Petrological analysis of medieval and later ceramic floor tiles from Holy Trinity Goodramgate, York

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Background

Fragments of a number of floor tiles were recovered from the 1998 excavations at Holy Trinity Church. Four groups were identified within this collection by J Stopford, University of York. In order to investigate and test the possible sources of these groups one sample of each was selected for thinsection analysis. The thin-sections are coded AG493 to AG496 (Table 1)

Table 1

TS Number	Context	Group	Details
AG493	4012	Group 1	Design A or B
AG494	1003/4012	Group 2	Designs C, D, E or F
AG495	4004	Group 3	
AG496	4016	Group 4	

Group One

Sample AG493 was tempered with a medium-textured quartzose sand, consisting of subangular grains of quartz with minor amounts of chert and sandstone (grains c.0.3mm across). In addition, rounded clay pellets were common. These ranged from being lighter in colour than the matrix to darker. Moderate quantities of rounded opaque "iron ore" up to 0.2mm across were also present. The clay matrix was isotropic.

Group Two

Sample AG494 contained a subangular, moderately well-sorted quartzose sand with grains up to 0.3mm across. In addition to quartz, grains of plagioclase feldspar, sandstone, chert, altered glauconite and non-ferroan calcite were present. Large rounded grains of fine-textured clay were present, being similar in colour to the clay matrix. The clay matrix was anisotropic and contained few clasts.

Group Three

Sample AG495 contained an ill-sorted quartzose sand with the largest grains being c.1.0mm across. In addition to quartz a rock fragment showing quartz/microcline feldspar intergrowth (c.1.0mm across) and sparse fragments of altered glauconite were present. Sparse laths of muscovite up to 0.5mm long

were present. The clay matrix was isotropic with moderate silt-sized clasts of quartz and muscovite up to 0.1mm across.

Group Four

Sample AG496 contained moderate quantities of coarse quartzose sand, with clasts averaging 1.5mm across. In addition to quartz, fragments of coarse sandstone were present. The isotropic clay matrix was variegated, varying in colour and quantity of sand inclusions, and contained moderate silt-sized clasts of quartz and muscovite up to 0.1mm across. The surface of the tile was 'salt-surfaced', indicating that it was formed from a clay rich in calcium carbonate and salt (NaCl).

Discussion

None of the thin-sections produced a distinctive suite of rocks or minerals that might be used to establish the source of the tiles, although the coarse sand temper found in the Group Four sample is typical of northern English river sands and gravels, being dominated by material derived from the Carboniferous sandstones of the Pennines. The finer sands found in Groups One to Three are more typical of deposits further south, and the mixture of quartz, sandstone and chert found in the Group One sample is similar to that found in pottery made in the Trent valley (although windblown sands with similar characteristics were deposited over the Jurassic ridge in Lincolnshire in the quaternary period).

The samples of Groups Two and Three, although quite distinct in detail, both contained altered glauconite. Glauconite pellets are mainly found in clays of Cretaceous age and younger and are typical, for example, of some clays in the vale of Pickering, immediately underlying the Chalk. However, glauconite is found much more widely and the grains in these two samples are detrital and may have travelled some distance from the source. A similar range of inclusions is found in Flemish earthenware and there is nothing in either section to disprove a Flemish source.