Appendix A

Mineralogical report on ceramics

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Mineralogical analysis was carried out by QEMSCAN using the methodology described by Andersen *et al.* (in press). Four major mineralogical types were recognised and the key mineralogical characteristics of these types are listed in Table A.1 on the next page. A list of potential minerals included in the QEMSCAN mineral groups is given in Table A.2 on page 291.

Results of the Mineralogical Analysis

The most obvious result of the mineralogical analysis is that the sherds from production sites display consistent mineralogical groupings that appear to relate to differences in the local bedrock geology. Although the present dataset does not adequately account for variability within and between sites, these geological correlations to some extent corroborate the existing archaeological groupings. Particularly significant mineralogical differences separate the West Somerset types produced on Triassic bedrock formations from the East and South Somerset types, represented by samples from Donyatt and Wanstrow, that were produced on Jurassic bedrock. The dominance of alkali feldspar over plagioclase and the near absence of kaolinite are the most significant characteristic features of the West Somerset types. We have not examined enough samples from East and South Somerset to generalise about their particular characteristics.

Sherds from Taunton Castle are mineralogically similar to the sherds from production sites but also include additional types that cannot presently be linked to production sites based on the samples studied here.

A further significant observation is that the sherds have significant mineralogical differences between their inclusions and matrix. The abundance of inclusions is very variable, and in some cases for the post-medieval less than one volume percent. It is particularly worrying that sherds that are visually very similar have significantly different inclusion populations and matrix compositions. This demonstrates, perhaps, how difficult it is to establish the provenance of pottery fabric types based on their inclusion mineralogy using optical microscopy. Generally (for types A, B, and C) the inclusion populations can be described as simple mixtures of two minerals, and it is likely that they have been derived from distinct sources that are relatively mineralogically pure. While some accidental inclusions are likely, the uniform mineralogy of the inclusions between different types makes it more likely that the pottery was intentionally engineered from components that had been deliberately sourced as appropriate materials for tempering of different wares. Type D in contrast, has a very mixed inclusion population, perhaps reflecting less refinement in the material selection.

Some mineralogical differences undoubtedly have geological explanations, particularly the clay minerals which are always fine grained in geological materials, and therefore distinct matrix components. A more interesting mineral is the plagioclase feldspar, which consistently reports to the matrix. While plagioclase would geologically not always be expected to be fine grained, it appears to be a characteristic component of the clays used for types B, C, and D.

The presence of glauconite is particularly significant in Somerset as it could be used as an indicator of Upper Greensand derived material (Allan *et al.* 2011). It is no surprise, therefore, that sherds from Donyatt site 4 (type B1) and Langford Budville (type A), which come from sites that are near geological exposures of the Upper Greensand, have significant glauconite. It is more

A		The clay composition of the matrix is dominated by Fe–Al–K silicates with some muscovite/illite. This type has no or little kaolinite. Inclusions are predominantly quartz and K-feldspar. Plagioclase feldspar and calcite are absent from both inclusions and matrix. Glauconite is locally significant. Type A appears to be consistent with samples from the West Somerset production sites at Crowcombe (Figure A.14), Langford Budville (Figure A.17), Nether Stowey (Figure A.18) and Wrangway (Figure A.21) and with Taunton Castle fabric types 74, 83 and 89 (Figure A.11 to Figure A.13).
B		The clay composition of the matrix is a mixture of Fe–Al–K silicates and kaolinite (between 1:1 and 2:1) with significant (although less) muscovite/illite. The matrix has significant Fe–Al silicates and plagioclase feldspar. Two subtypes are defined by differences in the inclusions:
	B1	Inclusions of quartz and K-feldspar. Glauconite is locally significant but calcite is absent. This subtype includes Donyatt Site 4 (Figure A.15) and the two samples from Wanstrow (Figure A.19 and Figure A.20) as well as two sherds from Taunton Castle fabric types unclassified and type 14 (Figure A.2 and Figure A.7)
	B2	Inclusions of quartz and calcite with minor K-feldspar. This subtype includes four medieval sherds from Taunton Castle fabric types 3, 7B, 8 and 15 (Figure A.3, Figure A.5, Figure A.6 and Figure A.8). No examples were studied from potential production sites.
C		The matrix clay composition of type C is closely similar to type B except the content of kaolinite appears to be slightly less. Inclusions are 60–70 percent calcite with the remaining being quartz and minor alkali feldspar. This group includes two medieval sherds from Taunton Castle fabric types 7A and 23 (Figure A.4 and Figure A.9), while no examples were examined from potential production sites.
D		The clay composition of the matrix is predominantly kaolinite and muscovite/illite with only minor Fe–Al–K silicates. Quartz is below 20 percent and plagioclase dominates over alkali feldspar. The inclusion population is much more diverse than in all other types. Around 70 percent is quartz but the remaining 30 percent include alkali feldspar, muscovite/illite, kaolinite, and Fe–Al silicates The group includes Donyatt Site 13 (Figure A.16) and a single sherd from Taunton Castle fabric type 62 (Figure A.10), both of which are post-medieval.

Table A.1: *Mineralogical types*

surprising that other samples in close proximity to the Upper Greensand exposures (particularly that from Wrangway) have little if any glauconite.

Of the three medieval sherds that were previously identified to have Upper Greensand components, our results confirm significant glauconite in two (type C) but not the third (type B2). It is particularly striking (on the basis of the occurrence of glauconite), that either the Upper Greensand derived material has been used locally in the production of most of the different mineralogical types (not confined to either the medieval or the post-medieval production), or that glauconite occurs more widely across the county.

The Effect of Firing Earthenwares on their Mineralogy

The very purpose of pottery firing is to introduce mineralogical changes, which as a consequence will alter the physical properties of the pottery fabric. The conditions under which these changes take place fundamentally determine the properties of the final product. However, although the products of the firing are reasonably predictable within the context of individual production sites and periods, the complex mineralogical changes that the materials undergo are only poorly understood.

Most analytical work in relation to pottery firing is either carried out on sherds from archaeological contexts, or from samples prepared from possible clay sources prepared in the laboratory. The essential difference is that it is likely that

Fe sulphides	pyrite, marcasite, pyrrhotite (and possibly jarosite)
Pb glaze	Pb bearing silicates, oxides and sulphides/sulphates
Barite	barite
Chrome spinel	chromite, chrome spinel
Fe Ox/CO_3	siderite, haematite, magnetite, goethite, ochre and limonite
Mn phases	all manganese bearing minerals including pyrolusite, rhodonite, rhodocrosite and umber
Rutile	rutile, anatase, brookite
Ilmenite	ilmenite
Zircon	zircon
REE phases	monazite, xenotime, allanite
Quartz	quartz, opal, chert, flint, chalcedony
Plagioclase feldspar	plagioclase feldspar
K-Feldspar	orthoclase, sanidine, microcline
Muscovite/Illite	muscovite, illite
Fe Al K silicates	iron-bearing clays, biotite mica
Glauconite	any phase with Fe, Al, K,Mg, Si, O
Kaolinite	kaolinite, halloysite, dickite, kyanite, sillimanite, andalusite
Tourmaline	tourmaline
Fe Al silicates	chlorite/clinochlore, nontronite, vermiculite
Mg Al silicates	palygorskite, magnesiochloritoid
Mg silicates	asbestos, talc, serpentine minerals
Ca Fe Al silicates	epidote, zoisite, clinozoisite
Calcite	calcite, chalk, limestone, lime, ankerite, dolomite
Ca phosphates	apatite, tooth and bone material
Others	any other mineral

Table A.2: *Mineral groups used in the QEMSCAN analysis*

the former were fired and exposed to the naked flame in a simple kiln with a regimen of oxidation, reduction and final reoxidation as described by Dawson and Kent (1999, 165–67) following experimental work with Dr Andy Tubb; the latter most often in an oxidising atmosphere in an electric kiln where the firing temperature can be controlled. What has been little explored is what changes occur to the mineralogy of the matrix and inclusions in pottery when fired in the former way. That there are changes can be observed in the finished pottery.

Setting aside the changes to glazes, perhaps the most obvious change is that the matrix changes colour. A typical plain red earthenware clay that will fire orange to red when fully oxidised, will fire grey to black when reduced. When reoxidised however the same ware may change to buff to pale orange in colour. At any event the reoxidised colour will be paler than the fully oxidised colour. A core of reduced clay may be left grey or black while the surface has reoxidised. The principal active constituents here are iron compounds but a similar though less marked change can be seen in other less iron-rich clay bodies. This implies that the firing cycle is changing other constituents as well.

Two observable changes to specific inclusions may be cited. Organic material may by accident or design be used to temper the ware such as the grass-tempered ware found at Cadbury-Congresbury (Rahtz 1974, 108). It is not uncommon to find that this material has been burnt out of the fabric leaving voids which may provide a detailed cast of the original. Some types of calcareous material will undergo the conversion to quicklime. The change manifests itself as a problem when the lime rehydrates increasing its volume and causing a spall on the surface of the vessel. It is a fault with certain clays once used in the Bridgwater potteries where the specks of lime were characterised by the clay-diggers in former

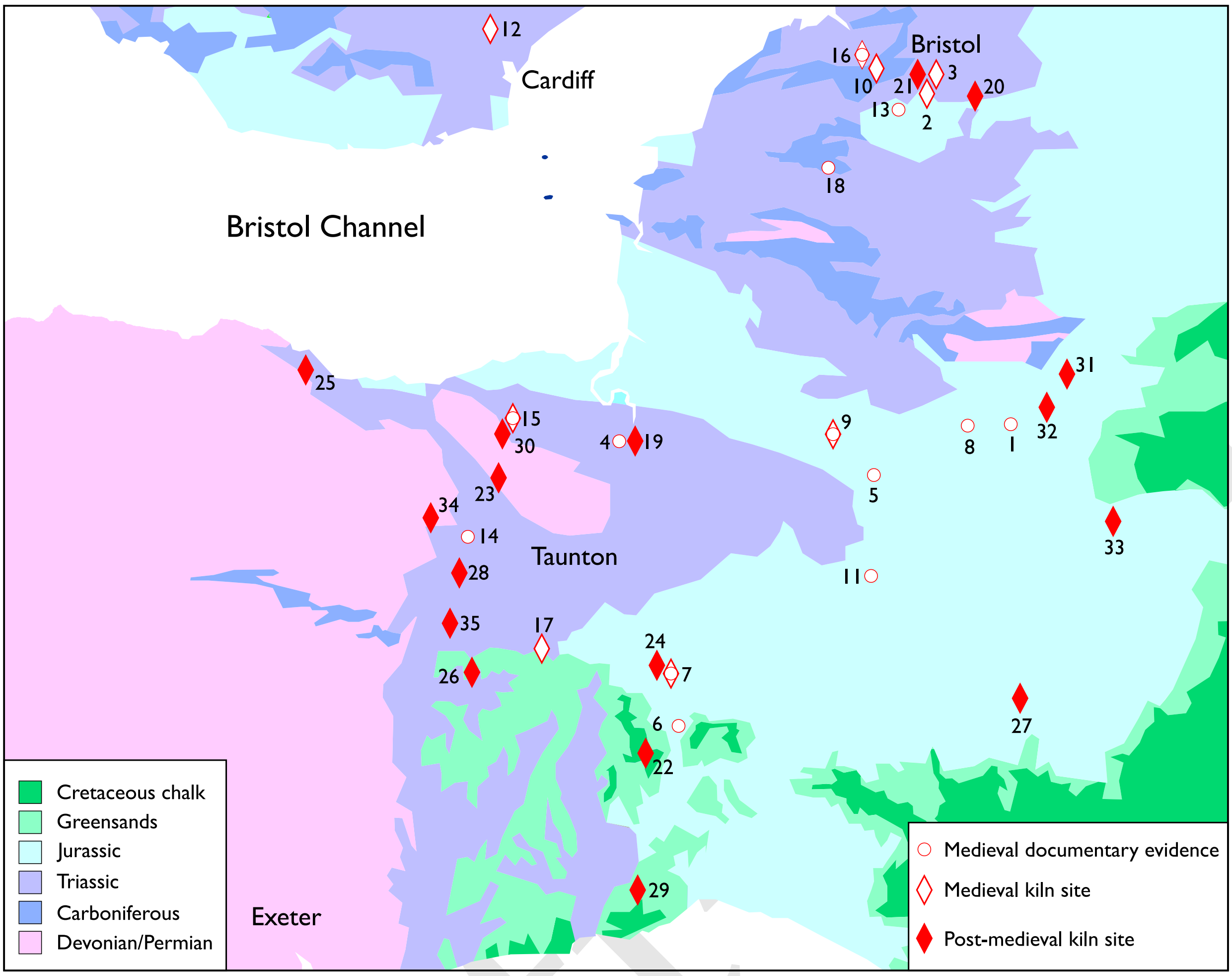

Figure A.1: *Distribution of evidence of post-Roman pottery production sites in Somerset and surrounding area pre 1800. For key to sites see Table A.3 on the facing page*

times as "fossilised bird turds." Other calcareous inclusions may leach out during firing and burial leaving a corky surface appearance such as in Pearson's Taunton fabric type 180 (Pearson 1984c, I.47, 11).

A potential explanation for the lack of glauconite identified in our analysis could relate to the thermal stability of the mineral. Geologically, glauconite is an indicator mineral for sediments deposited in marine environments, and it is poorly preserved in rocks that have been subjected to elevated temperatures after their deposition. This causes us to suggest that the thermal stability of glauconite is indeed extremely limited, and it may also break down under certain conditions during firing. A study by Basso *et al.* (2008) documents visual changes to glauconite pellets during the firing process, and we suggest that these changes are not merely changes to the colour but are caused by the thermal decomposition of the glauconite itself. Although we are currently only able to speculate, it may explain the absence of glauconite in some sherds that have previously been linked to Upper Greensand derived materials. We suspect that the red-brown inclusions of Fe-Al silicates and K-feldspar (which are particularly abundant in the sherds from Wanstrow and Donyatt site 13) may represent thermally decomposed glauconite in pottery that had been subjected to somewhat higher firing temperatures than those of the sherd from Donyatt site 4.

To conclude, the process employed in firing most pottery from archaeological contexts will change the chemistry and physical form of the mineralogy of the clay body from its raw state to its fired state in a different way to an oxidising firing under laboratory conditions.

	Medieval potteries
1	Batcombe, documentary evidence of land held by potters 1189 (le Patourel 1968, 123, 125).
2	Bristol Redcliffe (Wilson and Moorhouse 1971, 152).
3	Bristol St Peter, 14th-century pottery waste (Dawson *et al.* 1972).
4	Bridgwater, documentary evidence (le Patourel 1968, 125).
5	Butleigh, documentary evidence of land held by potters 1189 (le Patourel 1968, 123, 125).
6	Chard, documentary evidence of land held by potters 1265 (le Patourel 1968, 123, 125).
7	Donyatt sites 1 and 2, documentary evidence (Coleman-Smith and Pearson 1988; le Patourel 1968, 125).
8	Evercreech, documentary evidence of land held by potters 1272 (le Patourel 1968, 123, 125).
9	Glastonbury, documentary evidence (le Patourel 1968, 125); 14th-century waste pottery from Bove Town (C and N Hollinrake pers. comm.).
10	Ham Green, kiln and mid 12th- to 13th-century pottery waste (Barton 1963; Ponsford 1991).
11	Ilchester, documentary evidence (le Patourel 1968, 125).
12	Llandaff, Cathedral School, 14th-century waste of “Vale ware” pottery and tile (M Redknap and A Forward pers. comm.).
13	Long Ashton, documentary evidence (le Patourel 1968, 125) and possible 13th-century cooking pot waste (Ponsford 1987, 82).
14	Milverton, documentary evidence of land held by potters 1265 (le Patourel 1968, 123, 125).
15	Nether Stowey, documentary reference to right to make pottery *ab antiquo* 1275 and possible kiln site (le Patourel 1968, 104, 125).
16	Pill, documentary evidence of duration from 13th to 18th centuries (le Patourel 1968, 123, 125); 13th-century waste pottery (Ponsford 1987, 81).
17	Blackdown Hills, Upper Greensand derived wares, based on geological examination and ICP analysis (Allan *et al.* 2011).
18	Wrington, documentary evidence of land held by potters 1234 (le Patourel 1968, 125).
	Post-medieval potteries (*waste pottery sampled)
19	Bridgwater (Boore and Pearson 2010).
20	Brislington, St Anne’s (Pountney 1920, 23–40).
21	Bristol, pottery production until 1968 including tin-glazed earthenwares and creamware (Pountney 1920; Witt 1979), 18th-century waste of yellow slipwares and stoneware (Barton 1961), 19th-century kilns and waste mocha ware at Crews Hole (Marochan 1962), red earthenwares (Brears 1971, 199–200).
22	Chard and Chardstock, 17th- to 18th-century kiln furniture from field walking (R Carter and P Woods pers. comm.), South Somerset group of wares.
23*	Crowcombe, 16th-century pottery waste (Dawson pers. obsv.), one of the West Somerset group of wares.
24*	Donyatt (sites 4 and 13 sampled), the principal centre of making South Somerset wares (Coleman-Smith and Pearson 1988; Coleman-Smith 2002).
25	Dunster (Dawson and Kent 2008a).
26	Hemyock, 17th-century waste pottery (J. Allen pers. comm.)
27	Holnest, documentary evidence (Brears 1971, 178), late 16th to early 17th-century waste pottery (Dawson and Kent pers. comm.)
28*	Langford Budville, 17th-century waste saggars (Ponsford 1987, 85), 18th-century red earthenware waste (Dawson pers. obsv.), one of the West Somerset group of wares.
29	Lyme Regis, Hole Common, 18th-century waste pottery (Draper 1982).
30*	Nether and Over Stowey (Coleman-Smith and Pearson 1970; Dunning 1985, 195), one of the West Somerset group of wares.
31*	Nunney and Trudoxhill (samples Wanstrow A and Wanstrow B from Nunney Catch) 17th to 18th-century pottery waste identical to and grouped with the Wanstrow or East Somerset wares (Vranch 1988).
32*	Wanstrow, kilns reported (Nunney Catch samples A and B, see 31), a centre making East Somerset wares.
33	Wincanton, Ireson Cottage, 18th-century tin-glazed earthenware kiln and waste (Dawson and Kent 2008b).
34	Wiveliscombe, 17th-century waste pottery (Ponsford 1987, 85).
35*	Wrangway, 18th-century kilns and red earthenware waste (Dawson *et al.* 2001), one of the West Somerset group of wares.

Table A.3: *Evidence of post-Roman pottery production sites in Somerset and surrounding area pre 1800. For locations see Figure A.1 on the facing page*
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Sample: TC unclassified, context 755	CSM lab code: C05120010

(Grid = 3 x 3 cm)

Fabric description	Mineralogical description
Fairly hard-fired reduced and reoxidised red earthenware with light grey zone of reduction below inner surface and reoxidised orange buff, outer surface has eroded leaving patches of hard dark red sandy patches; fine granular structure with specks of white and occasional iron-rich particles; olive green lead-glaze with occasional speckles of reduced iron rusty brown	The sherd has 93 vol% matrix and 3 vol% inclusions. The inclusion population is composed of quartz (~88 vol%) with some K-feldspar (5 vol%). Minor Pb-glaze and matrix components make up the rest. The matrix is composed of kaolinite (29 vol%), Fe-Al-K silicates (26 vol%) and quartz (20 vol%), with minor muscovite/illite (8 vol%), plagioclase (6 vol%), K-feldspar (4 vol%) and Fe-Al silicates (6 vol%).
Form	**Mineralogical type**
Body sherd of a jar, very competently made	B_1
Analogues	
A common post-medieval type from mid and north Somerset	

Visual appearance of thin section (transmitted light)

Mineralogical map

Key to mineral map [1]

- Fe sulphides
- Pb glaze
- Barite
- Chrome spinel
- Fe Ox/CO3
- Mn phases
- Rutile
- Ilmenite
- Zircon
- REE phases
- Quartz
- Plagioclase feldspar
- K-Feldspar
- Muscovite/Illite
- Fe Al K silicates
- Glauconite
- Kaolinite
- Tourmaline
- Fe Al silicates
- Mg Al silicates
- Mg silicates
- Ca Fe Al silicates
- Calcite
- Ca phosphates
- Others

Sample: TC unclassified, context 755	**CSM lab code: C05120010**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.012	0.000	0.012
Pb glaze	0.180	4.276	0.971
Barite	0.000	0.000	0.000
Chrome spinel	0.008	0.000	0.007
Fe Ox/CO3	0.019	0.000	0.018
Mn phases	0.004	0.000	0.004
Rutile	0.589	0.062	0.569
Ilmenite	0.076	0.000	0.073
Zircon	0.022	0.000	0.021
REE phases	0.003	0.000	0.003
Quartz	20.019	87.574	21.897
Plagioclase feldspar	5.983	0.629	5.783
K-Feldspar	3.738	4.786	3.744
Muscovite/Illite	7.779	0.109	7.499
Fe Al K silicates	25.563	0.716	24.652
Glauconite	0.181	0.338	0.185
Kaolinite	29.193	0.624	28.146
Tourmaline	0.126	0.000	0.122
Fe Al silicates	6.250	0.758	6.045
Mg Al silicates	0.007	0.000	0.007
Mg silicates	0.008	0.000	0.007
Ca Fe Al silicates	0.009	0.000	0.009
Calcite	0.206	0.019	0.199
Ca phosphates	0.020	0.110	0.022
Others	0.006	0.000	0.006

Particle size distribution

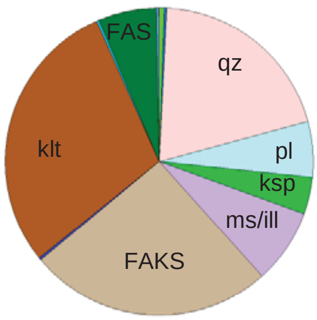
Matrix (< 63 µm) = 97.0 vol%
Inclusions (> 63 µm) = 3.0 vol%

Measurement statistics

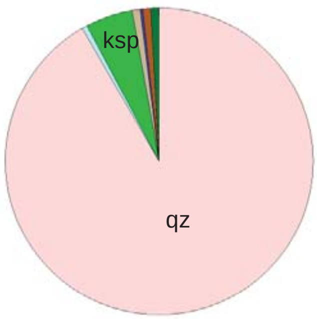
Total measurement points = 2344944
Measurement spacing = 10 µm

Visual representation of mineralogy [2]

Matrix



Inclusions



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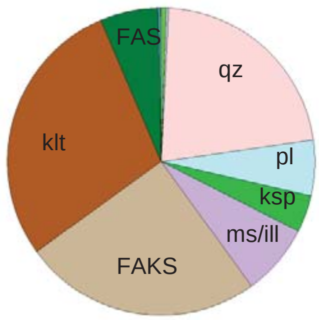


Notes

[1] Mineral groups listed in Table A2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.2: *Mineralogy report on pottery fabric (unclassified) by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 003, context 885	CSM lab code: C05120012
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Fabric description: a hard-fired ware reduced grey with reoxidised orange blushes; smooth corky surface with water-worn quartz up to 2mm, crushed chert and limestone (microfossils) again up to 2mm in size	The sherd has 76 vol% matrix and 24 vol% inclusions. The inclusion population is almost exclusively made of quartz (92 vol%) and calcite (7 vol%). The matrix is composed of Fe-Al-K silicates (53 vol%) with kaolinite (10 vol%) and plagioclase feldspar (15 vol%) and minor quartz (8 vol%), calcite (5 vol%) and muscovite/illite (4 vol%).
Form	**Mineralogical type**
Rim of hand-built jar [cooking pot] with flared neck	B_2
Analogues	
Mixed Upper Greensand derived materials; 11th-12th centuries	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 003, context 885 | **CSM lab code: C05120012**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.019	0.000	0.014
Pb glaze	0.002	0.000	0.001
Barite	0.000	0.000	0.000
Chrome spinel	0.001	0.000	0.001
Fe Ox/CO3	0.507	0.076	0.405
Mn phases	0.018	0.001	0.014
Rutile	0.531	0.014	0.408
Ilmenite	0.009	0.000	0.007
Zircon	0.010	0.000	0.007
REE phases	0.000	0.000	0.000
Quartz	7.617	91.747	27.597
Plagioclase feldspar	15.444	0.066	11.792
K-Feldspar	1.318	0.195	1.052
Muscovite/Illite	4.382	0.025	3.347
Fe Al K silicates	52.811	0.169	40.309
Glauconite	0.091	0.029	0.076
Kaolinite	10.421	0.017	7.950
Tourmaline	0.016	0.121	0.041
Fe Al silicates	1.608	0.083	1.246
Mg Al silicates	0.002	0.000	0.001
Mg silicates	0.040	0.000	0.030
Ca Fe Al silicates	0.240	0.000	0.183
Calcite	4.798	6.755	5.263
Ca phosphates	0.088	0.701	0.234
Others	0.028	0.000	0.021

Particle size distribution

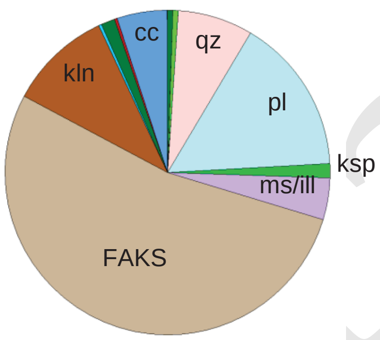
Matrix (< 63 µm) = 76.3 vol%
Inclusions (> 63 µm) = 23.7 vol%

Measurement statistics

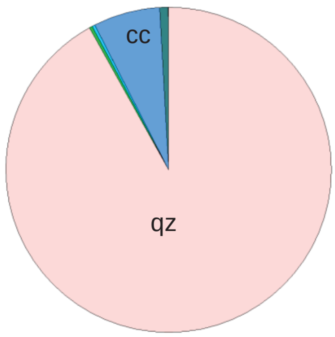
Total measurement points = 3271938
Measurement spacing = 10 µm

Visual representation of mineralogy

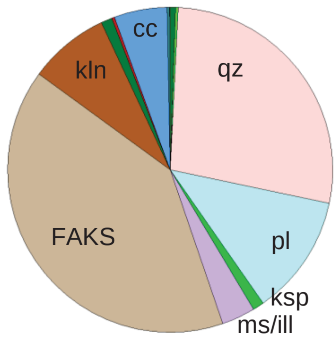
Matrix



Inclusions



Bulk



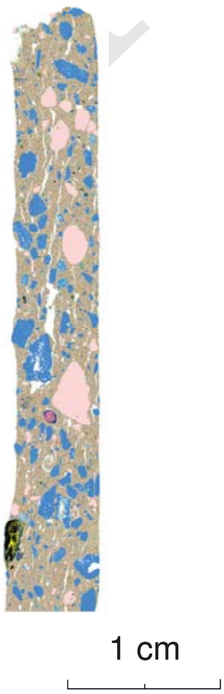
Notes

[1] Mineral groups listed in Table 2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.3: *Mineralogy report on pottery fabric 003 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 007A, context 45	CSM lab code: C05120003
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Hard-fired coarse earthenware with dark grey reduced core and light grey exterior; with crushed quartz and limestone inclusions <3mm	The sherd has 77 vol% matrix and 23 vol% inclusions. The inclusion population is composed exclusively of calcite (61 vol%) and quartz (39 vol%). The matrix is composed of Fe-Al-K silicates (39 vol%) with kaolinite (14 vol%), calcite (15 vol%), plagioclase feldspar (9 vol%), muscovite/illite (9 vol%) and quartz (7 vol%).
Form	**Mineralogical type**
Body sherd of a hand-built open jar/cooking pot	C
Analogues	
Mixed Upper Greensand derived materials, 11th-12th century	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 007A, context 45	CSM lab code: C05120003

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.292	0.048	0.235
Pb glaze	0.001	0.000	0.001
Barite	0.001	0.000	0.000
Chrome spinel	0.003	0.000	0.002
Fe Ox/CO3	0.997	0.043	0.775
Mn phases	0.219	0.000	0.168
Rutile	0.460	0.000	0.353
Ilmenite	0.015	0.000	0.011
Zircon	0.008	0.000	0.006
REE phases	0.001	0.000	0.000
Quartz	7.125	38.564	14.423
Plagioclase feldspar	9.409	0.022	7.230
K-Feldspar	2.020	0.052	1.564
Muscovite/Illite	9.142	0.014	7.023
Fe Al K silicates	39.413	0.079	30.282
Glauconite	0.343	0.042	0.273
Kaolinite	13.647	0.023	10.484
Tourmaline	0.020	0.000	0.015
Fe Al silicates	2.179	0.001	1.673
Mg Al silicates	0.007	0.000	0.005
Mg silicates	0.005	0.000	0.004
Ca Fe Al silicates	0.120	0.000	0.092
Calcite	14.500	61.097	25.317
Ca phosphates	0.053	0.015	0.044
Others	0.025	0.000	0.019

Particle size distribution

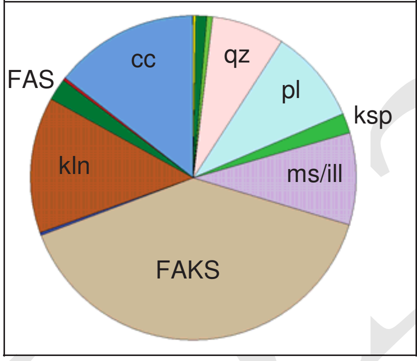
Matrix (< 63 µm) = 76.8 vol%
Inclusions (> 63 µm) = 23.2 vol%

Measurement statistics

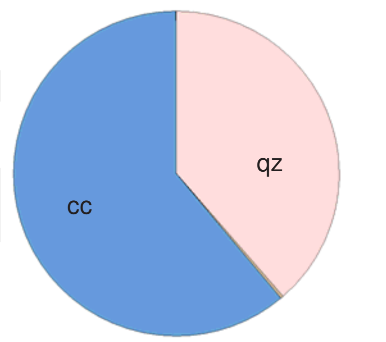
Total measurement points = 2030866
Measurement spacing = 10 µm

Visual representation of mineralogy

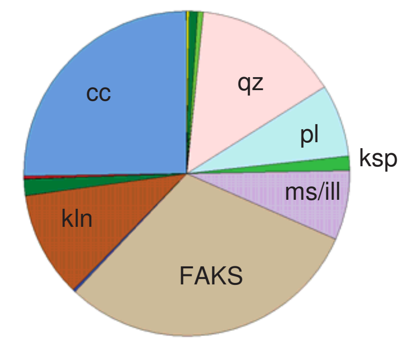
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table 2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.4: *Mineralogy report on pottery fabric 007A by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 007B, context 45	**CSM lab code: C05120004**
	
	(Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Hard-fired course earthenware with reduced grey core and reoxidised orange buff surface with light buff patches; many coloured quartz inclusions <1mm and occasional quartz <3mm.	The sherd has 83 vol% matrix and 17 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~96 vol%) with traces of calcite (2 vol%). The matrix is a mixture of Fe-Al-K silicates (37 vol%), kaolinite (26 vol%) and muscovite/illite (18 vol%) with minor plagioclase (5 vol%), quartz (6 vol%) and Fe-Al silicates (4 vol%).
Form	**Mineralogical type**
Body sherd of a hand-built open jar/cooking pot	B_2
Analogues	
11th-12th century	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 007B, context 45 | **CSM lab code: C05120004**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.001	0.000	0.001
Pb glaze	0.002	0.000	0.002
Barite	0.000	0.000	0.000
Chrome spinel	0.002	0.000	0.002
Fe Ox/CO3	0.153	0.034	0.133
Mn phases	0.011	0.000	0.009
Rutile	0.422	0.000	0.351
Ilmenite	0.008	0.010	0.008
Zircon	0.005	0.042	0.011
REE phases	0.001	0.000	0.001
Quartz	5.954	95.593	21.051
Plagioclase feldspar	5.341	0.030	4.447
K-Feldspar	1.136	0.182	0.975
Muscovite/Illite	17.705	0.093	14.739
Fe Al K silicates	37.298	0.141	31.040
Glauconite	0.069	0.000	0.057
Kaolinite	26.352	0.113	21.933
Tourmaline	0.105	1.066	0.267
Fe Al silicates	3.964	0.369	3.359
Mg Al silicates	0.002	0.000	0.001
Mg silicates	0.047	0.000	0.039
Ca Fe Al silicates	0.064	0.001	0.053
Calcite	1.325	2.183	1.470
Ca phosphates	0.026	0.142	0.046
Others	0.007	0.000	0.006

Particle size distribution

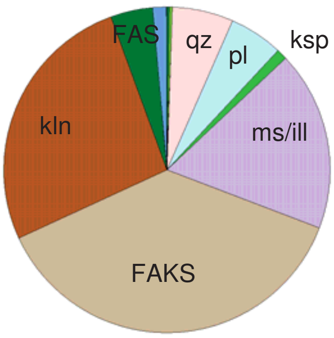
Matrix (< 63 µm) = 83.2 vol%
Inclusions (> 63 µm) = 16.8 vol%

Measurement statistics

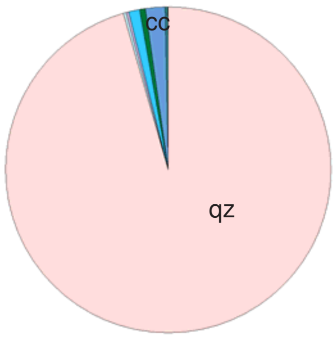
Total measurement points = 2057978
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

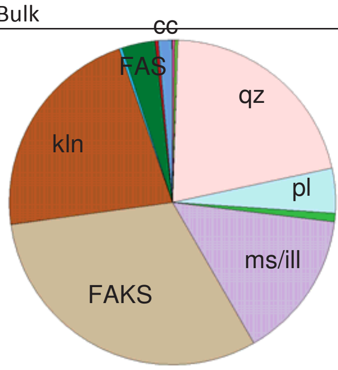
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.5: *Mineralogy report on pottery fabric 007B by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 008=026, context 340	CSM lab code: C05120008
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Very coarse reduced grey earthenware with buff oxidised surface with crushed chert, limestone and quartz inclusions <1mm	The sherd has 75 vol% matrix and 25 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~98 vol%) with minor calcite (1 vol%). The matrix is composed of Fe-Al-K silicates (51 vol%) and kaolinite (28 vol%) with minor Fe-Al silicates (4 vol%), quartz (5 vol%), plagioclase (3 vol%), muscovite/illite (4 vol%), Fe-Al silicates (4 vol%) and calcite (2 vol%).
Form	**Mineralogical type**
hand-built cooking pot	B_2
Analogues	
Upper Greensand derived wares 11th-12th century, Taunton 1984 type 52	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map [1]
 1 cm	 1 cm	Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 008=026, context 340	**CSM lab code: C05120008**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.012	0.000	0.009
Pb glaze	0.003	0.000	0.002
Barite	0.000	0.000	0.000
Chrome spinel	0.001	0.000	0.001
Fe Ox/CO3	0.436	0.000	0.325
Mn phases	0.088	0.098	0.090
Rutile	0.281	0.000	0.209
Ilmenite	0.005	0.000	0.004
Zircon	0.001	0.000	0.001
REE phases	0.001	0.000	0.001
Quartz	5.080	98.015	28.715
Plagioclase feldspar	3.112	0.036	2.330
K-Feldspar	0.587	0.080	0.458
Muscovite/Illite	3.824	0.000	2.852
Fe Al K silicates	51.527	0.066	38.440
Glauconite	0.071	0.290	0.127
Kaolinite	28.340	0.080	21.153
Tourmaline	0.035	0.000	0.026
Fe Al silicates	4.251	0.235	3.229
Mg Al silicates	0.001	0.000	0.001
Mg silicates	0.006	0.000	0.004
Ca Fe Al silicates	0.081	0.000	0.060
Calcite	2.223	1.080	1.933
Ca phosphates	0.012	0.021	0.014
Others	0.022	0.000	0.016

Particle size distribution

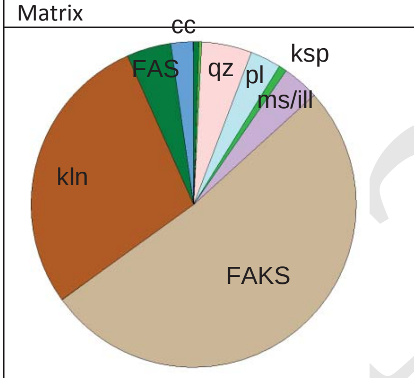
Matrix (< 63 µm) = 74.6 vol%
Inclusions (> 63 µm) = 25.4 vol%

Measurement statistics

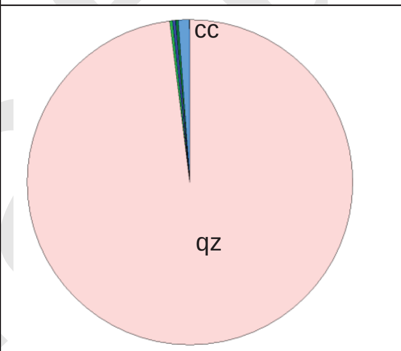
Total measurement points = 987142
Measurement spacing = 10 µm

Visual representation of mineralogy [2]

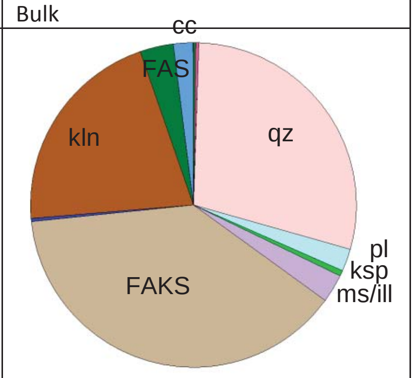
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table 2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.6: *Mineralogy report on pottery fabric 008=026 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

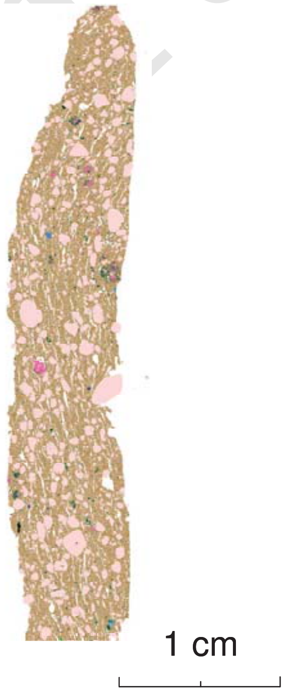
Sample: TC 014, context 338	**CSM lab code: C05120007**
	

(Grid = 3 x 3 cm)

Fabric description	**Mineralogical description**
Fabric description: hard-fired dark grey reduced earthenware with buff oxidised surface and water worn quartz and chert inclusions <1mm	The sherd has 72 vol% matrix and 28 vol% inclusions. The inclusion population is nearly exclusively quartz (99 vol%). The matrix is a mixture of Fe-Al-K silicates (54 vol%) and kaolinite (24 vol%) with minor muscovite/illite (5 vol%), quartz, plagioclase feldspar, Fe-Al silicates, and K-feldspar.
Form	**Mineralogical type**
Flared rim of a hand-built open jar/cooking pot	B_1
Analogues	
Mixed Upper Greensand derived materials,11th century; Taunton 1984 type 57	

Visual appearance of thin section (transmitted light)

Mineralogical map



Key to mineral map[1]

- Fe sulphides
- Pb glaze
- Barite
- Chrome spinel
- Fe Ox/CO3
- Mn phases
- Rutile
- Ilmenite
- Zircon
- REE phases
- Quartz
- Plagioclase feldspar
- K-Feldspar
- Muscovite/Illite
- Fe Al K silicates
- Glauconite
- Kaolinite
- Tourmaline
- Fe Al silicates
- Mg Al silicates
- Mg silicates
- Ca Fe Al silicates
- Calcite
- Ca phosphates
- Others

Sample: TC 014, context 338 | **CSM lab code: C05120007**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.001	0.000	0.001
Pb glaze	0.002	0.000	0.001
Barite	0.000	0.000	0.000
Chrome spinel	0.001	0.000	0.001
Fe Ox/CO3	0.066	0.129	0.083
Mn phases	0.795	0.294	0.656
Rutile	0.325	0.000	0.236
Ilmenite	0.017	0.012	0.016
Zircon	0.008	0.018	0.011
REE phases	0.002	0.000	0.002
Quartz	5.449	98.611	31.137
Plagioclase feldspar	2.747	0.000	1.990
K-Feldspar	1.016	0.117	0.768
Muscovite/Illite	5.152	0.022	3.737
Fe Al K silicates	54.122	0.084	39.222
Glauconite	0.298	0.094	0.242
Kaolinite	23.821	0.089	17.277
Tourmaline	0.056	0.000	0.040
Fe Al silicates	5.562	0.255	4.099
Mg Al silicates	0.001	0.000	0.001
Mg silicates	0.022	0.000	0.016
Ca Fe Al silicates	0.030	0.000	0.021
Calcite	0.446	0.275	0.399
Ca phosphates	0.049	0.000	0.036
Others	0.012	0.000	0.009

Particle size distribution

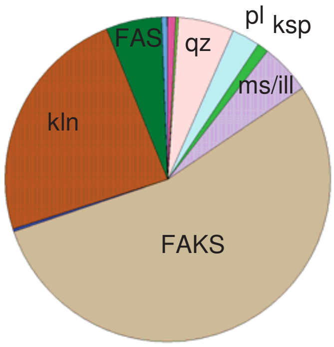
Matrix (< 63 µm) = 72.4 vol%
Inclusions (> 63 µm) = 27.6 vol%

Measurement statistics

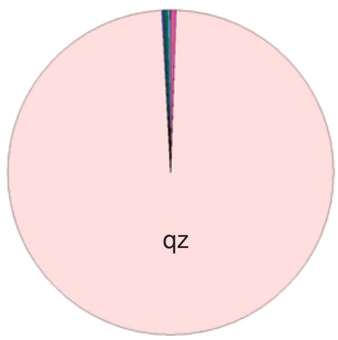
Total measurement points = 2319625
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

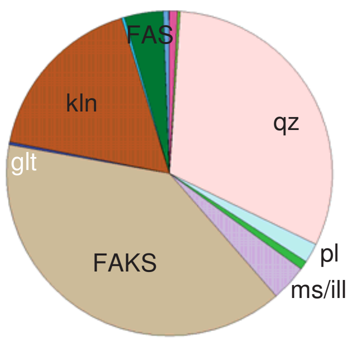
Matrix



Inclusions



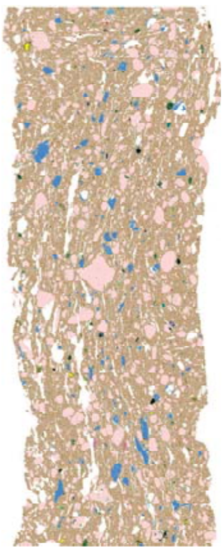
Bulk



Notes
[1] Mineral groups listed in Table A.2.
[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.7: *Mineralogy report on pottery fabric 014 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 015, context 350	CSM lab code: C05120009
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Reduced dark grey earthenware with brick red oxidised surface and quantities of water worn quartz and crushed chert <1mm and occasional limestone	The sherd has 79 vol% matrix and 21 vol% inclusions. The inclusion population is dominated by quartz (89 vol%) with some calcite (10 vol%). The matrix is a mixture of Fe-Al-K silicates (50 vol%) with kaolinite (20 vol%), and muscovite/illite (12 vol%) and minor quartz, plagioclase feldspar, Fe-Al silicates and K-feldspar.
Form	**Mineralogical type**
Hand-built handle with two incised lines, probably from a tripod pitcher	B_2
Analogues	
Mixed Upper Greensand derived materials; 12th-13th century; Castle Neroche	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
 1 cm	 1 cm	Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 015, context 350 | **CSM lab code: C05120009**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.039	0.273	0.089
Pb glaze	0.004	0.000	0.003
Barite	0.002	0.000	0.001
Chrome spinel	0.002	0.000	0.002
Fe Ox/CO3	0.198	0.277	0.215
Mn phases	0.076	0.001	0.060
Rutile	0.396	0.021	0.316
Ilmenite	0.012	0.014	0.013
Zircon	0.006	0.018	0.009
REE phases	0.001	0.000	0.000
Quartz	5.676	88.561	23.434
Plagioclase feldspar	5.259	0.031	4.139
K-Feldspar	1.527	0.131	1.228
Muscovite/Illite	12.459	0.024	9.795
Fe Al K silicates	49.552	0.106	38.959
Glauconite	0.113	0.000	0.089
Kaolinite	19.803	0.037	15.568
Tourmaline	0.038	0.203	0.073
Fe Al silicates	3.205	0.098	2.540
Mg Al silicates	0.002	0.000	0.001
Mg silicates	0.005	0.000	0.004
Ca Fe Al silicates	0.138	0.001	0.108
Calcite	1.414	10.011	3.256
Ca phosphates	0.043	0.191	0.075
Others	0.030	0.000	0.024

Particle size distribution

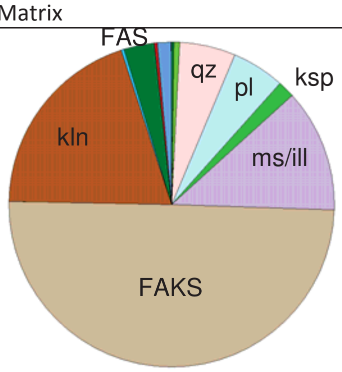
Matrix (< 63 µm) = 78.6 vol%
Inclusions (> 63 µm) = 21.4 vol%

Measurement statistics

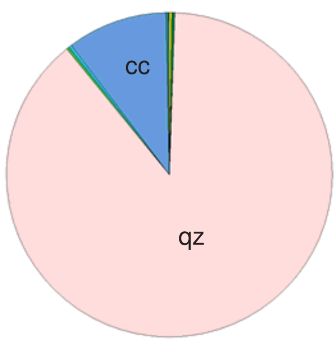
Total measurement points = 5252998
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

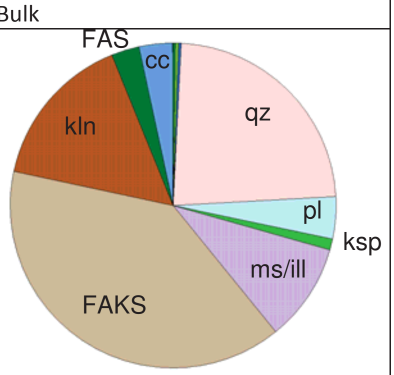
Matrix



Inclusions



Bulk

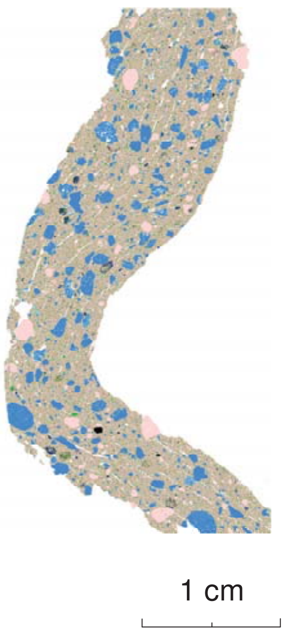


Notes

[1] Mineral groups listed in Table A.2.
[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.8: *Mineralogy report on pottery fabric 015 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 023, context 931	**CSM lab code: C05120013**
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Hard-fired reduced grey fabric with brick red oxidised surface with rough feel to the surface; fabric contains with quantities of crushed chert, quartz, limestone and fossil material <2mm.	The sherd has 83 vol% matrix and 17 vol% inclusions. The inclusion population is dominated by calcite (63 vol%) with some quartz (~35 vol%) and trace K-feldspar (2 vol%). The matrix is composed of Fe-Al-K silicates (54 vol%) with some muscovite/illite (14 vol%), quartz (11 vol%) and calcite (8 vol%) and minor K-feldspar (5 vol%) and plagioclase (4 vol%).
Form	**Mineralogical type**
Rim of hand-built open jar/cooking pot	C
Analogues	
Upper Greensand derived 11th-12th century	

Visual appearance of thin section (transmitted light)	**Mineralogical map**	**Key to mineral map[1]**
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 023, context 931	**CSM lab code: C05120013**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.002	0.000	0.001
Pb glaze	0.005	0.000	0.004
Barite	0.000	0.016	0.003
Chrome spinel	0.003	0.000	0.003
Fe Ox/CO3	0.035	0.418	0.101
Mn phases	0.063	0.003	0.052
Rutile	0.251	0.006	0.209
Ilmenite	0.026	0.000	0.021
Zircon	0.015	0.000	0.012
REE phases	0.001	0.000	0.001
Quartz	10.505	34.685	14.670
Plagioclase feldspar	3.711	0.267	3.117
K-Feldspar	5.256	1.545	4.617
Muscovite/Illite	13.932	0.041	11.540
Fe Al K silicates	54.483	0.243	45.140
Glauconite	0.676	0.030	0.565
Kaolinite	1.159	0.000	0.960
Tourmaline	0.010	0.000	0.008
Fe Al silicates	2.006	0.011	1.662
Mg Al silicates	0.001	0.000	0.001
Mg silicates	0.034	0.000	0.029
Ca Fe Al silicates	0.031	0.000	0.026
Calcite	7.755	62.736	17.225
Ca phosphates	0.030	0.000	0.025
Others	0.010	0.000	0.008

Particle size distribution

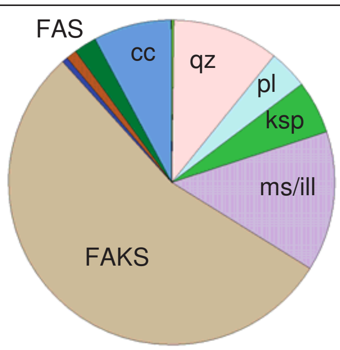
Matrix (< 63 µm) = 82.8 vol%
Inclusions (> 63 µm) = 17.2 vol%

Measurement statistics

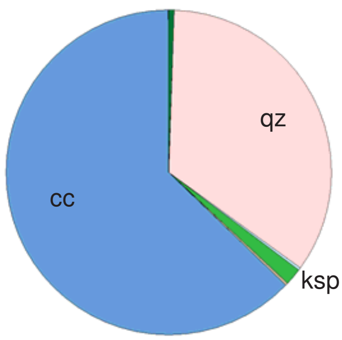
Total measurement points = 2484580
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

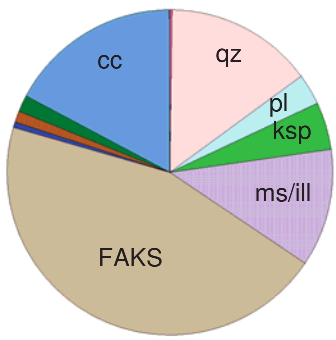
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.9: *Mineralogy report on pottery fabric 023 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 062, context 1105	CSM lab code: C05120014
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Medium to soft-fired pink buff earthenware; smooth external surface; fabric very fine grained with occasional iron-rich particles <2mm; reduced light green glaze with slight mottling and picking up the throwing lines	The sherd has 99 vol% matrix and 1 vol% inclusions. The inclusion population is composed of quartz (58 vol%) with some K-feldspar (8 vol%), Fe-Al-silicate (6 vol%) and minor muscovite/illite, kaolinite, and plagioclase. The matrix is composed of kaolinite (30 vol%) and muscovite/illite (25 vol%) with some Fe-Al-K silicates (10 vol%) and includes significant quartz (18 vol%) and minor Fe-Al silicate, plagioclase and K-feldspar .
Form	**Mineralogical type**
Body sherd of a large wheel-thrown bowl with internal lead-glaze	D
Analogues	
South Somerset ware, 17th-19th century; Taunton 1984 type 17, DPT type 9	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
 1 cm	 1 cm	Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 062, context 1105 | **CSM lab code: C05120014**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.002	0.000	0.002
Pb glaze	0.043	17.989	0.552
Barite	0.001	0.000	0.001
Chrome spinel	0.007	0.000	0.007
Fe Ox/CO3	0.025	0.209	0.027
Mn phases	0.001	0.000	0.001
Rutile	0.772	0.128	0.764
Ilmenite	0.055	0.000	0.055
Zircon	0.012	0.000	0.012
REE phases	0.002	0.000	0.002
Quartz	17.733	58.153	18.023
Plagioclase feldspar	7.716	1.517	7.635
K-Feldspar	5.641	8.332	5.645
Muscovite/Illite	24.999	3.383	24.723
Fe Al K silicates	9.806	0.358	9.689
Glauconite	0.082	0.000	0.081
Kaolinite	30.189	3.598	29.851
Tourmaline	0.094	0.000	0.093
Fe Al silicates	2.734	5.717	2.750
Mg Al silicates	0.022	0.000	0.021
Mg silicates	0.012	0.000	0.011
Ca Fe Al silicates	0.001	0.000	0.001
Calcite	0.018	0.136	0.019
Ca phosphates	0.015	0.480	0.019
Others	0.016	0.000	0.016

Particle size distribution

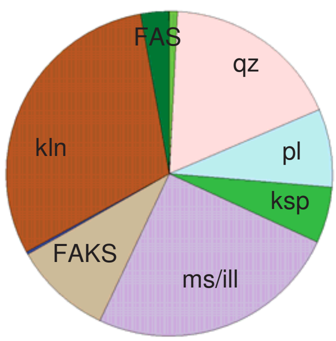
Matrix (< 63 µm) = 99.1 vol%
Inclusions (> 63 µm) = 0.9 vol%

Measurement statistics

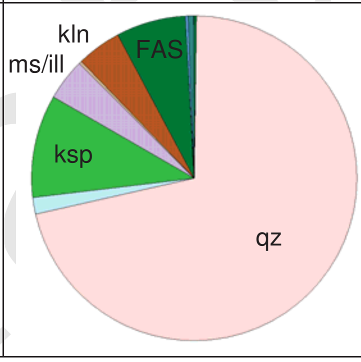
Total measurement points = 4230938
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

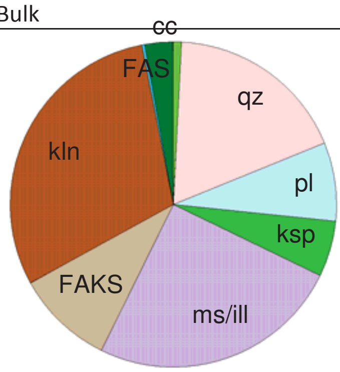
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.10: *Mineralogy report on pottery fabric 062 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 074, context 203	CSM lab code: C05120005
	
	(Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Hard-fired reduced and reoxidised red earthenware with brick red core and reduced grey internal fine sandy surface; fine granular structure with lime and ?conglomerate inclusions; lead-glaze has fired to a dark green almost black speckled with white	The sherd has 91 vol% matrix and 9 vol% inclusions. The inclusion population is dominated by quartz (71 vol%) with 23 vol% K-feldspar. The matrix is a dominated by Fe-Al-K silicates (64 vol%) with some muscovite/illite (12 vol%) but no kaolinite. Minor quartz (10 vol%), and K-feldspar (10 vol%) occurs along with traces of Fe-Al-silicates.
Form	**Mineralogical type**
Possibly moulded on a sand-sprinkled former	A
Analogues	
Possibly West Somerset ware 18th century	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
 1 cm	 1 cm	Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 074, context 203 | **CSM lab code: C05120005**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.004	0.000	0.004
Pb glaze	0.062	5.912	0.842
Barite	0.001	0.000	0.000
Chrome spinel	0.002	0.000	0.002
Fe Ox/CO3	0.098	0.110	0.099
Mn phases	0.032	0.055	0.034
Rutile	0.112	0.002	0.102
Ilmenite	0.036	0.000	0.033
Zircon	0.013	0.000	0.012
REE phases	0.001	0.000	0.001
Quartz	9.655	70.529	15.062
Plagioclase feldspar	0.285	0.000	0.259
K-Feldspar	10.235	22.958	11.344
Muscovite/Illite	11.575	0.050	10.517
Fe Al K silicates	64.482	0.241	58.583
Glauconite	0.360	0.014	0.329
Kaolinite	0.134	0.000	0.122
Tourmaline	0.003	0.000	0.003
Fe Al silicates	2.055	0.079	1.873
Mg Al silicates	0.003	0.000	0.003
Mg silicates	0.013	0.000	0.012
Ca Fe Al silicates	0.005	0.000	0.005
Calcite	0.552	0.017	0.503
Ca phosphates	0.020	0.031	0.021
Others	0.262	0.002	0.238

Particle size distribution

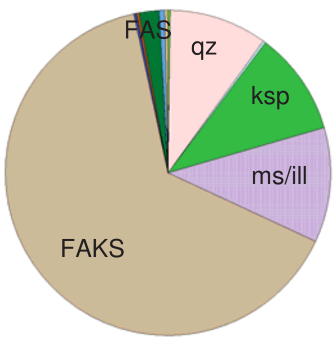
Matrix (< 63 µm) = 91.1 vol%
Inclusions (> 63 µm) = 8.9 vol%

Measurement statistics

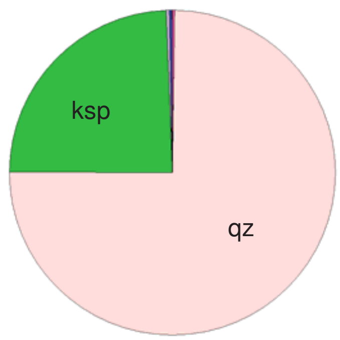
Total measurement points = 3178160
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

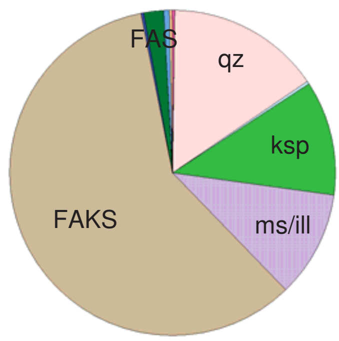
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.
[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.11: Mineralogy report on pottery fabric 074 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ

Sample: TC 083=093, context 231	**CSM lab code: C05120006**
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Fairly hard-fired oxidised red earthenware with smooth external surface; granular structure to the fabric with few discernible inclusions; glaze appears dull brown speckled all over with dark brown spots from iron-rich particles in the glaze	The sherd has 89 vol% matrix and 11 vol% inclusions. The inclusion population is dominated by quartz (72 vol%) with 23 vol% K-feldspar. The matrix is a dominated by Fe-Al-K silicates (63 vol%) with some muscovite/illite (13 vol%) but no kaolinite. Minor quartz (11 vol%), and K-feldspar (10 vol%) occurs along with traces of Fe-Al-silicates.
Form	**Mineralogical type**
Profile of a shallow wheel-thrown dish with knife trimmed base and internal lead-glaze over rather scribbled white slip-trailed decoration	A
Analogues	
South Somerset ware; 18th -19th century	

Visual appearance of thin section (transmitted light)	**Mineralogical map**	**Key to mineral map**[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 083=093, context 231	**CSM lab code: C05120006**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.008	0.064	0.015
Pb glaze	0.353	4.371	1.000
Barite	0.000	0.000	0.000
Chrome spinel	0.002	0.000	0.002
Fe Ox/CO3	0.081	0.000	0.072
Mn phases	0.085	0.326	0.112
Rutile	0.134	0.020	0.121
Ilmenite	0.047	0.000	0.042
Zircon	0.016	0.000	0.015
REE phases	0.002	0.000	0.002
Quartz	10.606	71.715	17.429
Plagioclase feldspar	0.335	0.000	0.297
K-Feldspar	10.172	22.739	11.559
Muscovite/Illite	13.085	0.112	11.606
Fe Al K silicates	62.405	0.483	55.346
Glauconite	0.321	0.051	0.291
Kaolinite	0.192	0.000	0.170
Tourmaline	0.019	0.000	0.017
Fe Al silicates	1.949	0.057	1.733
Mg Al silicates	0.004	0.000	0.004
Mg silicates	0.016	0.000	0.014
Ca Fe Al silicates	0.004	0.000	0.003
Calcite	0.121	0.044	0.112
Ca phosphates	0.032	0.017	0.030
Others	0.012	0.000	0.010

Particle size distribution

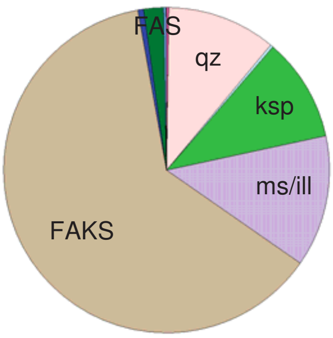
Matrix (< 63 µm) = 88.8 vol%
Inclusions (> 63 µm) = 11.2 vol%

Measurement statistics

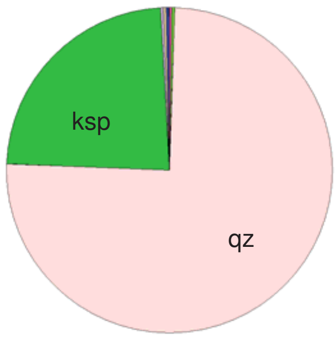
Total measurement points = 3121571
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

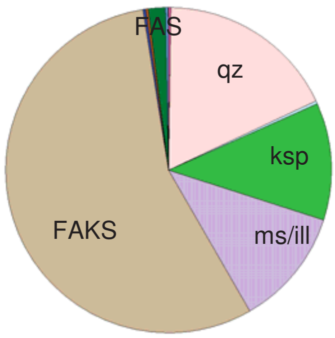
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.12: *Mineralogy report on pottery fabric 083 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: TC 089, context 810	CSM lab code: C05120011
	
	(Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Hard-fired oxidised red earthenware with sandy feel to the dark red outer surface; granular structure with occasional voids, sparsely speckled with mica and ?quartz; glaze shows rich brown over the exposed surface and dark cream over the slip.	The sherd has 91 vol% matrix and 9 vol% inclusions. The inclusion population is dominated by quartz (80 vol%) with 19 vol% K-feldspar. The matrix is a dominated by Fe-Al-K silicates (63 vol%) with some muscovite/illite (14 vol%) but no kaolinite. Minor quartz (9 vol%), and K-feldspar (11 vol%) occurs along with traces of Fe-Al-silicates.
Form	**Mineralogical type**
Base of wheel-thrown dish decorated inside with sgraffito through a white slip under a lead-glaze, horizontal combed bands interrupted by vertical combed zig-zags	A
Analogues	
West Somerset ware 18th century	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: TC 089, context 810 | **CSM lab code: C05120011**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.001	0.000	0.001
Pb glaze	0.023	0.495	0.064
Barite	0.000	0.000	0.000
Chrome spinel	0.001	0.000	0.001
Fe Ox/CO3	0.019	0.000	0.018
Mn phases	0.127	0.417	0.152
Rutile	0.122	0.000	0.111
Ilmenite	0.031	0.059	0.033
Zircon	0.014	0.000	0.012
REE phases	0.002	0.000	0.002
Quartz	8.867	80.140	15.052
Plagioclase feldspar	0.374	0.000	0.341
K-Feldspar	11.468	18.644	12.091
Muscovite/Illite	13.656	0.029	12.474
Fe Al K silicates	63.051	0.168	57.594
Glauconite	0.214	0.000	0.195
Kaolinite	0.263	0.000	0.240
Tourmaline	0.015	0.000	0.014
Fe Al silicates	1.705	0.048	1.561
Mg Al silicates	0.002	0.000	0.002
Mg silicates	0.006	0.000	0.005
Ca Fe Al silicates	0.001	0.000	0.001
Calcite	0.022	0.000	0.020
Ca phosphates	0.011	0.000	0.010
Others	0.005	0.000	0.005

Particle size distribution

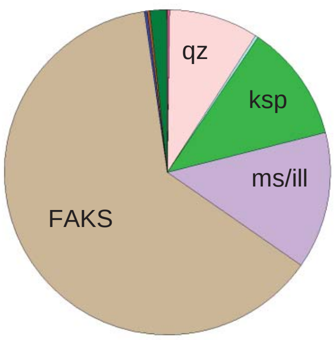
Matrix (< 63 µm) = 91.3 vol%
Inclusions (> 63 µm) = 8.7 vol%

Measurement statistics

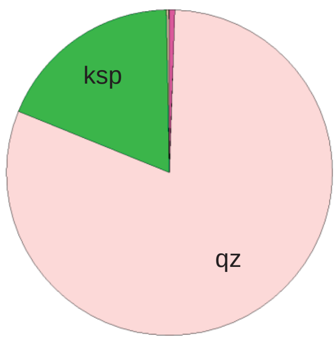
Total measurement points = 2068922
Measurement spacing = 10 µm

Visual representation of mineralogy

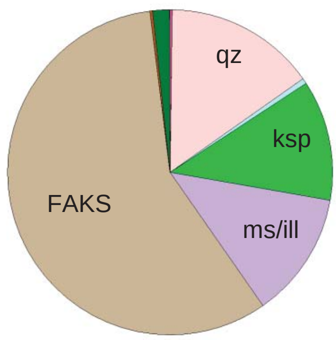
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table 2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.13: *Mineralogy report on pottery fabric 089 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Crowcombe 55/1992	CSM lab code: C05120019
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Fairly hard-fired orange red earthenware with grey reduced smooth surface; fine diagonal laminar structure with moderate fine inclusions of white flecks and larger both orange iron-rich and darker harder grains	The sherd has 94 vol% matrix and 6 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~94 vol%) with some K-feldspar (5 vol%). The matrix is predominantly composed of Fe-Al-K silicates (68 vol%) with some Fe-Al silicates (5 vol%), muscovite/illite (6 vol%), K-feldspar (7 vol%) and quartz (11 vol%).
Form	**Mineralogical type**
Rim sherd of wheel-thrown flanged bowl with thumbed edge; unglazed	A
Analogues	
West Somerset type ware 16th-17th century, see Bridgwater George Street	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: Crowcombe 55/1992 | **CSM lab code: C05120019**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.003	0.000	0.003
Pb glaze	0.151	0.000	0.141
Barite	0.000	0.000	0.000
Chrome spinel	0.001	0.000	0.001
Fe Ox/CO3	0.030	0.045	0.031
Mn phases	0.226	0.334	0.232
Rutile	0.135	0.093	0.133
Ilmenite	0.034	0.000	0.032
Zircon	0.015	0.101	0.020
REE phases	0.002	0.000	0.002
Quartz	10.748	93.744	16.031
Plagioclase feldspar	0.472	0.000	0.442
K-Feldspar	7.006	5.123	6.886
Muscovite/Illite	6.113	0.135	5.733
Fe Al K silicates	68.351	0.199	64.013
Glauconite	0.211	0.014	0.198
Kaolinite	0.423	0.000	0.396
Tourmaline	0.011	0.000	0.010
Fe Al silicates	4.783	0.170	4.490
Mg Al silicates	0.032	0.000	0.030
Mg silicates	0.059	0.000	0.055
Ca Fe Al silicates	0.001	0.000	0.001
Calcite	0.798	0.040	0.750
Ca phosphates	0.024	0.000	0.023
Others	0.371	0.000	0.347

Particle size distribution

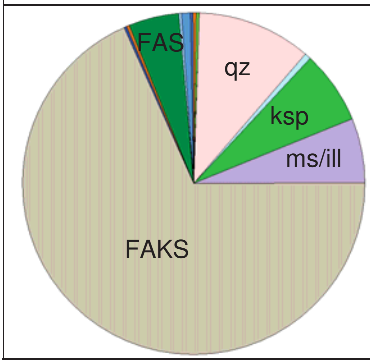
Matrix (< 63 μm) = 93.6 vol%
Inclusions (> 63 μm) = 6.4 vol%

Measurement statistics

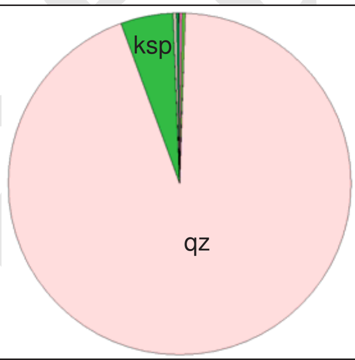
Total measurement points = 3911915
Measurement spacing = 10 μm

Visual representation of mineralogy[2]

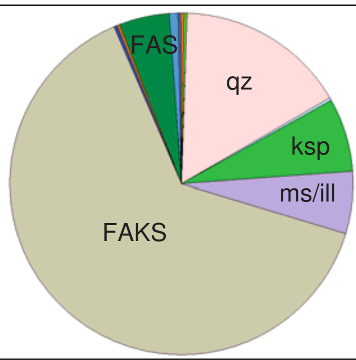
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.14: *Mineralogy report on pottery fabric 55/1992 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Donyatt Site 4	CSM lab code: C05120020
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Fairly hard-fired earthenware reduced grey with a reoxidised orange red sandy interior surface; granular structure with occasional clear quartz <1mm, limestone and dark iron-rich fragments; glaze is a part burnt-off reduced mottled green with darker green specks where iron in the body has bled into the glaze. Some patches of white slip adhere probably shed by another vessel during the firing	The sherd has 86 vol% matrix and 14 vol% inclusions. The inclusion population is predominantly quartz (89 vol%) and glauconite (6 vol%) with minor K-feldspar. The matrix is a mixture of Fe-Al-K silicates (52 vol%) and kaolinite (24 vol%) with some muscovite/illite (10 vol%). The matrix also has minor quartz, plagioclase feldspar, Fe-Al silicates, K-feldspar and glauconite.
Form	**Mineralogical type**
Wheel-thrown neck of a tankard or jug with marks of collaring and external lead glaze	B_1
Analogues	
Donyatt pottery type 8	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: Donyatt Site 4	**CSM lab code: C05120020**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.005	0.000	0.004
Pb glaze	0.129	1.805	0.369
Barite	0.000	0.000	0.000
Chrome spinel	0.004	0.000	0.003
Fe Ox/CO3	0.020	0.000	0.017
Mn phases	0.056	0.112	0.064
Rutile	0.294	0.015	0.254
Ilmenite	0.021	0.056	0.026
Zircon	0.009	0.112	0.024
REE phases	0.000	0.000	0.000
Quartz	4.589	89.496	16.747
Plagioclase feldspar	2.751	0.000	2.357
K-Feldspar	1.172	0.729	1.109
Muscovite/Illite	9.733	0.038	8.345
Fe Al K silicates	52.231	0.335	44.800
Glauconite	0.822	6.202	1.592
Kaolinite	23.992	0.116	20.573
Tourmaline	0.033	0.000	0.029
Fe Al silicates	3.954	0.970	3.527
Mg Al silicates	0.005	0.000	0.005
Mg silicates	0.009	0.000	0.008
Ca Fe Al silicates	0.052	0.000	0.045
Calcite	0.091	0.000	0.078
Ca phosphates	0.013	0.012	0.013
Others	0.014	0.000	0.012

Particle size distribution

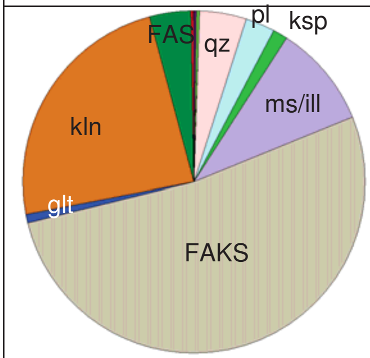
Matrix (< 63 µm) = 85.7 vol%
Inclusions (> 63 µm) = 14.3 vol%

Measurement statistics

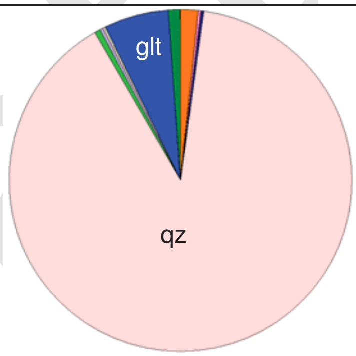
Total measurement points = 2377350
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

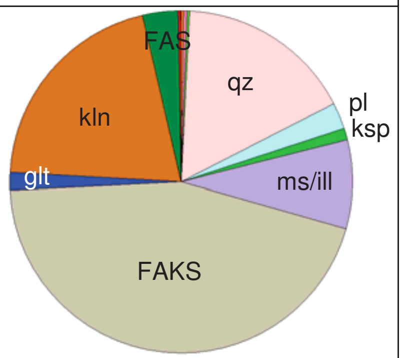
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.
[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kalinite, FAS = Fe-Al silicates, cc = calcite

Figure A.15: *Mineralogy report on pottery fabric Donyatt site 4 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Donyatt Site 13	CSM lab code: C05120021
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Medium soft fired reduced and reoxidised orange red earthenware with smooth internal surface and fine granular structure with occasional specks of ?quartz; reduced green streaky glaze inside, brown oxidised but mostly burnt off outside	The sherd has 99 vol% matrix and 1 vol% inclusions. The inclusion population is somewhat skewed by a large proportion of lead glaze. Excluding this, quartz dominates over K-feldspar with significant Fe-Al silicates, muscovite/illite and kaolinite. The matrix is a mixture of kaolinite, muscovite/illite and Fe-Al-K silicates with quartz, plagioclase feldspar and K-feldspar. The matrix has minor glauconite.
Form	**Mineralogical type**
Rim of a wheel-thrown bowl with a partly wiped band of white slip below the rim on the outside and an internal lead-glaze	D
Analogues	
Donyatt pottery type 9	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: Donyatt Site 13 | **CSM lab code: C05120021**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.003	0.000	0.003
Pb glaze	0.099	44.686	0.708
Barite	0.000	0.000	0.000
Chrome spinel	0.009	0.000	0.009
Fe Ox/CO3	0.035	0.154	0.036
Mn phases	0.009	0.000	0.009
Rutile	0.781	0.000	0.772
Ilmenite	0.055	0.000	0.054
Zircon	0.011	0.000	0.011
REE phases	0.001	0.000	0.001
Quartz	15.534	36.701	15.706
Plagioclase feldspar	7.091	0.790	7.018
K-Feldspar	4.530	4.327	4.520
Muscovite/Illite	27.062	3.459	26.788
Fe Al K silicates	10.536	0.364	10.420
Glauconite	0.210	0.018	0.208
Kaolinite	30.381	3.099	30.066
Tourmaline	0.092	0.000	0.091
Fe Al silicates	3.473	6.400	3.494
Mg Al silicates	0.018	0.000	0.018
Mg silicates	0.036	0.000	0.036
Ca Fe Al silicates	0.001	0.000	0.001
Calcite	0.017	0.000	0.017
Ca phosphates	0.005	0.000	0.005
Others	0.011	0.000	0.011

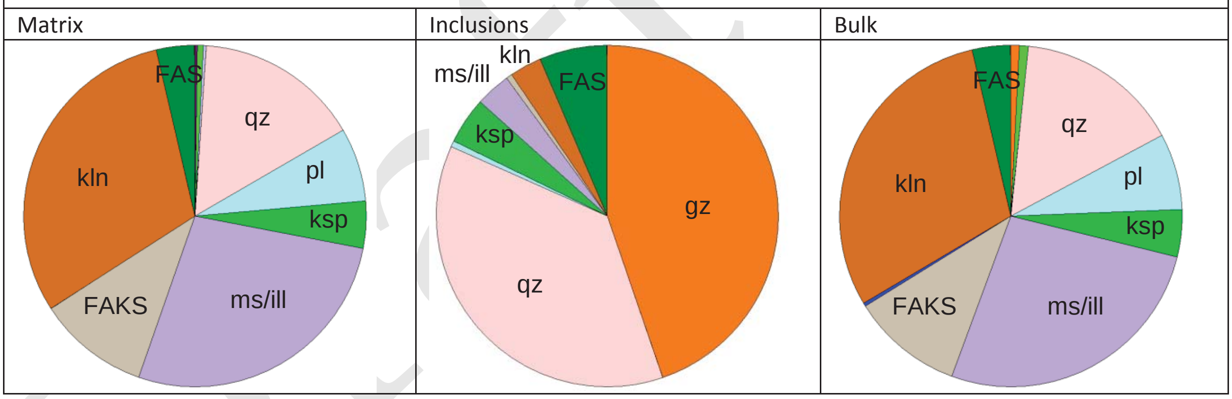
Particle size distribution

Matrix (< 63 µm) = 99.1 vol%
Inclusions (> 63 µm) = 0.9 vol%

Measurement statistics

Total measurement points = 2866664
Measurement spacing = 10 µm

Visual representation of mineralogy



Notes

[1] Mineral groups listed in Table 2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.16: *Mineralogy report on pottery fabric Donyatt site 13 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Langford Budville 85/1994	CSM lab code: C05120015
	
	(Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Medium soft fired reduced and reoxidised orange red earthenware with smooth internal surface and fine granular structure with occasional specks of ?quartz; reduced green streaky glaze inside, brown oxidised but mostly burnt off outside.	The sherd has 93 vol% matrix and 7 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~60 vol%) and K-feldspar (~23 vol%). The matrix is predominantly composed of Fe-Al-K silicates (72 vol%) with some muscovite/illite (11 vol%), K-feldspar (7 vol%) and quartz (6 vol%) and minor Fe-Al silicates and traces of glauconite.
Form	**Mineralogical type**
Rim of a wheel-thrown tankard with internal lead-glaze and collar outside wiped on the rim but which has run and stuck to the pot below during firing	A
Analogues	
West Somerset ware 17th-18th century	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: Langford Budville 85/1994 | **CSM lab code: C05120015**

Mineralogical composition[1]

	Matrix	Inclusions	Bulk
Fe sulphides	0.025	0.000	0.023
Pb glaze	0.122	15.840	1.189
Barite	0.000	0.000	0.000
Chrome spinel	0.001	0.000	0.001
Fe Ox/CO3	0.052	0.314	0.069
Mn phases	0.028	0.000	0.026
Rutile	0.099	0.015	0.093
Ilmenite	0.025	0.068	0.028
Zircon	0.010	0.021	0.011
REE phases	0.001	0.000	0.001
Quartz	6.410	59.595	10.019
Plagioclase feldspar	0.264	0.000	0.246
K-Feldspar	7.037	23.417	8.149
Muscovite/Illite	10.699	0.154	9.983
Fe Al K silicates	71.772	0.068	66.906
Glauconite	0.843	0.501	0.820
Kaolinite	0.161	0.000	0.150
Tourmaline	0.009	0.000	0.009
Fe Al silicates	2.427	0.006	2.262
Mg Al silicates	0.001	0.000	0.001
Mg silicates	0.005	0.000	0.004
Ca Fe Al silicates	0.000	0.000	0.000
Calcite	0.004	0.000	0.004
Ca phosphates	0.003	0.000	0.003
Others	0.001	0.000	0.001

Particle size distribution

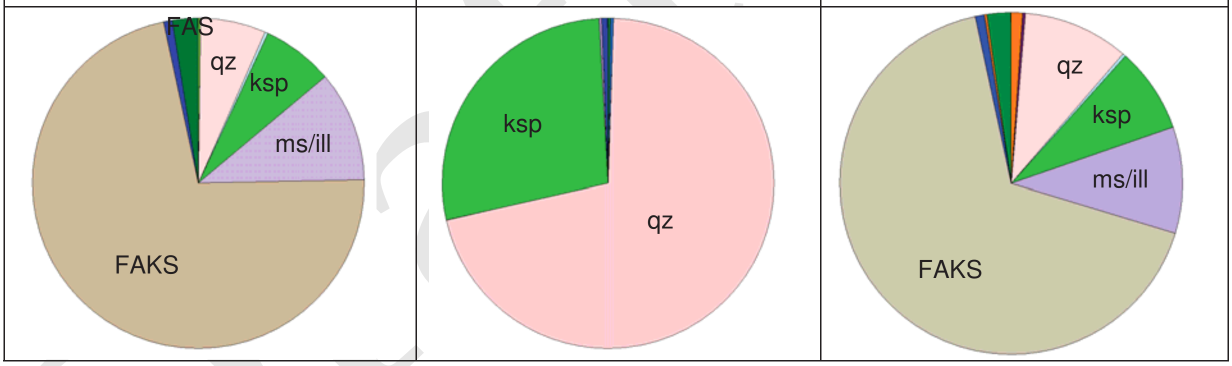
Matrix (< 63 µm) = 93.2 vol%
Inclusions (> 63 µm) = 6.8 vol%

Measurement statistics

Total measurement points = 2484580
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

Matrix | Inclusions | Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.17: *Mineralogy report on pottery fabric 85/1994 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Nether Stowey	CSM lab code: C05120022
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Fairly hard-fired reduced and reoxidised orange red earthenware with zone of grey reduction below the glaze and flashed darker red smooth surface with patches of orange; irregular granular structure with sparse inclusions mostly specks of lime and scarce lumps <0.5mm of a dark red material (?conglomerate), occasional voids where organic material has burnt out; glaze fired a mottled olive green with pits caused by the lime	The sherd has 98.5 vol% matrix and 1.5 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~59 vol%) and K-feldspar (~30 vol%). with minor Fe-Al-K silicates and Ca phosphates. The matrix is predominantly composed of Fe-Al-K silicates (56 vol%) with some muscovite/illite (14 vol%), K-feldspar (15 vol%) and quartz (11 vol%).
Form	**Mineralogical type**
Part of the base of a wheel-thrown deep bowl with internal lead glaze	A
Analogues	
West Somerset type ware 16th-17th century, Bristol pottery type 230/284	

Visual appearance of thin section (transmitted light)	Mineralogical map	Key to mineral map[1]
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: Nether Stowey — **CSM lab code: C05120022**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.002	0.000	0.002
Pb glaze	0.107	5.981	0.194
Barite	0.000	0.000	0.000
Chrome spinel	0.003	0.000	0.003
Fe Ox/CO3	0.028	0.000	0.028
Mn phases	0.042	0.179	0.044
Rutile	0.130	0.000	0.128
Ilmenite	0.025	0.000	0.025
Zircon	0.024	0.000	0.024
REE phases	0.003	0.000	0.003
Quartz	10.837	59.059	11.558
Plagioclase feldspar	0.562	0.183	0.557
K-Feldspar	15.422	29.962	15.640
Muscovite/Illite	14.427	0.591	14.222
Fe Al K silicates	56.253	2.075	55.441
Glauconite	0.063	0.000	0.062
Kaolinite	0.204	0.000	0.201
Tourmaline	0.016	0.000	0.016
Fe Al silicates	1.318	0.011	1.299
Mg Al silicates	0.002	0.000	0.002
Mg silicates	0.014	0.000	0.014
Ca Fe Al silicates	0.006	0.000	0.005
Calcite	0.181	0.011	0.178
Ca phosphates	0.293	1.948	0.317
Others	0.037	0.000	0.036

Particle size distribution

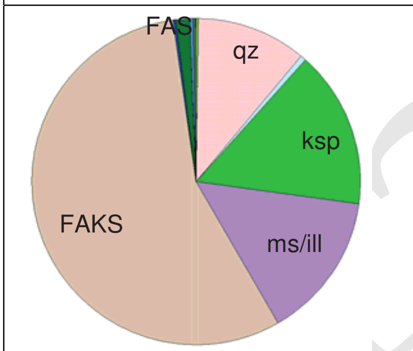
Matrix (< 63 µm) = 98.5 vol%
Inclusions (> 63 µm) = 1.5 vol%

Measurement statistics

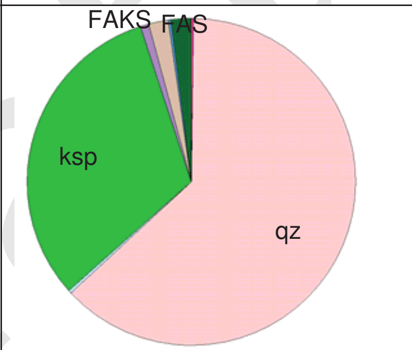
Total measurement points = 3071954
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

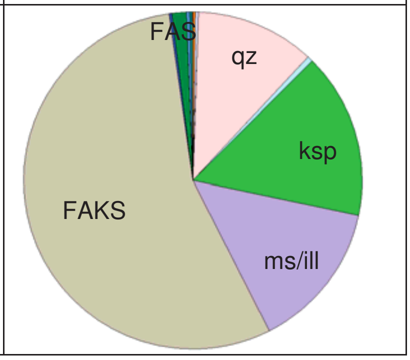
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.18: *Mineralogy report on pottery fabric Nether Stowey by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Wanstrow A	**CSM lab code: C05120017**
	 (Grid = 3 x 3 cm)
Fabric description	**Mineralogical description**
Hard-fired reduced and reoxidised red earthenware with grey core and outer surface and reoxidised dull red brown zone and inner surface; very fine sandy feel to the surfaces reflecting the fine sandy structure to the fabric; very occasional specks of mica	The sherd has 95 vol% matrix and 5 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~88 vol%) and K-feldspar (~9 vol%) with minor Fe-Al silicates and traces of kaolinite and Fe-Al-K silicates. The matrix is a mixture of Fe-Al-K silicates (42 vol%), kaolinite (21 vol%) and quartz (18 vol%) with some muscovite/illite (6 vol%); minor Fe-Al silicates, K-feldspar and plagioclase feldspar and traces of rutile.
Form	**Mineralogical type**
Body sherd of a wheel-thrown small jar	B_1
Analogues	
East Somerset ware 17th-18th century	

Visual appearance of thin section (transmitted light)	**Mineralogical map**	**Key to mineral map[1]**
		Fe sulphides Pb glaze Barite Chrome spinel Fe Ox/CO3 Mn phases Rutile Ilmenite Zircon REE phases Quartz Plagioclase feldspar K-Feldspar Muscovite/Illite Fe Al K silicates Glauconite Kaolinite Tourmaline Fe Al silicates Mg Al silicates Mg silicates Ca Fe Al silicates Calcite Ca phosphates Others

Sample: Wanstrow A | **CSM lab code: C05120017**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.002	0.000	0.002
Pb glaze	0.002	0.000	0.002
Barite	0.000	0.000	0.000
Chrome spinel	0.006	0.000	0.005
Fe Ox/CO3	0.040	0.000	0.038
Mn phases	0.000	0.000	0.000
Rutile	0.439	0.040	0.418
Ilmenite	0.076	0.075	0.076
Zircon	0.022	0.000	0.021
REE phases	0.002	0.000	0.002
Quartz	17.733	88.004	21.464
Plagioclase feldspar	4.309	0.000	4.081
K-Feldspar	3.171	9.192	3.491
Muscovite/Illite	6.057	0.023	5.737
Fe Al K silicates	42.367	0.501	40.144
Glauconite	0.191	0.000	0.181
Kaolinite	20.826	0.293	19.736
Tourmaline	0.051	0.000	0.048
Fe Al silicates	4.658	1.872	4.511
Mg Al silicates	0.004	0.000	0.004
Mg silicates	0.020	0.000	0.019
Ca Fe Al silicates	0.003	0.000	0.003
Calcite	0.009	0.000	0.009
Ca phosphates	0.002	0.000	0.002
Others	0.008	0.000	0.007

Particle size distribution

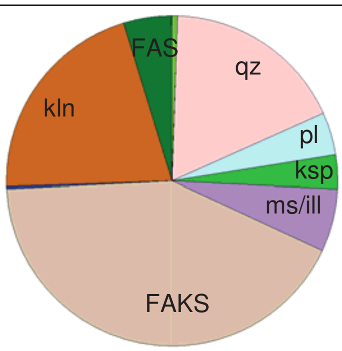
Matrix (< 63 µm) = 94.7 vol%
Inclusions (> 63 µm) = 5.3 vol%

Measurement statistics

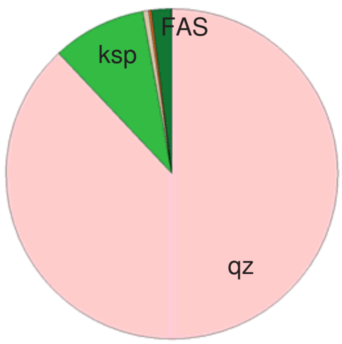
Total measurement points = 1699203
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

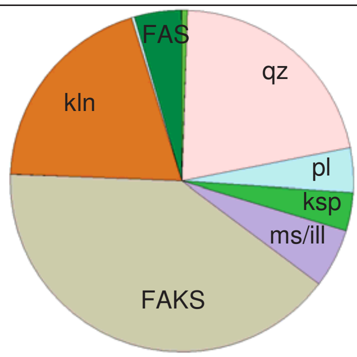
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.19: *Mineralogy report on pottery fabric Wanstrow A by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Wanstrow B	**CSM lab code: C05120018**

(Grid = 3 x 3 cm)

Fabric description	**Mineralogical description**
Fairly hard-fired reduced and reoxidised orange red earthenware with grey reduced core; smooth very fine sandy surface with specks of mica; distinctive laminar structure to the fine sandy fabric and occasional iron-rich inclusions; glaze has fired light olive green with splotches of orange and with black speckles.	The sherd has 90 vol% matrix and 10 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~84 vol%) and K-feldspar (~8 vol%) with small amounts of Fe-Al silicates (2 vol%) and plagioclase feldspar (1.8 vol%). The matrix is a mixture of Fe-Al-K silicates (36 vol%), kaolinite (24 vol%) and quartz (20 vol%) with some muscovite/illite (6 vol%); minor Fe-Al silicates, K-feldspar and plagioclase feldspar and traces of rutile.
Form	**Mineralogical type**
Wheel-throw base of a deep bowl with an internal lead glaze	B_1
Analogues	
East Somerset type ware	

Visual appearance of thin section (transmitted light)

Mineralogical map

Key to mineral map[1]

- Fe sulphides
- Pb glaze
- Barite
- Chrome spinel
- Fe Ox/CO3
- Mn phases
- Rutile
- Ilmenite
- Zircon
- REE phases
- Quartz
- Plagioclase feldspar
- K-Feldspar
- Muscovite/Illite
- Fe Al K silicates
- Glauconite
- Kaolinite
- Tourmaline
- Fe Al silicates
- Mg Al silicates
- Mg silicates
- Ca Fe Al silicates
- Calcite
- Ca phosphates
- Others

Sample: Wanstrow B	**CSM lab code: C05120018**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.004	0.000	0.003
Pb glaze	0.053	3.995	0.448
Barite	0.000	0.000	0.000
Chrome spinel	0.006	0.000	0.006
Fe Ox/CO3	0.025	0.040	0.027
Mn phases	0.002	0.000	0.002
Rutile	0.542	0.039	0.492
Ilmenite	0.070	0.019	0.065
Zircon	0.021	0.000	0.019
REE phases	0.003	0.000	0.003
Quartz	19.783	83.634	26.185
Plagioclase feldspar	5.208	1.793	4.865
K-Feldspar	3.636	8.118	4.085
Muscovite/Illite	5.970	0.030	5.374
Fe Al K silicates	36.017	0.210	32.427
Glauconite	0.130	0.000	0.117
Kaolinite	23.761	0.157	21.394
Tourmaline	0.083	0.019	0.077
Fe Al silicates	4.655	1.947	4.383
Mg Al silicates	0.001	0.000	0.001
Mg silicates	0.010	0.000	0.009
Ca Fe Al silicates	0.001	0.000	0.001
Calcite	0.011	0.000	0.010
Ca phosphates	0.003	0.000	0.003
Others	0.003	0.000	0.003

Particle size distribution

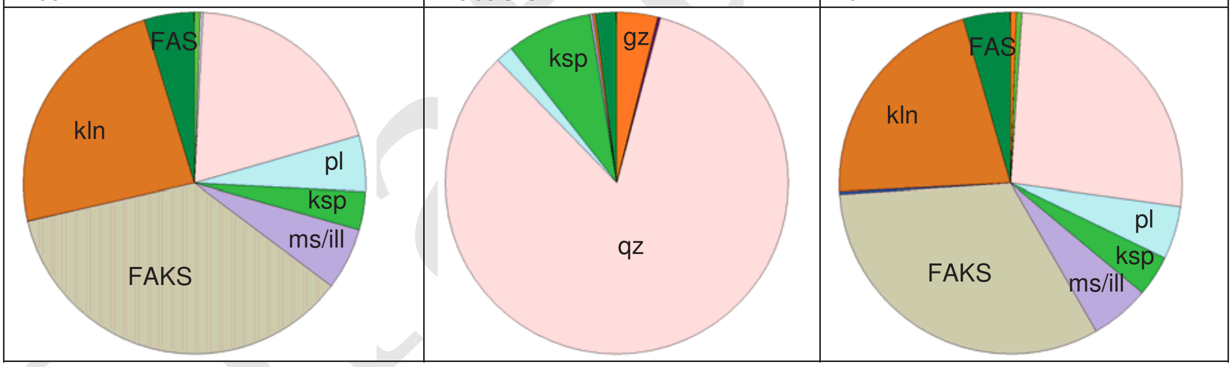
Matrix (< 63 μm) = 90.0 vol%
Inclusions (> 63 μm) = 10.0 vol%

Measurement statistics

Total measurement points = 1128996
Measurement spacing = 10 μm

Visual representation of mineralogy[2]

Matrix | Inclusions | Bulk



Notes

[1] Mineral groups listed in Table A.2.
[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.20: *Mineralogy report on pottery fabric Wanstrow B by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*

Sample: Wrangway 91/1995	CSM lab code: C05120016

(Grid = 3 x 3 cm)

Fabric description	Mineralogical description
Fairly hard-fired reduced and thoroughly reoxidised orange red earthenware with smooth external surface and occasional specks of mica; grainy structure with occasional voids some from burnt-out organic material but others from poorly pugged clay; sparse specks of ?quartz; reduced light olive green lead-glaze streaked where picking up the throwing lines and with tiny pimples where the quartz projects through the surface.	The sherd has 91 vol% matrix and 9 vol% inclusions. The inclusion population is composed almost exclusively of quartz (~75 vol%) and K-feldspar (~25 vol%). The matrix is predominantly composed of Fe-Al-K silicates (65 vol%) with some muscovite/illite (8 vol%), K-feldspar (10 vol%) and quartz (10 vol%).
Form	**Mineralogical type**
Body sherd of a large wheel-thrown jar with internal lead-glaze	A
Analogues	
West Somerset ware 17th-18th century	

Visual appearance of thin section (transmitted light)

Mineralogical map

Key to mineral map[1]

- Fe sulphides
- Pb glaze
- Barite
- Chrome spinel
- Fe Ox/CO3
- Mn phases
- Rutile
- Ilmenite
- Zircon
- REE phases
- Quartz
- Plagioclase feldspar
- K-Feldspar
- Muscovite/Illite
- Fe Al K silicates
- Glauconite
- Kaolinite
- Tourmaline
- Fe Al silicates
- Mg Al silicates
- Mg silicates
- Ca Fe Al silicates
- Calcite
- Ca phosphates
- Others

Sample: Wrangway 91/1995	**CSM lab code: C05120016**

Mineralogical composition

	Matrix	Inclusions	Bulk
Fe sulphides	0.008	0.000	0.007
Pb glaze	0.222	1.749	0.360
Barite	0.000	0.000	0.000
Chrome spinel	0.003	0.000	0.002
Fe Ox/CO3	0.014	0.019	0.014
Mn phases	0.197	0.000	0.179
Rutile	0.138	0.017	0.127
Ilmenite	0.039	0.041	0.039
Zircon	0.016	0.009	0.016
REE phases	0.002	0.000	0.002
Quartz	10.119	71.305	15.622
Plagioclase feldspar	0.576	0.000	0.524
K-Feldspar	10.293	26.307	11.733
Muscovite/Illite	7.865	0.251	7.180
Fe Al K silicates	65.045	0.134	59.207
Glauconite	0.070	0.000	0.064
Kaolinite	1.665	0.000	1.515
Tourmaline	0.012	0.000	0.011
Fe Al silicates	3.278	0.000	2.984
Mg Al silicates	0.199	0.162	0.195
Mg silicates	0.020	0.000	0.019
Ca Fe Al silicates	0.005	0.000	0.004
Calcite	0.178	0.000	0.162
Ca phosphates	0.032	0.004	0.030
Others	0.004	0.000	0.003

Particle size distribution

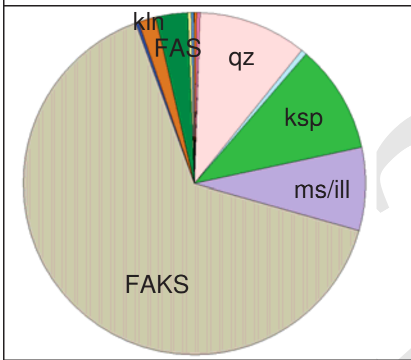
Matrix (< 63 µm) = 91.0 vol%
Inclusions (> 63 µm) = 9.0 vol%

Measurement statistics

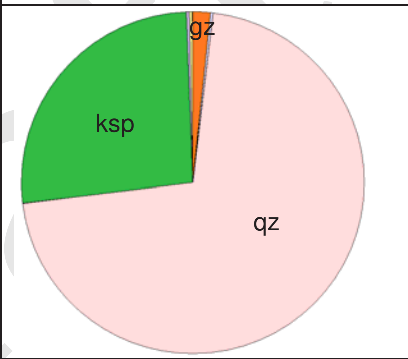
Total measurement points = 3094633
Measurement spacing = 10 µm

Visual representation of mineralogy[2]

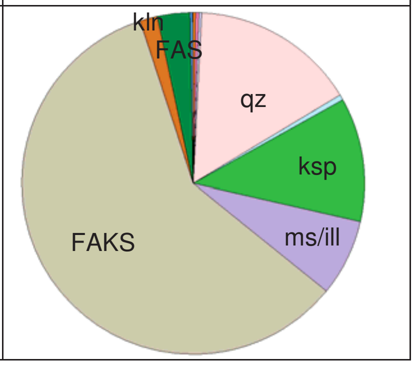
Matrix



Inclusions



Bulk



Notes

[1] Mineral groups listed in Table A.2.

[2] gz = glaze, qz = quartz, pl = plagioclase, ksp = K-feldspar, ms/ill = muscovite/illite, FAKS = Fe-Al-K silicates, glt = glauconite, kln = kaolinite, FAS = Fe-Al silicates, cc = calcite

Figure A.21: *Mineralogy report on pottery fabric 91/1995 by QEMSCAN analysis. Camborne School of Mines, University of Exeter, Penryn Campus, Penryn, TR10 9EZ*