



National Museum of Iceland

Guidelines On the Care of Archaeological Artefacts

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Introduction

This document provides guidelines for the care of archaeological artefacts from the moment they are excavated to the moment they are handed over to the National Museum.

On-site preventive conservation will help to ensure the long term preservation of finds and information about their manufacture and use. The sudden change in environment on excavation can cause rapid deterioration of an artefact if not stored in a suitable environment. Simple methods used in the excavation and storage of archaeological material can be used to minimise the impact of this sudden change. Serious damage, which cannot be reversed by conservation treatments, will occur if artefacts are not properly cared for during and after excavation.

Conservation should be included in the initial planning phase with a budget set aside for materials and conservation treatment of excavated artefacts. There should also be a contingency plan for unexpected finds.

Archaeologists are responsible for the care of finds in their possession and should ensure adequate resources are in place prior to excavation, particularly when large quantities of finds requiring specialist conservation are expected. This includes the materials necessary for appropriate storage on site and access to an archaeological conservator for consultation or conservation services.

Advice should be sought from an archaeological conservator or the National Museum when particularly fragile, composite or important objects are found.

You can contact the archaeological conservator Jane.Hamill@thjodminjasafn.is at the National Museum: or Nathalie@thjodminjasafn.is, Head of Conservation.



Excavating Artefacts: General Guidelines

- Ensure you have adequate packing and lifting material to hand before attempting to lift an artefact.
- Artefacts should be lifted as soon as they are exposed; otherwise delay excavating.
- Excavate around and under an artefact before lifting it.
- Fragile or fragmented objects should be lifted with adhering soil and a rigid support.
- Use wood or plastic tools to excavate artefacts which could be easily damaged or scratched by metal tools.
- Do not prise artefacts out of the ground with a trowel or any other tool.
- Do not try to remove soil by rubbing the surface of an artefact.
- Do not excavate the inside of hollow objects before lifting it: this may be providing support or holding it together.
- When excavating bone, it can be useful to allow it to dry slightly before lifting.
- Look out for foetal remains, calcified tissue, unfused epiphyses and calcified cartilage when excavating human skeletal material.
- Finds should not be left exposed to the sun, wind or rain in finds tray or in bags on the site.
- Do not allow wet or waterlogged artefacts to dry out during or after excavation.
- For larger artefacts, cover exposed areas with plastic sheeting and/or soil whilst excavating.



Cleaning, Packing and Storing Artefacts on Site

General Guidelines

- Finds should be processed as soon as possible after excavation to ensure that they are kept in the most suitable environment.
- Excavated finds should be kept in suitable packaging and stored in a secure location away from direct heat and light.
- There should be no smoking, eating or drinking in artefact storage or handling areas.
- Ensure adequate cushioning between objects to prevent breakages or abrasion when packing.
- Artefacts which have been lifted with a rigid support should be packed with the support.
- Composite artefacts can have complex problems which make the choice of correct storage difficult. Always consult a conservator for advice. If in doubt, pack according to the most fragile material.
- Wet or damp artefacts should not be allowed to dry out, with the exception of metal objects from wet contexts.
- Wet or damp artefacts should be packed with a Tyvek¹ label and double bagged with both bags clearly labelled with the museum find number.
- Do not try to re-hydrate artefacts which have dried out.
- All bags/boxes containing artefacts should be clearly labelled with the museum find number in permanent marker.
- Pigment pens or biros should be used to mark Tyvek labels.
- Self-sealing (Ziploc) polythene bags or polycarbonate boxes are suitable for storage of small finds.
- Air-tight polyethylene boxes can also be used, particularly for storage of artefacts requiring special environmental conditions.
- Only use acid free tissue paper and paper labels with fully dry artefactual material. Do not use with wet or damp artefacts as paper encourages mould growth and disintegrates after a short time.
- Jiffy foam and bubble wrap can be used with damp, wet or dry artefactual material.
- The condition of artefacts should be checked on a regular basis, particularly artefacts requiring special environmental conditions such as metals and damp or wet artefacts.
- Finds should never be kept on the floor, even if contained in a box.

¹ See Appendix 1: *Materials* and Appendix 2: *Suppliers* for further information.



- Minimise handling as much as possible by carrying out cleaning, documentation and photography before packing. Ensure all containers are well labelled.
- Never lift or hold a find by an appendage or projecting part.
- Do not make holes in artefacts to attach labels.
- Conservation of artefacts should only be carried out by a qualified archaeological conservator.

Cleaning and Packing Artefacts on Site: By Material

The guidelines in this section refer to artefacts which have not been conserved. Some of the packing materials are only suitable for short-term storage (less than one year).

- ⚠ Only use water from the cold tap which has been heated to wash finds. Water from the hot tap contains many impurities which can contaminate an artefact encouraging further deterioration or interfering with future analysis.

Metal

- Do not try to remove corrosion or closely adhering deposits. These may be holding the object together or may contain useful information.
- Do not rub the surface of objects such as coins, as this can damage or remove fragile decorated surfaces or loose fragments of the object.
- Metals should be stored in a dry environment immediately after excavation. Iron should be kept in a relative humidity below 12% and other metals below 35%. Humidity indicator strips can be used to monitor the humidity.²
- Dry silica gel³ in a well perforated polythene bag should be placed in an air-tight plastic box with the metal finds. The metal finds should be individually packed in well perforated bags or non-airtight plastic boxes inside the larger air-tight plastic box (see fig. 1).
- Do not add silica gel directly to bags or small boxes containing finds.



Figure 1. Iron artefacts packed with silica gel in air-tight plastic box with humidity indicator card.

² See Appendix 1: *Materials* for instructions of use and Appendix 2: *Suppliers*.

³ The amount of silica gel used should be roughly equal in weight to the weight of the object(s). Larger containers will require more as there is a larger volume of air to dehydrate.



Ceramics and Glass

- Sherds of ceramics and glass can be cleaned on site with clean, warm water and a soft brush.
- Never use detergent. Never scrub.
- Washed objects should be allowed to dry away from direct heat and light.
- Bag washed ceramics and glass only when fully dry, and store in a clean perforated bag.
- Do not wash ceramics or glass with fragile surfaces or glass with an iridescent surface.
- Do not attempt to remove the contents of vessels as they may contain original contents or the contents may be holding the vessel together.
- Glass from wet contexts should not be allowed to dry out.
- Sherds of glass from wet or waterlogged contexts should be separated by Jiffy foam¹ in a polythene bag with a Tyvek label.

Waterlogged Organic Materials

- Take to a conservator as soon as possible.
- Leather, wood, horn, textiles, etc. should be kept wet in a cool, dark place and taken to a conservator as soon as possible.
- Pack finds with some of the surrounding burial deposit for support and to hold moisture if possible. Sphagnum moss is particularly useful.
- Use a rigid support for fragile objects.
- These can then be wrapped in cling wrap and bagged with a Tyvek label. Double bag to prevent leakages and label both bags (see figure 2).
- Remove air from bag before sealing. Air can be displaced by lowering the bag into water, without allowing further water into the bag, then seal before removing the bag from the water.
- Larger waterlogged or damp wooden artefacts should be wrapped in heavy duty black polythene sheeting with bubble wrap outside for protection. Use a rigid support if necessary.
- When using bubble wrap ensure the bubbles are away from the object as they may leave an impression on delicate surfaces.
- Waterproof tape² or brown packing tape should be used on the outside of packing materials instead of string, as this will leave an impression on soft organic materials.
- Store in a cool, dark place; away from heat and light. A fridge is preferable, but cooler boxes or polystyrene boxes are also effective.



Figure 2. Waterlogged wood wrapped in cling film, double bagged with rigid support.

Wood (dry)

- Do not clean. Do not store wet.
- Pack in a perforated polythene bag with acid free tissue cushioning.
- Use a support if necessary, for example the lid of a plastic box or a piece of Jiffy foam.
- Store in a cool dark place; away from heat and light.

Leather (dry)

- Do not clean. Do not store wet.
- Pack in a perforated polythene bag with acid free tissue cushioning.
- Use a support if necessary, for example the lid of a plastic box or a piece of Jiffy foam.
- Store in a cool dark place; away from heat and light.

Bone, Horn, Antler, Ivory

- Un-worked bone can be cleaned on site with warm water and a soft brush.
- Do not attempt to clean if the bone is fragile. Do not clean horn, antler or ivory.
- Human skeletal material can be cleaned on site with warm water and a soft brush.
- Store artefactual material in perforated polythene bags or polycarbonate boxes with appropriate cushioning.
- Use a support if necessary, for example the lid of a plastic box or a piece of Jiffy foam.
- Human skeletal material: pack the bones of an individual together; do not place different individuals in the same box.
- Store in a cool dark place; away from heat and light.



Textile

- Do not clean.
- Support as necessary with a support such as a plastic box lid or a piece of Jiffy foam.
- Pack in a polythene bag with a Tyvek label.
- Store in a cool dark place; away from heat and light.

Stone, Plasters, Mortar, Cement

- Do not clean fragile or decorated surfaces.
- Dry brush to remove soil from robust objects.
- Store in a perforated polythene bag.

Amber and Jet

- Take to a conservator as soon as possible.
- Pack in a polythene bag.
- Do not allow to dry out. If dry, do not wet.
- Store in a cool dark place; away from heat and light.

A Note on Samples

- The National Museum only accepts samples intended for future preservation.
- Non-artefactual material such as samples of soil, charcoal and animal bone should not be mixed with archaeological artefacts.
- All samples must be clearly labelled as such.
- All environmental samples must be processed before reaching the museum. Large soil samples will not be accepted.
 - Animal bone: should be washed, dried, bagged and bags labelled.
 - Soil: should be sieved or floated, as appropriate.
 - Charcoal: should be packed in aluminium foil, bagged and labelled (100g per sample max.).



Recording, Photography and Illustration of Artefacts

- Minimise handling as much as possible.
- Minimise the time an artefact is kept out of its packaging.
- Set up photography or illustration areas before removing an artefact from its packaging.
- Only remove the artefact that is being recorded.
- Do not allow wet or damp artefacts to dry out.
- Do not leave artefacts exposed to bright lights.
- Avoid rubbing edges of artefacts against each other. Handle metal artefacts with gloves.
- Use callipers and other tools with caution, particularly with delicate finds.

Packing Conserved Artefacts for Storage at the Museum

Artefacts should be clean and stable before being packaged for permanent storage at the National Museum. The museum number must be clearly visible on the bag or box containing the artefact.

- Artefacts should be bagged separately.
- Fragile or important artefacts should be packed separately and with appropriate packaging to afford the necessary protection during transport.
- Use plastic boxes to pack fragile artefacts.
- Use only archival quality, inert packing materials.
- Never use cotton wool, toilet tissue or paper towels to pack objects.
- Inert foam and acid free tissue can be used to pad or cushion objects.
- Do not wrap objects, cushion them.
- Use acid free tissue or inert foam to prevent movement of objects in boxes.
- Jiffy foam and bubble wrap should not be used in direct contact with artefacts in long-term storage.

Metal Objects

- Dry silica gel in a well perforated polythene bag should be placed in an air-tight plastic box with the metal finds. The metal finds should be individually packed in well perforated bags or non-airtight plastic boxes inside the larger air-tight plastic box.
- Silica gel should not be in direct contact with archaeological finds.
- Pack different types of metals separately.



Ceramics

- Ceramics should be packed in perforated polythene bags.
- Fragile or friable sherds should be packed in acid free tissue paper inside bags or boxes.
- Individual vessels should be packed separately with appropriate support and padding.

Organic Objects

- Wood, leather, bone, horn, antler, ivory and textile artefacts should be padded or supported within their bags or boxes with acid free card or acid free paper.

Skeletal Material

- Objects made from bone, ivory or cetaceous material should be bagged individually with acid free tissue padding as appropriate.
- Particularly fragile or fragmentary objects should be packed in boxes with inert foam support.
- Human skeletal material: pack the bones of an individual together; do not place the bones of different individuals in the same box.

Labelling for Conserved Objects

- The bag or box containing the artefact should be clearly labelled with the museum find number in permanent marker.
- The bag or box should contain a label with the museum find number. Tyvek labels marked with a pigment pen are recommended.
- Paper labels marked with biro can be used. Only use acid free paper labels.
- Site or artefact information other than the museum find number can be included on labels as long as the museum find number is clearly visible.

Documentation

- Digital copies of finds registers and full conservation reports of any conservation treatments carried out should accompany all archaeological artefacts deposited at the museum.
- All boxes/containers should contain a paper list of contents and be accompanied by digital copies.



Appendix 1: Materials

Acid Free Tissue Paper

This is used to provide protection to fragile artefacts. It should never be wrapped around an artefact, only used as padding or a cushion.

Use only with dry material.

Can be purchased through Hvit List.

Bubble Wrap

This is useful for lining boxes and providing cushioning for fragile artefacts.

Always use with the bubbles away from the artefact as they can leave an impression on softer materials if stored for long periods of time.

Can be purchased at office supply stores.

Humidity Indicator Cards

These are small cards with a colour-coded scale to give an estimate of the relative humidity (RH). They are usually used inside plastic boxes containing metal objects to ensure the environment is dry enough to prevent corrosion.

The colour ranges from pink to blue. The top blue square on the scale indicates the RH. When storing metals, the silica gel should be changed or regenerated as soon as the first section of the humidity indicator card turns pink.

Cards need to be replaced when the ink in the indicating squares begins to run. This will happen if used in a high humidity environment for long periods of time. *Can be supplied by the National Museum.*

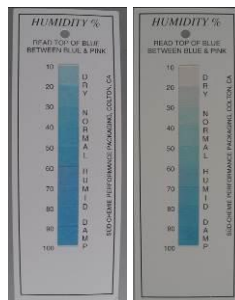


Figure 3. Humidity indicator cards; left dry (under 10% RH); right damp (20%RH).

Polyethylene Foam

This is an inert foam used to support objects. It can be cut out to support a shape or used to line boxes for fragile objects. It is also commonly known as Plastazote, Ethafoam or Jiffy foam. It comes in a number of colours, densities and thicknesses. It can be used with wet or dry materials. Jiffy foam is cheap, easily available and suitable for providing a small amount of support to small finds or fragments of leather or textile in short term storage. Plastazote and Ethafoam can be used in long term storage.

Polyurethane foam is not the same. It breaks down rapidly and can become attached to objects causing severe damage. It is identifiable from its distinctive yellowing and discolouration. Polyether foam will also begin to break down after a few years.



Figure 4. Polyethylene foam; example above is Jiffy foam. Suitable for temporary storage.

Jiffy foam is available from Byko and office supply stores.

Plastic Boxes

Plastic boxes made of High Density Polyethylene (HDPE) or Polycarbonate can be used to safely store artefacts; long or short term.

They should be air-tight if they are to maintain a micro-climate, for example with metals and silica gel or waterlogged materials. Do not stack as this can disrupt the seal on the box. Polycarbonate finds boxes are not air-tight and cannot be used to create a microclimate. Clear plastic allows humidity indicator strips or indicating silica gel to be monitored without opening the box.



Figure 5. Left: air-tight HDPE box; suitable for microclimate storage. Right: polycarbonate boxes; suitable for storing small finds (not air-tight).

Air-tight HDPE boxes can be purchased at kitchen supply stores.

Small polycarbonate finds boxes can be supplied by the National Museum.

Silica Gel

Silica gel can absorb and release large amounts of moisture quickly as the ambient humidity changes. It is placed in a plastic bag with small perforations to allow the silica gel to absorb moisture. Holes can be made using a cocktail stick or tooth pick. The bag containing the metal artefacts should also be well perforated.

Silica gel can be bought with or without a self-indicator. The self-indicating silica gel is more expensive but a small amount of this can be mixed with non-indicating silica gel to reduce costs.

A humidity indicator card should also be used to determine when the silica gel needs to be regenerated or dried. A humidity card must be used with non-indicating silica gel

Silica gel from the National Museum is yellow and turns colourless at 5-9% RH.



Figure 6. Indicating yellow silica gel; left dry, right wet.



Regenerating Silica Gel

- To regenerate or dry silica gel, it should be placed in a thin layer on a baking tray and placed in an oven at 110°C for about two hours, then shake and leave for another two hours.
 - Keep the door of the oven slightly open to allow moisture to escape during drying.
 - Allow the silica gel to cool before placing in a sealed container, but do not leave out for too long as it quickly begins to absorb moisture from the atmosphere again.
- ⚠ You should wear a dust mask and gloves when handling silica gel as it is a desiccant.

Can be supplied by the National Museum.

Tyvek Labels

This is a spun bonded polyethylene which is particularly useful in damp or wet contexts for labelling artefacts. It is strong, water-proof and tear-proof. It can be purchased as labels in two sizes or as a roll for wrapping large objects. Use a pigment pen for marking Tyvek. It is suitable for long or short-term storage.

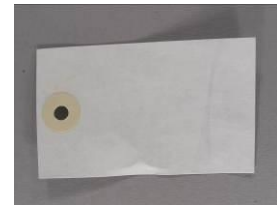


Figure 7: Tyvek label.

Can be supplied by the National Museum.

Other Materials

Other materials which may be useful on site:

Plastic film and aluminium foil	Can be used as a barrier layer between an artefact and support material. Plastic film is also useful for keeping artefacts damp or wet, during or after excavation.
Sponges	Can be used to keep artefacts wet during excavation.
Gloves (latex/vinyl/nitrile)	Should be used for handling materials which may be hazardous, such as lead or when handling silica gel.
Corrugated plastic board	Can be used to provide support for fragile or wet artefacts. Can be used to make boxes for over-sized objects.
Polyethylene sheeting	For covering exposed artefacts or protecting over-sized artefacts.
Cotton or Nylon Gauze Bandages	Useful for block lifting. Do not put in direct contact with the object as it may snag rough surfaces or leave an impression on softer materials.
Spray bottles	Useful for keeping waterlogged materials wet.
Terry towelling	Useful for providing insulation and maintaining moisture. Can be washed and reused. Only use white as dyes may run.



Appendix 2: Suppliers In Iceland

The National Museum can supply the following items:

- polythene self-sealing bags
- air-tight HDPE and polycarbonate boxes
- skeleton boxes
- silica gel
- humidity indicator strips
- Tyvek tags

It is also possible to buy small amounts of other material. Contact Nathalie at: nathalie@thjodminjasafn.is for enquiries.

- Archival boxes and acid free paper: Hvít list
- Air-tight HDPE boxes: kitchen supply stores
- Permanent pen and acid free paper labels: Penninn
- Jiffy foam: Byko and office supply stores

Abroad

The following suppliers are based in the UK and supply the materials mentioned in this document:

Conservation Resources: www.conservation-resources.co.uk

Conservation by Design: www.conservation-by-design.co.uk

Preservation Equipment: www.preservationequipment.com

Long Life For Art (Germany): www.cwaller.de (Silica gel and humidity indicator strips)

Appendix 3: Useful Sources of Information

Publications

General

Cronyn, J. (1990) *The Elements of Archaeological Conservation*. London: Routledge.

Corzo, M. & Hodges, H., eds., (1987) *In Situ Archaeological Conservation*. Los Angeles: The Getty Conservation Institute.

Pearson, C., ed., (1987) *Conservation of Marine Archaeological Objects*. London: Butterworth-Heinemann.

Robinson, W. (1998) *First Aid for Underwater Finds*. London: Archetype Books.

Sease, C. (1994) *A Conservation Manual for the Field Archaeologist*. Los Angeles: UCLA Institute of Archaeology.

Singley, K. (1988) *The Conservation of Archaeological Artifacts from Freshwater Environments*.

Michigan: Lake Michigan Maritime Museum.

Watkinson, D. & Neal, V. (1998) *First Aid for Finds*. London: Rescue/UKIC Archaeology Section.

Lifting

Jones, J. (2001) "A Bronze-Age Burial from North-East England: Lifting and Excavation." In: Williams, E. (Ed.), *Human Remains: Conservation, Retrieval and Analysis*. BAR International Series 934. Oxford: Archaeopress.

Payton, R. (1992) *Retrieval of Objects from Archaeological Sites*. London: Archetype Books.



Other Useful Links

An overview on archaeological conservation:

<http://www.english-heritage.org.uk/publications/investigative-conservation/>

Guidelines for the care of finds on site (Swedish):

http://www.raa.se/publicerat/rapp2012_5.pdf

Guidelines for care of underwater finds:

<http://www.english-heritage.org.uk/publications/underwater-finds-guidance-for-divers/>

Institute of Field Archaeologists (UK) guidelines on archaeological finds:

http://www.archaeologists.net/sites/default/files/node-files/ifa_standards_materials.pdf

General archaeological conservation (Swedish):

http://www.raa.se/cms/showdocument/documents/extern_webbplats/publicerat/2006/maj/9172093935.pdf

Guidelines for the care of waterlogged organic artefacts:

<http://www.english-heritage.org.uk/publications/waterlogged-organic-artefacts/>

Various guidelines provided by the Canadian Conservation Institute:

<http://www.cci-icc.gc.ca/publications/notes/index-eng.aspx>

Structure and degradation of materials found in museums (Swedish):

<http://www.raa.se/publicerat/9172091355.pdf>

Guidelines for the excavation of waterlogged wood:

<http://www.english-heritage.org.uk/publications/waterlogged-wood/>

Guidelines for the excavation of human remains:

<http://www.english-heritage.org.uk/publications/x-radiography-of-archaeological-metalwork/>

Guidelines and standards for sampling:

<http://www.english-heritage.org.uk/publications/environmental-archaeology-2nd/>