A characterisation assessment of some medieval pottery from Nottingham (JSAC 810)

Alan Vince

Excavations in Nottingham by John Samuels Archaeological Consultancy (JSAC 810) produced a deposit of medieval pottery waste. Samples of this material were submitted for petrological analysis using x20 magnification.

Description

Seven samples were selected for detailed study by Jane Young,. The samples were chosen to cover the range of colours and textures visible by eye and have been numbered 1 to 7 here. No 1 comes from context 016 and is virtually the only normally-fired sherd in a deposit composed of overfired wasters. The form and appearance of the vessel suggest that it is the product of a different potting episode from the main group, from context 038 (samples 2 to 7).

(016) Sample 1. Hard-fired, reduced fabric. Grey throughout with a lighter grey external margin under a brown mottled glaze.

The fabric contains a range of inclusions ranging from c.0.2mm to 3.0mm across. Some of these are composite grains which can only be reliably identified using thin-section analysis. They include the following types:

- Calcareous inclusions, up to 3.0mm long and with an irregular shape. The material is clearly heat-altered and it is not possible to identify any original structure.
- Iron-rich inclusions, up to 2.0mm across and with a laminar structure. Some of these inclusions have now disappeared, leaving voids coated with a dark brown, powdery deposit. Those which remain vary in texture and colour but are mainly ‘earthy’. Presumably, they were originally some form of tabular iron.
- Fine-grained white sandstone, up to 3.0mm across. These inclusions are rounded and are clearly detrital sandstone grains. The texture is too fine for any detail of the composition or texture to be recorded visually.
- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

(038) Sample 2. Very hard fired with a reduced, light grey core and oxidized margins.

The following inclusion types were noted:

- Calcareous inclusions, up to 3.0mm long and with an irregular shape, but with some tendency to rounding. The material is heat-altered and it is not possible to identify any original structure. There is a reaction rim around each grain.

- Iron-rich inclusions, up to 2.0mm across and with a laminar structure. Some of these inclusions have now disappeared, leaving voids coated with a dark brown, powdery deposit. Those which remain vary in texture and colour but are mainly 'earthy'. Presumably, they were originally some form of tabular iron.

- Fine-grained white rock, up to 3.0mm across. These inclusions are rounded and are clearly detrital sedimentary rock grains. In addition, rounded brown grains of similar texture are present. The texture is too fine for any detail of the composition or texture to be recorded visually.

- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

(038) Sample 3. Hard fired, oxidized with a reddish brown core and lighter brown margins.

The following inclusion types were noted:

- Calcareous inclusions, up to 5.0mm long and with an irregular shape. The material is clearly heat-altered and it is not possible to identify any original structure.

- Iron-rich inclusions, up to 2.0mm across and with a laminar structure. Some of these inclusions have now disappeared, leaving voids coated with a dark brown, powdery deposit. Those which remain vary in texture and colour but are mainly 'earthy'. Presumably, they were originally some form of tabular iron.

- Fine-grained white sandstone, up to 6.0mm across. These inclusions are rounded and are clearly detrital sandstone grains. The texture is too fine for any detail of the composition or texture to be recorded visually.

- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

(038) Sample 4. Very hard fired with a reduced, light grey core and oxidized margins. The external surface appears to have a thin red slip.

The following inclusion types were noted:

- Calcareous inclusions, up to 3.0mm long and with an irregular shape. The material is clearly heat-altered and it is not possible to identify any original structure. Two of these inclusions have caused spalling on the exterior surface.

- Iron-rich inclusions, up to 2.0mm across and with a laminar structure. Some of these inclusions have now disappeared, leaving voids coated with a dark brown, powdery deposit. Those which remain vary in texture and colour but are mainly ‘earthy’. Presumably, they were originally some form of tabular iron.

- Fine-grained white sandstone, up to 3.0mm across. These inclusions are rounded and are clearly detrital sandstone grains. The texture is too fine for any detail of the composition or texture to be recorded visually.

- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

(038) Sample 5. Very hard fired with as reduced light grey core and oxidized margins. There is also oxidation of some of the broken edges, identifying the sherd as a waster. The sherd probably comes from the sagging base of a jug and has a shadow on the exterior which is probably due to contact with the rim of another jug, set centrally on the base.

The following inclusion types were noted:

- Calcareous inclusions, up to 3.0mm long and with an irregular shape. The material is clearly heat-altered and it is not possible to identify any original structure.

- Iron-rich inclusions, up to 2.0mm across and with a laminar structure. Some of these inclusions have now disappeared, leaving voids coated with a dark brown, powdery deposit. Those which remain vary in texture and colour but are mainly ‘earthy’. Presumably, they were originally some form of tabular iron.

- Fine-grained white sandstone, up to 3.0mm across. These inclusions are rounded and are clearly detrital sandstone grains. The texture is too fine for any detail of the composition or texture to be recorded visually.

- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

(038) Sample 6. Hard fired, oxidized. There is a possible external brown slip and brown-mottled lead glaze.

The following inclusion types were noted:

- Rare iron-rich inclusions, up to 2.0mm across and with a laminar structure. Some of these inclusions have now disappeared, leaving voids coated with a dark brown, powdery deposit. Those which remain vary in texture and colour but are mainly ‘earthy’. Presumably, they were originally some form of tabular iron.

- Fine-grained white sandstone, up to 1.0mm across. These inclusions are rounded and are clearly detrital sandstone grains. The texture is too fine for any detail of the composition or texture to be recorded visually.

- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

(038) Sample 7. Very hard fired with a reduced, light grey core and oxidised margins. Broken and cracked edges are also oxidized, identifying the sherd as a waster.

The following inclusion types were noted:

- calcareous inclusions up to 3.0mm. Several of these are present on the surface of the vessel and in many cases they have caused the pot to spall. There is also a slightly darker reaction rim around the grains.

- Iron-rich inclusions, up to 2.0mm across.

- Fine-grained white sandstone, up to 3.0mm across. Some of these grains are extremely finie-textured and it is possible that they should be classified as a siltstone. The white colour suggests that clay minerals are scarse. Thin-sectioning is required to reliably identify these inclusions.

- Rounded quartz, mainly less than 0.5mm but with sparse grains up to 2.0mm across.

Discussion

The seven samples appear to share the same range of inclusion types. Only sample 6 is different in that it completely lacks any calcareous inclusions and neither does it have any voids which might have once contained these inclusions. This sample also has a lower quantity of iron-rich inclusions and is generally a finer-textured fabric. Sample 1 may also be separated because of the low quantity of calcareous inclusions although the main visual differences seem to be a result of its reduced firing.

It seems clear that all the samples were made from similar mixtures of raw materials. It is highly unlikely that the calcareous inclusions would have been deliberately added, nor is it likely that this is so for the iron-rich inclusions. The rounded sedimentary rock grains and the quartz, however, might have been elements in a sand used to deliberately temper the vessel and it is these inclusions which appear to be constant in all seven samples. Thus, it seems likely that the potters used a parent clay which was contaminated with calcareous and iron-rich nodules and that this clay varied in the amount of contamination: Sample 6 had none, Sample 1 a little and the remainder a lot. The sand tempering seems to have been added in similar quantities to all the fabrics. There are no lenses of sand or of sand-free clay. This demonstrates that the sand was well-mixed with the clay and not thrown into the clay during wedging.

One could find out more about the techniques used to collect prepare and work the clay through a comparison with potential clay and sand sources, if any such material was noted on site and sampled. It would also be possible to compare these finds with those from previous discoveries of pottery waste in the town. Two such groups were sampled by the author in 1999 as part of the Northern English Medieval Whiteware project. Samples of high-medieval production waste collected in the 1930s and of wasters from George Street were taken for thin-section and chemical analysis. The results of this study showed that the two groups had chemically distinct fabrics. The George Street fabrics were similar to, but even coarser than, this collection whereas the 1930s collection was finer-textured.

The origin of these clays is of some interest. They do not appear to be Coal Measure whitewares and the firing pattern of Sample 3 and to a lesser extent Sample 6 suggests that the light colour might be due in part to the presence of finely-divided calcium carbonate in the body. However, the chemical analyses of the 1930s and George Street samples show that Nottingham glazed wares have a relatively low calcium content.

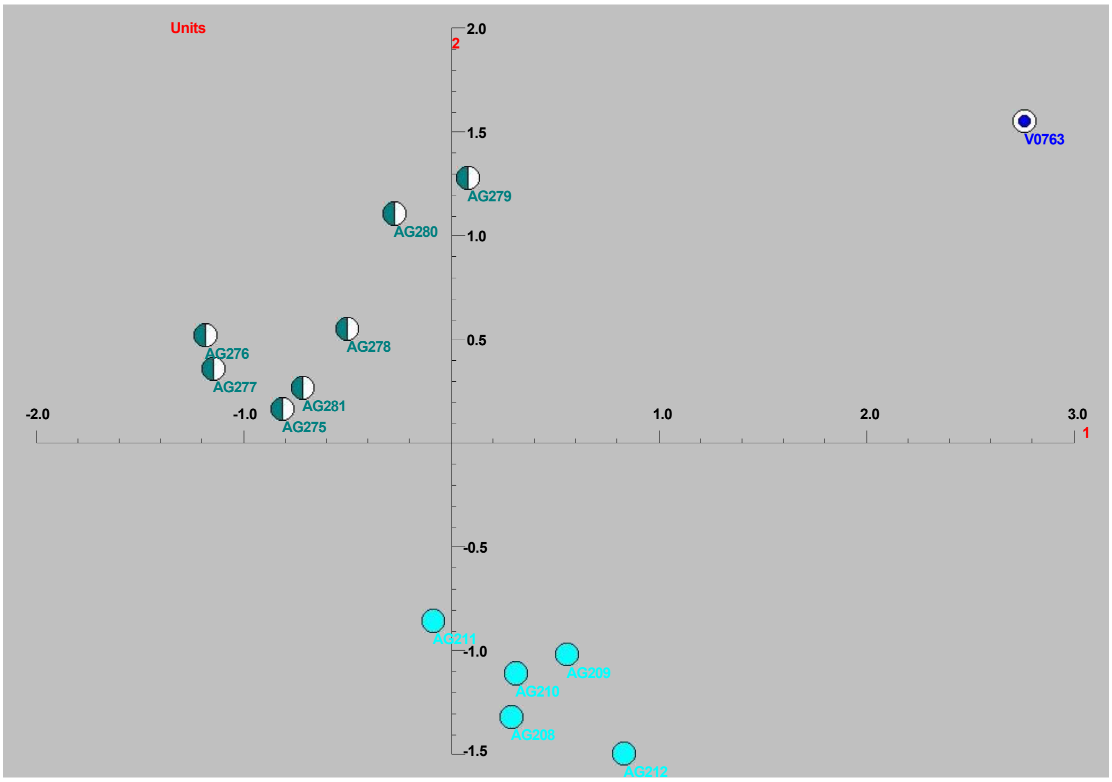

Figure 1

Figure 1 shows the result of Principal Components Analysis of the chemical data. There are three groups: the 1930s samples (filled circles), the George Street samples (half-filled samples) and a sample of a Nottingham floor tile from a site at Blanket Row, Kingston-upon-Hull. It shows that the three groups are chemically distinct.

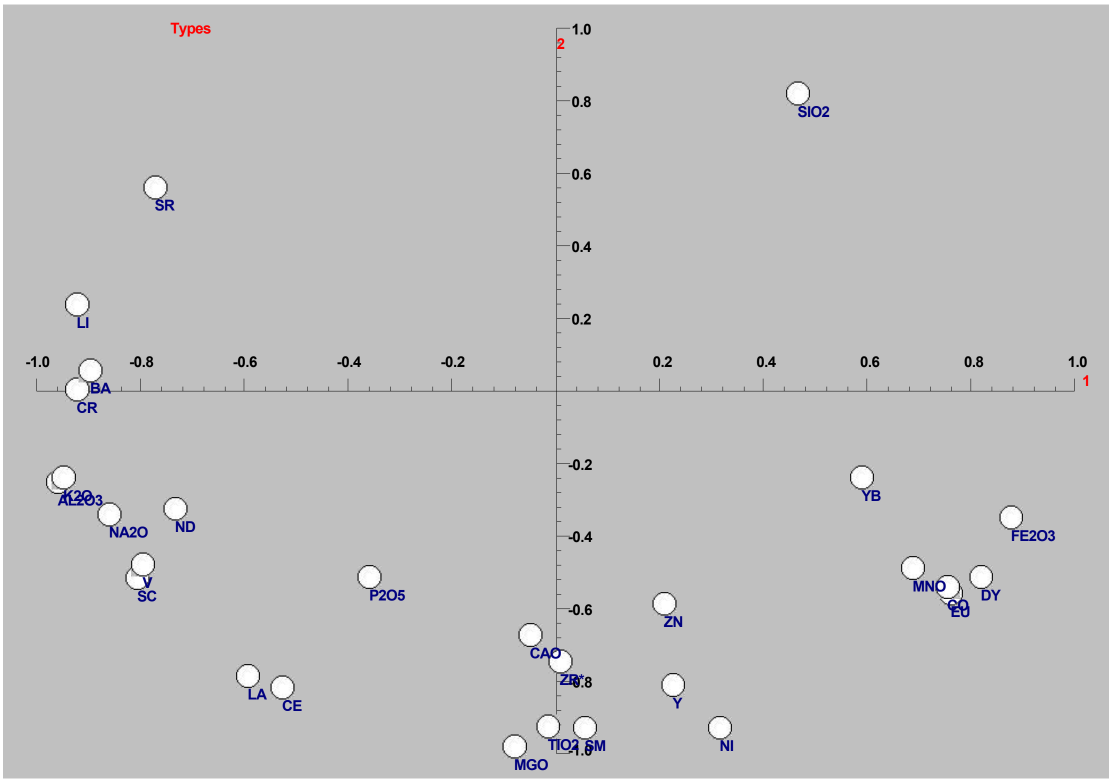

Figure 2

Figure 2 shows the contribution of various elements to the separation illustrated in Figure 1. The floor tile sample is separated mainly because of the high silica content (ie it is more heavily tempered) whereas the split between the two groups of pottery is seen to be based on a range of elements. A similar analysis of the JSAC 810 material would show whether this pottery was made using the same raw materials as those used in the earlier George Street discovery or whether there are chemical differences. If the former, then the potters may have been obtaining their clay from a single clay pit where the clay was dug and prepared but if the latter then the potters may have either been digging their own clay or preparing the same clay but by mixing it with chemically different raw materials.

Chemical analysis of the floor tiles found on the site would demonstrate whether the same clays were used for these as for the pots or whether, as in the case of the Hull sample, they are chemically distinct.