AVAC Reports No 2006/19

Petrological Analysis of Medieval Pottery from Frogs Hall Takeley, Essex (TAFH02, project 1021)

Alan Vince

Samples of pottery, fired clay and local sand from the site of a medieval pottery production site at Frogs Hall, Takeley, Essex, were selected by Helen Walker for petrological analysis (Table 1).

The aims of this analysis were:

1. to establish whether a single fabric was used for pottery production
2. to describe the petrological characteristics of the fabric(s) as a means of characterising the products
3. to determine what raw materials had been used and whether or not the clay was used "as dug" and, if not, what preparation techniques were employed.

No possible potting clay was collected from the site, which is situated on Head consisting of clay and sand, but two samples of a fine sand/silt were collected and these were consolidated and sampled.

Methodology

The thin sections were produced by Steve Caldwell, University of Manchester, and stained using Dickson's method (Dickson 1965). Each section was examined and a list of inclusion types present was made. The sections were then re-examined using this list as a guide and the presence/absence, quantity and any unusual features were recorded for each thin section.

Table 1

TSNO	REFNO	class	Action	Context	Cname	Form	Description
V3262	SAMPLE 1	POTTERY	TS	817		JAR	TYPICAL

The Alan Vince Archaeology Consultancy, 25 West Parade, Lincoln, LN1 1NW

http://www.postex.demon.co.uk/index.html

A copy of this report is archived online at
http://www.avac.uklinux.net/potcat/pdfs/avac2006019.pdf

V3263	SAMPLE 2	POTTERY	TS	817		JAR	TYPICAL
V3264	SAMPLE 3	POTTERY	TS	1216		JAR	ORANGE INCLUSIONS
V3265	SAMPLE 4	POTTERY	TS	817		JAR	OXIDIZED
V3266	SAMPLE 5	POTTERY	TS	817		JAR	OXIDIZED
V3267	SAMPLE 6	POTTERY	TS	817		SJ?	COARSER FABRIC
V3268	SAMPLE 7	POTTERY	TS	691		SJ	VARIANT;FEWER SANDS BUT FLINTY
V3269		FCLAY	TS	1216	FCLAY	KILN STRUCTURE	
V3270		FCLAY	TS	902	FCLAY	KILN STRUCTURE	
V3271	SAMPLE 8	POTTERY	TS	_		JAR	FEW SANDS
V3272		SAND	TS	_	SAND	SAMPLE	
V3273		SAND	TS	_	SAND	SAMPLE	

Description

The samples could be grouped into four fabrics. Fabric 1 includes all the pottery samples and one of the fired clay samples; Fabric 2 consists of one of the fired clay samples; Fabric 3 consists of one of the sand samples and Fabric 4 consists of the second sand sample.

Fabric 1

This fabric groups consists of all of the pottery samples and one of the fired clay samples (V3269). It is possible to subdivide this group into three, based on the quantity of quartzose sand inclusions but the range of inclusions and the character is the same in each of the three subfabric groups. Sample V3271 has the lowest quantity of quartzose sand (as noted by eye by Walker), followed by samples V3267 and V3268 (noted by Walker as being atypical) and the fired clay sample. The remaining five samples form the third subfabric (V3262 to V3266). One of these samples, V3264, was noted by Helen Walker as containing orange inclusions. However, in

thin section there are no inclusions which match this description, although a single rounded fragment of Chalcedony is present.

The following inclusion types were noted:

- Rounded quartz. Moderate grains, mostly with a high sphericity, up to 1.5mm across.
- Angular quartz. Abundant, well-sorted grains c.0.2mm across.
- Flint. Sparse to moderate angular grains up to 1.5mm across.
- Chert. Sparse well-rounded grains, with a high sphericity, up to 1.0mm across.
- Dark brown clay/iron. Sparse rounded grains, with sparse angular quartz inclusions, up to 1.5mm across.
- Fine-grained Sandstone. Sparse rounded grains up to 1.0mm across.
- Lower Cretaceous Chert. Sparse subangular fragments up to 1.5mm across.
- Muscovite. Sparse to moderate laths up to 0.3mm long.
- Greensand Quartz. Sparse well rounded grains with a low sphericity, up to 1.0mm across.
- Metamorphic Quartz. Sparse well-rounded grains up to 1.0mm across.
- Mosaic Quartz. Sparse well-rounded grains up to 1.0mm across.
- Conglomerate. Sparse rounded grains containing well-rounded quartz grains up to 0.5mm across in a groundmass of fine-grained silica.

The groundmass consists of baked clay minerals, some of which are optically anisotropic and others isotropic, abundant angular quartz and moderate muscovite up to 0.1mm across. Sparse lenses with a coarser texture and higher quartz content are present.

Fabric 2

This fabric group consists of one of the two fired clay samples, V3270. The following inclusion types were noted:

- Rounded Chalk. Abundant rounded fragments of varying textures but mostly containing abundant microfossils, up to 2.0mm across.
- Rounded Quartz. Moderate well-rounded grains with a high sphericity up to 2.0mm across.
- Phosphate. Abundant rounded and angular fragments of dark brown phosphate, some with banded structure, up to 2.0mm across.
- Microfossils. Moderate ferroan calcite microfossils, up to 0.2mm across.

The groundmass consists of poorly mixed optically anisotropic baked clay with lenses of brown phosphate, crushed chalk and clays varying in colour.

Fabric 3

This fabric group consists of one of the sand samples, V3273. The following inclusions were noted:

- Angular and subangular quartz. Abundant well-sorted grains c.0.2mm across. Most are unstrained and monocrystalline.
- Chert. Sparse, well-rounded grains up to 1.0mm across with a high sphericity. Some of these grains may be flint, but the texture and lack of microfossils and staining suggest not.
- Dark Brown Clay/iron. Sparse well-rounded grains up to 1.0mm across.
- Rounded Quartz. Sparse well-rounded grains with a high sphericity. Mostly unstrained and monocrystalline.

- Feldspar. Sparse subangular grains of altered feldspar up to 1.0mm across.

The groundmass consists of anisotropic, light brown-coloured clay minerals.

Fabric 4

This fabric group consists of one of the sand samples, V3272. The following inclusions were noted:

- Angular and subangular quartz. Abundant well-sorted grains c.0.2mm across. Most are unstrained and monocrystalline.
- Chert/flint. Sparse angular and subangular grains c.0.2mm across.
- Glauconite. Sparse rounded green glauconite grains c.0.2mm across.
- Feldspar. Sparse angular and subangular grains c.0.2mm across
- Phosphate. Secondary dark brown phosphate is present filling cracks within the sand sample.

The groundmass consists of anisotropic light-coloured clay minerals.

Discussion

The thin sections indicate that a silty micaceous clay was used to produced the pottery at Frog Hall, Takeley, and that this clay was probably tempered with a rounded quartzose sand which includes material of Triassic, Lower Cretaceous, Upper Cretaceous and possibly Tertiary origin. Variations in the quantity of temper are probably responsible for the subgroupings in Fabric 1. One of the two fired clay samples was made from similar raw materials. The other fired clay sample, however, was produced from a completely different clay and contains rounded chalk grains. This is probably a chalky boulder clay.

Two samples of fine-grained sand contain material not found in the pottery and clay samples (a well-sorted angular quartz sand, with sparse glauconite grains) although in one sample (Fabric 3)

this sand is mixed with a rounded quartzose sand similar to that seen in the pottery and one of the clay samples. The texture of these fine sands is quite distinct from that of the pottery and fired clay samples. The better sorting, the lack of muscovite and the lower iron content in the groundmass indicate that these sands are unlikely to have be formed by soil formation processes (e.g. podsolization) from the silty micaceous clay and the fine sand is similar to fine white-firing clays such as those found in the Reading Beds.

The characteristics of the pottery fabric are similar to those of Hertfordshire Reduced ware vessels produced in northern Middlesex, where the silty, micaceous clay was of Tertiary origin (probably the Claygate Beds) and the sand temper is what was once termed plateau gravel and is now interpreted as being pre-glacial river sands from the proto-Thames, which ran east northeast across north Middlesex and into north-west Essex. Since the sites are only about 30 miles apart and are situated on similar geology it would probably not be possible to distinguish pottery made in the two areas using thin section analysis.

Bibliography

Dickson, J. A. D. (1965) "A modified staining technique for carbonates in thin section."*Nature*, 205, 587