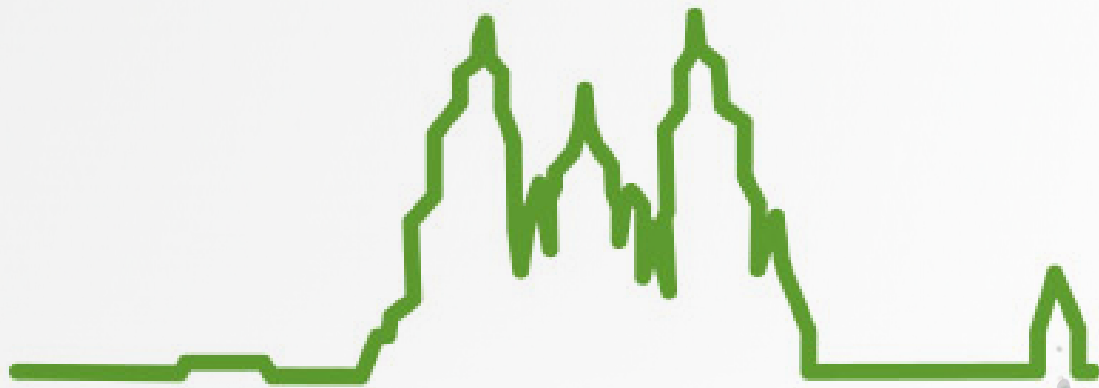




TechnoHeritage



# TechnoHeritage2024

Sept 25-27<sup>th</sup> | SANTIAGO DE COMPOSTELA

## BOOK OF ABSTRACTS



<https://technoheritage2024.com/>

Edited by:  
Massimo Lazzari  
Maite Maguregui  
José Santiago Pozo Antonio  
Jorge Sanjurjo Sánchez  
Patricia Sanmartín Sánchez

© Universidade de Vigo 2024

ISBN 978-84-1188-028-2

Depósito Legal: VG 487-2024

# Tests for the Efficacy of Three Consolidation Methods for the Organic Collection of Ses Fontanelles Shipwreck (Mallorca, Balearic Islands, Spain)

E. Fernández-Tudela <sup>(1)</sup>, M. Goñalons Lapiedra<sup>(2)</sup>, L. C. Zambrano Valdivia<sup>(3)</sup>, D. Bernal-Casasola <sup>(2)</sup>, M. Á. Cau-Ontiveros <sup>(4)</sup>, E. García Riaza <sup>(5)</sup>, J. Cardell Perelló <sup>(6)</sup> and M. Bethencourt Núñez <sup>(2)</sup>

*(1)Center for Underwater Archaeology, Andalusian Institute of Historical Heritage (IAPH), Spain*

*(2)University of Cadiz, Spain*

*(3)Department of Conservation and Restoration, Museum of Cadiz, Spain*

*(4)ICREA and ERAAUB-IAUB of the University of Barcelona (UB), Spain*

*(5)University of the Balearic Islands, Spain*

*(6)Council of Mallorca, Spain*

For decades, polyethylene glycol (PEG) has been the most widely used consolidation product, providing great advances and problems in the conservation of organic material. However, there are other products that for decades have been introduced or revised, focusing with a special interest on wood, and to a lesser extent in other materials such as leather, textile fibers or seeds. Some of them are the polyxylsilanes (plastination method) or the natural resins liked pine resin (acetone-colophony method).

This study delves into the conservation of organic materials recovered from the Ses Fontanelles Shipwreck (Mallorca, Balearic Islands, Spain) as part of the ARQUEOMALLORNAUTA project. The wreck site yields a diverse array of organic artifacts, ranging from cellulosic materials such as wood and plant fibers to protein-based elements like leather.

Three methods were selected for their suitability, availability, and ease of use: PEG 400 (saturation and air drying), plastination method (Biodur® S15+S3) and acetone-rosin method.

Samples of leather, vegetable fabrics (grass mats and ropes) and wood were treated to test the effectiveness of each of the products and materials to propose a protocol for the whole collection. The experiments were carried out at the Laboratory for Studies and Conservation of Historical Heritage (LEC-PH).

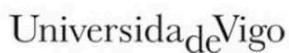
Scanning electron microscopy and digital microscopy were used to examine the surface and structural and dimensional changes. The Anti-Shrink Efficacy Index (ASE %) was used to evaluate the efficacy of the treatments.

All methods are effective in treating the materials studied. Attending on common aspects such as hygrometric stability or physical qualities (color, brightness, or elasticity), PEG and plastination result in relatively elastic materials, while rosin results in rigid and brittle materials. Color and gloss are also affected in all cases, with PEG being the treatment in which the materials darken the most, followed by rosin. In the case of plastination, no chromatic variation is observed but there is an increase in brightness. In all cases these parameters are acceptable.



TechnoHeritage2024

Sept 25-27<sup>th</sup> | SANTIAGO DE COMPOSTELA



## GOLDEN SPONSORS



## COLLABORATORS





TechnoHeritage



<https://technoheritage2024.com/>

