

## THE USE OF THE TERMS QUARTZ AND QUARTZITE IN CERAMIC INCLUSIONS

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At a recent seminar on the identification of inclusions in pottery samples organised by the north-western group of the Medieval Pottery Research Group and the Institute of Extension Studies it became clear that there is a good deal of confusion amongst archaeologists and pottery workers about the meanings of the terms quartz and quartzite and the means by which they might be distinguished under hand lens or low-powered microscope. Many pottery workers distinguish between translucent hard grains which they call quartz and opaque ones which they call quartzite. The authority for this is usually given as the 'Working Party of the Medieval Pottery Research Group: Sub-committee on Scientific Aids Revised Draft: January 1976', the relevant parts of which were subsequently published in Pottery and early commerce: characterisation and trade in Roman and later ceramics (Peacock 1977). Under the section 'Key to the Identification of Common Inclusions in Pottery—Table 11' and the sub-section C.C. '(No Reaction with Acid)—Homogeneous. Light coloured' the differences between quartz and quartzite are defined as follows:-

- " 2. Clear glassy grains harder than metal ..... quartz  
3. White glassy grains harder than metal ..... quartzite" (Peacock 1977 : 31).

As this distinction appears to represent a break with normal geological practice and to have caused some confusion, the purpose of the present note is to state the differences clearly in geological terms and to suggest an alternative approach which archaeologists might use in future.

Quartz is the name of a mineral whose chemical composition is silica ( $\text{SiO}_2$ ). The most important physical characteristics of quartz are its crystal form, conchoidal fracture, vitreous lustre, hardness and absence of cleavage. Quartz occurs in its macrocrystalline form as a vein mineral and as a major rock-forming mineral in many igneous, metamorphic and sedimentary rocks. In its compact cryptocrystalline form, quartz is known as chalcedony and occurs in such varieties as agate, jasper, chert and flint (see Berry & Mason, 1959). Quartzite is a rock which is composed essentially of grains of the mineral quartz. The grains form an equigranular interlocking mosaic (granoblastic texture) with little or no sign of a matrix cement. In a strict definition, the term quartzite should be restricted to the metamorphosed (i. e. recrystallised) equivalents of sedimentary quartz sandstones. Some geologists however, do adopt the term orthoquartzite for a sedimentary rock consisting of quartz grains with a silica cement and metaquartzite for its metamorphic equivalent. Clearly then, the two terms quartz and quartzite belong to different classification systems, the one for minerals and the other for rocks. Whilst all quartzite is quartz, not all quartz is quartzite.

The quartz occurring naturally in clay deposits or in sands used as fillers by the potters may have derived from four possible sources:-

- 1) a primary crystal in e. g. a vein or granite,
- 2) a detrital grain in a sandstone (derived from weathering of 1),
- 3) a recrystallised grain from a metamorphic rock, e. g. quartzite, (from 1 or 2),
- 4) a recycled grain in a sandstone (derived from the weathering of 2 or 3).

The quartz from any of these sources may be translucent or opaque, and white or a variety of colours (e.g. 'rose quartz', 'smoky quartz'). Hence the opacity or colour of the grains cannot be used as definitive guides to the nature of the source. The difficulty of correlating quartz grains with their original source is highlighted in a warning by Greensmith in which he says '...great care has to be taken to avoid provenance misinterpretation because quartz grains may be recycled, extensively reworked in the basin of deposition or transported over long distances.' (Greensmith 1965 : 95 ). It is also self-evident that opacity and colour cannot be used to distinguish the mineral quartz from the rock quartzite. The term quartzite should be used only when inclusions which consist of rock fragments made up of aggregates of quartz grains can be identified. This is rarely possible in medieval pottery under hand lens and will usually only be apparent in thin section. Normally the term quartz should be used, as, even if the inclusion should turn out in thin section to be quartzite, the identification of the mineral remains correct. It may be, however, that in certain parts of the country detailed study of the sands in thin section will have led to the evolution of a 'rule of thumb' definition such as proposed by Peacock if in those areas opaque grains did invariably turn out to be quartzite. Unfortunately this 'rule' does not apply generally throughout the country and where there is no thin-section programme to confirm it should not be used.

What, then, should be the practice of the pottery assistant working with hand specimens outside the reach of a full thin section programme? Apart from restricting the term quartzite to observable rock fragments composed of quartz grains as outlined above it might be useful to record differences in the quartz present. As the sands available to the potters or present in the clays may differ significantly in their origins and be composed of observably different types of quartz grain, some distinctions between the types of quartz grain present in a fabric may be recorded with profit. The most simple method would be to treat each major quartz type as a separate kind of inclusion. Thus for example 'translucent' 'opaque white' or 'opaque red' quartz inclusions would be described separately for their frequency, sorting, size and rounding, as suggested by the Subcommittee on Scientific Aids. This may in due course help to distinguish different fabrics and to suggest programmes of thin-section, heavy mineral or other analyses. The

The writers hope that this note will reduce the quantity of quartzite occurring in medieval pottery.

#### Bibliography

- Berry, L. G. & Mason, B., 1959. Mineralogy: Concepts, Descriptions, Determinations. London.
- Greensmith, J. T., 1965. Petrology of the Sedimentary Rocks by the late F. H. Hatch & R. H. Rastall 4th edition, London.
- Peacock, D. P. S. (ed.) 1977. Pottery and Early Commerce: Characterisation and Trade in Roman and Later Ceramics. London.

distribution . It is hoped to extend the project to look at material from Yorkshire, the Orkneys and Shetland, while enquiries were in hand to look at material at Durham and Carlisle. Mr Haggarty asked about a national archive of samples. Mr Hurst suggested the British Museum while Mr Cherry said that the Museum's own laboratory was working on its own material. It was agreed that there were difficulties about a central archive, but Dr Hodges suggested that Southampton would be the most likely place. Miss Mellors asked if the project was to be extended to other areas and Mr Hurst replied that it would. Mr Streeten suggested that the DOE prepare a list of petrological work which was both in progress and that which had already been completed. Mr Hurst said that such a list was being prepared by Dr Williams at Southampton.

4. Treasurer's report: The current account holds £407:72. Despite and total of about £250 having been obtained as grants for Medieval Ceramics 3, this level of support cannot be relied upon in the future. Due to constantly rising costs it may be necessary to raise the subscription rates in the near future. The back numbers of Medieval Ceramics would have their prices raised accordingly.
5. Editor's report: Dr Hodges apologised for the non-appearance of Medieval Ceramics 3 in time for circulation at the conference but this was due to mechanical failure at the University printers. A number of articles had been promised for vol. 4, which will be out for distribution at the Canterbury meeting; the volume was to include a composite bibliography of published works covering the previous three years. A scheme for publishing the Hull conference proceedings. Following discussion it was agreed that they should be made available as soon as possible.
6. Election of officers: The following officers were elected, proposed by Mr J. Cherry and seconded by Mr R. Alvey:

President:	Mrs H.E.J. Le Patourel
Honorary Secretary:	Mr S. Moorhouse
Honorary Treasurer:	Miss C. Brooks
Honorary Editors:	Mr P.J. Davey
	Dr R. Hodges
Ordinary members:	Mr D. Evans
	Mr J.G. Hurst
7. Any other business: none.