

NATIONAL MUSEUM OF IRELAND

ADVICE NOTES FOR EXCAVATORS

Updated April 2010

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INTRODUCTION

The following are intended as guidelines to inform excavators of the National Museum's requirements in respect of excavated material and to assist them in arranging their finds in such a way as to make their incorporation into the National Museum's archive as simple as possible.

Excavators should bear in mind that compliance with the standards outlined in this document may have cost implications – and in some cases, significant cost implications. **It is important that such costs are taken into account in all stages of excavation planning, particularly in initial tendering.**

All enquiries to the National Museum of Ireland relating to archaeological excavations should be addressed to:

**The Duty Officer
Irish Antiquities Division
National Museum of Ireland
Kildare St
Dublin 2**

Tel. 01-6777444; fax 01-6766116.

Email antiquitiesdo@museum.ie

Please note that all correspondence with the National Museum of Ireland in relation to an excavation must be accompanied by the relevant excavation licence number, which also acts as a unique reference number to the site.

1. OWNERSHIP OF ARCHAEOLOGICAL OBJECTS

- 1.1. The current legal position is that all archaeological objects which have no known owner (i.e. where neither the original owner nor their present legal heirs are known) are State property. The National Museum of Ireland is the State's repository of archaeological objects.
- 1.2. The State's ownership of archaeological objects arises from the Supreme Court judgement in relation to the Derrynaflan case and applies retrospectively to all archaeological objects found after the enactment of the Irish Constitution on 6th December 1922. The National Monuments Amendment Act (1994) gave statutory expression to this judgement.
- 1.3. Effectively this means that all excavation finds, including human remains, are State property and that landowners do not have any prior claims on, or rights to material excavated on their lands. **It is therefore essential that no arrangements for the disposition of excavated finds be made with landowners or any other party without the written consent of the National Museum.**

2. RETRIEVAL OF FINDS

- 2.1. It is the State's policy that there be comprehensive retrieval of archaeological objects from all licensed excavations. Archaeological objects are legally defined in Section 2 of the National Monuments Act (1930, as amended). The National Museum must be consulted if doubts arise as to what constitutes an archaeological object worthy of retention.
- 2.2. Excavators must ensure that the techniques of excavation will not place archaeological objects in danger. Excavation should always be by hand and, except in the most exceptional circumstances (and only after consultation with the Museum), **deposits thought to contain archaeological objects should never be removed mechanically.**
- 2.3. In the case of piling, provision must be made to retrieve any archaeological finds from the cored deposits and a stratigraphic record of the finds retrieved must be made,

insofar as it is practicable to do so. This is particularly important in cases where no further archaeological investigation is to take place. In all cases where deposits which may contain objects are removed, the location of the removed spoil **must** be recorded and notified to the National Museum.

2.4. **Provision** must be made, in accordance with the conditions for licensing, for adequate conservation resources to be put in place in advance of excavation. Special provisions must be made for sites (such as urban or wetland sites) likely to produce large quantities of finds or finds requiring specialist conservation needs. This may include the necessity for a conservator to be on site to assist and advise on the excavation of delicate objects. All contractual arrangements between excavators and their clients must take full account of conservation requirements.

2.5. **Finds retrieval strategies** must be included in method statements accompanying excavation licence applications and must be tailored to the site type.

2.6. **Ecofacts:** Non-artefactual material (such as animal bone and environmental samples) is not automatically accepted by the Museum, but may be accepted if shown to be of sufficient importance. This will be decided by the Museum in consultation with the excavator and relevant specialist(s). Excavators should arrange for a specialist's assessment of the importance of the sample and a recommendation as to whether the sample should be retained (in whole or in part) by the Museum. This should be submitted to the Museum at the same time as the finds documentation.

Where material is not to be retained by the Museum, arrangements for disposal must be agreed in advance with the Museum, to ensure against potential pollution of the archaeological record. In such circumstances the Museum would consider retaining a sample of bones, from different stratigraphic phases, for future dating purposes, if this was thought appropriate.

Under no circumstances will unprocessed environmental samples (e.g. soil samples, animal bone assemblages etc) be accepted.

3. CARE OF FINDS

- 3.1. It is the responsibility of excavators to ensure that archaeological objects are excavated and stored in a way that will not lead to any deterioration in condition while in their care. Guidelines on how this may best be achieved have been produced by the Irish Professional Conservators and Restorers Association (IPCRA – see www.ipcra.org) and are reproduced here as Appendix 1, below. **All excavators should ensure that they are fully aware of these important guidelines.**
- 3.2. Proper on-site care is critical in ensuring the long-term safety of excavated finds. Finds should be kept in suitable packaging and stored in a designated office space, cared for by a designated finds supervisor and assessed by a conservator within a reasonable time period. Advice should be sought (from a conservator and/or the Museum) for the excavation of delicate finds such as waterlogged material, complete pottery vessels etc.
- 3.3. All excavations should have an appointed approved conservator, who should carry out the lifting on site of particularly delicate or awkward objects, should carry out the conservation of the finds from the excavation and should ensure that objects are correctly packaged prior to their deposition with the Museum. Details of conservators appropriate for this work can be obtained from IPCRA or the Conservation Department of the Museum.
- 3.4. A directory of conservators in Ireland is published by IPCRA – see www.ipcra.org. The secretary of IPCRA (currently Roisin Miles) is contactable at conservation@ipcra.org
- 3.5. Where particularly important objects are found during excavation, the National Museum should be informed immediately.
- 3.6. As indicated on the excavation licence, excavators are also responsible to arrange for the proper conservation of excavated finds by a qualified conservator, holding the appropriate Licence to Alter. **All** archaeological objects must be in a stable and viable condition when deposited with the Museum, and excavators should never take it on themselves to decide which objects require conservation treatment. Such judgements should only be made by a qualified conservator in consultation with the Museum.
- 3.7. **All** metal objects from a site should be X-rayed by the conservator prior to conservation because important details of metal objects, including construction and

decoration, are frequently only visible from X-radiographs. Decisions about which objects require full conservation treatment should be made jointly by the conservator and a finds specialist, and only after the objects have been X-rayed. If there is any doubt about specific objects, the matter should be referred to the Museum.

- 3.8. Objects should always be conserved before they are drawn and/or photographed for publication, to ensure that details of their construction and decoration that may be revealed by the conservation process, are captured. Objects should not be illustrated until after they are conserved (apart from recording considered necessary as part of the conservation process).

4. EXCAVATION NUMBERS

4.1. All excavations are identified by a licence number, indicated by the prefix 'E' with or without an annual prefix (e.g. E1234, 99E1234, etc). Excavations continuing over more than one season continue to use the number issued in the first season. This number, issued by the Licencing Section of the National Monuments Service, appears on the top right-hand corner of the Excavation Licence.

4.2. The excavation number is to be used as a permanent reference number to the site and **must be noted on all correspondence** with the National Museum and the National Monuments Service. It must also be noted on all site records: plans, sections, drawings, site notebooks, interim and final reports, publications and any other form of archival material relating to the archaeological record of the site. It is essential that it is also used on all applications for Licences to Alter and Export archaeological objects (including samples). Please ensure that the excavation number is clearly visible on the front or title page of all reports and that it is not confused with any other reference number.

5. NUMBERING OF FINDS FROM EXCAVATIONS

- 5.1. It is the responsibility of the excavator to ensure that all excavated finds are numbered with the correct excavation (E) number allocated to the excavation. **On no account is any other numbering system to be used.**
- 5.2. In the case of excavations resulting from Ministerial Consents or Directions the **excavation number** (e.g. E3456, without an annual prefix) must be used, rather than a Consent or Directions (A) number. Similarly, diving licence (D) numbers and detection consent (R) numbers **must not be used** to number finds. For advice on numbering finds from diving or detection, contact the Duty Officer, Irish Antiquities Division.
- 5.3. Two standard numbering syntaxes for objects from excavations are acceptable:
 - a. The excavation number followed by the object number in a sequential series from 1 to infinity, and separated by a colon, e.g. **99E1234:1** to **99E1234:999**.
 - b. Where an excavator wishes to incorporate the context or feature number, the following format should be used: the excavation number, followed by the context/feature number, followed by the object number (each separated by a colon), and commencing with object number 1 in each context e.g. **99E1234:1:1** to **99E1234:1:33**, where thirty-three objects have been recovered from context/feature 1.
- 5.4. All finds must be physically numbered, except in cases where the small size of an object or its condition makes this impractical or damaging (see Appendix 2 below). To save space, redundant zeroes should be excluded when numbering objects – e.g. use the formula ‘**99E123:1:1**’ rather than ‘**99E0123:0001:0001**’ (the latter format should be used for data entry).
- 5.5. Where exceptionally large numbers of similar objects (e.g. pottery) have been produced from the same context, it may be possible to consider alternatives to the physical numbering of each object. This can only be done in consultation with the Museum (via the Duty Officer, Irish Antiquities Division). Unless the Museum expressly agrees to the contrary, **all objects must be numbered.**
- 5.6. Further guidelines on the practicalities of numbering (and labelling) objects can be found in Appendix 2, below.

6. DOCUMENTATION OF FINDS

6.1. Excavators are required to provide full documentation of the excavated finds (in digital format) **before** the objects are lodged with the Museum.

- For excavations licenced since 1st January 2008, this documentation must be submitted using the Excavation Finds Register database issued by the National Museum (available on request from the Duty Officer, Irish Antiquities Division).
- For excavations licenced before 2008, this documentation should, if possible, be submitted using the Excavation Finds Register database issued by the National Museum. In exceptional cases, however, other digital formats (e.g. Excel spreadsheets) may be accepted, subject to prior agreement with the Museum.

6.2. Copies of conservation reports and the final Excavation Report, including specialist reports (if not already submitted to the Museum) should also be supplied with the documentation.

7. PACKING FINDS FOR FINAL DEPOSITION IN THE MUSEUM

7.1.Boxes/Containers

7.1.1. It is the responsibility of excavators to pack finds in a manner that is safe and sustainable in the long term. The nature and size of the bags, boxes or containers used must be appropriate to the materials they contain. Cardboard boxes (see specifications below) may be suitable for most materials, but **may not be suitable** for large, heavy objects (e.g. of stone or metal) or for large quantities of dense material such as ceramics and glass, whose weight the boxes cannot support in the long term. In such cases reinforced boxes or heavy-duty plastic containers should be used. It may also be necessary to use smaller boxes/containers, rather than filling large boxes/containers to the point where they are difficult or even dangerous to lift. Excavators are expected to use their professional judgement to assess what type of container is necessary, but if in any doubt should consult the Duty Officer, Irish Antiquities Division.

7.1.2. Where cardboard boxes are used, they should be of acid-free or low-acid millboard (minimum 1200 micron, with reinforcement where necessary) with flat copper wire stitching and with 80 mm lift-off lids. The following sizes are most suitable for large boxes (i.e. for containing multiple finds):

Length: 550-600mm
Width: 280-300mm
Height: 180-200mm or 350-400mm

On no account should the maximum dimensions (usually at the lid) of standard boxes exceed **600mm x 300mm x 400mm**. These limits also apply to plastic containers.

Please note that where shallower boxes (i.e. 180-200mm in height) are used, these are likely to be stacked in the long term. It is therefore particularly important that they should not be over-filled with heavy material.

7.1.3. Smaller boxes (for containing individual objects) should be based on regular fractions of the large box dimensions (e.g. 200mm x 150mm x 100mm), for efficient packing within larger boxes.

7.1.4. If outsize or non-standard boxes are required for packing particular objects, the dimensions of these should be discussed with the Duty Officer, Irish Antiquities Division before they are ordered.

7.1.5. Excavators who have already boxed finds should check with the Duty Officer, Irish Antiquities Division, in advance of sending finds to the Museum. Recycled boxes designed for other purposes, damaged boxes or other inappropriate containers will not be accepted.

7.1.6. Details of suppliers of boxes and other equipment can be found in the IPCRA Guidelines (see Appendix 1, below).

7.2. Packing boxes:

7.2.1. To make the most efficient use of shelf space, excavated finds should, as far as possible, be packed in containers of consistent size. Objects should be packed economically, to avoid waste of space but should not be too tightly packed. Finds which are vulnerable by virtue of their condition (e.g. glass or other fragile objects) or their exceptional quality (e.g. gold or silver objects, coins, complete

pottery vessels) should be boxed separately as they will need special storage handling.

7.2.2. Finds should be packed in a logical manner (primarily by material, then by object type, register number or site context) so as to be easily accessed by reference to the site register or other databases/lists. As far as possible, objects made of the same material should be boxed together.

7.2.3. Before packing boxes, the base should be padded with inert foam and/or crumpled acid-free tissue. If the contents of boxes are to be layered, place heavier objects at the bottom, with lighter objects on top of these and the lightest objects at the top. Put additional padding between the layers – use inert foam and/ or crumpled acid-free tissue. Finally, boxes should be padded (especially any empty space in the top of the boxes) for transit to the Museum, to ensure minimal movement of the objects within the boxes. This extra packaging can be removed once the objects have reached the Museum.

7.2.4. Pad delicate objects with crumpled acid-free tissue, ensuring they also have a rigid support such as a box or a stiff piece of inert foam under the acid-free tissue. Very delicate objects should be packed in inert foam cutouts within smaller boxes. The advice of a conservator should be sought, particularly on packing delicate objects but also on packing objects generally.

7.3. Material-specific packing guidelines:

7.3.1. **Iron objects** (and if possible, other metal objects) must be boxed separately, as they will be placed in a low humidity store when they reach the Museum. If metal objects are packed in plastic bags, **these must be perforated** to allow the air in the bags reach the low ambient humidity provided by this store.

Metalwork (unless composite with organics) needs to be dried out as rapidly as possible after excavation and then kept very dry. Copper alloy objects need to be kept below 35% RH in order to remain stable, and archaeological iron needs to be kept below 12% RH. Archaeological metalwork should be kept in perforated plastic bags, in sealed polythene boxes at a very low humidity, kept at below 12% RH by the addition of desiccated silica gel into the box (but not the finds bags). This storage technique is described in detail in the IPCRA Guidelines. When the objects are transferred to the Museum, they will be removed from the

sealed plastic containers and placed in acid-free cardboard boxes in a specialist conditioned low humidity store for their long-term care.

7.3.2. **Most organic objects** (e.g. leather, textile and wooden objects) must be supported within their bags, usually on acid-free card or acid-free blotting paper cut to fit snugly within the bag. Relatively large objects may require the acid-free card to be set in a frame of Plastazote.

7.3.3. **Textiles** should be wrapped in clean acid-free tissue. Textile fragments should be supported by acid-free blotting paper covered in brushed cotton; the archaeological textile should be placed directly on the brushed cotton surface and covered with nylon netting, cut to hold the textile in place. If several fragments are to be boxed together, they should be individually wrapped and the largest/heaviest placed on the bottom of the box. Ensure that the box is large enough to accommodate all the fragments without crushing (remember that the tissue wrapping adds considerably to the bulk). If fragments are three-dimensional, they should ideally be packed in individual boxes with nothing resting on top.

7.3.4. **Pottery:** Prehistoric potsherds, especially if friable or fragile, should not be packed in plastic bags but placed in boxes within nests of acid-free tissue and padded so that there is no movement in any direction. This is to ensure that the edges of the sherds do not break.

Relatively well-fired medieval and post-medieval sherds, especially if present in very large quantities, can be packed as groups in plastic bags within boxes. Such bags **must not exceed 300mm x 200mm** in maximum dimensions (before filling), as larger bags filled with potsherds inevitably tear or burst with use. Care should also be taken that the box containing such bags is capable of supporting their weight in the long term. In many cases reinforced boxes or heavy-duty plastic containers should be used. Large boxes/containers should not be filled with potsherds, as they will become too heavy to be handled safely.

Pottery groups should be divided in either of two ways: [a] by context, then within context by fabric type and within fabric type by vessel type, or [b] by fabric type, then within fabric type by context and within context by vessel type.

Complete, or substantially intact ceramic vessels should be boxed separately with adequate packing and support. Where vessels have been reconstructed, the advice of the conservator on packing should be sought and followed.

7.3.5. **Lithics**, if present in very large numbers, need not be bagged individually.

Where lithics are bagged as groups, these should be sorted firstly by context, and within that by form. Bags **must not exceed 200mm x 150mm** in maximum dimensions (before filling), as larger bags filled with lithics inevitably tear or burst with use. Care should also be taken that the box containing such bags is capable of supporting their weight in the long term. In many cases reinforced boxes or heavy-duty plastic containers should be used. Large boxes/containers should not be filled with lithics (or stone artefacts), as they will become too heavy to be handled safely.

7.3.6. **Metal objects**, if packed in plastic bags, should always be bagged individually (i.e. one object per bag). If groups of bagged objects are placed within larger bags or boxes, it is essential to ensure that individual objects are properly padded and supported, to prevent damage caused by movement or friction. All bags **must be well perforated** to allow the air in the bags reach the low ambient humidity provided by the Museum's store. If there is a delay in depositing the objects in the Museum, they should be stored in perforated bags in airtight containers containing silica gel and humidity indicator cards and checked regularly to ensure the required humidity levels are being maintained.

7.3.7. **Human remains** should be packed in acid-free cardboard boxes or plastic containers with lids. The advice of an osteoarchaeologist on packing should be sought, if necessary.

Remains of an individual should never be split between two or more boxes, but it may be possible to pack two or more individuals in a single box (usually where the remains are incomplete). The aim should be to achieve an efficient use of space, without over-packing boxes. Where a box contains more than one individual, they must be clearly separated and labelled.

Bones should first be bagged in logical groups (e.g. leg, arm, foot and hand bones, ribs, vertebrae etc). Leg, arm, foot and hand bones and ribs should be separated into left and right (if known) and bagged separately

Small individual bones (less than 30mm) and fragile elements (e.g. nose and ear ossicles) should be placed separately in self-sealing bags.

Skulls should be bagged and, if intact or reconstructed, should be wrapped in Jiffy foam, acid-free tissue or bubble-wrap. Mandibles can be bagged separately if appropriate. Loose teeth should be placed in self-sealing bags.

7.4. **Ecofactual material** (including animal bones), if it is being accepted by the Museum, must be packed with the same care as artefactual material. In the case of fragile ecofactual material, such as plant macro- and micro-fossil remains, the advice of the relevant specialist should be sought on appropriate packaging methods.

7.5. All plastic bags used in packing **must be perforated** (unless containing liquid or damp materials).

7.6. **Box lists and labels:**

7.6.1. Each box or container must be accompanied by a list of the finds it contains.

Box lists should include, as a minimum, the following information:

Find Registration Number
Simple Name
Material
Box Number

7.6.2. There is a facility in the Museum's Excavation Finds Register database for generating and printing box lists.

7.6.3. **On no account** should any other documentation (e.g. conservation reports, X-rays etc) be placed within boxes. Such material should be separately packed and deposited along with the finds documentation, prior to deposition of finds (such documentation *does not* include general site archives such as find/context sheets, index cards, notebooks, diaries, plans etc.).

7.6.4. Boxes must be clearly labelled in block capitals and permanent ink, using a standard label format produced by the Museum. A copy of this label is enclosed (Appendix 3) and a file to enable printing of labels can be obtained from the Duty Officer, Irish Antiquities Division. **All excavation find boxes must carry this label** with the information marked clearly in **block capitals in indelible ink**.

7.6.5. Excavators are requested to **check and double-check** that the excavation licence number is correctly quoted on all box and find labels (as well as on the finds themselves). Experience to date has shown an alarmingly high incidence of misquoting of excavation licence numbers (e.g. '95E1324' instead of '95E1234', '01E0123' instead of '00E0123', etc.)

7.6.6. When entering the Site name on labels, please use only the name **as recorded on the Excavation Licence**. Using other site names or variants can lead to confusion later on.

7.6.7. Only archival quality, self-adhesive labels should be used (labels should never be taped to boxes!). These should be applied to one of the short ends of the box, at the base, so that no part of the label is obscured by the box lid when it is in place.

7.7. Labelling and use of plastic bags

7.7.1. If objects are packed (within boxes) in plastics bags, these must be clearly labelled on the outside (in permanent, indelible ink) with the Excavation Number, Context Number(s), Object Number(s), object name(s) and the site name. Another label, with the same information, and contained in a self-seal bag, must also be included in the bag.

7.7.2. Except where they contain liquids or material meant to be damp, all plastic bags used to pack objects **should be perforated**.

8. DEPOSITING FINDS IN THE MUSEUM

8.1. The procedure for depositing finds in the Museum is as follows:

1. The excavator submits the final Excavation Report to the Museum (and the National Monuments Service).
2. The excavator submits the completed Excavation Finds Register database (or other agreed documentation) to the Duty Officer, Irish Antiquities Division. The excavator must also submit confirmation that:
 - All finds have been properly conserved.
 - All finds have been numbered, labelled and packed in line with these guidelines.
3. If the Museum is satisfied with the quality of the documentation submitted, an inspection of the finds by Museum staff will be arranged. During this inspection **spot checks will be carried out** on the condition of the finds, the quality of packing, numbering and labelling, etc.
4. If inspection reveals that these guidelines have been adhered to, a date for deposition of the finds in the Museum will be arranged.
5. If these guidelines have not been adhered to, the assemblage **will not be accepted** by the Museum. Excavators will be required to correct all deficiencies and make new arrangements for inspection/deposition.

APPENDIX 1:

CONSERVATION GUIDELINES FOR
ARCHAEOLOGISTS
IPCRA
IRISH PROFESSIONAL CONSERVATORS'
AND RESTORERS' ASSOCIATION

The Conservation Guidelines have been compiled by the IPCRA working group for
archaeological conservation:

Christina Haywood (co-ordinator), Marga Foley, Adrian Kennedy, Karena Morton, Paul
Mullarkey, Joe Norton, Grellan D. Rourke.

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Art work by Nieves Fernández

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INTRODUCTION

Excavated archaeological materials are at their most vulnerable during and immediately after excavation. This is due to the radical changes of environment which they undergo and the risk of physical damage they may suffer during their inevitable handling and moving. This booklet is designed to help archaeologists ensure that freshly excavated artefacts receive the best possible care during the critical period before they are handed over to the conservator.

The booklet is divided into five sections which follow the normal sequence of events:

1. Preparing for excavation
2. On-site care
3. Packaging
4. Temporary storage
5. Handing the material to the conservator

Each section provides guidelines on procedures and materials, and advises on the most useful ways in which archaeological material would profit from collaboration between archaeologist and conservator.



1. PREPARING FOR EXCAVATION

The care of finds during and immediately after excavation is the responsibility of the site director who must plan for conservation well in advance of the excavation.

The site director should take the following steps before excavation:

1.1 Liaise with a conservator (see “Choosing a conservator”) in order to:

- Budget for the likely cost of on-site and post excavation conservation.
- Purchase sufficient supplies of the recommended materials for the care and packaging of finds (see section 3).
- Enlist the conservator’s assistance with regard to possible conservation problems that may arise in the field (see section 2.1).
- Make arrangements for the ultimate conservation of the finds which should be carried out without delay after each season’s excavation.

1.2 Study the contents of this booklet, particularly the recommended methods of caring for (see section 2) and packaging of (see section 3) archaeological materials. Bring the booklet to the notice of the finds supervisor and any person who will be entrusted with the finds during or after excavation. The conservator will give further advice and answer queries.

Choosing a Conservator

Most archaeological conservators are listed in one or both of the following registers:

- The Conservation Directory published by IPCRA (www.ipcra.org). Only members of the Association are listed.
- The Conservation Register (www.conservationregister.com) compiled by the Museums and Galleries Commission in the U.K. (Tel +44(0)20 7785 3805). Conservators from the Republic of Ireland and Northern Ireland may be listed.

Inclusion in these registers does not constitute a recommendation or a guarantee of quality. Upon request, the conservator will provide references and information about qualifications and training. The archaeologist may also ask to see examples of previous work undertaken by the conservator.

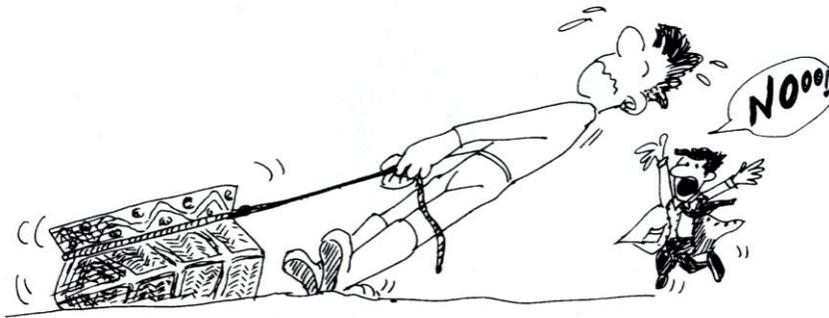


Advice on the conservation, storage and display of excavated artefacts may also be obtained from the Conservation Department of the National Museum of Ireland.

ON-SITE CARE

Terrain, soil, weather and other environmental conditions can differ considerably from one excavation to another, but are usually adverse to the safe recovery and immediate care of finds. The risk to the finds will be greatly reduced, however, if the following precautions are taken:

- 1.3** If difficulties arise regarding the safe recovery of materials such as the lifting of fragile objects or sensitive materials, a conservator should be contacted and, if possible, called to assist.



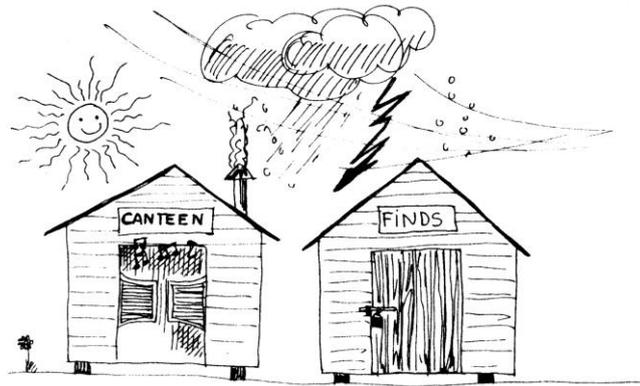
- 1.4** All finds should be taken to a sheltered and secure finds hut immediately after excavation. The finds hut should be used solely for the processing and storage of finds. Food consumption should not be permitted in the finds hut.
- 1.5** Handling and particularly cleaning of artefacts should be kept to a minimum to avoid damage or loss of evidence from the artefacts. Only superficial dirt should be removed from artefacts on the site using a soft brush. If any further cleaning is absolutely necessary, this should be carried out by the site's designated conservator.

Do not use hard brushes of any kind including tooth brushes as they will cause irreparable damage to the artefacts.

Do not attempt to remove corrosion products or closely adhering deposits.

Do not rub the surface of artefacts (which occurs frequently in the case of coins) in an attempt to reveal detail or decoration. This action may remove or loosen inlays, painted surfaces, fibres, etc.

1.6 Finds should be placed in an appropriate environment without delay:



- All metal objects should be dried thoroughly and immediately placed in a controlled environment: iron in a relative humidity below 12%; other metal below 30% (see section 3.2 C). To dry metals quickly, the artefacts must be placed in a container with a tight fitting lid together with their equivalent weight in self-indicating silica gel. This should be replaced when it turns orange until the desired Relative Humidity (RH) is achieved and remains stable for at least an hour. A humidity indicator card placed in the container in the last stages of drying will display the current RH. Freshly excavated iron will require many successive changes of silica gel to remove its moisture content, and achieve the desired 12% RH.
- All waterlogged organic materials (wood, textiles, leather, hide, etc.) should be kept wet (see section 3.1).
- Materials other than metals, if found in damp conditions, should be kept damp. These materials include, glass, poorly fired pottery, wall-plaster, bone, textiles, ivory and amber.
- Composite objects (e.g. a knife with an iron blade and a wooden handle) require the advice of a conservator.

1.7 If an object appears to be disintegrating or deteriorating, the conservator should be called to help. Chemicals (e.g. fungicides) or adhesives should not be used on the site by non-conservators. They may prove difficult to remove and might hinder any possible future chemical analyses, including Carbon 14 dating of organic materials. Usually the provision of suitable packaging and correct environmental conditions is sufficient to get an artefact safely to the conservation laboratory.

2. PACKAGING ARCHAEOLOGICAL MATERIALS

The packaging of excavated materials is of the greatest importance. Correct packaging will provide a holding environment until such time as the artefacts receive treatment in the laboratory. The site director or finds supervisor must therefore ensure that all artefacts are processed and packaged as soon as possible after excavation and not left lying on benches or shelves.

Packaging Materials

The following is a list of recommended materials. A list of suppliers in the Republic of Ireland and U.K. can be found at the end of this booklet:

- Self-sealing polythene bags with write-on panels for the packaging of dry, damp and wet artefacts. They are available in different sizes.
- Plastic (polythene) boxes with tight fitting lids for the packaging of wet and dry materials and for the collective packaging of small artefacts. They are available in different sizes and are indispensable for maintaining objects in the required micro-environment.
- Recommended cardboard boxes in different sizes for the packaging of bagged dry artefacts.
- Acid free tissue paper for padding and support of objects in boxes.
- Inert foam i.e. polyethylene foam (Plastazote) or polyether foam for padding and support of objects in boxes.
- Polystyrene sheeting for lining and filling empty spaces in boxes.
- Heavy-duty black plastic sheeting for wrapping large waterlogged wooden artefacts.
- Bubblewrap for extra protection of the artefacts during transport.
- Permanent, water-proof pens for labeling bags and boxes.
- Good quality tie-on labels. Tyvek (polythene fibre) labels are recommended for waterlogged artefacts.

2.1 Waterlogged Artefacts

Waterlogged artefacts must be packaged so as to maintain their wet environment. Waterlogged artefacts vary enormously in shape, size and condition, and their

requirements may vary accordingly. In cases where the following guidelines cannot be applied, the advice of a conservator should be sought.

- Small artefacts should be packed in polythene self-seal bags containing sufficient water to keep them waterlogged. A second bag, into which the bag with the object is placed, should be used as a precaution against leakage. It is advisable to label both bags using a waterproof pen or marker. The bags can then be packed collectively in plastic containers with tight fitting lids. Sufficient padding should be used to prevent the movement of objects in their bags and boxes.
- Artefacts which cannot bear their own weight such as large leather objects and textiles, require a rigid support. They may be packed at the bottom of containers between layers of soaked foam, or other light-weight water-retaining padding materials.
- Fragile or damaged artefacts should be packaged with their matrix of surrounding moist or waterlogged earth or peat.
- Large robust artefacts of wood should be wrapped in heavy duty plastic with some excess water, and protected for transport with a double layer of bubblewrap. Bubblewrap should never be used directly on the artefact with bubbles facing inwards as it will leave marks on the wood. For the same reason waterproof tape rather than string should be used to secure the wrapping around artefacts.

2.2 Dry or Damp Artefacts

A. Packaging individual artefacts:

- Small and medium size robust finds should be packed in self-seal ‘write-on’ polythene bags of a size proportionate to the object and then collectively packaged in larger boxes (see section 3.2 B).
- Fragile artefacts, may be individually packaged in polythene boxes with lids, or, if dry, in acid free cardboard boxes (see “Advice Notes for Excavators”). To prevent artefacts from moving about in their boxes, the boxes should be lined and padded with inert foam or bubblewrap, wrapped on acid free tissue paper, if the artefacts are dry. Artefacts must never be rolled or wrapped in the packaging material. Instead a “nest”

should be constructed from bubble-wrap and acid free tissue paper and the object placed in it. A lid should also be made to fit the “nest”.

- Large artefacts may be packaged in plastic boxes, bowls or buckets and protected using the same materials described for smaller finds. Containers should always be covered preferably with a snap-shut lid.
- Damp-sensitive materials such as poorly fired pottery, glass and wall plaster should be packaged between layers of damp inert foam and then protected from drying out by placing in self-seal bags or boxes. They should be brought to the attention of the conservator immediately as mould growth may quickly develop.

Never use cigarette or tobacco boxes, match boxes or envelopes as containers for artefacts.

Never use toilet tissue, paper towels or cotton wool as packaging materials.

DO NOT FORCE LIDS !!!



B. Collective Packaging of Artefacts:

Small, individually packaged artefacts should be stored together in air-tight plastic containers with tight-fitting lids. Boxes with the closest fitting lids are preferred.

Clear lids are the most suitable as they allow the checking of humidity indicator cards without opening the box.

Large artefacts can be packed collectively in plastic crates. In the case of waterlogged artefacts the crates should be lined with a waterproof material e.g. heavy polythene sheeting.

Please note that:

- Only artefacts of the same material and which require the same environmental conditions should be placed in the same containers.
- The interior of boxes should be lined with inert foam and the artefacts cushioned from each other with inert foam, polystyrene blocks or, if the materials are dry, acid-free tissue paper.

Silica Gel

Silica gel is a mineral which has the capacity to absorb and release large amounts of moisture quickly in response to changes in ambient humidity. For this reason it is used for drying out freshly excavated metal artefacts and for maintaining them at a suitably dry environment in their storage containers and display cases. The type recommended is the self-indicating gel.

- Silica gel must always be used with a humidity indicator card which will display the Relative Humidity (RH) inside the container.
- Silica gel can easily be regenerated (dried out) for repeated use. This can be done by heating the gel to 120°-140° C for eight hours in a conventional oven until it reverts to a orange colour when dry, colourless when saturated. Small quantities can be regenerated faster in a microwave oven. Regenerated silica gel should be allowed to cool down in a metal container with a tight fitting lid. It should not be exposed to open air as it will rapidly absorb ambient moisture.
- Silica gel is a health hazard. When handling it, a dust mask and gloves should be worn.

C. Environmental Control:

The micro-environment inside the containers should be controlled to suit the artefacts they hold:

- Objects which must be kept damp should be packed with a saturated piece of foam which must be placed in its own perforated self-seal bag.
- All metals should be stored with self-indicating silica gel placed in a finely perforated self-seal bag. Iron objects should be packed with silica gel of equivalent weight. An RH indicator card should be included in every container. Checks should be made every

day. If the RH is found to have risen above 12% in containers with iron artefacts or 30% in containers with other metal artefacts, the silica gel should be changed or regenerated immediately (see “Silica Gel” above).

3. TEMPORARY STORAGE

Ideally the conservator should receive the artefacts immediately the excavation ends. However, this is often not possible, for example when preliminary drawings and photographs are required. The artefacts may therefore have to spend some time in temporary storage. The environmental conditions of the store are very important. Unconserved artefacts are very vulnerable and, if suitable conditions are not maintained, they will deteriorate very quickly.

The temporary store should:

- be secure and kept separate from activities such as the preparation and consumption of food and drink, smoking etc.
- ideally have an RH of between 50% and 65% and a temperature between 10° and 20° C.



Environmental control is not possible to achieve without air-conditioning, or controlled heating. In order to monitor the RH in the store, a data logger or hygrometer may be installed with the advice of a conservator. If conditions are found to be unsuitable, an alternative store should be sought.

All metals, sensitive damp materials, and waterlogged materials should be kept in their recommended micro-environments (see section 3):

- silica gel and RH indicator cards must be checked regularly. Silica gel must be regenerated if conditions change as advised in section 3. Silica gel is useless if it is allowed to become saturated and will generate harmful moisture when conditions become drier.
- foam packed with damp artefacts must be checked regularly and re-moistened if necessary.
- damp and waterlogged materials should be kept in a cool dark place, preferably a refrigerator, to avoid micro-biological growth. They should be checked regularly and the water inside the containers or wrappings replenished. If there is a risk of mould growth, the advice of the conservator should be sought.

4. HANDING THE MATERIAL TO THE CONSERVATOR



The material, correctly packaged and labelled, should be handed over to the conservator as soon as possible after the completion of the excavation. Conservator and archaeologist should have an initial meeting to discuss what preliminary

examinations or analyses may be required before conservation commences (e.g. the x-radiography of metals, XRF of metals, identification of wood and fibres, sampling for Carbon 14 dating, etc.)

When the results of these examinations are available, the archaeologist, conservator and the finds specialist(s) involved, should meet to:

- select the artefacts to be conserved.
- discuss the conservation methods to be used, which work will be sub-contracted (e.g. freeze-drying) and where it will be carried out.
- discuss priorities (e.g. artefacts requiring urgent attention, publication deadlines, budgetary constraints, etc.)

BIBLIOGRAPHY

Robinson, Wendy. *First Aid for Underwater Finds.* Archetype Publications-Nautical Archaeology Society. London, 1998.

Watkinson, D. and Neal, V. *First Aid for Finds.* Published by RESCUE-The British Archaeological Trust and Archaeology Section of the United Kingdom Institute for Conservation with the Museum of London. London, Third Edition Reprinted 2001.

SOURCING MATERIALS

Boxes

Archival Box Company Ltd

IDA Business pk. Southern Cross Rd. Bray, Co. Wicklow.

Tel: (01) 2867917

www.archivalbox.ie

Acid free: folders, tissue, rigid boxes. Inert polyester pockets

Declan McGinn. The Paper Mill Company.

Stillorgan. Tel: (01) 2888748

www.wineboxgift.com

Storage, Corrugated plastic, Foam, Packaging

Killyleagh Box Company Limited

Killyleagh, Co. Down, N. Ireland. Tel: +44 (0)28 4482 8708

www.killyleaghbox.co.uk

Key Industrial Equipment Ltd.

Dorset, U.K. Tel : 0845 2190660

www.keyonline.co.uk

Kayfoam Woolfson Ltd.

Bluebell Industrial Estate, Dublin 12. Tel: (1) 419 2999

www.kayfoamwoolfson.com

Vita Cortex Ltd

Kinsale Road, Cork, Ireland. Tel: +353 (0) 21 4964377

www.vitacortex.com

Labels (paper, tie-on), pens for labels, polyethylene bags

Conservation Resources (U.K.) Ltd

Oxford, England. Tel: +44 (0) 1865 747755

www.conservation-resources.co.uk

Preservation Equipment Ltd

Norfolk, England. Tel +44 1379647400

www.preservationequipment.com

Conservation By Design

Bedford, England. Tel: +441234 853555

www.conservation-by-design.co.uk

O'Sullivan Graphics

14/15 Camden St, Dublin 2. Tel: +353 (0)1 478 9460

www.osullivangraphics.com

M Kennedy and Sons Ltd

12, Harcourt St. Dublin 2. Tel:+353 (0)1 4751749

www.kennedyart.com

APPENDIX 2: LABELLING ARCHAEOLOGICAL FINDS

Labelling an archaeological object or fragment bears a risk, due to their unstable condition after the excavation. On the other hand, labelling is necessary as a link between the object and the documentation.

Before you start:

Before we select any appropriate technique for marking or labelling an object, we must be sure that the system will be:

- **Secure**, so the chances of accidental removal of the label or mark from the object would be extremely low.
- **Reversible**, so it is possible for a label or mark to be removed intentionally from an object, even after 50-100 years, with as little trace as possible.
- **Safe** for the object. Neither the materials applied to the object nor the method by which they are applied should damage the object in any way.
- **Discreet but visible**. The methods should not spoil the appearance of the object or obscure important detail. However, the number should be visible enough to reduce the need to handle the object. When numbering objects, care should be taken to place the number in as inconspicuous a position as possible. Numbers must be legible but discreet. Where an object clearly has ‘front’ and ‘back’ sides, or decorated and plain surfaces, the number should be placed on the back, or plain surface.
- **Convenient and safe** for staff and volunteers. Materials should be easily available in small quantities and should not pose significant risks to health if used in accordance with the product information sheets available from suppliers and Health and Safety literature available.

Advice on these matters may be obtained through the Museum’s Conservation Department or the Duty Officer, Irish Antiquities Division.

Materials to avoid

For the sake of cheapness and convenience products such as Tippex or clear nail varnish have been used for labelling. These materials are unsuitable and should never be used on archaeological finds for the following reasons:

- **Tippex** dries to form an inflexible surface layer subject to cracking and detachment. It is not designed for long-term stability, and may discolour and deteriorate with age. In direct contact with the surface of an object it can be extremely difficult to remove and leaves an unsightly white residue.
- **Clear nail varnishes** have a variety of formulations and they are not designed for long-term stability and their ageing properties are unknown. However, in common with many

other polymers, they are likely to cross-link with age, resulting in embrittlement and discolouration, and possible loss of primary information.

- **Nail varnish remover** is not a substitute for laboratory-grade acetone. It contains other ingredients, such as perfume to mask the smell and oils to condition the nails, and may cause staining to object surfaces.
- Avoid as well:
 - Dymo labels
 - Felt markers, ballpoint pens
 - Straight pins or safety pins
 - Paper clips (metal or plastic)
 - Staples

All materials that are used to label archaeological finds must meet the following criteria

- Be as chemically stable as possible.
- Have excellent ageing characteristics to ensure the longevity and legibility of the label.
- Prevent absorption of marking inks by porous materials, such as unglazed ceramics or wood.
- Be removable, if for any reason the object must be renumbered or the number relocated

Positioning of labels and marks

- Avoid physically unstable surfaces. Also avoid placing labels or marks across a line of weakness or fracture.
- Never apply any self-adhesive label or tape, such as Sellotape or masking tape, to the surface of an object.
- Avoid surfaces where the mark is likely to be at risk from abrasion, such as surfaces on which it normally rests, or where touched during handling.
- Mark all detachable parts of an object.
- If one artefact is in a number of pieces, e.g. an axe in four pieces, label each piece with the object number followed by suffixes .1-.4, in order of size.

SELECTING AN APPROPRIATE METHOD

Many factors need to be considered when selecting the most appropriate marking technique for any specific object.

The selection of a marking technique is determined by the characteristics of the object or fragment that is going to be labelled, like surface stability, strength or resistance to tensional forces, porosity, roughness and flexibility.

- **How stable is the surface of the object?** If it is flaking, or corroding it could be impossible to mark the object.
- **How porous is the object?** If the porosity of the object is high, consult with a conservator. It is possible to label an object changing the concentration of B72, for example (see *Basic Techniques*)
- **How rough is the surface?** Very rough surfaces are difficult if not impossible to write on. Never use a glued-on label. Consult a conservator for advice.

All this information contributes to your decision of what is the best method of labelling and marking the object.

One of the most secure options is the Paraloid Sandwich Technique but if in doubt consult a conservator and/or the Museum.

BASIC TECHNIQUES

Paraloid Sandwich Technique

This technique is suitable for a range of objects with a stable, smooth and reasonably non-porous surface.

The Paraloid Sandwich Technique is more suitable for marking inorganic material than for marking organic material.

Mix up a solution of Paraloid B72 granules in acetone at 20% weight to volume (for example, 20g Paraloid B72 in 100ml acetone, or 20g Paraloid B72 and 80ml of acetone).

If appropriate prepare the area to be marked by removing surface dirt and grease with acetone or IMS.

Always do a solvent test on an unobtrusive area before applying a solvent to your object.

Allow the solvent to evaporate.

Check the surface for disturbances.

Paint a small area with a base coat of 20% Paraloid B72 in acetone.

Wait at least for 15 minutes until the base coat is dry.

Write the object number on the base coat using a recommended drawing ink or drawing pen (Indian ink and nib pens or Rotring ink and Rotring pens), using white ink for dark objects on which black lettering would not show up.

Wait up to 30 minutes until the ink is dry.

Apply a top coat of 20% Paraloid B72 in acetone on top of the object number.

Notes:

Paraloid B72 should be used for the base coat and the top coat of the Paraloid sandwich technique. Problems have been encountered because Rotring inks can dissolve when the top coat of Paraloid B72 is applied. This problem can be avoided by substituting the Paraloid B72

top coat with Paraloid B67 or by using a pen, which is not soluble in the B72, such as the Edding 780 paint marker.

Indian Ink, applied with the nib pen, is the best method though it is more laborious.

Water-immersed label

This method is used for objects in water, typically waterlogged glass or organic materials, and most categories of find from maritime sites.

Write the number on a Tyvek label, using a black waterproof ink marker such as those made by Staedler or Artline. Avoid pencil as it becomes illegible over time. Allow ink to dry for 24 hours. (Also check the ink for survival in water.). Place label in container with artefact, and seal.

(Refer to the UKIC publications *First Aid for Finds* and *First Aid for Marine Finds*, 3.1.3 *Labels for Wet Packaging*).

HEALTH AND SAFETY

Before using any technique, assess the health and safety risks associated with it. As with any work involving the use of potentially hazardous substances is important to consider the need for:

- Washing of hands after a labelling and marking session
- Adequate ventilation. (Particular care is needed when working with acetone as a highly flammable solvent).
- Disposal of waste
- Cleaning and care of equipment
- Hand and eye protection
- Safe storage of materials and safe methods of decanting them
- A ban on food, drink and smoking from the work area

Summary of risks and safety precautions

Certain materials used in labelling have known risks associated with them, like acetone, ethanol, white spirit and Paraloid B-72.

Acetone and ethanol and Paraloid B-72 are highly flammable and toxic by inhalation and if swallowed. Keep away from sources of ignition. No smoking. Avoid contact with skin.

White spirit is flammable, and harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes and skin. May cause sensitization by skin contact. May cause lung damage if swallowed. Wear suitable protective clothing (gloves).

USEFUL ADDRESSES - SUPPLIERS

Paraloid b72 and b67

Preservation Equipment Ltd (UK)

Tel: +44 1379647400

www.preservationequipment.com

Conservation Resources (UK) Ltd

Tel: +44 (0) 1865 747755

www.conservation-resources.co.uk

Art & stationery

M Kennedy & Sons Ltd

Dublin. Tel: 01 475 1749

www.kennedyart.com

O'Sullivan Graphics

Dublin 2. Tel: 01 478 9460

www.osullivangraphics.com

The labels should be completed **in permanent ink** as follows:

Exc. No.	<i>99 E 1234</i>
Co.	:Town/land: <i>Cork : Ballymore</i>
Site:	<i>1-2 Main Street</i>
Contents:	<i>Medieval Pottery</i> <i>[Contexts F1-F100]</i>
	CBC.N3. .
Box No.	<i>24</i> of <i>52</i>