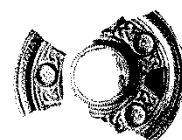


Pottery Recording Guide



A guide and protocol for recording pottery on the
Portable Antiquities Scheme Database



Portable
Antiquities
Scheme

www.finds.org.uk

Contents

Acknowledgements	3	6. List of vessel types	37
1. Introduction	4	6.1 The three basic vessel types	38
1.1 Conventions used in the Guide	4	6.2 Alphabetical list of vessel types	39-42
2. Pottery for the non-specialist	5	7. Other ceramic objects	43
2.1 Why record pottery?	5	7.1 Lighting equipment	43
2.2 Dating pottery	5	7.2 Fire covers (curfews)	43
2.3 What are clays, ceramics and pottery?	6	7.3 Moulds	43
1. Clays	6	7.4 Crucibles and cupels	44
2. Ceramics	6	7.5 Briquetage	44
3. Inclusions	7	7.6 Kiln furniture and kiln wasters	45-46
4. Pottery	7	7.7 Weights - spindle-whorls, loomweights, other ceramic weights	46-47
2.4 Finding help with your local pottery	7	7.8 Pipeclay objects - smoking pipes, figurines, dolls, hair-curlers	48-49
3. Recording pottery on the PAS database	8	7.9 Ceramic building material (CBM)	50
3.1 The Object Type field and the Classification fields	8	Brick and tile in the Roman world	50
3.2 The Object Description field—the basics	9	Medieval brick	51
3.3 The Material fields	9	Post-medieval brick	51
3.4 The Method of Manufacture field	10	Roman tile	52
3.5 The Surface Treatment field	11	Medieval tile	52-53
3.6 The Object Description field in detail	11	Post-medieval tile	53
1. Which part of the pot is it?	12-15	Field drains and drain pipes	54
List of the parts of a vessel	12-13	Daub, cob and clay lump	54
2. Describing the fabric: colour	15-16	8. Beware! Things that look like pottery, but aren't	55
3. Describing the fabric: hardness	16	Clay pigeon	55
4. Describing the fabric: feel	17	Asbestos sheeting	55
5. Describing the fabric: inclusions	17-18	Ironstones	55
Materials	19-20	9. Glossary	56-59
Peacock's key to inclusions	21-22	10. Bibliography and further reading	60
Frequency, size, shape, sorting	23	Useful books to own or download	60
6. Methods of manufacture	24	Full bibliography	60-61
7. Surface treatment and decoration	25-26	Useful websites	61
8. Recording the shape of a pot	27-28		
3.7 Model descriptions	29		
3.8 Recording the dimensions	30		
4. Illustrating pottery	30		
4.1 Drawing pottery	30-32		
4.2 Photographing pottery	33		
4.3 Combining photography and drawings	34		
5. Recording large groups of ceramic finds	35		
5.1 What to record	35		
5.2 How many records to make	35		

Terms in italics can be found in the Glossary

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This guide is a work of synthesis, not research. It is based on the work of others, and we acknowledge the many scholars on whose efforts we have drawn. It has been necessary to simplify their work for a wider, non-specialist, audience and we hope that they will forgive the liberties that we have taken, and excuse any errors which have crept in.

People have been kind and generous in their support during the preparation of the this guide, and Kevin would like to thank in particular Rose Nicholson of the North Lincolnshire Museum in Scunthorpe, who was always willing to find examples of particular sherds from the Museum's extensive collections. Helen would like to thank Victoria Bryant, Mark Whyman and Andrew Rogerson in particular for reading the whole text and giving many invaluable suggestions, help and advice. Any errors that remain, of course, are entirely our responsibility.

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The images on the front cover are all taken from the Portable Antiquities Scheme's database. Other images from the database all have their PAS record number in the caption.

We have tried to ensure that all images are correctly credited, but if you spot a mistake, please e-mail info@finds.org.uk with the details, and we will endeavour to correct it.



Bronze Age pottery from the British Museum Bronze Age Guide, 1904.

1. Introduction

This guide is here to help the reader make records of pottery (ceramic vessels) on the Portable Antiquities Scheme's database. Our philosophy of recording is the same as any other archaeological recording—we aim to substitute the object itself with a thorough record. This record should fully describe the object, allowing a future reader to evaluate the record and if necessary re-identify the object.

We therefore aim to give the reader the tools to recognise, describe, draw and photograph pottery vessels. We look at what all pottery has in common; shape, materials, technology, decoration, colour and hardness. We will tell you what information to put in which field of a PAS record, and how to get this information out of your sherd.

This guide is not intended as a universal guide to pottery in Britain. What kinds of pottery were made when, and where, is a vast topic and better covered elsewhere (e.g. Laing 2014). Instead, it is designed to be practical; the aim is to allow recorders to describe and record pottery, not necessarily to identify it.

It is also not a guide to other ceramic items. Clay pipes, ceramic lamps and moulds, kiln furniture and so on are briefly noted towards the end with recommendations as to the object type to use, but are better covered in other PAS guides to these object types. Ceramic building material has a short section as well.

This guide should help you to record pottery of all dates. Don't be intimidated, just describe what you see. Pottery has a story to tell; it is not just sherds, but part of the lives of people. Look at it, and think about what it is telling us.



A woman decorating a pot on a foot-powered wheel. From a mid 15th-century German playing card (Kunsthistorisches Museum Vienna, acc. no. KK5105)



Medieval glazed jug handle, Lincoln.
Photo: Kevin Leahy

1.1 Conventions used in the Guide

Terms that should be used in the Object Type field are written in CAPITAL LETTERS, as this is how they appear on the database. Terms that should be used in other fields are in 'single inverted commas'.

Cross-references within the List of Parts of a Vessel (pp. 12-13) and the List of Vessel Types (pp. 39-42) are also in 'Single Inverted Commas', and given an initial capital letter.

The names of PAS database fields are given an initial capital letter (e.g. Sub-classification, Object Description, Length).

Words that are explained in the Glossary are in *italics*.

Many of the photographs in this guide are there to give an impression of a particular aspect of pottery, rather than to provide a record of it. They are artistic photographs rather than records, and so may not conform to the standards that the PAS expects of its record photographs.

2. Pottery for the non-specialist

2.1 Why record pottery?

Sherds of pottery are, to many people, not the most exciting of finds. But a sherd can be as archaeologically important as a coin, or even a hoard. This sherd (right) was picked up next to a footpath in Lincolnshire. It was the first find from that parish to be recorded by the Portable Antiquities Scheme .

Pottery is one of the mainstays of archaeology. Unlike metal, it doesn't corrode and it can't be melted down. So it is common, usually well preserved (even if broken) and can be dated. Even a single sherd is an indicator of human activity and should be recorded.

Unfortunately, however, most pottery is highly regionalised. Medieval Lincolnshire alone contained at least 29 ceramic zones, which present difficulties even to the specialist. Most of us don't have the time or the reference collections to allow us to become specialists. All we can do is to record what we see to the best of our ability, so that our data can be used by people with the detailed local knowledge. See p. 7 for how to find help with your local pottery types.



2.2 Dating pottery

Unlike coins, pottery does not bear a convenient date or a ruler's name. However, many years of excavation and analysis have established a sequence and dating for most pottery. Dates are based on pottery found either in historically dated deposits, or in deposits which contain coins or other, better dated, types of pottery.

There is the problem of 'residuality': pottery (and coins) can survive to become incorporated in later deposits. A back-filled hole might contain pieces of 20th-century pottery and a halfpenny of Victoria. Using the coin to date the pottery would result in a date over a century too early. But with care, and by making comparisons between sites, the problems caused by residuality can be minimised.

Once the experts have established the pottery types and given us a dated sequence, all we have to do is identify our finds as to type, and look up the date! Of course it is not that easy. Remember that we are not pottery specialists; what we do is record finds so well that they can be re-identified or re-dated if mistakes are made. We should concentrate on a good description, and accept that a precise date is a bonus.



Few pots are as well dated as this jug, with *sprigged* and stamped decoration celebrating Queen Victoria's Golden Jubilee in 1887 - but most sherds can be dated precisely enough to be useful.
Photo: Kevin Leahy

2.3 What are clays, ceramics and pottery?

1. Clays

Clay consists of a mass of tiny particles of aluminium silicate produced by the decomposition of igneous rocks (e.g. granite). Water mixed with the particles lubricates them so they slide over each other, making the clay plastic and easily modelled to practically any shape.

Primary clays, such as Cornish china clay, have remained close to their origin. As they are chemically pure, they give white *fabrics* which need a high firing temperature. Pipeclays and fireclays are relatively pure secondary clays with similar properties.

Secondary clays have been moved from their igneous source by water and glacial action. They contain impurities (particularly iron) which act as *fluxes*, reducing the temperature needed to fire them. The impurities also give colour to the clay, which can change on firing depending on the environment. Most secondary clays are used for making ceramic vessels, and so are known as potter's clay.



James Cross excavating a Roman kiln at Winterton, North Lincolnshire, 1868. Note the raised floor separating the pots from the firing chamber, and the wasters lying in the foreground.

2. Ceramics

When clay is fired, it undergoes permanent changes to become a ceramic. First it is air-dried, then firing starts slowly to steam off the remaining free water without cracking the pot.

Between 450°C and 700°C the chemically combined water of crystallization is driven off. At 900°C-1200°C the particles of a secondary clay start to fuse where they touch, giving an earthenware. As temperatures rise still higher, the clay particles melt and fuse more completely producing, at 1300°C-1400°C, a vitrified stoneware. If heating continues beyond this point, the particles eventually melt completely and the pot collapses.

The type of ceramic produced depends on the firing temperature, but the temperature needed depends on the type of clay and the *inclusions* in it. Inclusions are everything that is not the clay *matrix*. They can be naturally present, or can be added by the potter, when they are called *filler* or *temper*.

Ceramics can be defined as fired clays, so include tiles, bricks, daub, etc. which are collectively known as ceramic building materials or CBM. Other objects made from ceramic include tobacco pipes, wig-curlers and figurines (all made from pipeclay), and weights, spindle-whorls, lamps, fire-covers and briquetage (all made from potter's clay). Kiln furniture and moulds may be made from fireclay, which is particularly resistant to heat. See pp. 43-54 for other objects made from ceramic.

3. Inclusions

Inclusions are anything that isn't raw clay, either naturally present in the clay or added before it is used to make pots. Some fabrics contain more inclusions than clay.

Inclusions help in several ways:

- They make wet clay less sticky
- They reduce shrinkage
- They increase resistance to thermal shock
- They give pots strength before and during firing.

Inclusions are crucial in allowing us to describe and identify a pot fabrics. See pp. 17-23 for how to recognise and describe inclusions.



Clay is a plastic material and can be shaped into a wide variety of forms; not just pots, but remarkable objects such as this medieval ridge tile from Nottingham.

Photo: Kevin Leahy

4. Pottery

In *A Standard for Pottery Studies in Archaeology* (Barclay et al 2016, 1), pottery is defined as 'vessels made of fired clay, complete or fragmented'. 'Pot' probably comes from the Latin *potare*, to drink, so may originally have meant a drinking cup.

'Pottery' is also used by the PAS to mean the kind of ceramic that vessels are made from. It can be used as an adjective (e.g. a pottery bottle) or a noun (a sherd of pottery). It isn't used, however, as an object type, nor is it an option in the materials fields. See Chapter 3, pp. 8-30, for how to record pottery on the PAS database.

2.4 Finding help with your local pottery

Because pottery types are usually restricted to a small local area, many local units or museums have developed fabric series. These contain samples of each type of pottery identified from a particular area, with standard names and numbers. Using the standard terms in PAS records means that our data can be more easily used by specialists. Try to find out where the fabric series is held in your area, and make contact to see if the local experts can help.

The Worcestershire fabric series is on line at

<https://www.worcestershireceramics.org/>

with fabric descriptions for all types of pottery made in Worcestershire and many made outside, and lots of photographs. It is useful for all those recording pottery on the PAS database, not just in the West Midlands.



Middle Bronze Age urn. Its low-temperature firing gives a weak, soft, crumbly structure.

Photo: Kevin Leahy

3. Recording pottery on the PAS database

3.1 The Object type and the Classification fields

All pottery vessels should be recorded using VESSEL in the Object Type field. This is because vessel terminology is very complicated, varies between different periods, and is based on complete vessels rather than the fragments we deal with.

A vessel is primarily used as a container. VESSEL is used both for *hollow ware* (such as cups and bowls) and for *flat ware* (such as plates and saucers). There are some objects which can look similar to vessels, but are used primarily for lighting (lamps) or for covering fires (curfews, also known as fire-covers). Use LAMP and FIRE COVER for these, and see pp. 43-44 for more details on these objects.

We can use narrower terms for vessel types in the Sub-classification field. There is a list of these terms on pp. 39-42.

We use the Classification field to note the *ware* type, if this is known. So the fields can be read together as, for example, VESSEL—grey ware—bowl. When specifying the ware, use words not code (so Glazed Red Earthenware rather than GRE), and make sure that you use standard terminology.

This Guide does not define ware types. This is an immensely complex job which needs local expertise. Try to find the resources available in your area (<http://www.worcestershireceramics.org/> is an ideal example).

It's fine if you can identify a sherd, but few of us are pottery specialists, so **the best we can do is to record finds fully so that they can be recognised in the future.**



Fragment of Roman colander made from Vectis ware (IOW-235984)



Complete post-medieval single-handled bowl made from a pink-red fabric. It has an internal thin cream slip and clear glaze, both now worn. Both the base and foot ring are fire-blackened (SUR-16EB67)

3.2 The Object Description field—the basics

The first thing we need to know is which **part of the vessel** we are dealing with. Is it a fragment of rim, base, body, handle, spout, lid or lip? For definitions of the various parts of the vessel, and tips on recognising them, see pp. 12-15. 'Sherd' is a perfectly acceptable alternative to 'fragment' - you can use either term.

The next thing is to describe the fabric, because every sherd has a fabric that can be described, but not every sherd will allow you to reconstruct the form of the pot. The description of the fabric might include the **colour** and the **hardness**, but most importantly must include the **inclusions** (see pp. 15-23 for more on all of these aspects).

The **vessel type** can come next. Options might include jug, or jar, or bowl. See pp. 39-42 for a list of *vessel types* (also known as vessel classes; see Glossary for details). If you can reconstruct enough of the vessel to describe some of its **shape** (e.g. an upright rim, or a sagging base) then do.

Other aspects to check include any **surface treatment** and any **decoration** (see pp. 25-26 for these).

Many people like to add something about a vessel's **shaping technique** (e.g. wheel-thrown, hand-made or cast; see p. 24 for details). It can be difficult to be certain which technique was used, as a hand-made coil-built pot can be so finely finished that it looks wheel-thrown. **If you don't know, don't guess.**

The **shape of the sherd** (e.g. triangular or rectangular) is less important, but can be briefly described for the sake of completeness. What is more interesting is the **condition**; are the breaks fresh, slightly worn or very worn? (The word 'abraded' can be used if you think 'worn' is ambiguous). The degree of wear is tells us how long the sherd has been in the ploughsoil, and helps us understand whether it is from a manuring scatter, or perhaps a recently disturbed pit.

There is more detail on how to fill in the Object Description field on pp. 11-29.

3.3 The Material fields

The only Primary Material that we use for pottery is Ceramic. Prior to 2010 there were several other terms available for use (e.g. Pottery, Stoneware, Earthenware) but these records are now gradually being edited to use Ceramic. Also use Ceramic for ceramic building material (*CBM*), tobacco pipes, etc.

The Secondary Material field is rarely used for pottery vessels, but sometimes a vessel with an in-situ lead *pot mend* will require its use. Use the object type VESSEL for a pot mend even if none of the ceramic body survives.



Lead pot mends: SOM-90FA04 (left) and NLM-C96EB8 (right)

3.4 The Method of Manufacture field

How was the pot made? This field gives three options that can be used for pottery: wheel made, hand made and cast.

Firstly, do not worry too much about identifying the manufacturing technique. Concentrate on describing the sherd well, and if as a result of this the manufacturing technique becomes obvious, add it to the Method of Manufacture field. If it is not obvious, leave the field blank.

The Prehistoric Ceramics Research Group (*PCRG*)'s guidelines suggest that several hand techniques are considered, e.g. pinching, slab-building, ring-building and coil-building. Most prehistoric pottery seems to have been made by ring-building or coil-building; look out for cracks between the coils. Add any extra information to the Object Description field.

It can be difficult to tell if a pot has been wheel-thrown, as the *throwing rings* can be smoothed away, and hand-made vessels can be as neat and symmetrical as their wheel-thrown counterparts. Look not only for throwing rings but also for *wire marks* on the base. Wheels were used in the Roman world and re-introduced in the middle Anglo-Saxon period, but were not used universally for some time; there is a lot of hand-made pottery in some areas, particularly in the 11th and 12th centuries.

Several different techniques can be combined on a single vessel, particularly where there are added features such as handles or spouts. Some Samian ware and some late post-medieval pottery was cast in a mould.



Hand made Iron Age pot.
Photo: Kevin Leahy



The potter's wheel allows a high level of symmetry to be produced more easily. After throwing, the surface of this pot was *burnished* to give a fine finish before it was fired. Photo: Kevin Leahy



The decoration on this Samian ware bowl was made by pressing the clay into a mould. On drying it shrank, allowing the bowl to be removed from the mould. The glossy surface was produced by dipping the bowl into a fine liquid clay *slip*. Photo: Kevin Leahy

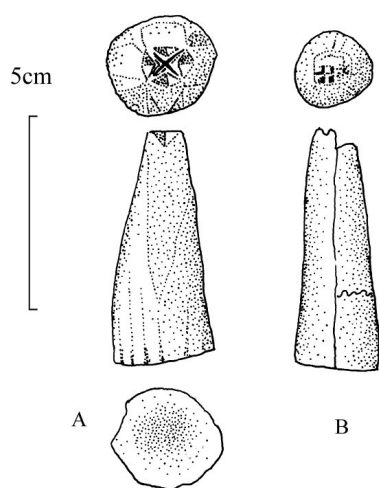
3.5 The Surface Treatment field

The Surface Treatment drop-down list does not contain any terms specifically designed for pottery. This is because many *wares* are defined (at least in part) by their surface treatments. If relevant, you can add details about the surface treatment to the Object Description field. See pp. 25-26 for more detail on surface treatments and decoration, and how to describe these aspects.

The only exception to this is for stamped pottery, for which it is useful to select 'Stamped' in the Surface Treatment field.



This hand-made early Anglo-Saxon cremation urn has stamped decoration together with many of the other methods commonly used to decorate pottery. While still workable, large bosses were modelled around its middle. Strips of clay (or *plastic* decoration) were applied and decorated with impressed notches. The upper part of the vessel bears scored lines. Photo: Kevin Leahy



Antler stamps for decorating Early Anglo-Saxon pottery. West Stow, Suffolk.

3.6 The Object Description field in detail

As for metal objects, the Object Description field should contain a complete description of the object. This will normally include all the information that you have put into the Method of Manufacture, Surface Treatment and Dimensions fields, plus a lot more besides. The next few pages contain sections on:

- identifying which part of the vessel you are dealing with
- describing the pottery *fabric*, including colour, hardness and inclusions
- identifying the techniques of manufacture, surface treatment and decoration, and describing the style of decoration
- describing the shape of the vessel, or at least the part of it that survives.



Medieval Humber ware jug
(YORYM-BFDCBB)

1. Which part of the pot is it?

There are many different types of fragment or *sherd* (both words are acceptable). Rim, base and body sherds are the main types, because every pot has a rim, base and body. The following glossary of vessel parts is adapted from MPRG 1998., 11.1-11.8, and is arranged in alphabetical order.

See p. 14 for how to recognise some commonly found vessel fragments.

List of the parts of a vessel

BASE. The lower part of the vessel, on which it rests. Bases can be flat, rounded (with no angle between body and convex base), sagging (with an angle between body and convex base), or concave. See p. 28 for details. A base can also have 'Feet' attached, or a 'Footring'.

BODY. The part of the pot that lies between the rim or neck, and the base, usually used of a fragment (so a 'body sherd'). The word 'body' is also used to mean the mix of clay and temper used to make a pot, so when referring to an area of a vessel, 'Wall' is often used as a synonym.

BUNG-HOLE. A hole towards the base of a vessel. It may be surrounded by a reinforcing flat circle of clay, but it does not otherwise project. Compare 'Spout'.

CARINATION. This is a poorly defined word, as is the similar 'Shoulder'. If you use either word, it may be a good idea to explain clearly what you mean by it. Both words generally mean a sharp curve or distinct angle in the wall of a pot (see illustration below).

FOOT RING. A band of clay around the edge of the base on the underside.

FOOT. Feet that project from the base are more common on a copper-alloy vessel (where we call them 'legs') but they can be found on ceramic vessels too. They can be applied or 'thumbed', i.e. pulled down from the base of the vessel rather than separately made.

HANDLE. Part of the pot used for carrying or suspending it. If you can, describe whether the handle is (or was) attached at both ends (called by the MPRG a 'loop handle') or only one (which the MPRG call a 'straight handle', even though it is often not straight). A strap handle has a width greater than its thickness, and a rod handle is narrower and/or thicker. For a lug handle, see 'Lug'. It is perfectly acceptable to just describe a handle, rather than using these jargon terms.

LEG. See *Foot*. The term 'leg' is used on a copper-alloy vessel, the term 'Foot' is used on a ceramic vessel.

(continued overleaf)



A carination can sometimes be confused with an angle between the base and the body. Usually the angle between base and body is sharper and more defined, but you may not always be able to tell them apart. This photo shows a carination (arrowed) from a late Iron Age grog-tempered bowl (BUC-F1B406).

1. Which part of the pot have you got? (continued)

List of the parts of a vessel (continued)

LID. A separate component which covers and closes the mouth of a vessel. Ceramic lids are not often recognised, perhaps because fragments are not easily distinguished from other parts of the vessel. Lids may also have been made from wood or tied-on leather.

LIP. This word is often used to mean a slightly pulled out or narrowed area of the rim used to pour the contents of a vessel. The MPRG, however, recommends the use of the word 'Spout' instead (1998, 11.8). They do recommend the use of 'lip' for a shallow pinched or pulled spout (1998, 11.8.2) and it is hard to reconcile these two pieces of advice. On the whole, it is probably best to stick to 'Spout'.

LUG. A lug is something that can be gripped and pulled, or a similar thing by which something can be held or supported. It has also come to mean something that sticks out (such as an ear). A sticking-out lump that can be used to lift a vessel is therefore a lug handle.

MOUTH. The void allowing entry to the inside of the vessel, surrounded by the 'Rim'. Also called the 'opening'.

NECK. If there is a tall narrowed part below the 'Rim', this is known as the neck. The opening at the top of the neck is the 'Mouth'.

RIM. This is normally the uppermost part of the vessel, the inner edge of which forms the 'Mouth'.

SHOULDER. This is a poorly defined word, as is the similar 'Carination'. If you use either word, it may be a good idea to explain clearly what you mean by it. Both words generally mean a sharp curve or distinct angle in the wall of a pot. See illustration on previous page.

SPOUT. A spout is any modification of the upper part of a vessel to allow pouring. Part of the rim can be pulled out, pinched or otherwise narrowed. Alternatively a hole can be made in the wall of the pot, over which a V-shaped or tubular spout can be applied. A hole at the base of a pot is a 'Bung-hole'. Compare 'Lip'.

WALL. The part of the pot that lies between the rim or neck, and the base, particularly when it is straight and/or vertical. Compare 'Body'.



Fragment of neck and handle from a 16th-century stoneware jug, with tall narrow neck with applied decoration, and one loop of a double-looped handle (HAMP-5ED82F).



1. Which part of the pot have you got? (continued)

Handle: most handle sherds have the original surface all around, but the ends broken. Handles can be a variety of shapes and there is not always a clear dividing line between strap handles, lug handles, loop handles, etc.

Rim sherd: any sherd which includes part of the rim. The rim will be unbroken and rounded, and can be of various shapes (see below).

Spout: like a rim sherd, but the spout is a small area with a tighter curve than the rest of the rim.



Base sherd: any sherd which includes part of the base. As with the body sherd, all edges must be broken, but there will usually be a clear angle between the side wall and the base. The base is usually flat or sagging (slightly convex). Sherds which consist of just the base, with no angle or body fragments, can be hard to recognise.

Body sherd: any sherd which does *not* include part of the rim or base (or handle, lip, spout, etc). All edges must be broken. Look out for angles which could distinguish a base from a body sherd.

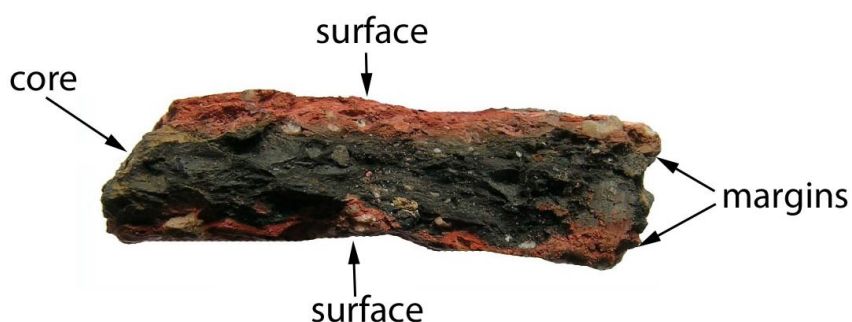
2. Describing the fabric: colour

The colour of a pot fabric depends on the purity of the clay, particularly the iron content and any organic material in the clay. These are both affected by the atmosphere in the kiln, which can be oxidising (with lots of oxygen to combine with elements in the clay) or reducing (with little oxygen, tending to remove oxygen atoms from compounds in the clay). So with different kiln conditions, the same clay can produce a yellow or red (oxidised) or a grey to black (reduced) fabric.

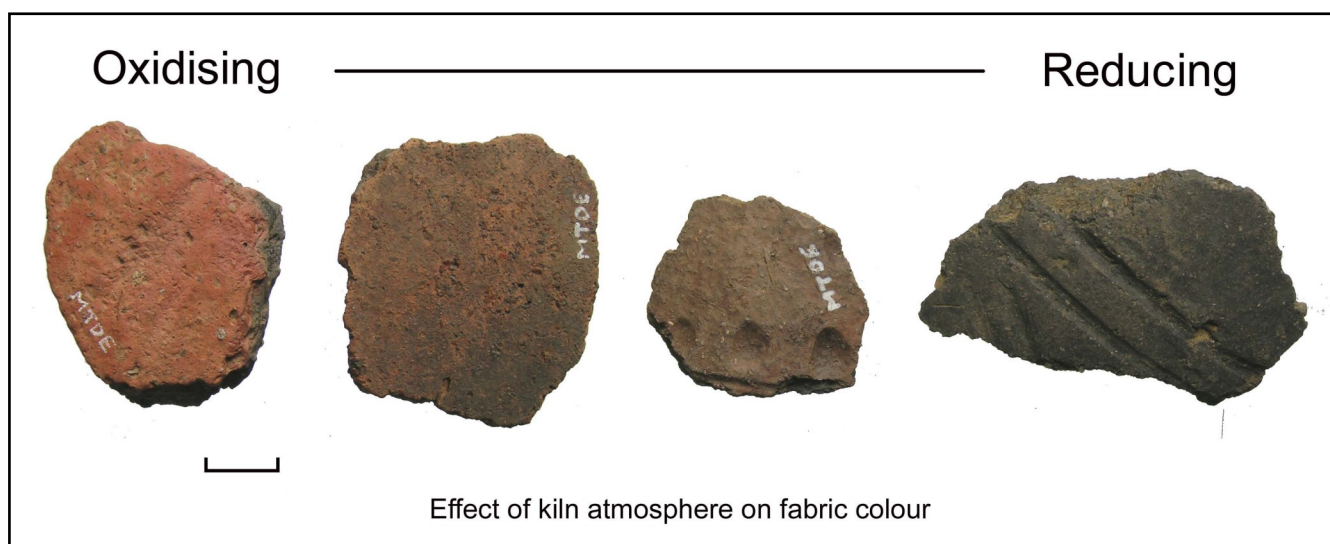
Pot fabrics can also have a *core* of a different colour, often caused by a short firing or a change in kiln atmosphere, giving the core different conditions to the outer part of the pot (the *margins*). The exterior or interior face of the vessel (the *surfaces*) can be different again, depending on kiln conditions and the use of the finished pot. Don't call the core the 'inside' and the margins the 'outside' because these terms can be confused with the exterior or interior of the vessel itself.

For those interested in the factors behind the different colours, see Orton et al. 1993, 69 and 134.

We don't need to work out exactly what has caused our colours—we just need to describe them, and any variation between core, margins and surface. Very precise standardised colour names are not needed; up to three words will do (e.g. dark greyish brown; orange; light yellow). We don't need to record fifty shades of reddish brown!



Firing failed to burn out the organic material in the core of this pot, giving a layered effect. Photo: Kevin Leahy



2. Describing the fabric: colour (continued)

Different colours can be present on the same pot, due to firing conditions or to burning and sooting during use.



If this pot broke into several fragments, they might look as if they were from different vessels. Photo: Kevin Leahy

3. Describing the fabric: hardness

The hardness of a fabric depends on how completely it is fired. The kiln temperature is obviously important, but so are the impurities in the clay which bring down the temperature at which the clay particles fuse (the *maturing point*). See p. 6 for more on this.

The scale of hardness developed by David Peacock (1977) is based on the Mohs scale of hardness for minerals. It has three levels:

- Soft: you can scratch it with your fingernail .
- Hard: cannot be scratched with a fingernail, but can be scratched with a knife.
- Very hard: cannot be scratched with a knife.

In practice these tests can be difficult to apply to a heterogenous material such as pottery. Not only can some parts of the pot be harder than others, you can also end up testing the strength of the bonds between the various components rather than the actual hardness of the ceramic *matrix* itself.

It is probably more useful to note if a fabric is particularly hard, or particularly soft, than to describe the hardness of every sherd you record.



SOFT - body sherd of Bronze Age beaker. Photo: Kevin Leahy



LON-1E43A1

VERY HARD - body sherd of stoneware Bartmann/Bellarmino jug. Photo: Kevin Leahy

4. Describing the fabric: feel

It is also sometimes worth recording the ‘feel’ of the surface of a sherd. The ‘feel’ is influenced by hardness, surface treatment and inclusions. Words often used include rough, smooth, soapy, powdery, etc. If your sherd appears porous, add this to the description. Also note if the inclusions are visible on the surface (exposed) or not (covered).



Middle Bronze Age urn, low-temperature firing giving a soft, weak, crumbly fabric.
Photo: Kevin Leahy



17th-century German stoneware jug, high-temperature firing giving a very hard, vitrified fabric. You could scratch yourself with a sherd of this vessel!
Photo: Kevin Leahy

5. Describing the fabric: inclusions

The inclusions are one of the most important aspects of a pot fabric. Inclusions are the material added to the raw clay. Some inclusions are natural, but most represent a deliberate choice on the part of the potter and can help assign it to a tradition or date. Deliberately added inclusions are called *fillers* or *tempers* (the MPRG recommends *temper*; MPRG 1998, 13.1).

This guide will help you to identify and describe inclusions, but there will always be some that you won't be able to recognise. It is also very easy to make mistakes. Because of this, you must describe what you see: if you record that an inclusion is 'dull black and *amorphous*' then you are likely to have told a specialist all they need to know.

A hand lens or loupe is helpful in examining the detail of the fabric; specialists also often use a binocular microscope. On the next few pages there are more details on how to recognise and identify inclusions, as well as how to describe them.

5. Describing the fabric: inclusions (continued)

Several aspects of the inclusions can be described:

- Material (or appearance, if the material is not clearly identifiable)
- Frequency
- Size
- Shape
- Sorting

Try to get an image of a freshly broken or thoroughly cleaned section (see box, and p. 33 for more on photographing pottery).

The next few pages cover how to identify your inclusions, as well as how to describe them.



The presence of quartz (white) and feldspar (pink) in this Early Anglo-Saxon sherd show that the temper was an acid igneous rock.

The feldspar appears to show flat faces and can be scratched with the point of a steel pin. The igneous rock comes from the Charnwood Forest area of Leicestershire. It is an inclusion which is widespread in the East Midlands, occurring in pottery dating from the Bronze Age to the Early Medieval periods.

Photo: Kevin Leahy

Fractures

A fresh break is used by pottery specialists to get detail on inclusions. Sometimes a fracture can have a laminated appearance, or look conchoidal (with ripples, similar to those seen in glass or flint fractures). The fracture normally breaks around the inclusions, so if the inclusions are small, the fracture will be smooth. The usual way to ensure a clean, fresh break is to break a small piece off with pliers.

However, there are ethical difficulties in fracturing sherds that have been lent to us for recording. They do not belong to us, and fracturing is a destructive technique.

If you would like to fracture a sherd, then ask permission first and make sure that the finder understands what you are doing. If you decide not to break the sherd, this is perfectly acceptable. Simply clean the best existing break well, and photograph that.



A freshly cleaned break (SOM-630E04). Hard-fired dark brown-grey-black fabric, with frequent sub-rounded to sub-angular translucent quartz inclusions, <2.5mm, frequent micaceous flecks and rarer ferrous inclusions, <2mm, and angular white feldspar, <3.0mm.

A freshly cleaned break (SOM-362C1C). Slightly laminar orange micaceous fabric with a reduced core, containing abundant coarse-grained sand temper. With very abundant sub-angular quartz, <2mm, sub-rounded white stone, <3.25mm, and occasional ferrous and probable crushed flint inclusions, <2.25mm.

5. Describing the fabric: inclusions (continued)

Materials

In the words of Orton and Hughes (1993, 75), 'A very wide range of materials can be and have been used as pottery temper, ranging from donkey dung to powdered slag. Since 1977 they have been identified in the UK mainly by using the key published by Peacock (1977). This key enables inclusions to be identified using a binocular microscope, a steel needle or blade, a pipette with a bottle of 10% dilute hydrochloric acid and a magnet.'

Not all of us have this equipment handy. For those that do, Peacock's key is also reproduced in Orton and Hughes (1993, 280-1) and there is a variant in this Guide, on p. 22. For those that don't, try a hand lens, a needle and a magnet. Gibson and Woods suggest using vinegar if 10% dilute hydrochloric acid is not available (1997, 191).

For more help, see below for photographs of sherds with different inclusions. Remember that it is often more difficult to identify inclusions than it is to identify pottery! If you can't identify the inclusions, at least you can describe them. Aim to include their colour, and tell us about their hardness if you can. Look at other PAS pottery records to see the level of description that they use.

Rocks, sand and minerals

Crushed rock is a frequent inclusion, and so in theory to identify the inclusions you will have to learn how to identify rocks. Even distinguishing cliffs of granite from those of sandstone, chalk or shale isn't easy without a background in geology, so these rocks will be very difficult to recognise when crushed into tiny fragments and baked into pottery. Thin-sections are often needed to confirm the identification.

So always describe fully what you see. A description without a definite identification is always better than a guess without supporting evidence.

Sand is very finely divided rock. It usually mainly consists of quartz, as this is very resistant to weathering.

Mica makes a fabric glitter and sparkle, so is easy to recognise.

Calcareous rocks, such as limestone, chalk and marble, will fizz when acid is added to them (see above for how to do this), and are slightly softer than siliceous rocks such as flint.



This sherd contains moderate inclusions of angular crushed limestone. There are also some sparse grains of quartz. Photo: Kevin Leahy



This sherd contains two tempers: sparse inclusions of poorly sorted angular flints **and** sparse inclusions of well sorted rounded quartz sand. Photo: Kevin Leahy



A fabric with three tempers. The black, angular material cannot be scratched with a knife and is iron slag. The amorphous light brown material is haematite, a slightly magnetic iron ore. There are also angular grains of quartz. All are of moderate frequency. Photo: Kevin Leahy

5. Describing the fabric: inclusions (continued)

Grog

Grog is fired ceramic which has been crushed or ground up. This is the only real way that ceramics can be recycled. Grog turns up in pottery of all dates. It is no harder than the rest of the fabric, but may be of a different colour. It usually has an angular or lumpy texture. It does not react with acid.



This sherd contains grog.
Photo: Kevin Leahy

Organics

Organics can include those that are hard (shell and *calcined* (burnt) bone), and those that are soft (dung, grass, chaff and straw).

Shell is *calcareous*, so will fizz when acid is applied. Calcined bone is not calcareous, so will not fizz.

Soft organics tend to burn out to produce voids.



This sherd contains moderate inclusions of poorly sorted crushed shell. Note its flat nature and traces of the original shell surface. Photo: Kevin Leahy

Voids

Organic tempers can burn out on firing, leaving voids. Alternatively, holes can be left when a calcareous temper, weakened by firing, has been dissolved by acid ground water.



This Anglo-Saxon sherd contained grass, which burnt out on firing.
Photo: Kevin Leahy



This sherd has a void from a cereal seed, which was probably accidentally incorporated into the fabric.
Photo: Kevin Leahy

These holes represent lumps of calcareous temper which dissolved in acid conditions. Photo: Kevin Leahy



5. Describing the fabric: inclusions (continued)

Peacock's key to pottery inclusions

Peacock's key is reproduced in nearly every basic book on pottery recording, usually with small modifications designed to make it easier to use. We have added our own tweaks and put it in tabular form, but if you would like to see the original, it's in Peacock 1977, 30-32.

How to use this key (over the page)

Look at the first column on the left-hand side. Which box in this column best describes the inclusions you have? When you have decided, move on to the second column and choose which of those options is correct. You may be offered a third, fourth or fifth choice. In the last box, down the right-hand side, will be the identity of the inclusion.

This key 'enables inclusions to be identified using a binocular microscope, a steel needle or blade, a pipette with a bottle of 10% dilute hydrochloric acid and a magnet' (Orton and Hughes 1993, 75-6) but a hand-lens, a needle and a magnet will certainly do.

***There are several things that I would expect to see in this key which I don't. They include Dung and Chaff (presumably voids that are different to Grass/Straw); Granite (= Feldspar?): Chalk. Specialist help is needed!



Two body sherds of probable Bronze Age to Iron Age date. Both fragments are of a coarse dark brown handmade fabric with a moderate density of angular well sorted flint, sand and organic inclusions. Both fragments are from large vessels, and the different thicknesses suggest they could come from two different vessels (KENT-7F66C4)

Voids visible in fabric	Sub-circular, flat or slightly dished, sometimes with striations				Shell		
	Ovals or spheres c. 1mm across				Oolitic limestone		
	Rhombs (crystals shaped like a cube, but with all faces lozengiform instead of square)				Calcite (from limestone, marble, stalactite etc)		
	Irregular				Limestone		
	Long, with striations down length				Grass or straw		
Inclusions that react with dilute hydrochloric acid (see p. 19)	Sub-circular, flat or slightly dished, laminated or blocky				Shell		
	Ovals or spheres	With concentric structure				Oolites from oolitic limestone	
		Without concentric structure				Limestone	
	White or clear rhombs (crystals shaped like a cube, but with all faces lozengiform instead of square)				Calcite (from limestone, marble, stalactite, etc)		
Irregular lumps, angular or rounded				Limestone			
Inclusions that do not react with acid	Homogeneous	Light coloured	Soft	Glistening flakes		White mica	
				Dull white or light grains, curved structure		Calcined bone	
			Hard (cannot be scratched with needle)	Clear glassy grains		Quartz (e.g. sand)	
				White glassy grains	Well distributed	Quartzite (metamorphic variety of quartz)	
					In clusters, not well cemented together	Sandstone (made of quartz sand)	
				Rectangular crystals		Feldspar	
				No visible crystal form, conchoidal fracture		Flint	
		Red or brown coloured	Earthy grains	Rounded	Slightly magnetic, sometimes bright ochre	Red iron ore (haematite)	
					Dull brown, clay-like	Clay pellets	
					Dull brown, clay-like, with laminations	Shale (or other meta-sediment)	
				Angular	Slightly magnetic, sometimes bright ochre	Red iron ore (haematite)	
					Dull red-brown, clay-like	Grog	
			Hard grains	Translucent		Quartz or quartzite	
				Opaque	Rectangular crystals	Feldspar	
					Conchoidal fractures	Flint	
				"hackly fracture, minute crystals"		"basic igneous rock" - basalt, dolerite and gabbro	
	Dark coloured or black	Glistening flakes		Dark mica			
		Dull grains	Soft, earthy, angular		Grog		
			Harder, flat grains, sometimes laminated		Slate (or other meta-sediment)		
			Hard, no crystals, conchoidal fracture, angular		Flint		
			"hackly fracture, formed of minute crystals"		"basic igneous rock" - basalt, dolerite and gabbro		
		Shiny grains	Metallic appearance, no crystals, often rounded		Black iron ore (magnetite)		
			Metallic appearance, angular, hard, black		Iron slag		
	Heterogeneous	Heterogeneous grains will be rock fragments difficult to identify without a thin section.					

5. Describing the fabric: inclusions (continued)

Inclusions: frequency

Words used to describe the frequency of inclusions are sparse, moderate and abundant. These terms are rarely precisely defined. 'Moderate' is the default density, unless the fabric looks like a gravel path (abundant) or the grains are widely spaced (sparse).

You can estimate the frequency of inclusions as a percentage of the fabric if you find this easier.

Inclusions: size

We usually record the maximum dimension visible, but some pottery experts also like to have the most common grain size (the modal grain size) recorded too.

Inclusions: shape

It is best to describe what you can see, while noting the descriptions in Peacock's key to inclusions (pp. 20-21). You may be able to see rounded or angular inclusions, or crystals or flakes, etc. 'Amorphous' means without shape, and may be a useful word.

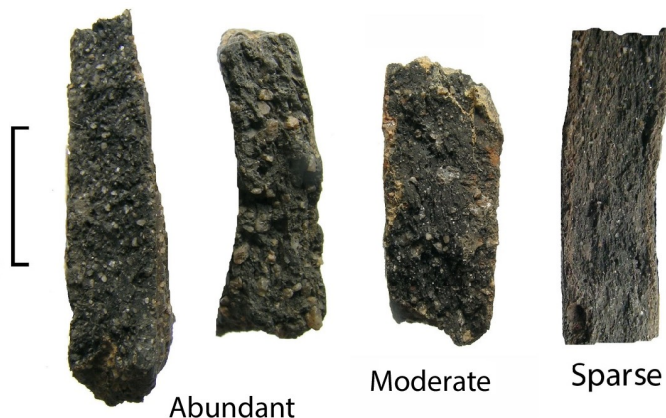
Inclusions: sorting

A fabric with well-sorted inclusions means that all the inclusions are of the same size. The opposite of well sorted is poorly sorted, but there is no good intermediate term. We really just need to describe the sorting. These phrases may help:

The inclusions are:

- well sorted
- moderately well sorted
- neither particularly well sorted nor particularly poorly sorted
- moderately poorly sorted
- poorly sorted

Don't worry too much about a very precise record of the frequency, size, shape and sorting of the inclusions. All of these can vary across a pot or even across a single sherd.



These samples with quartz temper provide a guide to assessing the density (or frequency) of tempers in ceramic fabrics. The grains in these sherds are sub-angular or rounded. Photo: Kevin Leahy

Multiple tempers

Of course the recipe for any particular fabric may include more than one temper. Don't forget to record the material (or appearance), frequency, size, shape and sorting for all of them.

6. Methods of manufacture

While describing the features of your sherd, look out for any evidence of the way in which it was made. There is usually not a great deal of evidence on one sherd, whether the pot was pinched, slab-built, ring-built, coil-built, cast or wheel-thrown; in addition, pots can be finished on a slow wheel or by the paddle-and-anvil method. Several of these techniques can be used on different parts of the same vessel.

Most prehistoric pottery seems to have been made by ring-building or coil-building; look out for cracks between the coils. It can be difficult to tell if a pot has been wheel-thrown, as the horizontal lines left by throwing can be smoothed away, and hand-made vessels can be as neat and symmetrical as their wheel-thrown counterparts.

So note the evidence for method(s) of manufacture if it is obvious, but otherwise do not worry about identifying any particular method.

See p. 7 for what to add to the Method of Manufacture field. There are three choices available for pottery: 'Wheel made', 'Hand made', or 'Cast'.

Secondary forming

A vessel can be made in several pieces that are then joined together or *applied* and then smoothed to join. If the join uses slip as an adhesive, this is known as *luting*.

A leather-hard vessel can be smoothed, thinned and tidied up considerably by trimming with a knife. Knife-trimming is often seen around the base. Alternatively a leather-hard pot can be improved by turning, normally upside-down on a wheel. If the turning-tool picks up a large *grit* it can carry it across the surface for a moment until it works free, creating a characteristic groove.



Jug with applied decoration, Nottingham, mid 13th century. Photo: Kevin Leahy

7. Surface treatment and decoration

There are an enormous number of possible decorative techniques and surface treatments that have been applied to pottery. Here is a brief list of some of the most common, and tips on describing them.



Medieval jug from Lincoln.
Copper may have been added to the glaze to give the strong green colour.
Photo: Kevin Leahy

Glaze—a glaze is a shiny, vitreous material, like glass. A glaze is chemically identical to a glass, and is formed from silica (from the clay) with a *flux* such as sodium, potassium, calcium, zinc, magnesium or lead. Colourants can also be added, but the iron in the clay will produce various colours (including yellow, red, brown, green and black) on its own. Glaze materials are ground up and either applied as a powder or as a suspension in water.

Glazes are not common before the 12th century, although they do exist on some rare Roman wares*, and 9th to 13th-century Stamford ware.

When describing a glaze, remember to say whether it is on one surface or both, and try to work out which is the interior and which the exterior. Glazes can be patchy (i.e. they do not cover the whole of the pot). They can also be smooth or pitted, thick or thin, and of course they can be of many different colours.

* Samian ware does not have a glaze—it has a gloss. See below for details on gloss.

Gloss—Some pottery, notably Samian ware, has a glossy rather than a glazed surface. A gloss is produced by dipping the vessel into a slip with a high proportion of very fine clay particles. The practical difference between a slip and a gloss is that a slip is applied to give a different colour, and a gloss is applied to give a sheen to the surface.



Sherd of Samian ware, ESS-D9B64B. Much of the gloss has worn off to reveal the paler fabric underneath.



Rim sherd of black burnished ware, LON-89C390.

Burnish—a burnished surface has been rubbed with a rounded tool while leather-hard. This compacts the surface and gives a characteristic shine. The result will vary according to how dry the pot was when the burnishing was carried out. Freehand burnishing leaves small facets, but burnishing can also be done on a wheel to produce a very smooth surface. Careful lighting helps to show the shine on a photograph.

Lustre—a glaze with an iridescent appearance, where some of the *flux* (often silver or copper) has been reduced so that the oxide has been converted to the metal. The technique was used in medieval Spain and the Middle East, but not until the 19th century in Britain.

7. Surface treatment and decoration (continued)

Slipped—a slip is a mixture of clay and water, perhaps with colourants and glossy minerals added. In medieval and post-medieval pottery the slip is usually painted on to the surface of a leather-hard pot, and medievalists and post-medievalists call this ‘slipped’ decoration. Slip is also used for **colour-coated** and **barbotine** decoration.

Slip-trailed—see **Barbotine**

Colour-coated—colour-coated is a term used by Romanists to describe pottery that has been dipped into a coloured slip. Compare **Slipped**.

Sgraffito—this technique is used on pottery which has been coated with slip of a contrasting colour. A design is cut through the slip to reveal the colour beneath. It can be done when the slip is wet or dry.

Barbotine (a term used only by Romanists—medievalists and post-medievalists use ‘slip-trailed’)—the barbotine or slip-trailing technique also uses slip, but a thicker slip which can be piped to form decoration slightly raised above the background surface. Barbotine or slip trails can be the same or a different colour.

Sprigged—like **barbotine**, sprigged decoration is slightly raised above the background surface, but instead of being made from slip, it is generally made in a mould and applied to the vessel using slip as a glue (this technique is called *luting*). The appearance of sprigging can be very similar to barbotine and so it is essential, after using the technical word, to fully describe what you see.

Applied—this is a catch-all term for any decoration made up of extra clay added to the surface. This could be a thick slip, or a clay sprig, strip or lump which could be luted or smoothed on. An applied strip is sometimes called a cordon. Applied decoration can be further modelled while still plastic.

Stamped—see **impressed**

Impressed—impressed decoration is pressed into the surface of the clay using a tool or fingers. Impressed decoration can be freehand, whereas **stamped** decoration uses a specially carved tool (a die stamp) to give a particular shape to the design. The use of a roulette or a cord sits between the two.

Incised—incised decoration is where a mark or groove is cut into the surface but not right through the clay. It includes combing (parallel lines incised using a tool with two or more teeth). Curved lines need the clay to be quite soft; very dry clay can only take straight lines. Other words for incised decoration include scoring and scratching; these are quite vague terms with no agreed definition.



Romano-British beaker with trailed white slip decoration. Using the word ‘barbotine’ for the decoration helps in searching, but the record must also include a full description. Photo: Kevin Leahy



Body sherd of early Anglo-Saxon pottery, WAW-4EA6D5. It has a dark mica-rich fabric, with an organic temper. There are two rows of decoration; three circular stamps with a central cross above, and a series of incised chevrons made up of two V shapes below. The rows of decoration are separated by horizontal incised lines.



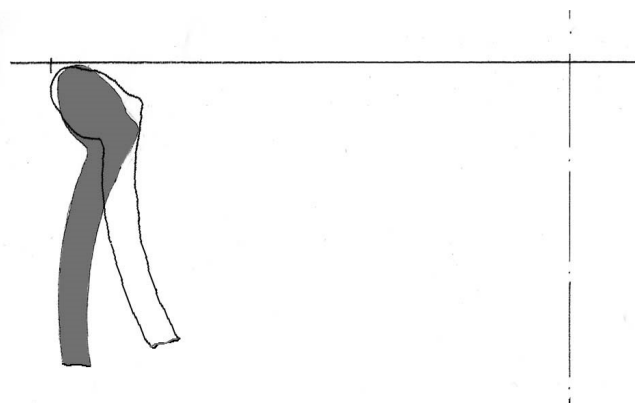
8. Recording the shape of a pot

Because pots are normally symmetrical, much of their shape can be reconstructed from just a sherd. Rims vary the most, so are the most useful in identifying the vessel type. It is important to record their cross-section by photography or by drawing (Chapter 4, pp. 30-34). If you can reconstruct the overall shape of the vessel, then describe this, including measurements (below and p. 30).

Rim sherds

Rims come in a variety of shapes and it is better to describe each one individually than to use a jargon term (such as 'everted').

The first thing you need to do is get your rim in the right alignment (also known as *attitude*). Put the rim upside down on a flat surface and rock it back and forth until the rim sits on the surface with minimum movement. In symmetrical wheel-thrown vessels, the rim should sit flush against the surface. This will show the angle at which the rim should be held and illustrated. It is crucial to judge this correctly; if the angle is mis-judged, the whole form of the pot can be mis-interpreted. For more detail on this, see Collett 2012, 6.

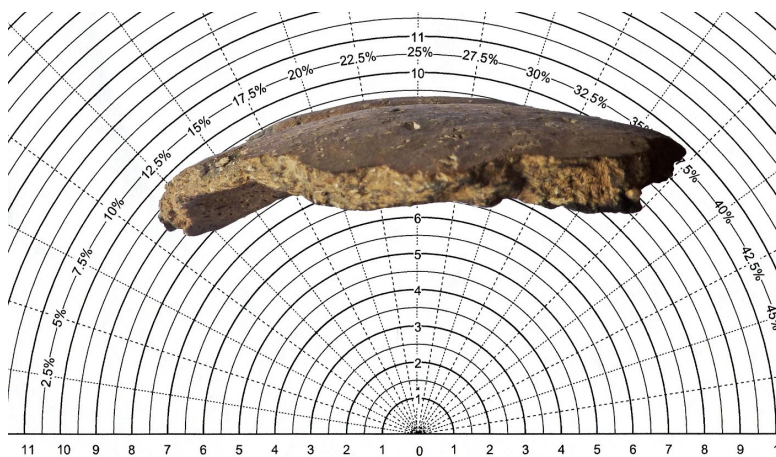


A sherd must be properly aligned to ensure that the cross-section is correct. The shaded cross-section is correct; the other one is misleading. Drawing: Kevin Leahy

Taking measurements using a radius chart

A radius chart allows you to reconstruct the radius (half the diameter) from a fragment of rim. Move the sherd until the external curve of the rim matches one of the arcs all along its length. Read off the radius (or the diameter—the charts vary) from the scale along the base line.

It is difficult to accurately determine the radius from a very short piece of rim. For irregular pots, it may be a case of best fit rather than perfect match.



You can download radius charts here: <http://potsherd.net/atlas/topics/tools>

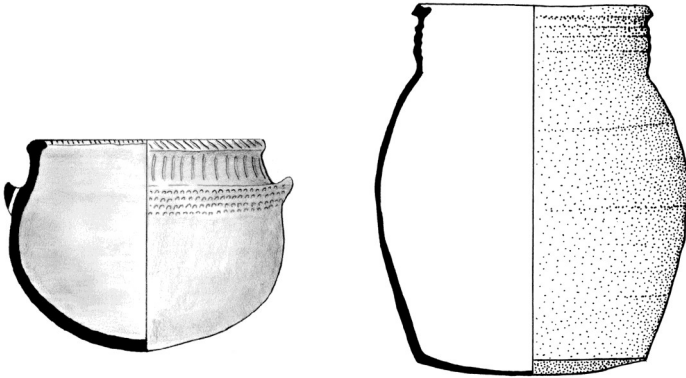
When photocopying or printing out a new radius chart, don't forget to check it with a ruler before using it.

If you have a very large pot, Collett (2012, 7) has a useful trick to work out the radius without using a chart.

8. Recording the shape of a pot (continued)

Base sherds

Bases do not vary so much in shape. Most bases are flat, but some can be sagging (slightly convex, with an angle between body and base) or rounded (more strongly convex, with no angle between body and base). Describe the angle between the base and any part of the body that survives.



Left: a rounded base on an early Neolithic decorated bowl. Centre: a sagging base on a Stamford ware jar of the 9th to 13th centuries.

Body sherds and the overall shape of the vessel

Sometimes you will get enough information from a body sherd to be able to reconstruct some of the shape of the vessel. Words for describing simple shapes include globular and cylindrical, tall and short; the *mouth* of the vessel can be narrow or wide. A tall narrow part just below the rim is a *neck*. Vessels with small mouths (and/or narrow necks) can also have *shoulders*, where the vessel widens below the rim before tapering again to the base. If the shoulders are angled, rather than rounded, they are often called a *carination*. See pp. 12-13 for more on the various parts of a pottery vessel.



13th-century glazed polychrome Saintonge ware jug, imported from south-west France. It has a wide mouth, applied spout, vertical handle attached at either end, , cylindrical body, and rounded base with deep footring. Photo: Kevin Leahy



Roman grey ware jar with wide mouth, short neck, rounded shoulders and a body which tapers to a narrow base.

It over-heated in the kiln, so the particles over-vitrified and sagged. Despite this, the pot has survived almost intact. Photo: Kevin Leahy

3.7 Model descriptions

Here is a colour-coded list of what should be included in a normal description, followed by some similarly colour-coded model descriptions. Note though that not every aspect can be recorded for every sherd.

Aspects to include

Part of the vessel (e.g. rim, handle)

Shaping method (e.g. wheel-thrown, slab-built)

Date

Ware type (if known)

Vessel type (e.g. bowl, jug)

Vessel shape

Fabric (colour, inclusions)

Surface treatment (e.g. burnishing, glaze)

Description of fragment, and reconstructed vessel if possible (including size)

Evidence for use (e.g. limescale, sooting)

Decoration

Condition

Conclusion

A description should read like these examples (which do not describe real objects!)

Rim sherd from a wheel-thrown globular medieval jug in a hard pale buff fabric with sparse angular quartz inclusions, partly covered on the exterior with a thick green glaze. The rim is upright and represents about 20% of the original rim, which was c. 105mm in diameter. There is no evidence for a spout. An incised line follows the edge of the rim about 10mm from the top. The sherd appears to be freshly broken. It is probably Woolpit White ware, which was made in Essex in the 13th century.

Large body sherd from a hand-made vessel, perhaps Iron Age. The fabric is soft, dark grey at the core with reddish brown margins. There are abundant hard white inclusions and two large oval voids. The exterior surface is compact and slightly shiny, perhaps burnished; some patches of sooting are visible. The sherd is quite strongly curved, suggesting that the vessel was probably small. The breaks are fresh.

Body sherd from a Roman Central Gaulish (Lezoux) or East Gaulish (Trier) Samian ware mortarium of Dragendorff 45 or 43 type (late 2nd to mid 3rd century AD). The small fragment has a pink/orange fabric, and the upper surface has embedding grits used as a grinding surface, made up predominantly of quartzite. Both the topside and the underside are coated in a red slip which is slightly abraded. The breaks are neither particularly fresh nor particularly worn. The underside is ridged concentrically and the sherd must have come from near the basal foot-ring.

3.8 Recording the dimensions

Don't forget to also add the dimensions of the sherd, including the weight. These will also need to be copied to the Object Description field, where you can explain how you have taken the dimensions. The length will normally be the longest dimension of the sherd, and the width will be perpendicular to this. The thickness will be the thickness of the sherd, not the vessel.

If you have a fairly complete vessel, the Length of the vessel is normally the distance from rim to base. The Diameter field can be used to record the maximum diameter, but be careful that you describe where this is in the Object Description field; is the rim the widest point, or is it a quarter or halfway down?

If you are including more than one sherd on a single record, then the weight of the individual sherds do not need to be recorded. Put the total weight in the 'Weight' field and copy this to the Description field.

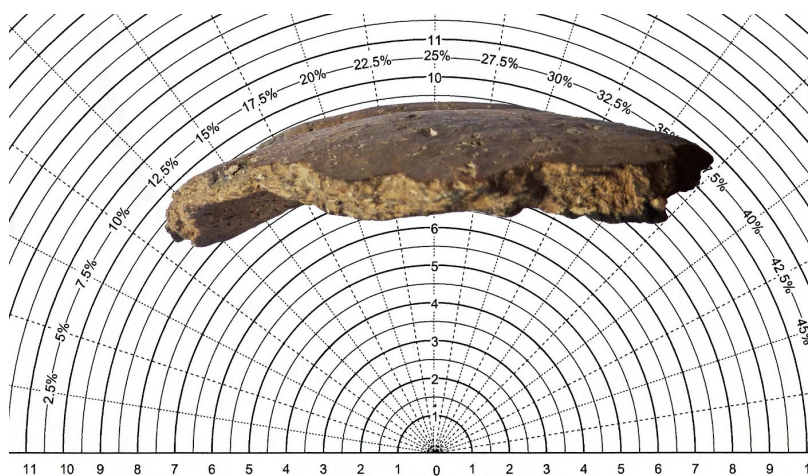
4. Illustrating pottery

4.1 Drawing pottery

It is surprisingly easy to record the cross-section of a sherd quickly by drawing it, even if you have little drawing skill. The illustration can encode a lot of information in a standard way. The next few pages show you how to draw a rim sherd; a base sherd can be drawn in exactly the same way. A profile gauge and a pair of outside calipers are useful extra pieces of equipment. All photos and drawings in this part of the guide are by Kevin Leahy.

STEP 1: Determine the rim measurement using a radius chart.
Move the sherd until the external curve of the rim matches one of the arcs along its whole length. Read off the radius from the scale along the base line.

For more on using a radius chart, see p. 27.

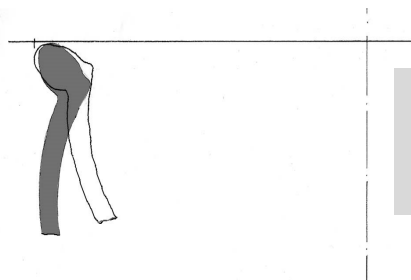


STEP 2: Mark the radius of the rim on a piece of paper as a straight line.



4.1 Drawing pottery (continued)

STEP 3: Place the rim sherd on the line, with the outer edge of the rim in the right place, and align it to its correct *attitude*. This means that the whole rim (points A, B and C) must be in a straight line, so that the rim will sit on a flat surface without rocking. See p. 27 for more on aligning a rim sherd.



If you don't get the rim in the right attitude, the whole shape of the pot will be wrong.

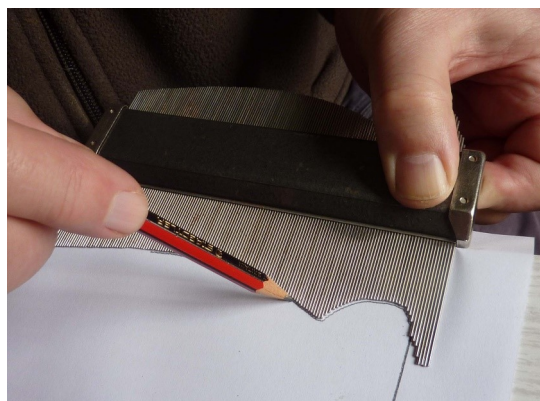


STEP 4: Then take your set-square (or piece of right-angled card) and place it against the sherd. Using the set-square (or right-angled corner of a piece of card) as a plumb-bob, mark off a few points down the length of the sherd on the paper to give the rough shape of the exterior of the pot.



STEP 5: If you have a profile gauge, push the teeth firmly but gently against the sherd to record its *profile*. Make sure that you press the gauge in at an angle pointing to the imaginary middle of the pot. Then align this profile on the points marked on the drawing, and draw the curve of the sherd, keeping the tips of the teeth against the paper to minimise inaccuracy.

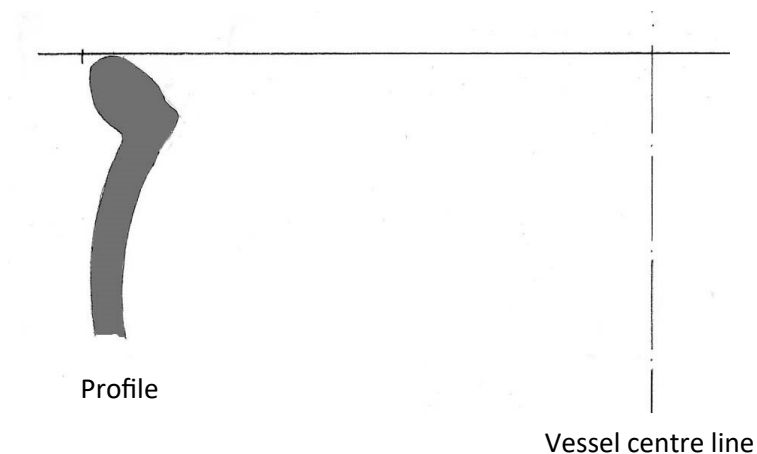
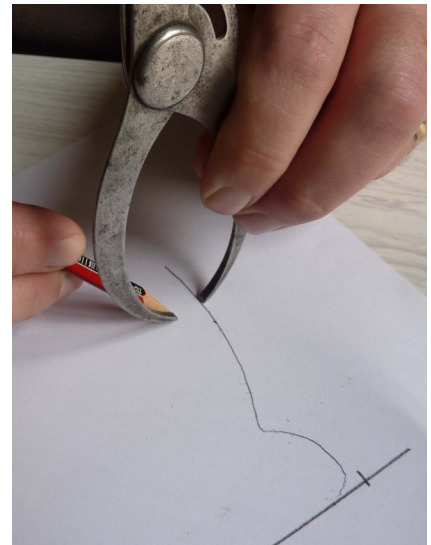
Profile gauges vary in their resistance to pressure—try to get one with fairly loose pins. Do not use a profile gauge on soft or crumbly pottery. If you do not have a profile gauge, follow Step 4, marking more points (at least every 10mm) and including important points such as changes in angle.



4.1 Drawing pottery (continued)



STEP 6: Using outside calipers, measure the thickness of the sherd at a few points down the length of the sherd, and add it to the drawing. Check measurements at important points such as changes in angle. This will give you the shape of the interior of the pot.



The completed cross-section, providing an accurate record of the form of the pot.

For more information on drawing pottery, see Collett 2012, a very useful short guide which is freely available here:

http://www.archaeologists.net/sites/default/files/10_Drawing_archaeological_pottery.pdf

4.2 Photographing pottery

When photographing a sherd, first ensure that it is in the right alignment or *attitude*.

For a rim sherd, put the rim upside down on a flat surface and rock it back and forth until the rim sits on the surface with minimum movement. In symmetrical wheel-thrown vessels, the rim should sit flush against the surface. This will show the angle at which the rim should be held and illustrated. For more detail on this, see Collett 2012, 6.

For a body sherd it can be more difficult, but using the decoration can help. In the same way as a rim should be horizontal, so should all the lines around the vessel parallel to the rim. If the camera is held vertically, the lines will look straight.

In addition to the basic straight-on view, in some cases a three-quarter, oblique view is useful to show the form of a sherd.

An image of the broken edge of a sherd is invaluable in allowing a fabric to be recognised. The scale bar, laid close to the section, will allow the size of the inclusions to be assessed. It is important that the break is clean; fresh breaks are the best.

See the Worcestershire ceramic database for some excellent photographs:

<https://www.worcestershireceramics.org/>



This photograph of this sherd of Samian ware (above) shows the horizontal lines around the vessel as curved. The sherd should be tilted so that it is in the correct attitude, and then the horizontal lines will be straight (below). Photos: Kevin Leahy



It is difficult to know exactly where in the vessel this sherd belongs, and so it is difficult to photograph it in the correct attitude. The best record possible in the circumstances has been made (DENO-1F4349).



N.B. Some of the photographs in this guide are there to give an impression of a particular aspect of pottery. They are artistic rather than record photographs, and so may not conform to the standards that the PAS expects of its record photographs.

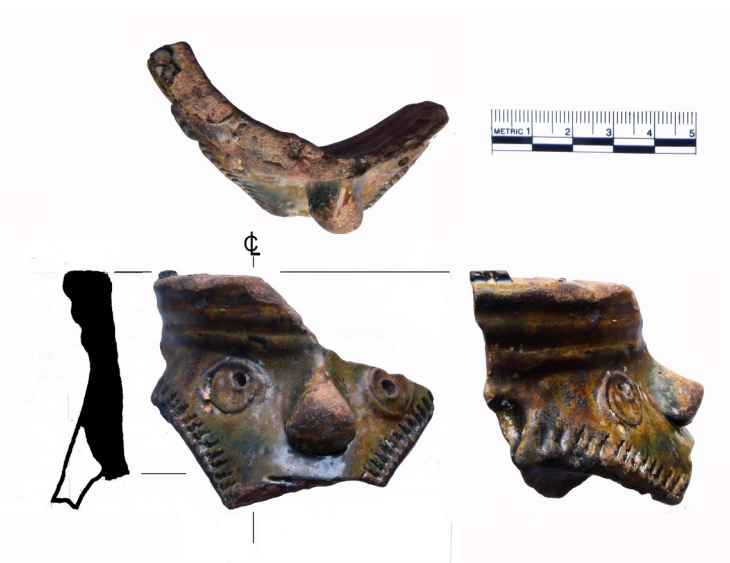
4.3 Combining photography and drawings

Some aspects of pottery, such as cross-sections of rims, are often best recorded by drawing.

Others, such as the cross-sections of handles, can *only* be recorded by drawing. It is perfectly acceptable to combine drawings and photographs on a single image, but it is not always easy to get the *projections* correct.



Above: Rim sherd from a Romano-British grey ware jar, illustrated by a combination of photography and drawing by Kevin Leahy.

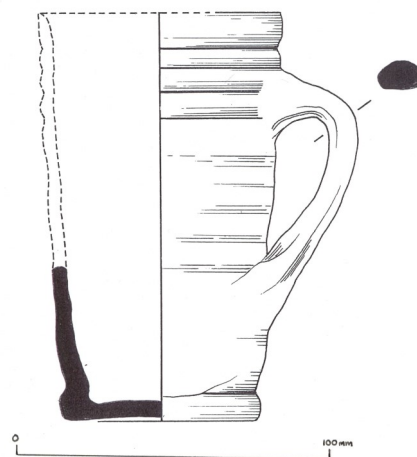


Left: Fragment of Scarborough jug, 13th or 14th century, illustrated by a combination of photography and drawing by Kevin Leahy.

How to add a handle cross-section to your image

Handles are usually shown to the right. The cross-section is shown next to the handle, with the outer surface uppermost. The image here shows a drawing, but it would be just as easy to combine the handle cross-section with a photograph.

Almost-complete one-handed mug made from red earthenware, 16th-17th century (ESS-17A9D0)



Sharp-eyed readers will note that the photograph of the left-hand side of these sherds has been put on the right-hand side of the image, which is not standard practice. It should go on the left, but this is also the standard place to put the cross-section. Adding the side view to the 'wrong' side also helps to draw the eye around to give an impression of the shape and appearance of the outside of the pot, which is traditionally put on the right-hand side of a pottery drawing.

This incorrect projection style should only be used when you have both a drawn cross-section and a photographed side view to accommodate. If you are simply showing a series of photographs, follow the normal projection, with the image of the left side on the left, the image of the right side on the right, a top view to the top and so on.

5. Recording large groups of ceramic finds

5.1 What to record

The PAS records finds made by members of the public, not finds from organised archaeological projects. Our database is not set up to record quantities of systematically collected objects such as a fieldwalking assemblage. Archaeological projects, including fieldwalking, should arrange their own recording and deposit the resulting archive with an HER.

If you feel you have to record a collection from an archaeological project, it is best to consult a Finds Adviser beforehand to work out the correct protocol together.

However, finds made by members of the public will sometimes include quite large groups, and so this page gives some hints on managing these. Examples of good records include ESS-17A9D0 (found when digging for a water main).

5.2 How many records to make per assemblage

Normally our rule is to make one record per object, but with pottery it is justifiable to have more than one sherd on a single record.

As a minimum, the PAS recommends that one record is made per fabric type or ware type and also per vessel type. A big assemblage therefore needs to be split first into fabric or ware, and then into vessel types. Group all of the same vessel type and the same fabric, and you can put the whole group on a single record.

You do not need to be sure that they come from the same single vessel, because the important thing is that the record can have the standard information added in the normal way. So the classification field must have only one ware type in it, and the sub-classification field must have only one vessel type in it.

All of the sherds that come from unidentifiable vessels (but the same fabric) can be put on the same record. Again, you do not need to be certain that they come from the same vessel, but they do need to be recordable in just one single way.

This will ensure that if a searcher is looking for all Roman greyware bowls, or all Late Medieval and Transitional Ware aquamaniles, they will be able to find them.

If you do not feel happy about identifying the ware type, you can put things that look similar, or whose fabric and vessel type can be described in similar terms, together on a single record. Or if you feel happier about simply creating one record for each sherd, this is perfectly acceptable.

When putting more than one sherd on a single record, the Description field must include:

- how many sherds the record contains, and what parts of the vessel(s) are represented (e.g. four body sherds and a handle, or 18 body, 34 rim and 12 base sherds)
- the total weight of the sherds in both the Weight field and the Description field; you don't need to record the weight of each individual sherd.
- lastly, don't forget to change the figure in the Quantity field.

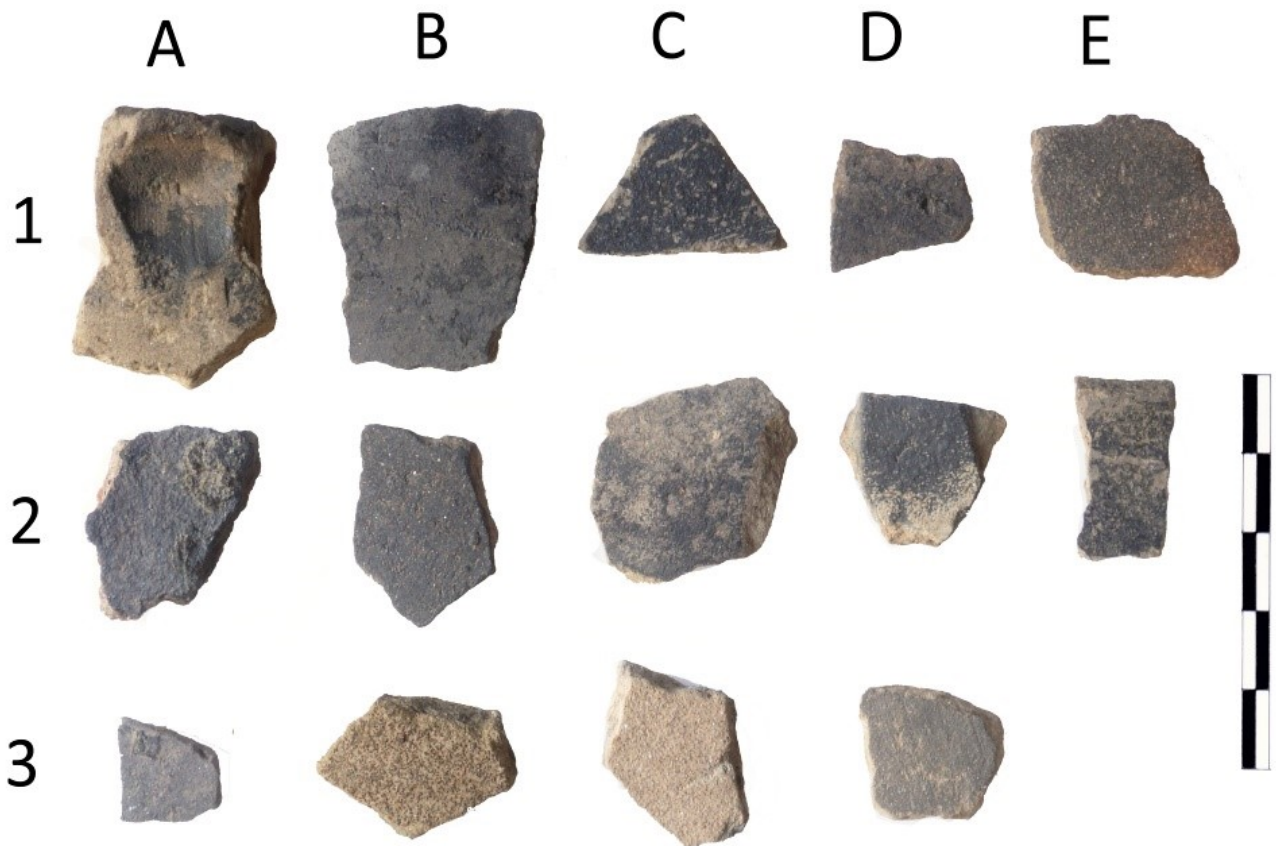
5.3 Photographing groups of ceramic finds

If you have decided to put a group of sherds, all of a single fabric, on a single record, you can photograph them together in a group as well. This makes it easier to link the photo to the description of each individual sherd.

In the photograph below, you can refer to sherd 1D or sherd E3 and it will be entirely clear which image is referred to.

Photograph both sides of each group of sherds so that you have two photographs to add to the record. It is not necessary to photograph a section of every single sherd, but do take one section photograph to record the fabric adequately.

Of course, if you have more than one fabric or more than one identifiable vessel type in your assemblage, you should be making more than one record.



Sherds laid out in a grid for photography. Use a 7 x 7 or a 5 x 5 grid which allows sherds to be easily identified without having to count across the rows or columns. Photos: Kevin Leahy

6. List of vessel types

This has been put together from the mda thesaurus, informed by several other sources. Most importantly, the Medieval Pottery Research Groups's *A Guide to the Classification of Medieval Ceramic Forms* (MPRG 1998) defines these terms precisely for medieval and early post-medieval types. There are fewer formal definitions for Roman and prehistoric vessel types, but some additional Roman forms have been gleaned from *Pottery in Roman Britain* (de la Bedoyère 2000) and there is much useful information, illustrations and references in the glossary in *Prehistoric Pottery for the Archaeologist* (Gibson and Woods 1997, 81-283).

There are also two European lists of vessel types, Kunow et al. 1986 and Balfet et al. 1988, both of which give translations of vessel names but no precise definitions.

The vessel type should be added to the Sub-classification field if possible, but in most cases it will not be possible to identify the vessel type from a single sherd and therefore the Sub-classification field should be left blank.

You will find the three basic divisions of vessel type on the next page, followed by an alphabetical list of individual vessel types.






Salt-glazed stoneware jugs. The glaze has a distinctive pitted 'orange-skin' surface. These tall jugs often have grooves around their bodies to support them during the high-temperature firing which was necessary to achieve the hard fabric. First imported into Britain in the early 14th century stone wares became common in the 16th and 17th centuries. Most came from production centres in the Rhineland, notably Cologne, Frechen, Langerwehe, Raeren and Westerwald. Photo from Jennings 1992, fig. 44.

6.1 The three basic vessel types

Most authorities agree that vessel types can be divided into groups based mainly on whether they are much taller than they are wide (jugs/flagons and bottles), or about the same in both height and diameter (jars), or wider than they are tall (bowls and dishes). Some unusually shaped vessels such as aquamaniles, however, cannot be fitted into this classification.

Below you will find a table of recommended vessel types, divided into three by their overall proportions. An alphabetical list of vessel types with full scope notes can be found on the next few pages.

Much taller than it is wide, often with the widest part low down (jug) Jug Flagon Bottle Amphora Mug Tankard Tyg Sprinkler Watering pot 	A little taller than it is wide (or about as tall as it is wide), often with the widest part high up (jar) Jar Beaker Cistern Pipkin Cauldron 	Wider than it is tall, widest at the rim and shallow (bowl) or very shallow (dish) Deeper forms: Bowl Cup Mortar Mortarium Pancheon Colander Chafing dish Shallower forms: Dish Tazza Dripping dish Frying pan Skillet Platter 
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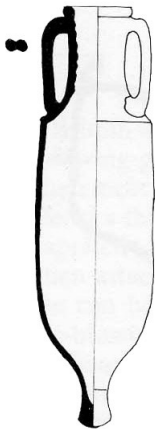
N.B. Do not be slavishly consistent about allocating a vessel type on the basis of proportion. We can all imagine a jar which is much taller than it is wide but still certainly a jar, or a bowl which is about as tall as it is wide but still clearly a bowl. There are shallow 'squat jugs' and deep bowls. The main thing is to make a good accurate descriptive record.

6.2 Alphabetical list of vessel types

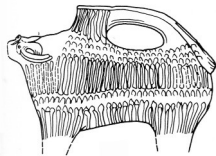
This alphabetical list includes all of the PAS's recommended vessel types ('preferred terms', in capital letters) and a few non-preferred terms (in lower-case). It does not contain all the terms in the mda thesaurus and the list of non-preferred terms is not exhaustive. Preferred terms should be used in the Object Description field and in the Sub-classification field. Non-preferred terms can be used in the Object Description field.

Most authorities also agree that 'functional' names (such as Storage Vessel, Drinking Vessel, Dripping Dish, Chamber Pot, Cooking Vessel, Flower Pot, Fuming Pot) tend to be subjective and therefore difficult to define precisely. So if you use a 'functional' name, you must of course add a full description, which should include (if possible) a more objective vessel type based on the proportions and shape.

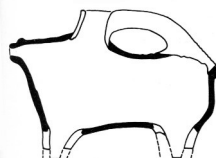
AMPHORA. Massive narrow-necked double-handled Roman storage and transportation vessel. Amphorae hold from 20 to 80 litres and are classified by their Dressel type (de la Bedoyère 2000, 36-39). Dressel 1 is known from the late Iron Age; the other types are Roman. Handmade from a distinctive thick oxidised gritty fabric.



AQUAMANILE. Ceramic version of a medieval metal vessel, usually zoomorphic, used for pouring water at the table. Drawing: McCarthy and Brooks 1988, no. 1164.

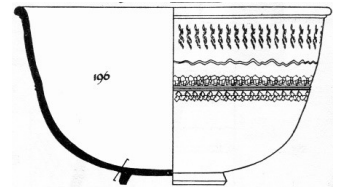


BEAKER. A tall, handle-less vessel. The term 'Beaker' often implies a presumed function as a drinking vessel (MPRG 1998, 6-6.1). Bronze Age beakers have thin walls and fine fabrics, are highly decorated and have wide mouths. A medieval or post-medieval beaker can have a pedestal base, either integrally thrown as part of the rest of the vessel, or separately made and applied.

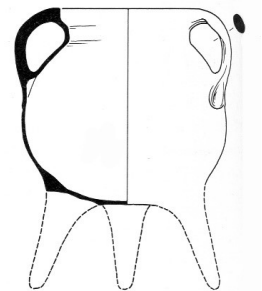


BOTTLE. Tall hollow-ware vessel with a narrow neck and no handle, and a flat base. Bottles are taller than they are wide. Use for 'Flask'.

BOWL. A bowl is defined by the MPRG (1998, 5.1) as having a rim diameter equal to or greater than the base diameter (so of open shape) and also shallower than it is wide. A bowl cannot be too shallow; its minimum depth is one-third its height. If a vessel is shallower than this, it is a 'Dish'. A bowl tends to have an *open* form. It is possible to add a footring, a pedestal base, a spout or one or more handles to a bowl. A small bowl with a single vertical loop handle is normally called a 'Cup'. Drawing: Gillam 1957, no. 196.



CAULDRON. A cauldron is a large vessel of 'Jar' proportions (diameter more or less equal to height), with three feet and a pair of vertical lug or loop handles. This type of vessel is also known in copper alloy, where the 'feet' are known as 'legs'. Drawing: McCarthy and Brooks 1988, no. 1344.

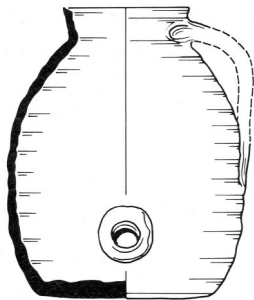


CHAFING DISH. Ceramic chafing dishes are similar in form to copper-alloy chafing dishes; a bowl on a pedestal base with dish-supports projecting upwards from the rim. The body of the chafing dish can be pierced with vents, and there may be one or more handles. Drawing: McCarthy and Brooks 1988, no. 1848.

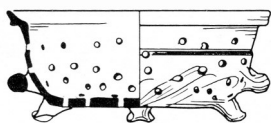


6.2 Alphabetical list of vessel types (continued)

CISTERN. A large vessel with a bung-hole just above the base is often known as a cistern. It may have one or two vertical loop handles, and be of jug or jar proportions. Drawing: McCarthy and Brooks 1988, no. 1787.



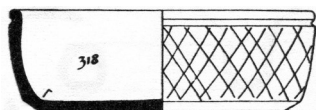
COLANDER. A 'Bowl' with multiple pierced holes in the vessel wall and base. Some have feet and/or one or more handles. Use 'Colander' for any type of strainer. They are usually medieval or early post-medieval, but can occasionally be Bronze Age or Iron Age. Drawing: McCarthy and Brooks 1988, no. 1940.



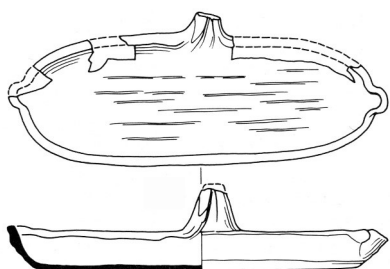
COSTREL. These come in a variety of shapes, but all have a narrow neck and are designed to be suspended from pierced lug handles with the neck upright.

CUP. A small 'Bowl' with a single vertical loop handle. Cups can have pedestal bases. Compare 'Mug'.

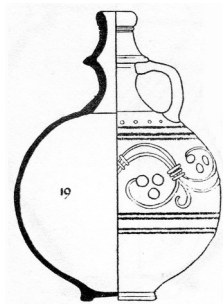
DISH. Defined by the MPRG (1998, 5.3) as having a rim diameter greater than the base diameter, and shallow; a dish should have a height between one-third and one-seventh of its rim diameter. If a vessel is deeper than this, it is a 'Bowl'. If it is even shallower, it may be a 'Platter'. Dishes can have pedestal bases or straight handles. Drawing: Gillam 1957, no. 318.



DRIPPING DISH. Dish with a straight handle (attached at one end only) and a pulled or pinched spout. Dripping dishes are normally not circular, but oval, semi-circular, rectangular, etc. Compare 'Frying pan'. Drawing: McCarthy and Brooks 1988, no. 1163.



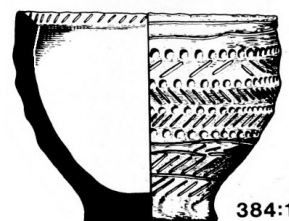
FLAGON. Romanists generally use the word 'Flagon' as a synonym for 'Jug'. Flagons are more standardised than jugs, all having globular bodies and narrow mouths. There are several types which develop over time: ring-necked, flange-necked, pinch-necked, etc. Flagon-type vessels with particularly large mouths are sometimes called 'Jug'. You may use either term, at your discretion. Drawing: Gillam 1957, no. 19.



FLASK. Medievalists use this word for a tall hollow-ware vessel with a narrow neck, no handle and a rounded base, such as a Martincamp flask (Jennings 1981, 74-6). Romanists use this word as a synonym for 'Bottle'. Because of the inconsistency, 'Flask' is best avoided as a general vessel type (although it can be used for Martincamp flasks).

FLOWER POT. It is easy to confuse fragments of modern flower pot with orange/red Roman earthenwares, such as Severn Valley ware. They both have the same uniform bright red colour, but flower pot has a slightly coarser fabric. It is also similar to post-medieval Staffordshire red wares, but look out for thin walls and careless finishing which indicate that you have a flower pot.

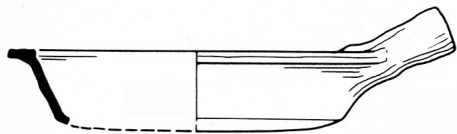
FOOD VESSEL. This term refers to a type of Bronze Age vessel only. It began as a functional name, used for a vessel like a 'Beaker', but which had a thickened body and/or rim and so was thought to be unsuitable for drinking from. It is now used for small thick-walled wide-mouthed jars and bowls, generally 10-20cm high, often richly decorated but of a coarser fabric than *Beakers*. Compare the larger 'Urn'. Drawing: Savory 1980, no. 384.



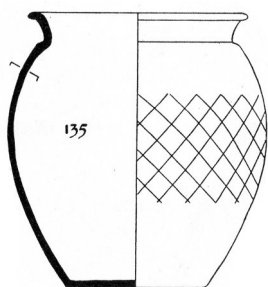
6.2 Alphabetical list of vessel types (continued)

FRYING PAN. A circular dish with a straight handle (attached at one end only). Similar vessels of different shapes are called 'Dripping dish'. If there are three feet attached, it is a 'Skillet'.

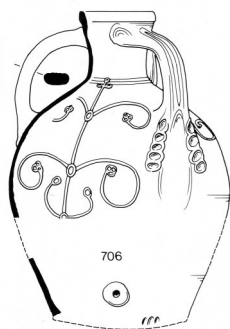
Drawing:
McCarthy
and Brooks
1988, no.
1197.



JAR. A jar is a hollow-ware vessel where the height is the same as the maximum diameter, or perhaps a little taller. The base and the mouth tend to be smaller than either the diameter or the height. A jar can have one or more loop handles (i.e. attached at both ends). For jars with straight handles (i.e. attached at only one end) see 'Pipkin'. For jars with feet, see 'Pipkin' and 'Cauldron'. Drawing: Gillam 1957, no. 135.

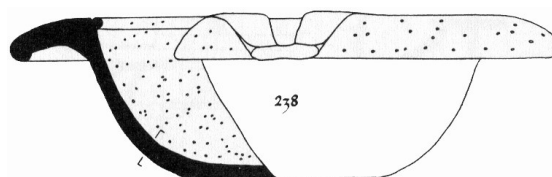


JUG. Tall hollow-ware vessel with at least one vertical loop handle (i.e. attached at both ends). A jug does not have to have a spout, but often does. Occasionally the word 'jug' will be used for a Roman vessel; see 'Flagon'. Large medieval jugs can have bung-holes. The MPRG define a 'squat jug' as one that is shorter than it is wide, and although this is inconsistent, it is subjectively reasonable. Use for 'Pitcher'. Drawing: McCarthy and Brooks 1988, no. 706.



MORTAR. A thick-walled bowl with a heavy base and rounded interior. It may have handles and/or a pulled or pinched spout. Ceramic mortars are rare; most mortars were made from stone or metal.

MORTARIUM. Large mixing and grinding bowl, essential for food preparation in the Roman style. Mortaria have heavy rims for easy gripping and lifting, grooves or grits on the interior surface to help in pulping, and normally a pulled spout. They can be stamped with the maker's name. Drawing: Gillam 1957, no. 238.



MUG. Tall vessel with straight sides and a vertical loop handle. A mug with two or more handles can be called a 'Tyg' and a large mug can be called a 'Tankard'.

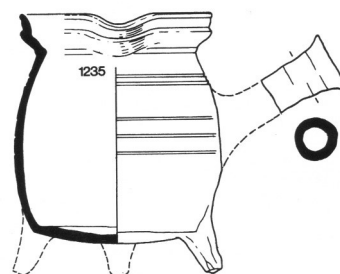
PANCHEON. A

large open bowl with a glazed interior and straight or concave walls. Drawing:

McCarthy and Brooks 1988, no. 1844.



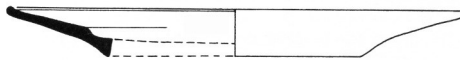
PIPKIN. A pipkin is a jar with a straight handle (i.e. attached at only one end). They often also have three feet. This type of vessel is also known in copper alloy, when it is known as a posnet (Butler and Green 2003, 9). A shallower version of the pipkin is a 'Skillet'. Drawing: Jennings 1981, no. 1235.



Pitcher. This term is often used interchangeably with 'Jug' and should be avoided. Use 'Jug' instead.

6.2 Alphabetical list of vessel types (continued)

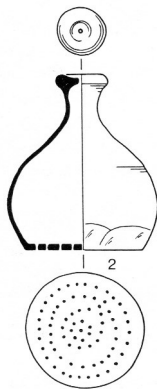
PLATE. A very flat dish with a long sloping rim. The MPRG (1998, 5.4) recommend that this term should only be used for post-medieval vessels with an obvious similarity to modern plates. If you have something older or more unusual which has a height less than one-seventh of its diameter, use 'Platter'. Drawing: Jennings 1981, no. 1519.



PLATTER. This word has been used by prehistorians and Romanists to mean a flatware vessel. As 'Dish' is defined as having a height between one-third and one-seventh of its rim diameter (MPRG 1998), we could define a platter as a vessel having a height less than one-seventh of its rim diameter. The drawing shows a Roman platter with a footring; Johns 1971, fig. 2.



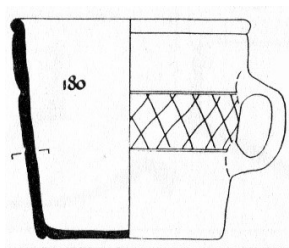
SKILLET. A circular bowl or dish with a straight handle (attached at one end only) and three feet. If the vessel is too deep to be classified as a bowl, it is a 'Pipkin'. If the vessel has a handle but no feet, it is a 'Frying Pan'.



SPRINKLER. A narrow-necked jug (with handle) or bottle (without handle) with multiple holes pierced through the base only. The mouth is very small and can be entirely covered by the thumb, to control the sprinkling of water. Compare 'Watering pot'. Drawing: McCarthy and Brooks 1988, fig. 59.2.

Strainer. See 'Colander'.

TANKARD. A large 'Mug', so a large tall vessel with straight sides and a vertical loop handle. Roman tankards are wide and can have incised decoration (see drawing); post-medieval tankards are tall and narrow, sometimes with metal lids. Drawing: Gillam 1957, no. 180.



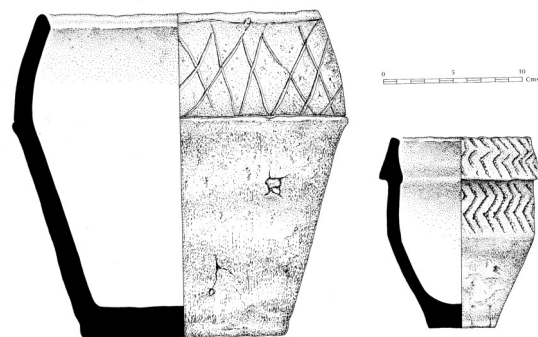
TAZZA. A dish with a pedestal foot. Tazze are known from the late Iron Age, Roman and medieval periods.

TRIPOD VESSEL. Medieval and post-medieval vessels with three feet may be 'Cauldron', a 'Pipkin' or a 'Skillet'. If you do not know which vessel type to choose, leave the Sub-classification field blank and use the term 'Tripod vessel' in the Object Description field. There are also occasional Bronze and Iron Age tripod vessels.

TYG. A 'Mug' with more than one handle can be called a 'Tyg'. Drawing: McCarthy and Brooks 1988, no. 1759.



URN. This term began as a functional name for a vessel containing cremated human remains. It is now used for large Bronze Age vessels of 'Jar' proportions (slightly taller than they are wide) with a wide mouth and often a narrowed foot, used both in domestic and funerary contexts. Urns can be of various shapes: barrel, biconical, bucket, collared, cordoned, corrugated. Compare the smaller 'Food Vessel' and 'Beaker'.



VASE. When used of a modern vessel, this is a functional term meaning a vessel used to hold cut flowers or foliage. It is also sometimes used of medium-sized Bronze Age vessels (such as Yorkshire vases, ridged vases, Irish vases), where it appears to mean the same as 'Jar'.

WATERING POT. A jug with single handle, and a perforated rose of watering-can type attached to the shoulder, similar to watering cans in use today. Compare 'Sprinkler', which has no handle.

7. Other ceramic objects

7.1 Lighting equipment

Lamps and candle-holders can be made from ceramic as well as from metal. A good range of Roman lamps is shown in Crummy 1983, and there is a useful discussion of medieval lighting in Egan 1998. Lighting equipment of all materials is covered in the PAS on-line Finds Recording Guides; object types to use include LAMP and CANDLE HOLDER.



Roman pottery lamps were cast in moulds. They are uncommon in Roman Britain, probably reflecting the high cost of imported olive oil. Photo: Kevin Leahy

7.2 Fire-covers

Fire-covers are also called 'curfew', and were used to safely cover a fire at night. They are massive domed objects with a handle on the top, and sometimes soot traces. Use the object type FIRE COVER.

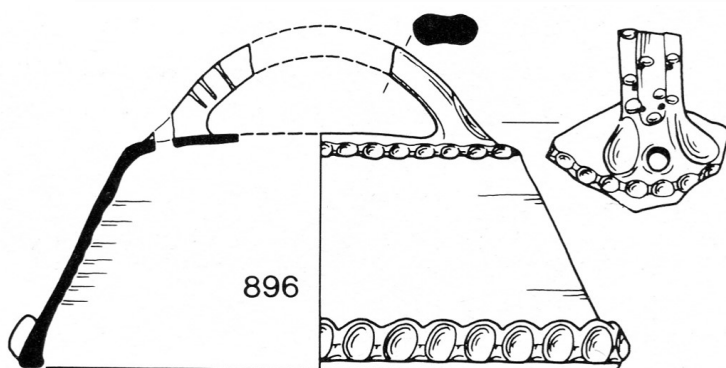


Photo and drawing above: Kevin Leahy. Drawing below: McCarthy and Brooks 1988, no. 896.

7.3 Moulds

Moulds are occasionally found made from ceramic, but more often from stone. It may be that ceramic moulds were simply too fragile to survive in ploughsoil. Coin moulds, which are more robust, seem to be one of the commoner types of ceramic moulds to survive. Use the object type MOULD or, for coin moulds, COIN MOULD.



Fragments of clay mould. Note the blackened surfaces. Photo: Kevin Leahy



Coin moulds were used in the making of Iron Age coins (above) and Roman coin forgeries. Photo: Kevin Leahy

7.4 Crucibles and cupels

Although both crucibles and cupels are in a sense vessels, they have a specialist industrial use. Both are small and can withstand high temperatures.

Crucibles were used in metalworking and enamelling and are made from refractory clays. They are usually deep with a conical base. Use the object type CRUCIBLE.

Cupels had a specialist use in refining and testing gold or silver and have to be absorbent; they are normally made of ground-up burnt bone or antler, but can occasionally be made from ceramic. They are much shallower than crucibles and can have residues, particularly lead oxide (also called 'litharge'), absorbed into their surface. Use the object type CUPEL.



Left: Early-medieval crucible from Barrow on Humber, Lincs. Note the slag on the inside of the crucible.

Photo: Kevin Leahy

Right: Post-medieval ceramic cupel from London (LON-A1B2E3)

7.5 Briquetage

Briquetage is a collective term used for items used in the manufacture of salt; the word was coined in 1740 and means 'brick-like material'. Briquetage is made from a distinctive, very coarse ceramic, and the most common forms are square-section pedestals and simple shallow evaporation tanks.

Briquetage is known mainly from the late Iron Age and Roman periods; later on, salt was boiled in lead or iron pans (Harding 2013, 30). There is some development over time both in fabric and in shape, so a good description of both is absolutely essential. Use the object type BRIQUETAGE.

The tanks or troughs were often broken while extracting the salt, so large quantities of briquetage can build up at sites that were used again and again. Briquetage is found all over the country, often surprisingly far from an obvious salt source, so could also have been used to transport the finished product (Harding 2013, 84, 96).



Iron Age briquetage from Lincolnshire. The pedestals supported clay troughs over a fire, which heated seawater to extract the salt.

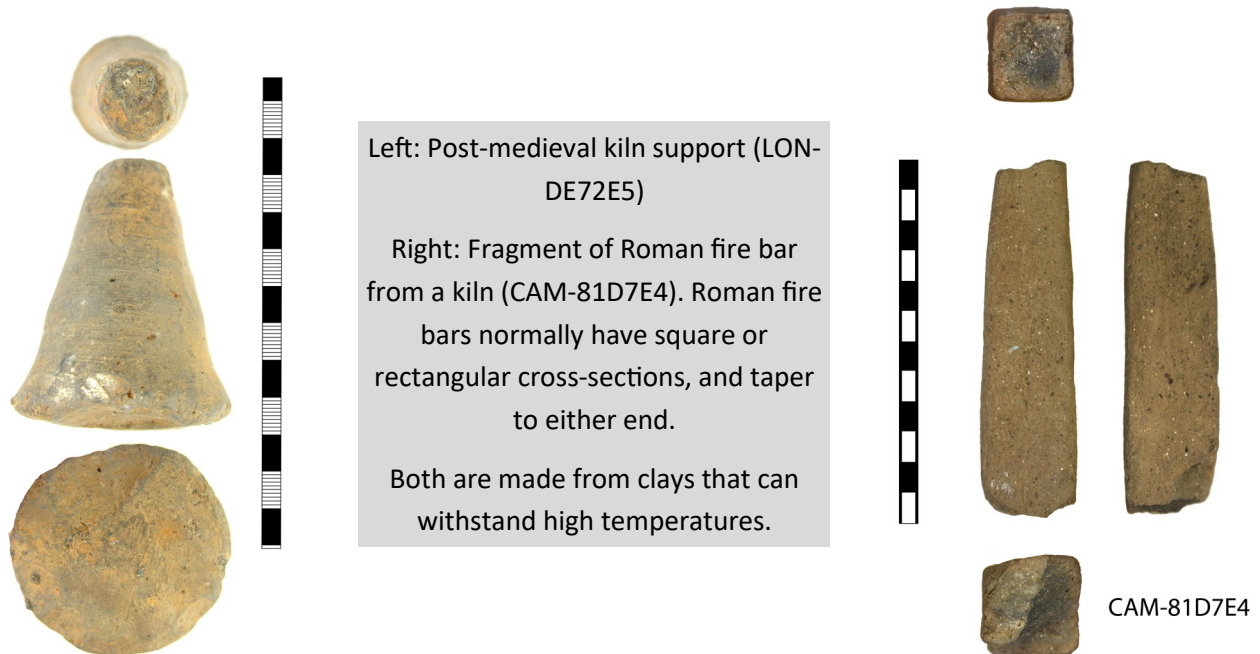
In other places, brine from springs was evaporated.

Photo: Kevin Leahy

7.6 Kiln furniture and kiln wasters

A pottery kiln can be a complicated structure (see picture on p. 6). It is usually a pit lined with clay to hold the fire, with a floor and/or supports to hold the pots to be fired. The parts that may survive to be found archaeologically include the kiln lining, fire bars (also called kiln bars) to support the pots yet let hot gases circulate, and spacers to prevent the pots touching. Use the object type KILN FURNITURE for all of these fragments of kiln.

It can be difficult to distinguish isolated fragments of briquetage from isolated fragments of kiln bar.



Kiln 'wasters' are also useful evidence of kiln sites. Wasters are items fired in the kiln which have not survived the firing process intact, and can be recognised from several characteristics. Firstly, if an oxidised or reduced surface continues over a break, this means that the break occurred during firing, perhaps because of a pocket of air in the clay expanding and blowing the object apart. This is most clearly seen when the oxidised or reduced surface has a single, homogeneous colour, but the other breaks have a layered appearance, with a core of a different colour (see 'Describing the fabric: colour' on p. 9 above). Secondly, if the kiln is too hot, the fabric will vitrify to the point that it cannot support itself, and the result is sagging shapes and a melted appearance to the wasters. It is also possible for vessels which touch in the kiln to fuse together if the temperatures are too high.

Use the object type VESSEL (unless the waster is not from a vessel, in which case use the appropriate object type) and, if you can, put the fabric or ware type in the Classification field and the vessel type in the Sub-classification field as normal. Add 'kiln waster' in the Object Description field to flag up these interesting finds. For brick and tile kilns, kiln structure and wasters, see the next page.



Roman greyware waster (NLM-A91DDB). The firing temperature was too high and the pot has begun to vitrify and collapse.

7.6 Kiln furniture and kiln wasters (continued)

Brick and tile kilns are made as permanent structures from c. 1700 AD. They consist only of kiln structure, which as fragments can't normally be distinguished from any other type of kiln structure. They don't produce kiln furniture, because any supports and so on are made from the bricks and tiles themselves.

There are also brick and tile kiln wasters, which turn up as concentrations of fragments. These should be treated in exactly the same way—use the object type BRICK or TILE (etc) and put 'waster' in the Object Description field.



Brick kiln of c. 1700 excavated at Oxburgh Hall, Norfolk, showing kiln structure made of bricks. Photo: Angus Wainwright

7.7 Weights

Spindle-whorls

Spindle-whorls are small circular objects which are used with drop spindles to act as flywheels. Do not confuse these with the much larger loomweights (below). Spindle-whorls recorded on the PAS database are most commonly made from lead, but they can be made from ceramic, either shaped from potsherds (in which case they will be thin, and either flat or gently curved) or newly made from fired clay.

Walton Rogers points out that Iron Age and Roman spindles tend have smaller diameters (mostly 4-6mm) than early Anglo-Saxon (6-9mm), late Anglo-Saxon and medieval examples (many over 9mm). The size of the central hole is not enough on its own, however, to date a whorl. The weights of spindle-whorls from Anglo-Saxon excavations varies between 10g and 55g (Walton Rogers 2007, 23-26). Drop spindles appear to have gone out of use during the 16th century (Margeson 1993, 184). Use the object type SPINDLE WHORL and consult the on-line guide.



Spindle-whorls made from a re-used Samian ware sherd (PUBLIC-DD674B) and from fired clay with quartz inclusions (LIN-952ED6).

7.7 Weights (continued)

Loomweights

Loomweights were used to hold the warp threads taut on a warp-weighted loom. They should not be confused with the much smaller spindle-whorls; loomweights tend to weigh between 150g and 550g (Walton Rogers 2007, 28-32). Loomweights can be unfired and tend not to survive well in the ploughsoil; they are most commonly found in Anglo-Saxon settlement excavations.

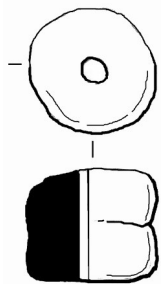


The warp-weighted loom began to be replaced by the two-beam vertical loom in the 10th century AD (Walton Rogers 2007, 34) and so most loomweights will be broadly early-medieval. Use the object type LOOMWEIGHT.

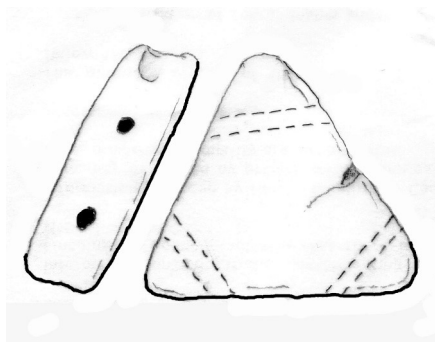
Anglo-Saxon loomweight.
Photo: Kevin Leahy

Other clay weights

Large heavy perforated objects made from fired clay look like they were designed to be tied to things to weigh them down. They may have been net sinkers or thatch weights, for example, but are too heavy to have been loomweights. They were used in the Bronze Age (cylindrical examples) and the Iron Age (thick, flat examples, often triangular). We have very few examples on the PAS database. Use the object type WEIGHT.



Bronze Age cylindrical weight,
c. 100mm in diameter.



Iron Age triangular weight, thick
and flat with multiple holes.



A group of Iron Age weights.
Photo: Kevin Leahy

7.8 Objects made from pipeclay

These include smoking pipes, figurines, dolls and hair-curlers.

Clay tobacco pipes

The earliest clay tobacco pipes date from the second half of the 16th century. See the on-line guide for full details. Use the object type PIPE (SMOKING).

Clay tobacco pipe, dated to c. 1640-1670 by David Higgins (LVPL-A1A2D7).



Figurines

Small mould-made pipeclay figurines are known from the Roman, medieval and post-medieval periods. Use FIGURINE for both human and animal representations (and MINIATURE OBJECT for small, non-functional inanimate objects).



ESS-998F26

Roman pipeclay figurine, perhaps representing Juno (ESS-988F26).



Post-medieval pipeclay figurine in the shape of a bird, perhaps a fairy (NARC-704320).

7.8 Objects made from pipeclay (continued)

Dolls

Ceramic dolls are usually called 'china' dolls. Some are glazed, others not. Dolls can be made completely of ceramic (such as the 'Frozen Charlotte' type) or with heads, arms and legs of ceramic and the body of cloth, leather or wood. China dolls date to after c. 1840, so are not normally recorded on the PAS database; but if you have to, use the object type TOY.



Part of a 'Frozen Charlotte' china doll (NLM-0AC196)



Leg from a china doll with painted ankle boot (NLM-E03B34).

Wig-curlers and hair-curlers

These pipeclay objects used to be called wig-curlers, but now there is evidence that (even though they must have been extremely uncomfortable) they were used for curling hair of any type, natural or artificial. They are circular in cross-section and have a narrowed centre. Use the object type HAIR CURLER.

When recording hair curlers, please note the following points:

- Diameter of the narrowest point
- Maximum diameter of thick ends (both ends, if the hair-curler is complete)
- Length (stating if complete or not)
- Method of finishing the end (e.g. flattened, cut, rounded or unfinished)
- Whether the central section is burnished or not (and the quality of the burnishing, if present).
- Any mark on the end(s)

For detail on hair-curlers, see Higgins 2006.



Pipeclay hair-curler,
17th-18th century
(SUSS-658A25)

SUSS-658A25

7.9 Ceramic building material (CBM)

The term 'CBM' includes brick, tile, and pipe (chimney pots, drainpipes and waterpipes, and also field drains even though these are not normally part of buildings). Burnt fragments of daub, cob and clay lump are also included, but plaster and mortar are not technically ceramics. McComish 2015 (free download) is a useful guide to CBM. The PAS database uses specific object types (e.g. BRICK, TILE, DAUB), not CBM as an object type.

It is acceptable to record more than one piece of CBM on the same record, as long as the Object Type, Periods and Dates, and Findspot are the same for each fragment. Add the individual dimensions to the Object Description field, and put the total weight in the Weight field. Don't forget to fill in the Quantity field accurately.



Fragment of Roman tegula.
Flint-tempered fabric, grey
core, orange surface and
margins (IOW-AABAE7)



Brick and tile in the Roman world

Brick and tile making was introduced into Britain by the Romans, who made extensive use of ceramic building material. The terms 'brick' and 'tile' are used almost interchangeably by Romanists. York Archaeological Trust have defined the term 'tile' as referring to all items whose original form and measurements can be reconstructed, whether used as roof tiles, floor tiles, levelling courses, hypocaust supports or walling. The term 'brick' is used for sherds of CBM which are too fragmentary for the original form to be determined (McComish 2015, 19). This terminology can usefully be followed on the PAS database, using BRICK for otherwise unidentifiable sherds and TILE for any identifiable type of Roman CBM.

Roman brick and tile have a relatively fine fabric with small inclusions, and were made in sand formers, leading to a sandy surface on the underside. They have red margins and surfaces, but can have an intense, deeply coloured grey-blue reduced core. The average thickness for tiles used in walling, flooring and hypocaust supports is about 40mm.

Occasionally Roman bricks and tiles are stamped, or otherwise marked before firing; they can also have graffiti scratched in after firing (McComish 2015, 8). The manufacture of brick and tile ceased with the end of Roman Britain.



Roman brick or tile, perhaps used in
flooring or walling (HESH-EA0F18)

7.9 Ceramic building material (CBM) (continued)

Medieval brick

Brick production started again in East Anglia the 12th century, with large-scale use in the 14th century, particularly in areas of eastern England which lacked good building stone.

Medieval bricks are all quite thin, c. 50mm thick, but were not made in standard sizes. The fabric varies according to the local clay source, and can have large coarse inclusions. Because they were heavy, medieval bricks were usually made on site, unless water transport was close and convenient. The itinerant brickmakers would move around, finding local sources of clay and building temporary kilns to fire the bricks needed for a specific project.

Two-colour glazed floor tile with fleur-de-lis decoration, dating to the second half of the 14th century (LON-5377F9)



Post-medieval brick

By the Tudor period brick sizes had become standardised so that 16th-century bricks, while still c. 50mm thick, otherwise have the proportions of a modern brick.

Fragments of paver or pamment (post-medieval or modern floor tiles) can be mistaken for medieval or early post-medieval bricks, because they are relatively thin. Pavers or pamments tend to have a more uniform, smoother surface, and a finer fabric with smaller inclusions.

Malting brick is occasionally encountered from the 18th century onwards, and is again of tile thickness. Other perforated bricks are known, which probably mostly functioned as general-purpose lightweight bricks.



Fragment of late 18th- or 19th-century malting brick (LON-5A7365)



The rough rule of thumb that bricks get thicker over time continues through the medieval and post-medieval periods. But if you only have a fragment and cannot work out the thickness of a brick, it can be very hard to date it.

7.9 Ceramic building material (CBM) (continued)

Roman tile

Tiles are common finds on Roman sites, particularly roof tiles. There are two shapes of roof tile. A tegula is flat with two long upturned edges; an imbrex has a curved cross-section with slightly splayed sides, and tapers slightly along its length. Tegulae alternated with imbrices which covered the joints, giving a Roman roof its characteristic corrugated appearance. The tapering shape of the imbrices allowed these to overlap each other too.

Occasionally the open ends of the imbrices were covered with antefixes (also called antefix tiles). We only have one record of an antefix on the PAS database; BH-B26360, which is semi-circular and undecorated. Use the object type TILE for antefixes.

Large square tiles were used on floors, and stacks of square tiles were also used to support floors in hypocaust systems. Another use of tiles was in walling, often as a levelling course. In this case the object is being used as a brick, although the term BRICK is only used for unidentifiable fragments of Roman CBM.

Hypocaust systems used hollow box flue tiles to carry the heat and smoke up through the wall. Box flue tiles have a characteristic complex grooved keying, made with a comb-like tool, making wall-plaster adhere well to the surface. Use the object type TILE for box flue tiles.

Tiles were often cut up to make tesserae for use in mosaics. Use the object type TESSERA for all tesserae, even those made from re-used tiles.



Roman roof tiles (tegula and imbrex).
Photo: Kevin Leahy



Antefixes from the roof of a Roman building at Caerleon. Photos: Kevin Leahy



Left: Tesserae cut from Roman tiles.
Right: Roman box tile from a hypocaust wall flue. Photos: Kevin Leahy

Medieval tile

The manufacture of brick and tile ceased with the end of Roman Britain. Tiles salvaged from Roman buildings were used in Anglo-Saxon churches and by the late Anglo-Saxon period there was some, infrequent, manufacture of polychrome floor tiles. Roof tiles seem to have been made in greater quantity from the 13th century onwards, and floor tiles from the 14th century onwards (McComish 2015, 33-35).

See the next page for more on medieval floor and roof tiles.

7.9 Ceramic building material (CBM) (continued)

Medieval floor tiles

Glazed floor tiles of one colour are known as plain-glazed tiles. A cream slip can be combined with a glaze to produce yellow, or a glaze can be green, brown or black. Tiles can also have decoration stamped onto the tile and the impression filled with white clay before glazing, to give a two-colour tile.



Medieval glazed decorated floor tiles. Left: Photo Kevin Leahy. Right: BERK-8B90E8.



Medieval glazed ridge tile fragments with applied crested decoration.
Photo: Kevin Leahy

Medieval roof tiles

Peg tiles are flat with a square or circular hole in them for a peg (fragments of course tend to lack the hole). They often have one sanded and one smoothed surface, and are unglazed. Peg tiles were used from the mid 13th century but are still used today, so hand-made tiles are very difficult to date.

Ridges, valleys and hips all need curved tiles, which are more fragile than flat tiles. Ridge tiles can have applied crests and be glazed. Valley tiles and hip tiles have peg holes near the top.

Post-medieval tiles

Most medieval roof-tile types continue into use into the post-medieval period. Pantiles come into use in the 17th century, so they are usually too late for us to record. They have a shallow S-shaped cross-section and have a hook (known as a 'nib') on the reverse that holds them to the roof laths. Because of their curved shape, fragments of pantiles can be mistaken for fragments of Roman imbrex. Pantiles can sometimes be glazed black.

Pavers and pamments (post-medieval or modern unglazed floor tiles) can be square or rectangular. They can be mistaken for medieval or early post-medieval bricks, but pavers or pamments tend to have a more uniform, smoother surface, and a finer fabric with smaller inclusions.

7.9 Ceramic building material (CBM) (continued)

Field drains and drain pipes

Late 18th– and 19th-century field drains of open ‘horseshoe’ shape can be confused with similarly shaped Roman imbrices. While field drains tend to have parallel, vertical sides, they can sometimes taper down their length and have splayed sides just like a Roman imbrex. D-shaped drains with a closed cross-section were introduced in the 19th century, and modern drains are normally closed circular pipes.

The fabric of Roman tiles is normally much finer than recent field drains, which are usually red but can be yellow or white. Roman imbrices are also almost always broken, whereas recent field drains are usually found complete or near-complete.



Recent field drain; note the vertical sides.
Photo: Kevin Leahy

There is a handy guide to field underdrainage here: http://www.collectionsgateway.org.uk/collections/8/field_drainage_tiles.pdf



Burnt daub with wattle impressions.
Photos: Kevin Leahy

Daub

Daub is a mixture of mud, dung, straw and (if the mud does not contain enough) clay and sand. It is applied to wattle panels and often limewashed. If the building burns down and the daub reaches a high enough temperature, it can be fired into a ceramic. It has an open, porous texture due to the inclusion of organic material.

Mud-and-stud is a variant of wattle-and-daub, found in Lincolnshire (and early America). The daub is used to fill around closely spaced earth-fast posts.

Plaster superseded daub during the 18th century.

Cob and clay lump

These are extremely unlikely to be found fired, and even less likely to be recognised. Still, a definition may be useful here. Cob (called ‘clom’ in Wales and ‘wychert’ in Oxfordshire and Buckinghamshire) is a type of rammed earth construction which does not use wattle.

Clay lump buildings are found mainly in Norfolk and Suffolk, built of air-dried blocks of clay subsoil. The technique of clay lump was developed in the 19th century.

Plaster, cement and mortar

These materials are not ceramics. Use the object type WALL PLASTER or, if this is not appropriate, ARCHITECTURAL FRAGMENT (see the mda thesaurus for scope notes for this term). The material to choose is ‘Mortar or Plaster’; see scope notes for this term under Controlled Vocabulary at the foot of any page.

8. Beware! Some things that look like pottery, but aren't



Clay pigeon; made of fine, hard ceramic.
Can be mistaken for Roman terra nigra.

Photos: Kevin Leahy



Asbestos sheeting; note the characteristic pitted surface on one face. Can look like Roman grey ware. Asbestos fibres are of course dangerous, but sheeting is the most stable form. Keep it in one piece, don't break it up. Photo: Kevin Leahy

Precipitated ironstone; also called 'box stone', these natural concretions can have thin, even cross-sections and smooth curves, making them look like pottery. They are often very hard to break. Fresh breaks can be finely laminated. They have no inclusions but often have a sandy surface. (Photos: Helen Geake)



The products of today's art pottery classes can be crudely made and unglazed, but tend to be much harder fired than any pottery from antiquity.

9. Glossary

AMORPHOUS. This means ‘without shape’ and can be a useful word for describing inclusions which have no clear shape.

APPLIED. Applied decoration is made separately and added to the surface of the pot (often by *luting*). See p. 26.

A pottery vessel can also be made from several different components which are joined together or ‘applied’. See p. 24. Compare *Luted*.

ATTITUDE. The correct alignment of a sherd, with the rim horizontal. See p. 27.

BARBOTINE. See *Slip*.

BASE. The lower part of the vessel, on which it rests. Bases can be flat, rounded (with no angle between body and convex base), sagging (with an angle between body and convex base), or concave. A base can also have feet attached, or a footring. See p. 28.

BODY. The part of the pot that lies between the rim or neck, and the base, usually used of a fragment (so a ‘body sherd’). The ‘body’ is also used to mean the mix of clay and temper used to make a pot (compare *Fabric*) so, when referring to an area of a vessel, *Wall* is often used as a synonym.

BUNG-HOLE. A hole towards the base of a vessel. It may be surrounded by a reinforcing flat circle of clay, but it does not otherwise project. Compare *Spout*.

BURNISH. A burnished surface has been rubbed with a rounded tool while leather-hard. This compacts the surface and gives a shine. See p. 25.

CALCAREOUS. This means ‘consisting of, or containing, calcium carbonate’. Calcareous rocks include chalk, limestone and marble. *Calcite* is a crystal mineral form of calcium carbonate, and shells are largely made up of calcium carbonate, so they are calcareous too. Calcareous materials react with acid to produce carbon dioxide, so they fizz when an acid such as vinegar is applied.

CALCINED. Heated to a high temperature. If flint is heated to c. 400°C, water is driven out of the crystal lattice, resulting in cracking and making the flint easier to crush for use as a temper. Calcined bone is also used as a temper.

CALCITE. A mineral found in veins within limestone and marble, also in stalactite or stalagmite, and in oyster shell. It was used extensively in late Roman pottery. Under a microscope it shows up as distinctive rhomboidal crystals (crystals shaped like a cube, but with all faces lozengiform instead of square). See also *Calcareous*.

CARINATION. A change of angle in the wall of a pot. This is a poorly defined word, as is the similar *Shoulder*, so if you use either word, it may be a good idea to explain clearly what you mean by it. See p. 12.

CBM. Ceramic Building Material, including brick, tile, and pipe (chimney pots, drainpipes and waterpipes, and also field drains even though these are not normally part of buildings). Burnt fragments of daub, cob and clay lump are also technically CBM, but plaster and mortar are not. See pp. 50-54.

CLOSED VESSEL. A vessel where the diameter of the rim (or more properly the mouth or opening) is smaller than the maximum diameter of the vessel. Also called *Hollow ware*. Compare *Open vessel*.

COLOUR-COATED. See *Slip*.

CORE. The inner part of the body of the pot. Compare *Margins* and *Surface*. See p. 15.

FABRIC. The fabric is a combination of what the pot is made from (clay and filler or temper) and how those ingredients have reacted to the conditions of firing (temperature, atmosphere, timing).

FLAT WARE. This is a collective term for vessel types where the diameter at the rim (the opening, or the mouth) is greater than the maximum girth and the height. Compare *Open vessels*. Compare *Hollow ware*.

FILLER. See *Temper*.

9. Glossary (continued)

FLUX. This word comes from the Latin ‘to flow’ and has several meanings. In ceramics and glass, it means an added substance that lowers the melting point.

FOOT. Part of a vessel. Feet that project from the base are more common on a copper-alloy vessel (where we call them ‘legs’) but they can be found on ceramic vessels too. They can be applied or ‘thumbed’, i.e. pulled down from the base of the vessel rather than separately made.

GIRTH. A non-preferred term for the circumference (or sometimes the diameter) of a vessel.

GLAZE. A glass-like shiny coating on the surface of a pot. See p. 25.

GLOSS. A gloss is produced by dipping the vessel into a slip with a high proportion of very fine clay particles. It gives a sheen to the surface and is most often found on Samian ware. See p. 25.

GRIT. ‘Grits’ is a shorthand for coarse, angular inclusions, giving a gritty texture to the fabric.

GROG. Grog is fired ceramic which has been crushed or ground up and added to the clay as a temper. It is usually recognised by being a different colour to the rest of the fabric. See p. 20.

HANDLE. Part of the pot used for carrying or suspending it. See p. 12 and p. 14.

HOLLOW WARE. This is a collective term for vessel types where the diameter of the rim (or more properly the mouth or opening) is smaller than the maximum diameter. Also called *Closed vessels*. Compare *Flat ware* and *Open vessels*.

IMPRESSED. Impressed decoration is pressed into the surface of the clay freehand, using a tool or fingers. Compare *Stamped*. See p. 26.

INCISED. Incised decoration is where a mark or groove is cut into the surface but not right through the clay. It includes combing (parallel lines incised using a tool with two or more teeth). Other words for incised decoration include ‘scoring’ and ‘scratching’; these are quite vague terms with no agreed definition. See p. 26.

INCLUSIONS. Inclusions are everything in the ‘body’ that is not the clay matrix. They can be naturally present, or can be added by the potter, when they are called *Filler* or *Temper*. See pp. 17-23.

LEG. See *Foot*. The term ‘leg’ is used on a copper-alloy vessel, the term ‘foot’ is used on a ceramic vessel.

LID. A separate component which covers and closes the mouth of a vessel. Ceramic lids are often not recognised, perhaps because fragments are not easily distinguished from other parts of the vessel. Lids may also have been made from wood or tied-on leather.

LIP. This word is often used to mean a slightly pulled out or narrowed area of the rim used to pour the contents of a vessel. The MPRG, however, recommends the use of the word *Spout* instead (1998, 11.8). They do recommend the use of ‘lip’ for a shallow pinched or pulled spout (1998, 11.8.2) and it is hard to reconcile these two pieces of advice. On the whole, it is probably best to stick to *Spout*.

LUG. A lug is something that can be gripped and pulled, or something by which something can be held or supported. It has also come to mean something that sticks out (such as an ear). A sticking-out lump that can be used to lift a vessel is therefore a lug handle.

LUSTRE. A type of glaze, where some of the *Flux* (often silver or copper) has been *reduced*, so that the oxide has been converted to the metal. See p. 25.

LUTING. Vessel components and decorative elements can be luted together, which means being attached using *Slip* as an adhesive. See p. 26.

MARGINS. The outer part of the body of the pot, between the *Core* and the *Surfaces*. See p. 15.

MATRIX. The clay of the pot, without the inclusions. Strictly speaking, the matrix is the framework which holds the inclusions.

9. Glossary (continued)

MATURING POINT. The temperature at which a ceramic reaches its desired degree of fusing of the clay particles, giving the desired colour, hardness, density, and so on. The maturing point of an earthenware is lower than that of a stoneware. Compare *Sinter point* and *Vitrified*.

MOUTH. The void allowing entry to the inside of the vessel, surrounded by the *Rim*. Also called the 'opening'.

MPRG. The Medieval Pottery Research Group. Compare *PCRG* and *SGRP*.

NECK. If there is a tall narrowed part below the *Rim*, this is known as the neck. The opening at the top of the neck is the *Mouth*.

OPEN VESSEL. A vessel where the diameter at the rim (or more properly the mouth or the opening) is the maximum diameter of the vessel. Compare *Closed vessel*, *Flat ware* and *Hollow ware*.

OXIDISING. The opposite of *Reducing*. Oxidisation is the gain of oxygen atoms, and reduction is the loss of oxygen atoms. See p. 15.

PCRG. The Prehistoric Ceramics Research Group. Compare *MPRG* and *SGRP*.

PLASTIC. The term 'plastic decoration' has been used to describe decoration which has been added when the clay is still flexible. This includes applied and incised decoration, and decoration raised from the body of the pot. See p. 26.

POT MEND. This informal term is used for lead repairs to pottery only. The more formal term 'vessel repair' is used for repairs to copper-alloy vessels. See p. 9. Use the object type *VESSEL* for pot mends, even if there is no ceramic surviving.

PROFILE. A profile is a side view of an object. A cross-section is a cut through an object. In practice, they are often exactly the same.

PROJECTION. The arrangement of different views on a single image. The correct projection encodes further information about the object. The PAS uses the American projection, putting the view of the left-hand face of an object on the left, the view of the right-hand face on the right, the view of the top above, and the view of the base below.

REDUCING. The opposite of *Oxidising*. Oxidisation is the gain of oxygen atoms, and reduction is the loss of oxygen atoms. See p. 15.

RIM. This is normally the uppermost part of the vessel, the inner edge of which forms the *Mouth*.

SAND. Fine mineral grains, usually of quartz because that is the mineral most resistant to weathering from the parent rock.

SGRAFFITO. This technique is used on pottery which has been coated with slip of a contrasting colour. A design is cut through the slip to reveal the colour beneath. It can be done when the slip is wet or dry. See p. 26.

SGRP. The Study Group for Roman Pottery. Compare *MPRG* and *PCRG*.

SHERD. A fragment of pottery. Either 'sherd' or 'fragment' can be used.

SHOULDER. This is a poorly defined word, as is the similar *Carination*. If you use either word, it may be a good idea to explain clearly what you mean by it. Both words generally mean a sharp curve or distinct angle in the wall of a pot.

SINTER POINT. The moment in firing where the clay particles begin to fuse, turning a clay into a ceramic.

SLIP. A liquid clay with a high proportion of water, used either as an adhesive (*luting*) or for decoration. See p. 26 for the uses of slip in decoration, including slip-trailing, colour-coating and barbotine. The practical difference between a slip and a gloss is that a slip is applied to give a different colour, and a gloss is applied to give a sheen to the surface.

9. Glossary (continued)

SPOUT. A spout is any modification of the upper part of a vessel to allow pouring. Part of the rim can be pulled out, pinched or otherwise narrowed. Alternatively a hole can be made in the wall of the pot, over which a V-shaped or tubular spout can be applied. A hole at the base of a pot is a *Bung-hole*. Also compare *Lip*.

SPRIGGED. When decorative elements are separately made in a mould and added to the surface of a pot, this is known as sprigged decoration. The 'sprig' is the decorative element and it can be attached using water or slip. Sprigging was used in the Staffordshire potteries, especially on Wedgwood's famous Jasper ware. It can also be called 'applied relief decoration'. See p. 26.

STAMPED. Stamped decoration uses a specially carved tool (a die stamp) to give a particular shape to the design. See p. 26.

SURFACE. The exterior or interior face of the vessel. Compare *Core* and *Margins*. See p. 15.

TEMPER. *Inclusions* which have been deliberately added by the potter. Temper is the preferred term, but deliberate inclusions are also often called 'fillers'.

THROWING RINGS. A horizontal spiral of broad ridges on the interior of a vessel, formed during wheel-throwing. It is possible to use these to work out the direction of rotation of the wheel, and whether the potter was left- or right-handed. They can also be smoothed completely away during the finishing of the pot. Throwing rings are sometimes called 'rilling', but this is a jargon term which is difficult to understand without a full explanation. See p. 10.

TYPE SERIES. A ceramic type series is a defined typology of ceramic types (usually fabrics) which have been identified as being most common in a local or national setting. A pottery type series is a reference collection of specimens of every pottery fabric identified within a specific area, accompanied by a descriptive catalogue.

VESSEL TYPE. This is analogous to a PAS object type, e.g. a bowl, jar, bottle or cup. In thesaurus terms, it is a narrow term for VESSEL. However, be aware that Barclay et al. (2016) call this level of classification a 'vessel class' and reserve 'vessel type' for a narrower term such as 'carinated bowl, rounded jar [or] ring-necked flagon' (2016, 21 and 26).

VITRIFIED. When firing reaches a very high temperature, the particles melt and coalesce together. The process is called vitrification, and the ceramic is then said to be vitrified. In theory a completely vitrified pot will melt and collapse, but a very high-fired ceramic is often called 'vitrified'.

WALL. The part of the pot that lies between the rim or neck, and the base, particularly when it is straight and/or vertical. Compare *Body*.

WARE. A 'ware' is a broad type of pottery, defined both by its fabric and by its range of vessel forms. The identification of a sherd as to ware type is generally based on its fabric, the manufacturing technique(s) and a typology (the range of vessel forms). If only a small bit of the vessel survives, then you can use the fabric to make an educated guess at the ware.

WASTER. A pot (or sherds) rejected after failure during firing, perhaps by melting, exploding or just breaking. See p. 45.

WIRE MARKS. Marks seen on the base of a wheel-thrown pot, consisting of concentric curves or parallel or radiating lines. They are made by using a string or wire to cut the pot from the wheel.

10. Bibliography and further reading

10.1 Useful books to own or download

de la Bédoyère, G. 2000. *Pottery in Roman Britain*. Shire Archaeology, Princes Risborough. (A short book, but comprehensive and easy to use.)

Gibson, A. and Woods, A. 1997. *Prehistoric Pottery for the Archaeologist*. Leicester University Press, 2nd edition. (The most useful single book on prehistoric pottery.)

Laing, L. 2014. *Pottery in Britain, 4000BC to AD 1900*. Greenlight Publishing. (A useful quick tour of pottery through the ages. Well illustrated with photographs of sherds and drawings of complete pots, but few section photographs showing fabrics.)

McCarthy, M. and Brooks, C. 1988, *Medieval Pottery in Britain AD900-1600*, Leicester University Press. (To find a particular vessel type, look under 'pottery forms' in the index, pp. 515-518.)

McComish, J. 2015. *A Guide to Ceramic Building Materials* (<http://www.yorkarchaeology.co.uk/wp-content/uploads/2015/08/A-guide-to-ceramic-building-material.pdf>)

MPRG, 1998. *A Guide to the Classification of Medieval Ceramic Forms*. MPRG Occasional Paper 1. (This useful ring-binder of forms (without chronological detail) can be ordered from <http://www.medievalpottery.org.uk/classmcf.htm>)

10.2 Full bibliography

Balfet, H., Fauvet, M. and Monzon, S (eds) 1988. *Lexique Plurilingue pour la Description des Poteries*. Éditions du CNRS, Paris. (This slim volume gives words for vessel types, parts of the vessel, technical terms and terms for decoration in seven European languages)

Barclay, A., Booth, P., Brown, D., Evans, J., Knight, D. and Wood, I. 2016. *A Standard for Pottery Studies in Archaeology*. Prehistoric Ceramics Research Group, Study Group for Roman Pottery and Medieval Pottery Research Group. (http://romanpotterystudy.org/new/wp-content/uploads/2016/06/Standard_for_Pottery_Studies_in_Archaeology.pdf)

Butler, R. and Green, C. 2003. *English Bronze Cooking Vessels and their Founders 1350-1830* (useful in showing the overlap between ceramic and copper-alloy forms)

Collett, L. 2012. *An Introduction to Drawing Archaeological Pottery* (http://www.archaeologists.net/sites/default/files/10_Drawing_archaeological_pottery.pdf)

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- Orton, C. and Hughes, M. 2013. *Pottery in Archaeology*. Cambridge Manuals in Archaeology, Cambridge: 2nd edition. (The go-to guide for pottery technology and analysis.)
- Peacock, D. (ed) 1977. *Pottery and Early Commerce*, Academic Press, London. (A range of papers, including the first publication of Peacock's key to inclusions, much copied since.)
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- Webster P. V. 1996. *Roman Samian Pottery in Britain*. Council for British Archaeology, York.
- Young, J. and Vince, A. with Nailor, V. 2005. *A Corpus of Anglo-Saxon and Medieval Pottery from Lincoln*, Lincoln Archaeological Studies No. 7, Oxbow Books, Oxford.

10.3 Useful websites

<http://potsherd.net/atlas/potsherd>

<http://www.thamesdiscovery.org/discover/pottery-identification>

<https://www.worcestershireceramics.org>