Journal of open archaeology data

Data from "Ceramic Technology and Cultural Change in Sicily from the 6th to the 11th Century AD." PhD Thesis

DATA PAPER

VERONICA TESTOLINI

ubiquity press

ABSTRACT

This dataset presents the results of the petrographic and SEM-EDS analysis of 516 ceramic artefacts sampled from four early medieval sites across Sicily. The full database archive as well as the raw data are stored in the University of Sheffield repository. Petrographic descriptions can be found in Testolini's thesis from page 94 to 142. These data shed new light into the ceramic provenance and technological choices in Sicily in a time of shifting power between Byzantine and Islamic rulers. The Dataset can be reused to identify other ceramic production centres and technological traditions in Sicily across time and space, as well as to challenge cultural labelling of ceramic artefacts.

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Archaeological Science; Early Medieval Sicily; Ceramic Petrography; SEM-EDS; Islamic Archaeology; Byzantine Archaeology; cooking pots; glazed ceramic; decolonising archaeology

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(1) OVERVIEW

CONTEXT

The dataset presented here is the result of Testolini's PhD research [1] which investigates ceramic provenance and technology in Sicily in the time of transition between Byzantine and Islamic rule (6th–11th century AD). The present work needs a clarification of the terminology employed to define time periods and cultural affiliations. The ceramic chrono-typology for medieval Sicily has not yet been established [1, pp 20–35], for this reason the ceramic assemblages analysed for this research are dated to wide time spans: 6th–7th century, 8th–9th century, 10th–11th century. The words Byzantine and Islamic do not refer to the ethnicity or religion of the individuals that lived in medieval Sicily; such terms refer to the traditional cultural labels given by archaeologists and historians to the different phases of medieval Sicily, the words are used to clarify how the study of medieval Sicily was traditionally organised and divided between different disciplines. For instance, Byzantine archaeology and Islamic archaeology are separate disciplines, published in different journals, even though assemblages from 'Byzantine' and 'Islamic' sites might be contemporary, and it is difficult to establish in which cultural group the archaeological context belongs to.

Four full pottery assemblages were selected according to their chronology and geographical location to assess eventual differences between the West and the East of Sicily in a time of political and cultural change, no specific categories/wares of pottery were preferred, with the aim of achieving a better picture of everyday life. The assemblages of Rocchicella (6th to 9th century), Colmitella (6th to 11th century), Palermo (9th to 10th century) and Pizzo Monaco (11th century) were studied through thin section petrography and Scanning Electron Microscopy with Energy Dispersive Spectroscopy capability (SEM-EDS) to provide a diachronic and synchronic picture of Sicilian ceramic production and consumption in rural areas, as well as in the capital of the newly established Islamic province.

Chronology of Sicily between the 6th and the 11th century AD according to written sources [2–4]

Byzantine Period: 535 AD – end of the 9th century AD
Islamic Period: 827 AD- first half of the 11th century AD.

This period is divided into two phases.

Phase 1: 827 AD to the second half of the 10th century – The Aghlabid who were the rulers of the North African Islamic territories (Ifriqiya) conquered several cities and lands in Sicily, the rest of the Island stays under Byzantine rule. The borders between such territories have been debated by historians [5]. This phase is characterised by the continuous conflict between Byzantine and new Islamic rulers, as well as the war that started in 913 AD between who was loyal to the Aghlabid rulers and the followers of the new rulers of North Africa, the Fatimids.

Phase 2: 965 AD to 1061 AD – The Islamic conquest of Sicily is completed in 965 AD, and Sicily is entirely under the Fatimid rule, the new Dynasty controlling North African territories. From 948 AD, the Fatimids appointed the Kalbids as rulers of Sicily.

Norman period: 1061 AD – 1194 AD

The Norman conquest of Sicily started in 1061 AD. Norman ceramic is not considered in this work. The current research investigates ceramic material dated to a general 11th century because the chronological sequence of ceramic material is still not well established, and does not allow in many instances to distinguish between early and late 11th century. However, considering the archaeological contexts and the vessels shapes and decorations, the material cannot be linked with Norman settlers.

Sites

The village of Colmitella is located in the South-West of Sicily in the province of Agrigento. The site is dated between the 6th–7th to the 11th century AD [6] and was excavated from 2011 until 2014 [7]. The village shows three occupation phases. In the 6th–7th century, villagers of Greek language (testified in the pottery inscriptions) lived on the site and farmed the area with grains; a large number of storage pits were found on the site. The next phase dated to the 8th–9th century is characterised by multiple domestic structures built on the ruins of the previous village. The date of this phase is confirmed by a Byzantine coin die dating between 720 and 780 AD [6, p. 423], while the ceramic assemblage is comparable to the one found in contemporary villages in Sicily [1, p.24]. The last phase dated to the 10th–11th century shows three structures built in a different part of the site, with pottery recognised and linked to the arrival of new incomers for Islamic North Africa [8].

The medieval village of Rocchicella in the East of Sicily is near the modern village of Palagonia (Lentini). The area was inhabited since the 7th century BC, but this research focuses only on the Byzantine phases that have been uncovered in recent excavations [9]. In the early Byzantine phase, during the 6th–7th century, the village was dependent from the Monastery of Favarotta nearby. At the end of the 7th century, the monastery lost its control over the area and the village was abandoned [9, p. 364]. At the beginning of the 9th century, a new village with different building techniques was constructed over the ruins of the Early Byzantine village, these structures are dated according to the coin of Michael I Rangabe (Emperor from 811–813) found in situ [9], also the ceramic assemblage is consistent with the contemporary site in the island [1, p. 37].

The site of Castello San Pietro is located inside the city of Palermo, in the North-West of the Cala harbour, and was excavated in 1987 [10]. Some domestic structures and a small Muslim cemetery were found during the excavation [11, p.166]. The material culture retrieved from this context indicates a chronology from the end of the 9th century AD to the 11th century AD. Part of the ceramic assemblage was re-examined by Arcifa and Bagnera [11] taking into account the new chronological indices identified for the early Islamic phase in Sicily 9th–10th century AD; this selected assemblage is the one that has been sampled for this dataset. In addition to this, some glazed ceramic found in the contexts directly above the contexts reviewed by Arcifa and Bagnera [11], and dated to the 10th–11th century AD, were studied for this project. The aim was detecting differences in glazing techniques in different periods in the same site.

The hilltop site of Pizzo Monaco is located in the north West of Sicily near Castellamare del Golfo (Trapani), its excavation was part of the European FP7 project: MEMOLA [12]. The site is fortified and consist of 50 small architectonic units that seems to have been used mainly to store goods. This site has a single phase of occupation, and its pottery assemblage is dated to the 11th century AD [13]. The site was probably dependent from the medieval village located at the foot of the hill [14].

Data from this research challenge the traditional narrative on the so-called Islamic conquest of Sicily of a wealthy Early Byzantine Phase (6th–7th century) [2–4] followed by a time of demographic and economic decline (8th–9th century) [15] corresponding with the end of North African imports and a documented change in building techniques [16, 17]. Written sources also report a sudden change after the Aghlabid military conquest of Sicily from 827 AD [18, 19] and a physical border between Byzantine and Islamic population has also been hypothesised [19, p. 37], [5, p. 117] (***Figure 1***), this war was reported to be followed by an increase in economic and cultural stability after the settling of the new Islamic incomers that changed the Island quite radically with new traditions and products [20, p. 1], [21, p. 107].

This dataset shows that Sicilian ceramic workshops continued to produce table wares, storage jars and amphorae, applying the same choice of raw materials, forming methods and surface finishing than in the 6th–7th century, demonstrating a real continuity of practice (see Testolini ceramic database, steps of production PDF, in this dataset). After the 7th century, Sicilian pottery production and consumption seem to thrive. In this late Byzantine period, Rocchicella and Colmitella have very similar ceramic assemblages. Shapes and provenance of ceramic artefacts are similar, as well as the production sequences employed in ceramic manufacture, indicating that the villages exchanged products, but also were part of a shared knowledge base and perhaps the same groups of potters themselves [1, pp. 233–234]. The physical evidence, therefore, contradicts the picture of the 8th and 9th centuries as a time of desertification and famine [15, 22].

A physical border between Christian and Muslim population cannot be confirmed by this dataset. Colmitella in the West, and Rocchicella in the East of Sicily show the same ceramic raw materials and recipes employed in the production of 8th–9th century pottery. In these contexts, Sicilian pottery technology dated to the

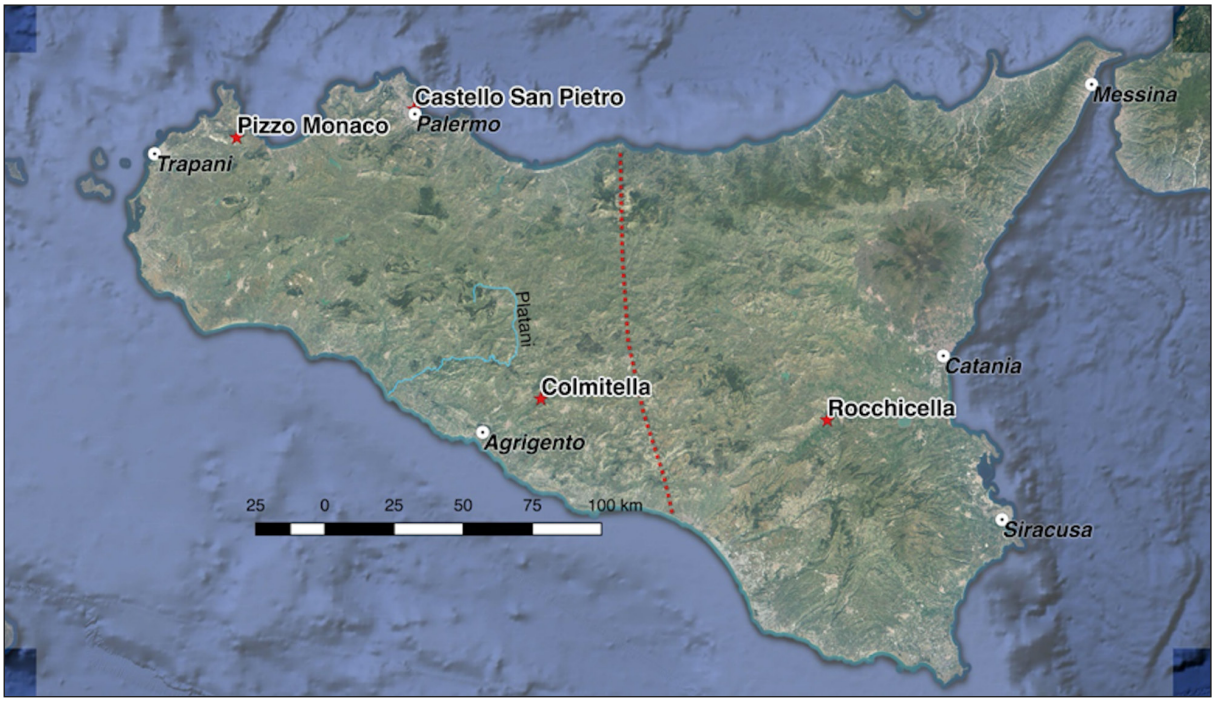

Figure 1 Distribution of the settlements sampled for this work in relationship to two hypothetical borders between Christian and Muslim communities. Red border according Maurici (9), Platani valley for Nef (10)- Picture from (1).

7th century is very similar to the one reconstructed for the later 8th–9th century layers. Only small modifications in pottery production are visible, showing that new practices were adopted in the villages progressively, instead of sudden changes or destruction [1, p. 214]. This slow technological and cultural shift is similar to what has been observed by Carvajal Lopez [23, p. 114], in Spain, for the Vega of Granada, during the first phase of "…Islamicisation…", a century earlier than in Sicily.

The results of the analysis from Palermitan (9th to 11th century) and Pizzo Monaco (11th century) pottery confirm that new pottery designs, technological innovation and consumption practices arrived with the new North African settlers and new potters established their activity in the new capital following the Aghlabid conquest and foundation of the city in 9th century. However, these workshops and their innovations coexisted with the persistence of some traditions from Byzantine Sicily [1, pp. 220–223]. For instance, the occurrence of abundant glazed table ware in Sicily coincides with the arrival of new settlers (9th century), bringing new technologies and consumption habits. The technology of glazing ceramic was known before this date in Sicily. However, such decoration was uncommon and always monochrome. The glazed pottery produced in Palermo was made in similar ways to the contemporary ones produced in North Africa, however some steps of production differ, and so, it is possible that the newly established potters copied some technical solutions from the artisans already present in Sicily (eg. local raw materials for glass). Details on glazes' appearance and analysis can be found in the PDFs documents with the title: "Detailed glaze pict. and chemical measurements" and "Glazes comparisons". Both documents are in the database folder of this dataset. The clear change in cooking pots fabrics and shapes is also an example of this phenomenon; details of different cooking pots recipes and shapes are available in the pdf named "Testolini ceramic database steps of production" in the database folder.

SPATIAL COVERAGE

Description: All data were collected in the Island of Sicily in Italy the site of: Castello San Pietro in Palermo; Rocchicella (Mineo), Catania Province; Colmitella (Racalmuto), Agrigento province and Pizzo Monaco (Castellamare del Golfo), Trapani province.
Northern boundary: +/- Palermo 38.13323183026975, 13.362779473560684
Southern boundary: +/- Rocchicella 37.36213345738318, 14.678392217968666
Eastern boundary: +/- Messina 38.20725919416624, 15.575557388606217
Western boundary: +/- Pizzo Monaco 38.0484353515921, 12.805078854774568

TEMPORAL COVERAGE

6th –11th century AD.

(2) METHODS

STEPS

All samples were selected on site and then prepared and analysed by Testolini. 516 ceramic samples were analysed macroscopically and through thin section petrography to characterise their raw material provenance, recipes, forming, finishing and firing. A selection of 37 glazes samples were selected for SEM-EDS analysis to characterise recipes. All data were organised in a database archive on FileMaker Pro 12 to visualise information on the different steps of ceramic production (***Figure 2***). The chemical measurements were imported into the database to correlate SEM pictures and chemical data (***Figure 3***).

SAMPLING STRATEGY

The selection of samples was undertaken considering the full ceramic assemblages. Sampling for the petrographic analysis is based on chronology and ware function rather than well-known types or decorations ***Table 1***. For instance, for the site of Rocchicella, for the 6th–7th century phase, 10 samples for each functional category were selected. The categories are: kitchen ware, storage/transport containers, table ware, lamps, mill pots, tiles. The samples were selected taking into account macroscopic variabilities such as different fabric appearance and different finishing. It was not possible to base the sampling on the fabrics that were recognised macroscopically, as such fabrics have not been recognised in the majority of the contexts that were sampled. The number of samples could not be proportional to the minimum number of vessels for each assemblage, because this information was not available for the majority of the contexts. However, the sampling covered all the variabilities in fabrics, forming and finishing detected macroscopically at the time of the sampling for each functional group, and for each phase. Castello San Pietro sampling was made on a selection of layers for which the assemblage could be dated confidently thanks to Arcifa and Bagnera review [11].

A further selection of 37 samples was made to analyse glaze recipes under the SEM-EDS instrument. The sampling was based on the following macroscopic classification of glazes:

Type A – monochrome brown glaze.
Type B – brown/green decoration under transparent and glossy honey glaze
Type C – brown/green/amber decoration under transparent and glossy yellow glaze
Type D – monochrome green glaze
Type E – brown/green/amber decoration under transparent and matt white glaze
Type F –opaque and matt white glaze under manganese/green decorations and slipped dots
Type G – opaque and matt green glaze under manganese/green decorations and slipped dots

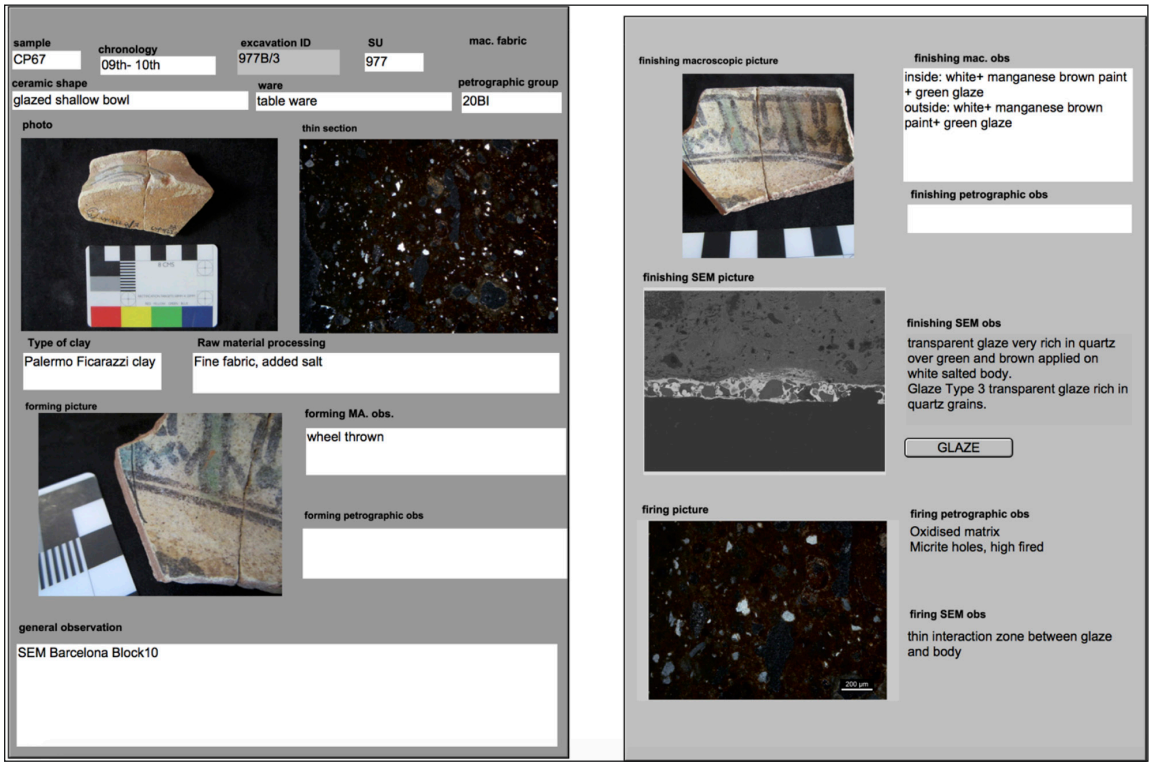

Figure 2 Example of the database layout for sample CP67. Picture from (1).

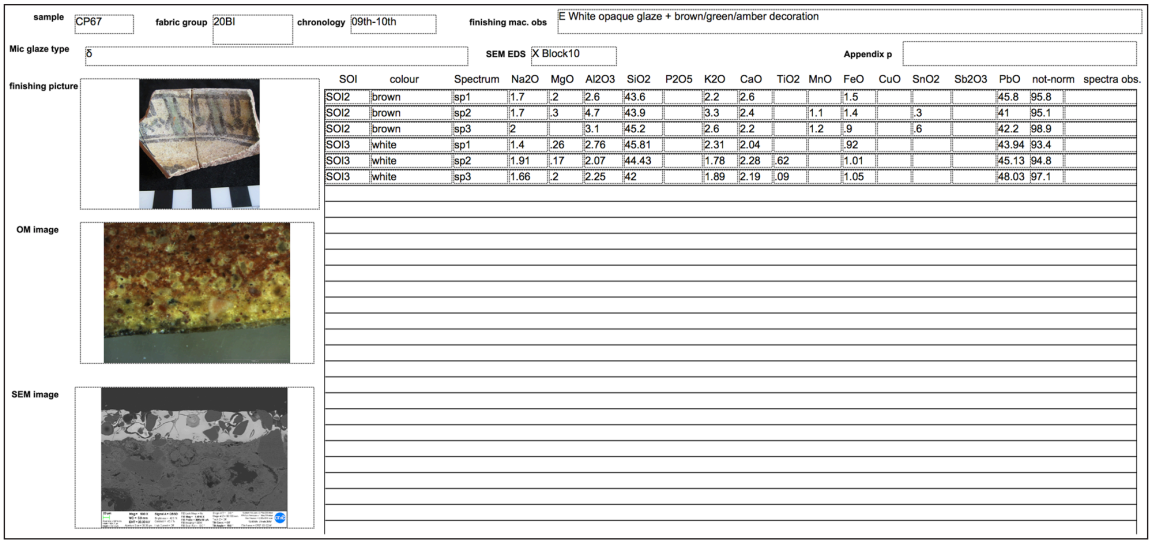

Figure 3 Example of the database layout presenting the SEM pictures and EDS measurements. Picture from (1).

SITE	PHASE	NUMBER OF SAMPLES
Colmitella	6th–7th	81
Colmitella	8th–9th	85
Colmitella	10th–11th	51
Rocchicella	6th–7th	54
Rocchicella	9th	70
Castello San Pietro	9th–10th	73
Castello San Pietro	10th–11th	14
Pizzo Monaco	11th	84

Table 1 Table summarising the phases of the sites considered in this work, and the number of samples taken for each phase.

For each macroscopic type, at least one sample was selected according to the chronology and the glaze conservation. Looking at the results of the petrographic analysis, vessels made in Sicily and those of the same type made in North Africa were sampled, if such vessels made elsewhere existed. The site of retrieval was not taken into account for this sampling.

QUALITY CONTROL

The sampling, as well as the chronological and typological interpretation were supervised by experts in Sicilian medieval pottery. The petrographic groups have been checked by the supervisors and the examiners of Testolini's research. Details on SEM standards are provided in ***Table 2***, more information on calibration and accuracy can be found in Testolini 2018 p. 59.

CONSTRAINTS

9th century Sicilian assemblages are rare, only the site of Colmitella covers the entire chronological span from the 6th to the 11th century.

(3) DATASET DESCRIPTION

OBJECT NAME

Ceramic Technology and Cultural Change in Sicily from the 6th to the 11th century AD. Dataset.

DATA TYPE

Primary data, processed data, interpretation of data.

FORMAT NAMES AND VERSIONS

The Dataset is divided in the following five main folders:

Macroscopic pictures: this is a folder that contains the macroscopic pictures in jpeg. of all the vessels sampled for this research. Pictures are organised in folders named with the site where the vessels were found.

Petrographic Fabrics pictures: this folder contains the photomicrographs of all the thin sections analysed in this thesis (jpeg). The pictures are organised according to their petrographic group. Each petrographic group indicates the mineralogical composition and the possible provenance. Detailed description of the petrographic groups and the methodology employed in their classification can be found in chapter 4 of Testolini's thesis.

OM preliminary pictures of SOI for SEM analysis: this folder contains the pictures taken with Optical Microscopes (tiff, bmp) to characterise the glaze colours in the samples selected for the SEM-EDS analysis.

Testolini 2018 ceramic database: this folder contains the original database archive and the exported files from it. The Filemaker file with fmp12 extension contains the original database archive which can be interrogated by Filemaker users. For other users, pdf and csv exports are made available. 4 pdf files present the visual exports of the database data. They are browsable using keywords; complex searches cannot be performed. 2 csv files contain the non-visual data of the database.

Glazes SEM_EDS data: this folder contains all the SEM pictures taken for a selection of 37 samples and the EDS measurements relative to the pictures (docx.). It also contains one xlsx file with all the EDS measurements normalised and organised by sample number, Site of Interest (SOI) that indicates the area of the sample, and spectra (sp).

The SEM-EDS analyses were performed in Oxford at the Research Laboratory for Archaeology and the History of Art (RLAHA) so data are stored in separate folders according to where the analysis were carried out. Samples CO158; CO219; PM03; PM12; PM22; PM65; PM78; GA02; GA03; CP65; CP66; CP67; CP69; CP73; CP75; CP79 and CP85 were analysed in Barcelona. Samples:CO119; CO216; CO217; CP59; CP60; CP61; CP62; CP63; CP64; CP68; CP72; CP74; CP83; CP84; CP87; GA01; GA04; PM02; PM13 and

OXFORD																			
	SIO_2	PBO	SNO_2	NA_2O	K_2O	CAO	MGO	AL_2O_3	MNO	FEO	P_2O_5	CRO_3	COO	AS_2O_3	NIO	CUO	TIO_2	ZNO	SB_2O_3	TOTALS
CORNING C Values	34.9	36.7	0.19	1.07	2.84	5.07	2.76	0.87	0.82	0.38	0.14	0.001	0.18		0.02	1.13	0.79	0.05	0.03	87.91
BARCELONA																				
Lead silicate glass K-229 NIST	30	70																		100
spessartine Geller Mn3Al2 (SiO2)3	38.7					3.4	6.4	21.5	30.1	0.5										100.5
Wollastonite MAC SiO3Ca	51.7					48.3														100
Augite Geller	52.0			0.3		20.5	16.9	3.1	0.1	5.7							0.6			100.1

Table 2 Table showing the standards used to validate the chemical measurements from the EDS instruments. Different standards were employed in Oxford and Barcelona laboratories. Table from [1].

PM75 were analysed in Oxford. One sub-folder contains xls files presenting EDS measurements from Barcelona not normalised, the second subfolder contains the Barcelona SEM pictures with the spectra indicated, and the associated EDS measurements normalised (docx). The last subfolder contains the SEM pictures taken in Oxford with the EDS measurements not normalised (docx).

List of file formats

csv, docx, fmp12, jpeg, pdf, tiff, txt, xlsx, zip.

CREATION DATES

Start 1/11/2014 – End 5/09/2018.

DATASET CREATORS

PhD Supervisors:

- Prof. Peter Day (Professor in Archaeological Materials, University of Sheffield)
- Dr. Roger Doonan (Head of Specialist Services, Archaeological Research Services Ltd. Previously Senior Lecturer in Archaeology, University of Sheffield)
- Prof. Giuseppe Montana (Associate Professor in the department of Earth sciences, Università degli studi di Palermo)

Sampling selection undertaken with:

- Prof. Lucia Arcifa (Associate professor of Medieval Archaeology, Università di Catania)
- Dr. Roberta Longo (Post graduate researcher, Università di Catania)
- Dr. Viva Sacco (post-doctoral researcher at the Ecole Francoise de Rome)
- Dr. Alessandra Bagnera (independent researcher).

SEM analysis performed with:

- Prof. Trinitat Pradell (Professor of Physics, Universitat Polytecnica de Catalunya)
- Prof. Judith Molera (Professor of Material Science, University of Vic -Central University of Catalonia)
- Dr. Moujan Matin (Research Fellow Research Laboratory for Archaeology and the History of Art, University of Oxford).

LANGUAGE

English

LICENSE

REPOSITORY LOCATION

https://doi.org/10.15131/shef.data.11567910.v3

PUBLICATION DATE

First version published on 13.01.2020

(4) REUSE POTENTIAL

This dataset provides an extensive record of clay recipes employed in Sicily in medieval pottery workshop. This information can be used to provenance ceramics from other Sicilian excavations, regardless of their time period. In addition to this, the reconstruction of the different steps of production provides other researchers with a new nuanced understanding of what is Byzantine and what is Islamic, in this period of the history of Sicily. The visual description of production sequences will help other research challenging cultural labels (such as Christian or Islamic) given to ceramic artefacts. Such data can be reused within the debate of cultural change in Medieval Sicily, but also in the wider debate about migration, and the perception of Islamic culture by the Eurocentric academic environment [24]. This system of recording and sharing data has the potential to advance the decolonising archaeological practices.

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COMPETING INTERESTS

The author has no competing interests to declare.

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