2018), doi: <https://doi.org/10.1016/j.measurement.2018.05.057>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Archaeometric study of mortars from the Pisa's Cathedral Square (Italy)

Marco Lezzerini^{A*}, Simona Raneri^A S., Stefano Pagnotta^A, Stefano Columbu^B, Gianni Gallelo^C

^ADepartment of Earth Sciences, University of Pisa, Via S. Maria, 53 – 56126 Pisa, Italy

^BDepartment of Chemical and Geological Sciences, University of Cagliari, Via Trentino, 51 – 09127 Cagliari, Italy

^CDepartment of Archaeology, University of York, King's Manor, YO17EP York, UK

* Corresponding author: Marco Lezzerini, Department of Earth Sciences, University of Pisa, Via S. Maria, 53 – 56126 Pisa, Italy. E-mail: marco.lezzerini@unipi.it

Abstract

The present work is focused on the study of forty-two mortars used in the construction of both Roman buildings, old Pisa's Cathedral and Modern structures in the Miracles Square (Italy). This area, included since 1987 in the World Heritage List of the UNESCO, is famous for the presence of an important historical complex built in the Middle Ages (the Cathedral, the Baptistery, the Leaning Tower and the Monumental Cemetery). The archaeologists discovered some structures related to more ancient periods: the Roman *domus* (1st – 5th centuries) and the older cathedral with its foundations and crypt (10th century). Based on OM, XRF, XRPD, TG-DSC and SEM-EDS analyses, the main characteristics of binder and aggregate of the mortars have been determined, and some raw materials used for the production of the analysed binding materials have been identified.

Keywords

mortar, binder, aggregate, Applied Petrography, building phase, raw materials.

1. Introduction

The study of ancient mortars has an important role in the knowledge of complex archeological sites, providing essential information about building technologies used in the past [1-5], construction phases [6-9] building materials features [10-12] provenance issues [13-15], technology [16] as well composition for restoration aims [17-19]. The use of mortars in architecture was carried out since prehistoric time until the present days [20-24]. Lime mortars had a very important key function in Roman architecture; in fact, Romans used mortars to make the load-bearing walls and partition

Download English Version:

<https://daneshyari.com/en/article/7120802>

Download Persian Version:

<https://daneshyari.com/article/7120802>

[Daneshyari.com](https://daneshyari.com)