
FINAL REPORT ON THE CONSERVATION OF
CERAMICS FINDS FROM UNDERWATER
SITES - CONTRACT FOR PROVISION OF
SERVICES FOR THE DEPARTMENT OF
ANTIQUITIES, CYPRUS

by

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1) Introduction

This report covers the conservation activities undertaken by freelance conservator, Constantina Hadjivasili, as part of her contract with the Department of Antiquities (DoA), Cyprus. This contract was fully funded by the Honor Frost Foundation. The conservation works described in the present report were carried out from 8th May 2017 to 7th July 2018 in the Laboratory for the Conservation of Underwater Finds (LCUF) in Larnaca. The main objective of this project was the conservation treatment of the ceramic finds that were lifted from underwater sites between 2008 and early 2017.

Conservation activities included treatments (desalination, cleaning, physical and chemical stabilization, reassembly, limited gap-filling) and documentation of the ceramics finds. Lastly, all the underwater ceramic finds were moved to the storage room.

2) Conservation Treatments

a) Desalination

The first task in this project was to finish the desalination process of ceramics finds from the 2016 and early 2017 excavations. The ceramics finds from the 2008-2015 underwater excavations had already been desalinated and had received some initial conservation. Only the finds (intact amphorae, parts of amphorae, groups of sherds) from 2016 and early 2017 excavations were in the last stages of desalination. These ceramics finds, which had been divided in 12 big tanks, were, at the time of commencement of the contract, in the last deionized water bath.

Conductivity and chloride salts levels were monitored once a week. When the conductivity and the chlorides of the bath water measured consistently below an acceptable level, the desalination was terminated and the ceramics were air-dried. The air-drying process started on 29/6/2017 with the help of conservation staff from

the Department of Antiquities. Specifically, the water was pumped out from the tanks and the ceramics finds were left inside the tanks to air-dry slowly (fig. 1).



Fig. 1: Pumping the water out of the tank.

b) Cleaning

One of the treatment goals for this project included the mechanical removal of the calcareous deposits covering the surface of the objects. The majority of the ceramics finds were covered with layers of calcareous crusts, spongy clusters which may have contained sand particles, shells, tube-worms or skeletal remains of corals. These concretions can hide significant decorative details or may shrink during further drying and storage and cause damage to the finds. The level of cleaning for each ceramic object was dependent on the nature of both the pottery and deposits and also on the strength of their attachment to the pottery surface.



a)





b)



c)

Fig. 2 (a,b,c): Jug (ESEA 2-12), Bowl (ESEA 219-12) and Amphora (ESEA 24-12) before and after mechanical cleaning.

During this project, almost all ceramics from the 2012 excavation were cleaned and a few from the 2015 excavation (fig. 2). The finds were cleaned using mechanical methods according to the type of deposit and the nature of each object. The deposits were removed with the use of surgical scalpel, pins and chisels (fig.3). Deposits which were attached loosely to the surface were removed easily whereas very hard deposits that have been intimately associated with an unstable surface were not removed completely. Therefore, the complete removal of the deposits from the ceramics finds was avoided in order not to damage the original surface. In some cases, after cleaning the surface, signs of erosion or discolouration, due to the action of marine organisms, were revealed.



Fig. 3: Mechanical cleaning of the ceramic finds

c) Reassembly

An important part of this contract was the reassembly of fragmented amphorae or parts of amphorae or even groups of sherds (fig. 4). Fragments were adhered with HMG Cellulose Nitrate adhesive.



a)



b)



c)

Fig. 4 (a,b,c): Small jug (ESEA 143-12) and Amphorae (ESEA 46-15, 58-15) before and after adhesion.

Hundreds of sherds from the 2008, 2010-2012, 2015-2016 Mazotos Shipwreck excavations were examined and sorted. The result of this painstaking procedure was that in 41 cases sherds were found to adhere to fragmentary objects. The sherds were either excavated in close proximity with the rest of the object, or further away, or in some instances lifted during different excavation seasons (fig.5).



a)



b)



c)

Fig. 5 (a,b,c): Cup (ESEA 224-12) and Amphorae (ESEA 137-12, 36-11) before and after adhesion of the new fragments found in different groups of sherds.

d) Consolidation

Consolidation treatment was essential because some finds showed signs of disaggregation. Many of the ceramics objects had hairline or bigger cracks. The original surface of some ceramic finds was flaked, powdery or frangible. Consolidation of these objects became necessary to prevent cracks opening, loss of the original surface or even breakage of the objects. Fragile surfaces and hairline cracks were strengthened using a 5%-20% solution of Paraloid B-72 dissolved in acetone. Bigger cracks were consolidated with the injection of Cellulose Nitrate adhesive or with a mixture of adhesive/glass microballoons (fig.6).



a)



b)



c)

Fig. 6 (a,b,c): Amphorae (ESEA 27-12, 17-11, 13-11) before and after consolidation.

e) Gapfilling

After reassembly, it was decided to proceed with gapfilling a limited number of finds. These objects were selected because their stability had been compromised. Plaster of Paris was selected to fill a few of the missing areas in these objects. The aim was not to fill all the missing areas or voids because it is possible that more fragments will be uncovered during future excavation seasons. Retouching was not carried out for the same reason.



a)



b)



c)

Fig. 7 (a,b,c): Amphorae (ESEA 27-12, 17-11, 13-11) before and after adhesion and gap-filling.

f) Documentation

Written and photographic documentation is an essential part of the conservation treatment. All the data gathered prior to, during and after conservation work were recorded in the DoA's Conservation Treatment Database (digital Microsoft Access Database). During this procedure, many old data (previous conservation treatments, number of fragments, material, dimensions, date of excavation, storage details, date

of photographs etc.) that had not previously been recorded in this database were recorded at this stage. Lastly, before, during and after treatment photographs were taken to document the condition of each object – 4 sides, top and bottom.

Conservation Procedures	
Consolidation:	The flaking parts were consolidated with 20% Paraloid in acetone (21/2/2018).
Adhesion:	The frag from 150/12 + 2 sherds (105/15) was adhered with 105/15 using HMG Cellulose Nitrate (11/10/2008).
Retouching:	
Gapfilling:	

Fig. 8: All conservation and other data were recorded in the DoA's Conservation Treatment Database.

3) Transfer of ceramic finds to a new storage space

All ceramics which were stored in a temporary space were moved to a new storage space – a room adjacent to the laboratory. This new storage room was designed mainly for the storage of amphorae, jugs and other ceramics finds from underwater excavations and surveys. Assistance in the transfer of the objects was part of the contract. The objects were dusted before being moved onto the new shelves (fig. 9).



Fig. 9: Removing dust from finds before their transfer to the new storage area.

4) Condition assessment of ceramic finds from 2008, 2010-2011 excavations

All the ceramic finds from the 2008 and 2010-2011 excavations were examined to determine their condition. Each object was taken off the shelf and was examined for cracks, flaking, powdering and breaks. A condition report was produced after the detailed examination of the objects. This was an accurate record of the existing condition, including any damage, accompanied by some photographs.

The information gained by this examination was extremely useful for planning a programme of action to deal with any problems identified. As a result, it was decided to add the ceramics finds from 2008 and 2010-2011 to the conservation programme of this contract.

5) Evaluation of the results

The objectives and tasks which were set out for this contract have been fully achieved. All ceramic objects and sherds from the underwater excavations and surveys 2008, 2010-2012, 2015-2017 have been documented and recorded (photographic, database). Objects with various conservation issues were treated. More than 200 amphorae (intact or fragmentary), 60 jugs and other ceramic objects, as well as hundreds of groups of sherds have been documented and treated.

CONSERVATION TREATMENTS OF THE CERAMICS FINDS - 2008-2017 UNDERWATER EXCAVATIONS				
	INTACT AMPHORA	HALF AMPHORA	GROUPS OF SHERDS	JUGS AND OTHER SMALL OBJECTS
REASSEMBLY	23	20	45	12
CONSOLIDATION	88	54	16	9
GAPFILLING	7	1	/	1
CLEANING	48	47	/	27
LABELLING & MARKING CERAMICS FINDS	57	48	/	17
DATA DOCUMENTATION	138	104	317	65
PHOTOGRAPHY	138	104	287	65

Table 1: This table shows how many ceramics finds have been treated and documented

Furthermore, as mentioned above, during examination of the sherds it was possible to find fragments joining to fragmentary objects either found together, in close proximity or at a distance from each other. This is a useful tool for archaeologists in better determine the stratigraphic context of the wreck. Moreover, following reconstruction, fragmentary objects have a complete profile, which will help in their further study. Generally, the conservation treatments on these objects will ensure their better preservation in the future.

6) Recommendations for future conservation needs

During examination of the ceramics, efflorescence was observed on the surface of 11 amphorae. Due to limited time, the desalination of these objects was out of the scope of this contract and hence were not desalinated. However it is recommended that this is done in the future. Overall, it is recommended that the objects be checked annually for any changes that may occur due to various environmental conditions or moves during study. This check will ensure their safety in the condition of storage or display.