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TECHNICIAN TRAINING FOR THE CONSERVATION OF MOSAICS

PART 2
THE CONSERVATION OF DETACHED MOSAICS

The conservation of mosaics kept in storage

Livia Alberti, Ermanno Carbonara, Thomas Roby

Often a large number of mosaics removed from their original site are stored in a repository. Mosaics can be stored on new supports or without any support on support structures. Sometimes mosaics are kept in storage without any type of support, simply rolled up on their facing fabric. In all cases, it is necessary to correctly preserve the mosaic sections or fragments, creating new supports for them and appropriate storage structures.

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Mosaics kept in storage on new supports

Honeycomb aluminum panel

Reinforced concrete panel

Mosaics kept in storage without supports, on support planks

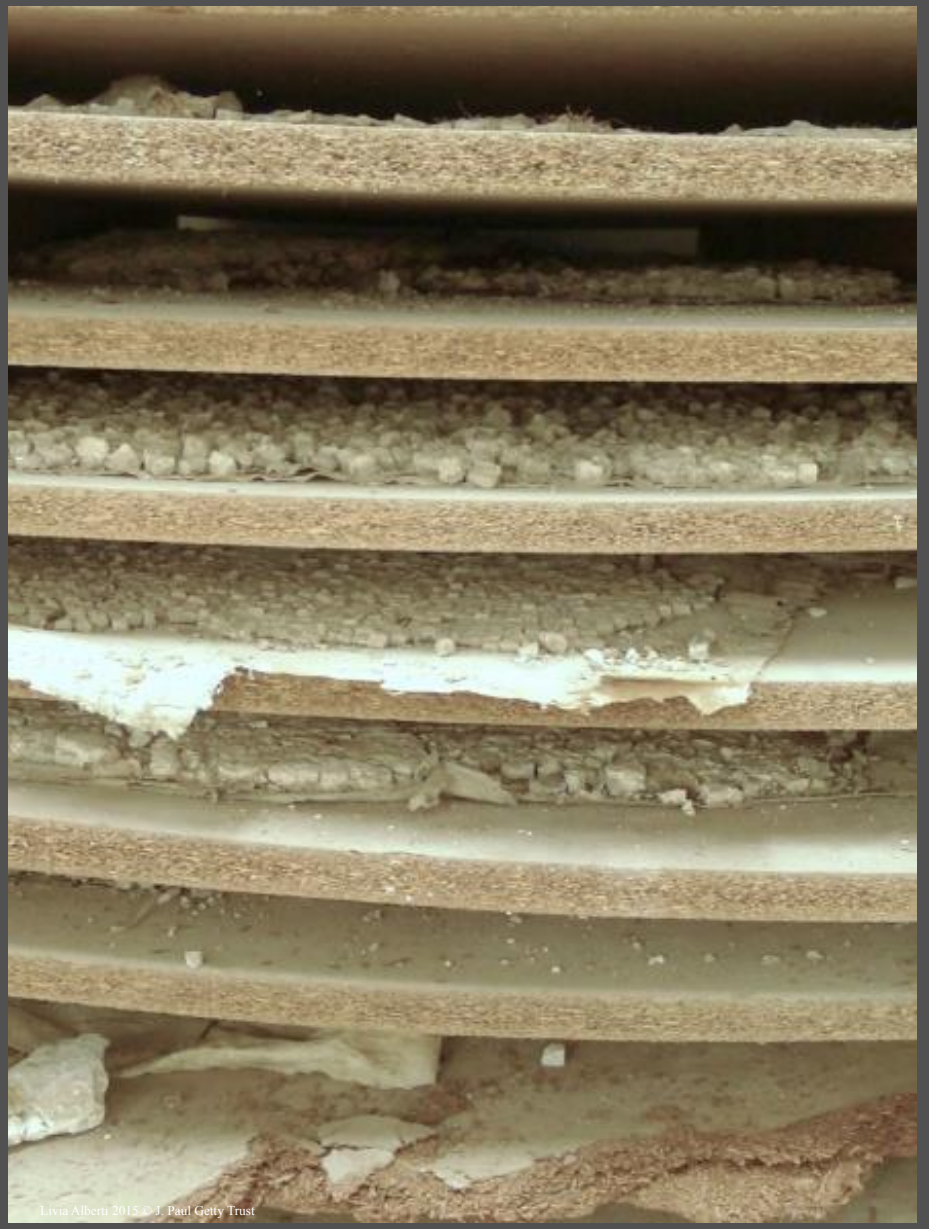
On metal shelves

One on top of another

Mosaics kept in storage without a new support

Examples

Mosaics put in storage on metal shelves on plywood panels



Mosaics put in storage one on top of another on particleboard panels

Mosaics put in storage one on top of another on plywood panels

Mosaics put in storage on a wooden plank panel

Mosaics put in storage without any support structure

Characteristics and functionalities of long-term storage installations for mosaics

- Rigidity and stability of materials to be used
- Dimensions appropriate for mosaic sections/fragments
- Adequate weight-bearing capacity of the structure
- Accessibility of mosaic sections/fragments
- Optimization of space to be used
- Sustainability of construction and maintenance costs of the structure

Materials used to support mosaic sections/fragments

Particleboard panels

ADVANTAGES

- Inexpensive
- Readily available

DISADVANTAGES

- Easily deformed in the short term
- Low stability to humidity
- Low weight-bearing capacity
- Maintenance needs

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Materials used to support mosaic sections/fragments

Plywood panels

ADVANTAGES

- Inexpensive
- Readily available
- Good weight-bearing capacity

DISADVANTAGES

- Easily deformed in the medium term
- Low stability to humidity
- Maintenance needs

Materials used to support mosaic sections/fragments

Wooden planks

ADVANTAGES

- Readily available
- Good weight-bearing capacity

DISADVANTAGES

- Expensive
- Easily deformed in the medium term
- Low stability to humidity
- Maintenance needs

Materials used to support mosaic sections/fragments

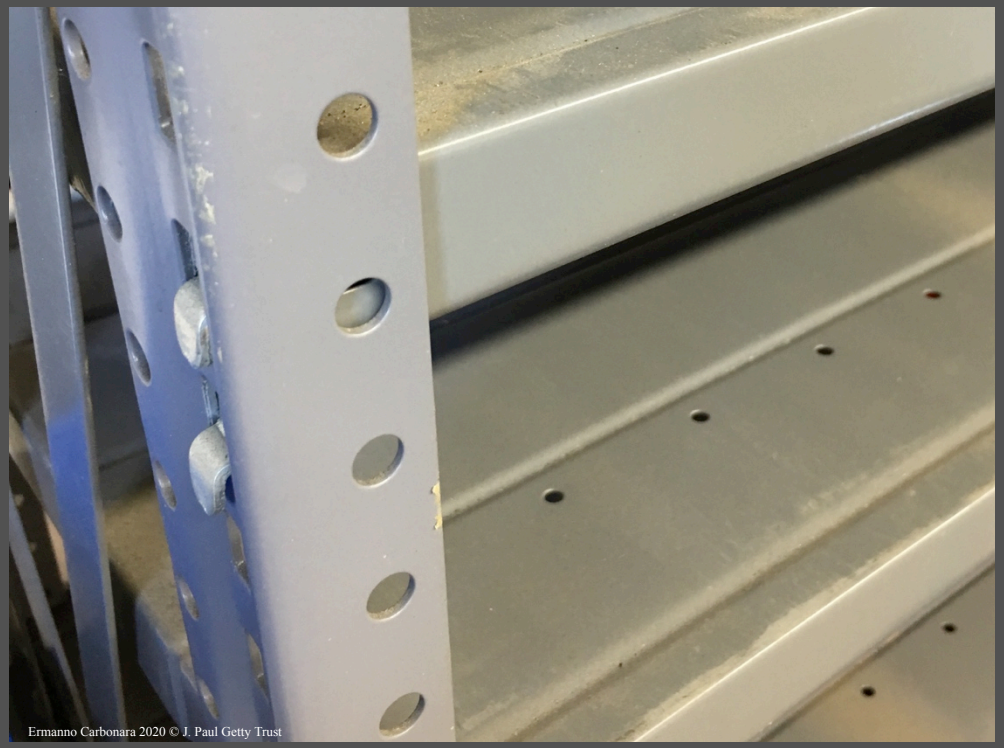
Painted or galvanized iron

ADVANTAGES

- Good stability
- Not easily deformed
- Very good weight-bearing capacity
- Low maintenance needs

DISADVANTAGES

- Expensive
- Not readily available



Materials used to support mosaic sections/fragments

Aluminum

ADVANTAGES

- Stable
- Not easily deformed
- Very good weight-bearing capacity
- No maintenance needs

DISADVANTAGES

- Expensive
- Not readily available

Materials used to support mosaic sections/fragments

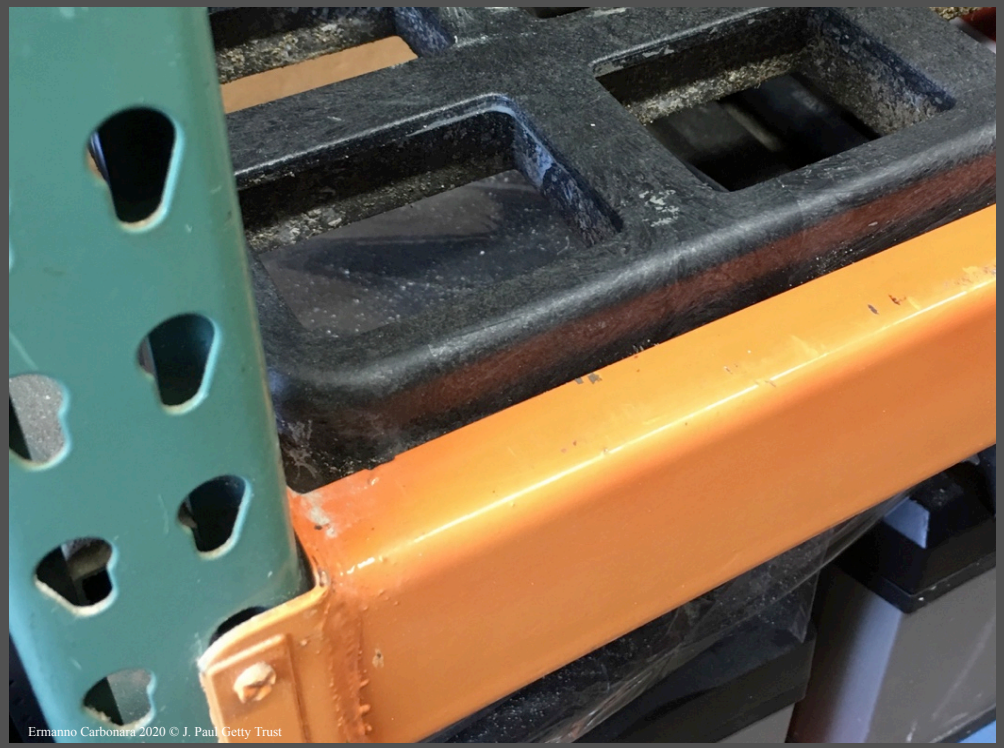
Polyethylene

ADVANTAGES

- Stable
- Not easily deformed
- Good weight-bearing capacity
- No maintenance needs

DISADVANTAGES

- Expensive
- Not readily available



Primary deterioration phenomena of mosaics kept in storage without a new support

Primary deterioration phenomena of mosaics kept in storage without a new support

Deterioration phenomena

- Deformation of sections
- Detachment of tesserae
- Growth of micro-organisms
- Tearing of the fabric/paper
- Disintegration of the fabric/paper

Deterioration causes

- Inappropriate support materials for sections/ fragments
- Inappropriate storage structure
- High humidity

Primary deterioration phenomena of mosaics kept in storage without a new support

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Deterioration causes

- High humidity
- Presence of light (ultraviolet)
- Variations in temperature and humidity

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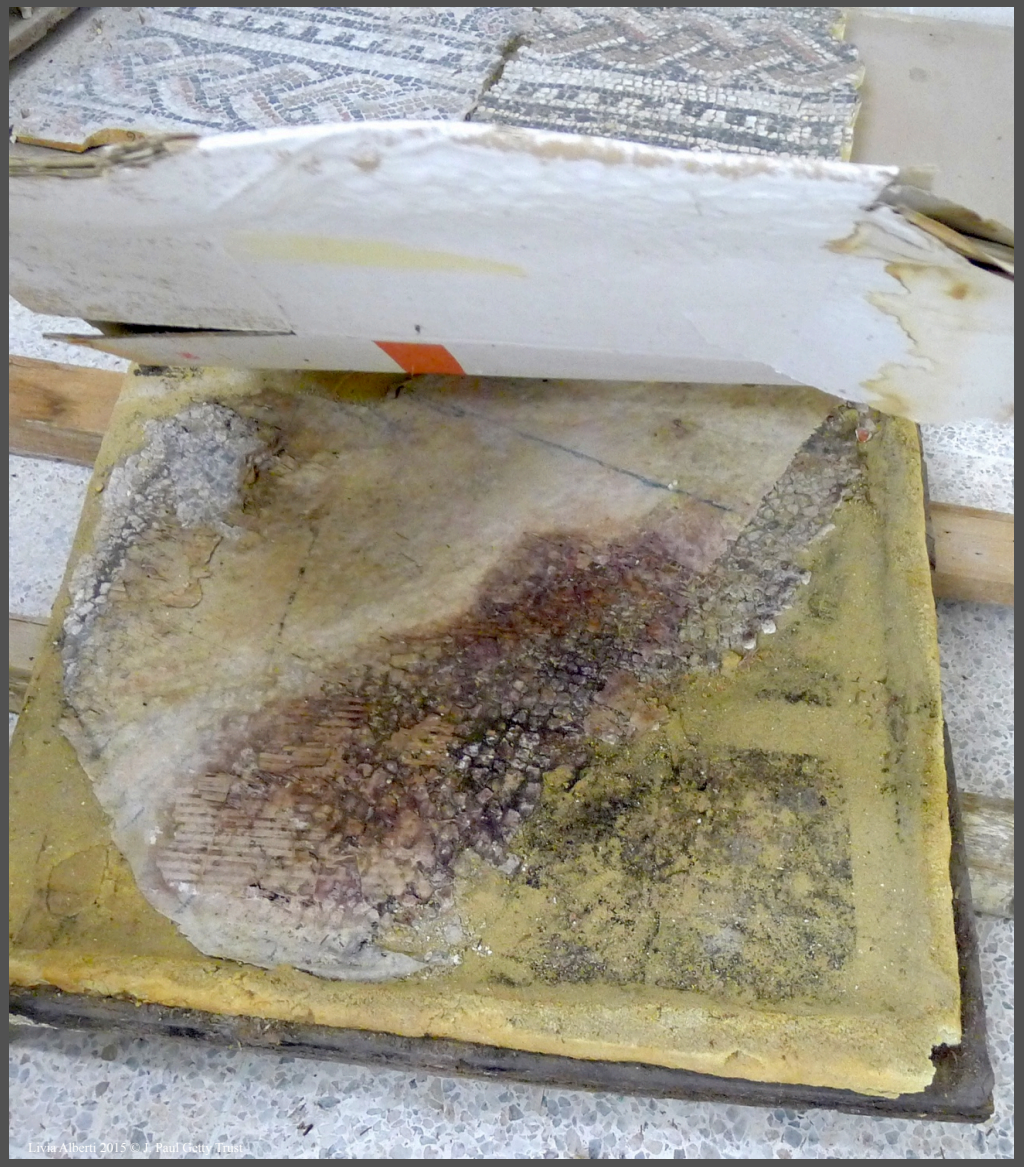


Primary deterioration phenomena of mosaics kept in storage without a new support

Deterioration phenomena

- Deformation of sections
- Detachment of tesserae
- Growth of micro-organisms
- Tearing of the fabric/paper
- Disintegration of the fabric/paper

Deterioration causes

- Inadequate removal procedure and materials
- Incorrect manipulation of sections during storage

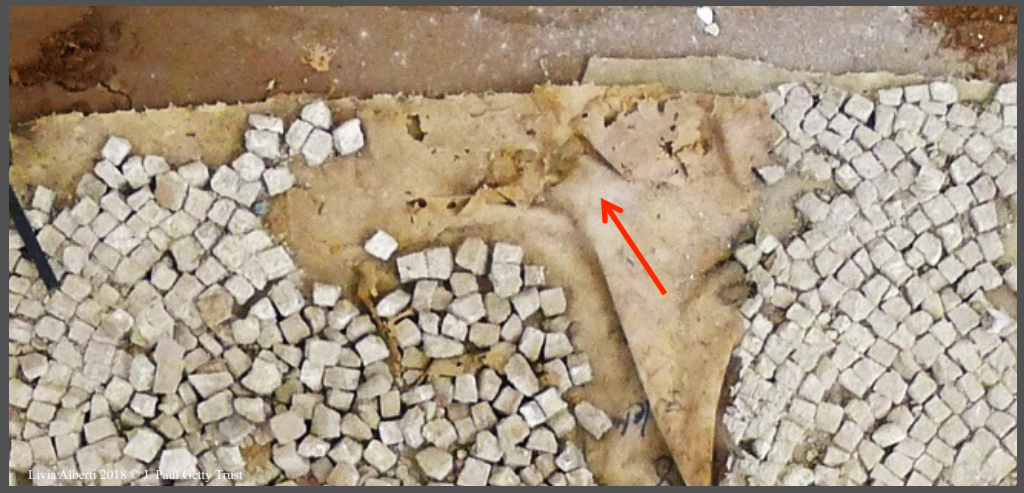
Primary deterioration phenomena of mosaics kept in storage without a new support

Deterioration phenomena

- Deformation of sections
- Detachment of tesserae
- Growth of micro-organisms
- Tearing of the fabric/paper
- Disintegration of the fabric/paper

Deterioration causes

- High humidity
- Presence of light (ultraviolet)
- Variations in temperature and humidity
- Inadequate removal materials and procedure
- Presence of animals in the repository



Treatments of mosaics kept in storage without a new support

Intervention phases:

1. Documentation and cataloging of mosaic sections/fragments
2. Stabilization of the tessellatum
3. Creation of temporary support
4. Placement of sections/fragments in the storage structure

1. Documentation and cataloging of mosaic sections/fragments

- Identification of sections by creating a database and a data archiving system.
- Graphic and photographic documentation of the Condition Assessment of each mosaic section.

LOCATION : _____ INVENTORY OF MOSAIC FRAGMENTS/SECTIONS IN STORAGE DATE : ___/___/_____

IDENTIFICATION	**ID Mosaic**										
	Location in the storage room										
	Temporary numbering	**S001**	**S002**	**S003**	**S004**	**S005**	**S006**	**S007**	**S008**	**S009**	**S010**
	Previous numbering - panel										
	Previous numbering - facing										
	Original location- site										
	Original location- room/mosaic										
	Maximum dimensions (cm)										
	Surface area (m²)										
CONSTRUCTION TECHNIQUE	Tessera dimensions										
	Tessera dimensions										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Density of the tesserae (no. in 20x20 cm)										
	Interstices										
	Note on the construction technique										
PREV. INTERV.	Type of facing used										
	Type of adhesive used										
	Other interventions										
CONDITION	Resettable detached tesserae (no.)										
	Loose non-resettable tesserae (no.)										
	Deteriorated tesserae (no.)										
	Presence of original bedding mortar										
	Other										
NEW REFERENCES	Location in the new storage										
	Photographic documentation folder name										
	Graphique documentation folder name										

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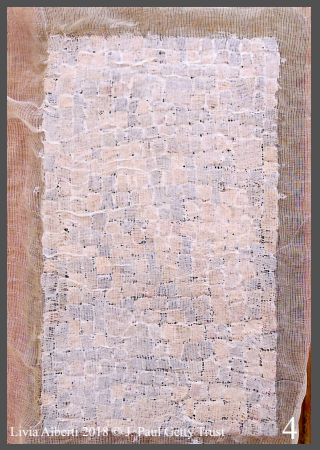
Cristina Caldi, Ermanno Carbonara 2018 © J. Paul Getty Trust

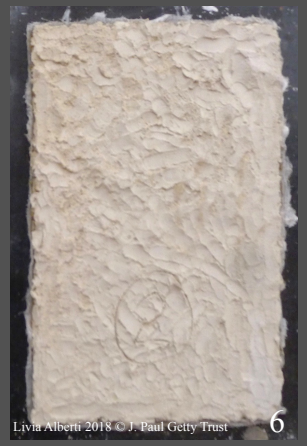
2. Stabilization of the tessellatum

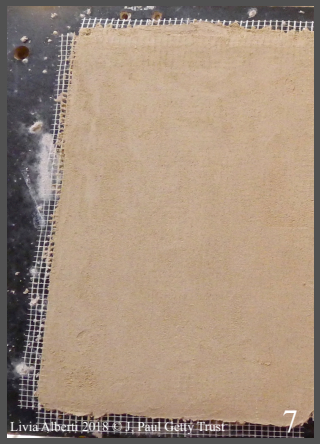
- Collect and keep tesserae that are no longer in their original position in a small container.
- Clean the back of the tesserae with a brush and vacuum cleaner, avoiding the detachment of tesserae from the facing fabric/paper.
- Readhere the detached tesserae to the facing with an adhesive, keeping their original position and orientation.

3. Creation of a new temporary support

- Apply a layer of clay to the back of the sections/fragments and invert them (Photo 1).
- Dissolve the facing adhesive with an appropriate solvent, depending on the type of adhesive used and remove the facing fabric, verifying that the tesserae do not detach from the clay bedding layer (Photo 2, 3).
- Apply a new facing fabric layer (one or more) to the surface of the mosaic using an appropriate adhesive (Photo 4).
- Invert the mosaic sections/fragments and remove the clay layer (Photo5).
- Apply an initial layer of a weak lime-based mortar to the back of the tesserae (Photo 6).
- Apply a second layer of mortar reinforced with natural fibers (hemp, cotton, horse hair) or synthetic fibers (polyester, carbon) (Photo 7).
- Apply a layer of wide weave natural fabric (cotton gauze or fabric) or synthetic fabric (polyester) with an adhesive (acrylic or vinyl) with aggregates, if necessary (Photo 8).







4. Placement of sections/fragments in the storage structure

- Dissolve the facing adhesive with an appropriate solvent, depending on the type of adhesive used and remove the fabric, verifying that the tesserae do not detach from the bedding layer.
- Store the sections/fragments with an identification code corresponding to the previously created catalog.

Documentation
for mosaics kept in storage

Inventory of mosaic fragments/sections in storage

LOCATION : _____

DATE : ___ /___ / _____

IDENTIFICATION	**ID Mosaic**										
	Location in the storage room										
	Temporary numbering	**S001**	**S002**	**S003**	**S004**	**S005**	**S006**	**S007**	**S008**	**S009**	**S010**
	Previous numbering - panel										
	Previous numbering - facing										
	Original location- site										
	Original location- room/mosaic										
	Maximum dimensions (cm)										
	Surface area (m²)										
CONSTRUCTION TECHNIQUE	Tessera dimensions										
	Tessera dimensions										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Material | tessera color										
	Density of the tesserae (no. in 20x20 cm)										
	Interstices										
	Note on the construction technique										
PREV. INTERV.	Type of facing used										
	Type of adhesive used										
	Other interventions										
CONDITION	Resettable detached tesserae (no.)										
	Loose non-resettable tesserae (no.)										
	Deteriorated tesserae (no.)										
	Presence of original bedding mortar										
	Other										
NEW REFERENCES	Location in the new storage										
	Photographic documentation folder name										
	Graphique documentation folder name										

Glossary of inventory of mosaic fragments/sections in storage

		GLOSSARY
	ID Mosaic	to establish according to the original location of the fragment/section (site - building - room - no. of the fragment/section)
IDENTIFICATION	Location in the storage room	shelf (S) and panel (P) of the storage structure; refer to a drwaing or photo of the structure where the numbering is shown (shelves from left to right, panels from below up), ex. S02-P08
	Temporary numbering	consecutive numbers
	Previous numbering - panel	if marked on the panel
	Previous numbering - facing	if marked on the facing
	Original location- site	if known
	Original location- room/mosaic	if known
	Maximum dimensions (cm)	the largest dimensions that can be measured on two orthogonal axes.
	Surface (m^2)	to be calculated
CONSTRUCTION TECHNIQUE	Tessera dimensions	choose among the following categories: 0-6 mm (A), 6-10 mm (B), 10-15 mm (C) and > 15 mm (D)
	Tessera dimensions	"
	Material | tessera color	choose among the following materials: Stone/Marble (S/M), Ceramic (C) and Glass (G), or Not Identifiable (NI) |and following colors: White (W), Beige (Be), Grey (G), Black (B), Yellow (Y), Green (G), Red (R) and Other(O)
	Material | tessera color	" "
	Material | tessera color	" "
	Material | tessera color	" "
	Material | tessera color	" "
	Density of the tesserae (no. in 20x20 cm)	number of tesserae in a square of 20 x 20 cm
	Interstices	choose among the following categories: 0 mm (A), 0-1 mm (B), 1-2 mm (C) and > 2 mm (D)
PREV. INTERV.	Type of facing used	choose among the following materials: Gauze (Ga), Fabric (F), Paper (P) and Other (O)
	Type of adhesive used	choose among the following materials: Vinyl adhesive (V), Acrylic adhesive (Ac), Animal glue (A), or Not Identifiable (NI)
	Other interventions	note other types of interventions
CONDITION	Resettable detached tesserae (no.)	number of detached tesserae which are still in their place on the facing
	Loose non-resettable tesserae (no.)	number of detached tesserae which have lost their place on the facing
	Deteriorated tesserae (no.)	number of fractured, disaggregated, eroded tesserae
	Presence of original bedding mortar	yes / no
	Other	note other types of deterioration
NEW REFERENCES	Location in the new storage	shelf (S) and panel (P) of the new storage structure; refer to the numbering present on the structure and on the drawing or photograph of the storage, ex. S1-P12
	Photographic documentation folder name	
	Graphic documentation folder name	

Legends for graphic documentation

LEGEND - CONDITION AND CURRENT INTERVENTIONS
MAP 1
BACK OF THE TESSELLATUM

Mosaic fragment/section ID :

- ☐ Loss of tesserae within the fragment/section
- ☐ Presence of original mortar preparation layers
- ☐ Presence of roots
- ☐ Deteriorated tesserae consolidated with:
- ☐ Detached tesserae re-adhered to the facing with:
- ☐ Tesserae reset on a reinforced facing (fabric, paper or gauze) with:
- ☐
- ☐

PREPARED BY : DATE :

LEGEND - CONDITION AND CURRENT INTERVENTIONS
MAP 2
FRONT OF THE TESSELLATUM

Mosaic fragment/section ID :

- ☐ Area of loss in the old fabric/paper facing
- ☐ Loose tesserae (kept in a container)
- ☐ Tesserae reset on clay
- ☐ Infilling of lacunae with:
- ☐ Filling of interstices with:
- ☐ Reference lines present on the old facing

PREPARED BY : DATE :

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MOSAIKON is a partnership of four institutions: the Getty Conservation Institute, the Getty Foundation, ICCROM, and ICCM. The aims of the project are to strengthen the network of professionals concerned with the conservation, restoration, maintenance, and management of mosaic heritage in the southern and eastern Mediterranean region; provide training to a variety of individuals involved in mosaics conservation and, more generally, with the management of archaeological sites and museums with mosaics; work with national and international bodies to provide a more favorable legislative, regulatory, and economic environment for the conservation of mosaics in the Mediterranean; and promote the dissemination and exchange of information.