



GHENT
UNIVERSITY

FLEPOSTORE

CERAMIC HAND SPECIMEN & THIN SECTION
DESCRIPTION

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1 ELEMENTS INCLUDED IN THE HAND SPECIMEN & PETROGRAPHIC DESCRIPTIONS

The following guidelines are based on the methodology for petrographic descriptions as described by Quinn 2013.

1. Matrix

- General colour of the fabric in hand-specimen, plane polarized light (PPL) and crossed polars (XP)
 - Oxidization state: oxidized (OX), reduced (RED) or combination (RED-OX)
 - Matrix texture: homogenous, semi-homogenous, semi-heterogeneous, heterogeneous
 - Clay nature: e.g. (non-)calcareous, micaceous, iron-rich
 - Optical activity: no, low, medium, high
 - Abundance: estimation of matrix percentage (= 100 - %inclusions - %voids)
- Figure 1

2. Inclusions

List of mineral and non-mineral inclusions (> 0.008 mm) containing:

- Identification of mineral and lithic inclusions
- Frequency estimation of each mineral and lithic inclusion (++, +, +-, -, --)
- Relevant specific observations concerning shape, size, composition, etc. that are not implied by naming the inclusion or included in the general observations (below)
- If bimodal: presence/absence of inclusions in coarse fraction (cf) or fine fraction (ff)

General observations regarding:

- Grain size: very fine, fine, medium, coarse, very coarse silt/sand (Figure 2)
- Grain shape: rounded (r), sub-rounded (sr), sub-angular (sa), angular (a) (Figure 4)
- If bimodal: relation between fine and coarse fraction (natural variation, added temper, etc.)

Inclusion structure:

- Sorting: very well, well, moderately, poorly, very poorly (cf. sorting chart) (Figure 3)
- Orientation: very well, well, moderately, poorly, very poorly
- Spacing: close, single, double, open (cf. spacing definition)
- Abundance: estimation of inclusion percentage (cf. abundance estimation chart) (Figure 5)

Figure 1

3. Voids

- General void size (variation)
- Void types: planar, channel, vughs, vesicules, drying cracks (cf. void shape diagram) (Figure 6)
- Infill: no, soil, secondary calcite, etc.
- Alignment (to surface): very well, well, moderately, poorly, very poorly
- Abundance: estimation of void percentage (cf. abundance estimation chart) (Figure 5)

Figure 1

4. Diagnostic features

- General matrix attributes (oxidization, texture, optical activity)
- General porosity (low, medium, high)
- Main mineralogical and non-mineralogical inclusions. In order of frequency with semi-quantitative frequency labels (dominant, frequent, common, few, rare)
- Observations regarding bimodality and/or tempering (if relevant)
- General sorting of the fabric (very well, well, moderately, poorly, very poorly) (Figure 3)

5. Additional information

- Observations not included within sections above
- Surface observations: slip, paint, glaze, post-depositional residue, etc.
- Technological observations: firing temperature, production relics (e.g. coils, clay mixing), etc.
- Similarities with other known thin sections

2 LIST OF TERMINOLOGY, ABBREVIATIONS AND SYMBOLS

General

| | |
|-----|-------------------------|
| PPL | plane polarized light |
| XP | crossed polarized light |

Mineralogy

| | |
|---------------|--|
| Quartz - mono | monocrystalline quartz |
| Quartz – poly | polycrystalline quartz |
| O/Fe | opaque inclusions / iron oxides |
| CP/SP | clay pellets / semi-plastic inclusions |
| cf | coarse fraction |
| ff | fine fraction |

Inclusion shape

| | |
|----|------------|
| r | rounded |
| sr | subrounded |
| sa | subangular |
| a | angular |
| el | elongated |
| eq | equant |

Semi-quantitative frequency labels

| | |
|--------------------|--------|
| Predominant | >70% |
| Dominant | 50-70% |
| Frequent | 30-50% |
| Common | 15-30% |
| Few | 5-15% |
| Very few | 2-5% |
| Rare | 0.5-2% |
| Very rare | <0.5% |

Description of spacing

| | |
|---------------|-------------------------|
| Close spaced | Inclusions in contact |
| Single spaced | Spacing = mean diameter |
| Double spaced | Spacing = 2x diameter |
| Open spaced | Spacing > 2x diameter |

Frequency of inclusions

| | |
|-----|----------|
| ++ | Dominant |
| + | Frequent |
| + - | Common |
| - | Few |
| -- | Rare |

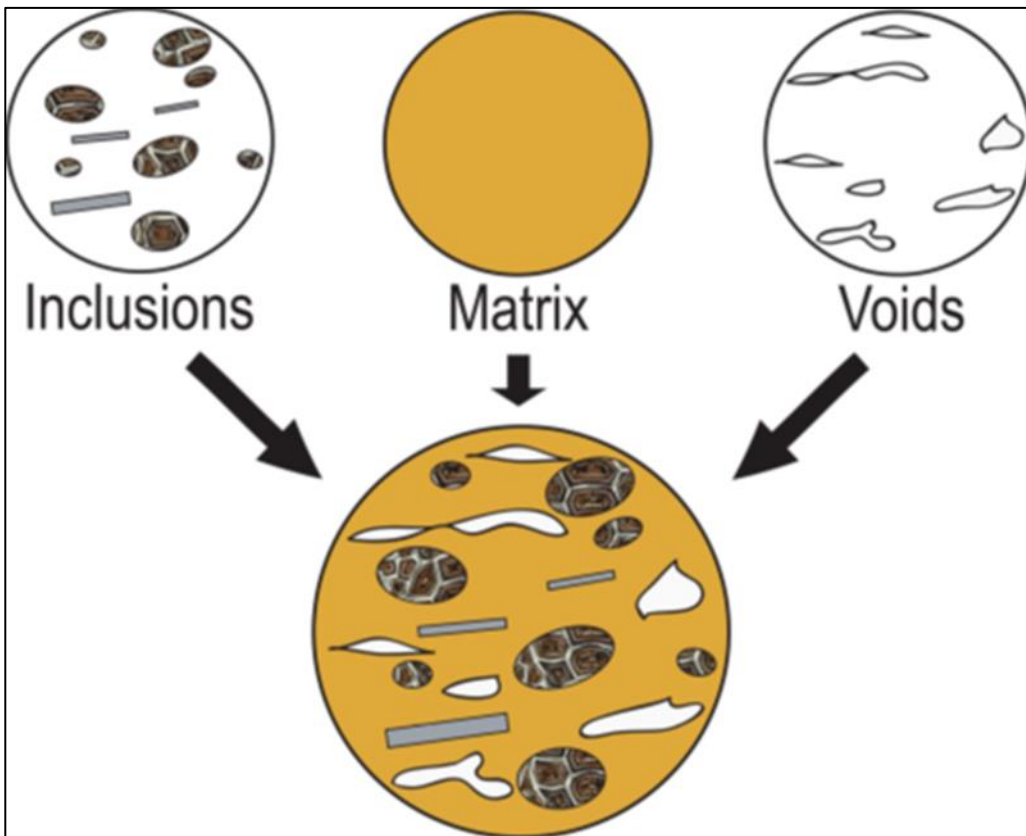


Figure 1: Schematic representation of compositional elements in ceramic fabrics: matrix, inclusions and voids (from P. Quinn: Intensive Course on Ceramic Petrography & Geochemistry).

| Millimeters (mm) | Micrometers (μm) | Phi (ϕ) | Wentworth size class |
|------------------|-------------------------------|----------------|----------------------|
| 4096 | | -12.0 | Boulder |
| 256 | | -8.0 | Cobble |
| 64 | | -6.0 | Pebble |
| 4 | | -2.0 | Granule |
| 2.00 | | -1.0 | Very coarse sand |
| 1.00 | | 0.0 | Coarse sand |
| 1/2 | 0.50 | 1.0 | Medium sand |
| 1/4 | 0.25 | 2.0 | Fine sand |
| 1/8 | 0.125 | 3.0 | Very fine sand |
| 1/16 | 0.0625 | 4.0 | Coarse silt |
| 1/32 | 0.031 | 5.0 | Medium silt |
| 1/64 | 0.0156 | 6.0 | Fine silt |
| 1/128 | 0.0078 | 7.0 | Very fine silt |
| 1/256 | 0.0039 | 8.0 | Clay |
| 0.00006 | 0.06 | 14.0 | |

Figure 2: Grain size, Wentworth scale (Wentworth 1922).

SORTING IMAGES

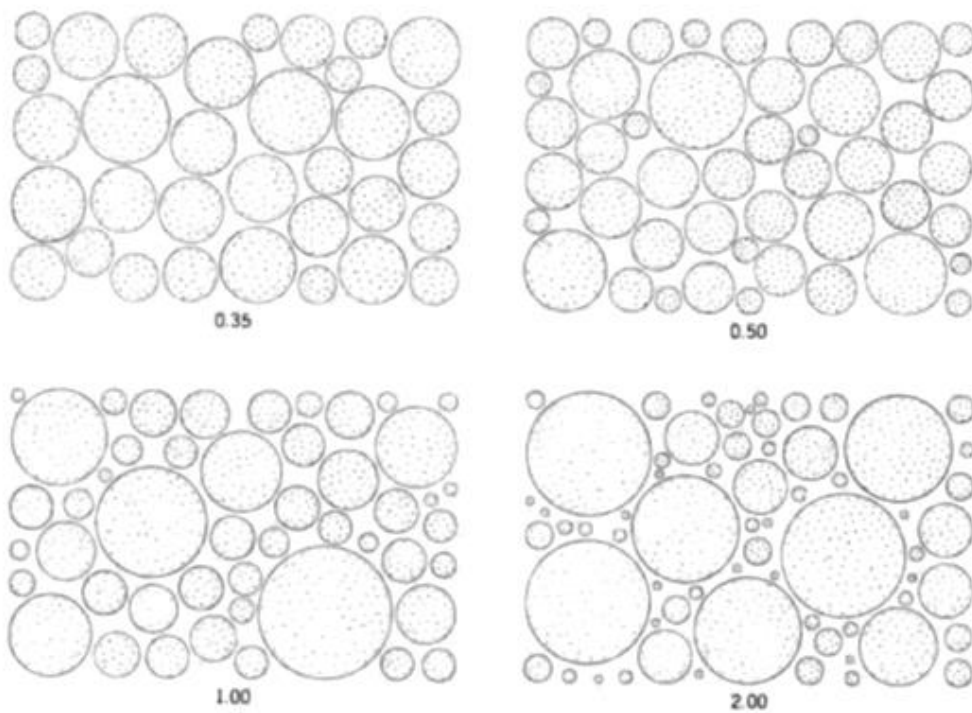


Figure 3: Chart for the comparison of mineralogical sorting (after Pettijohn, Potter and Siever 1973). 0.35: well sorted, 0.50 moderately sorted, 1.00 poorly sorted, 2.00 very poorly sorted.

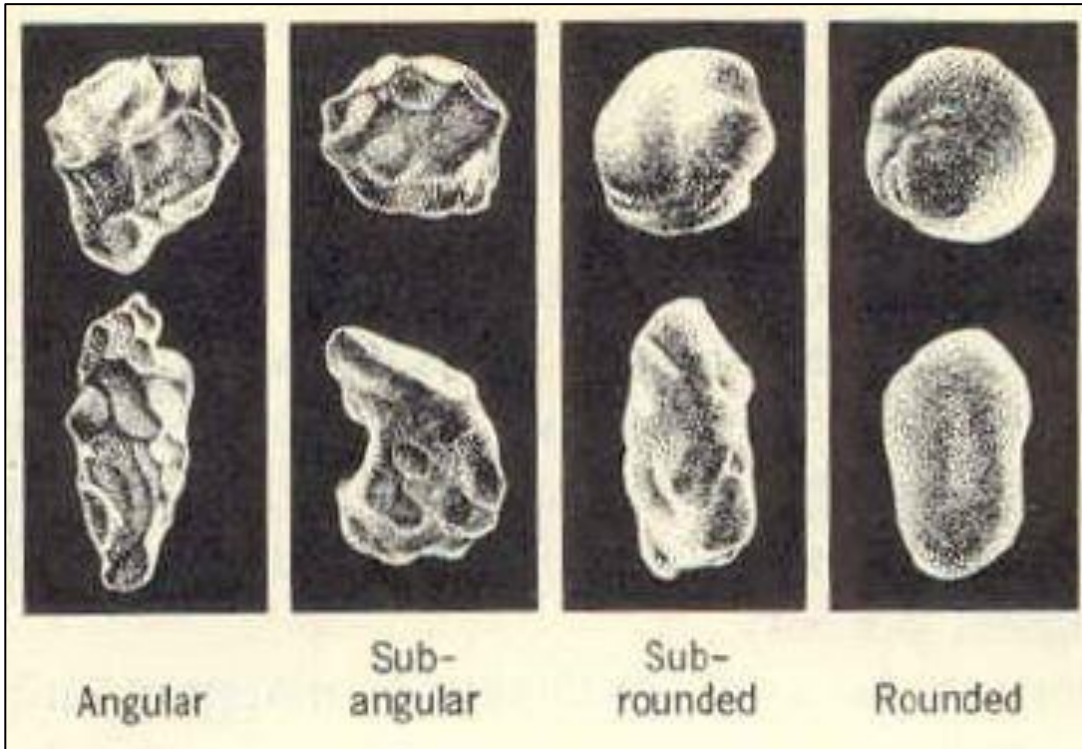


Figure 4: Grain shape (after Powers 1953).

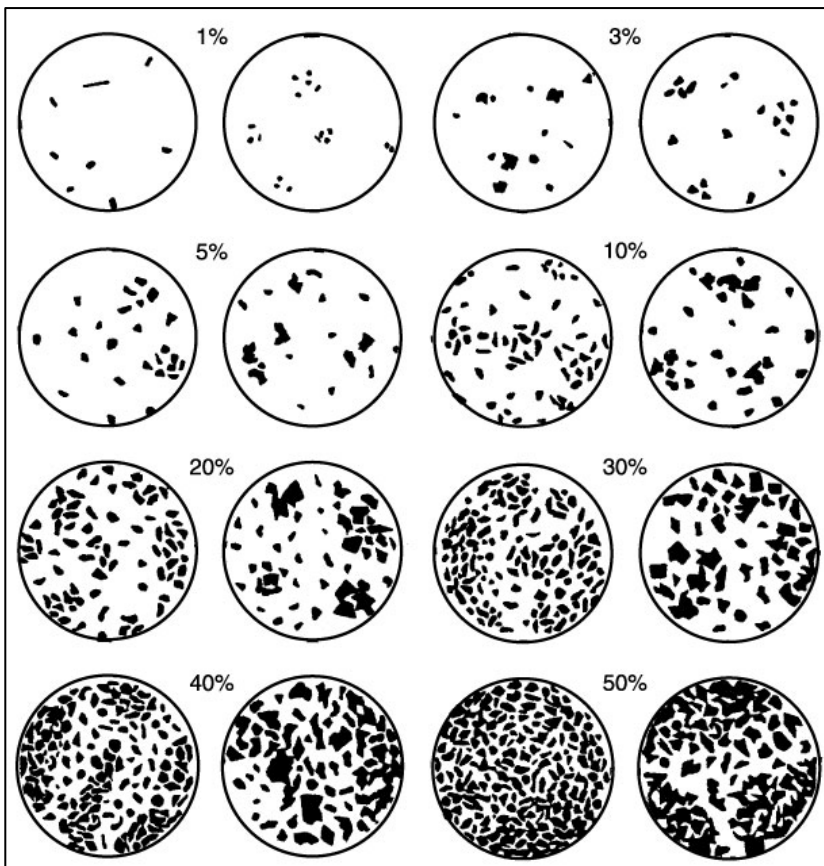


Figure 5: Abundance Estimation Chart (Terry and Chillingar 1955).

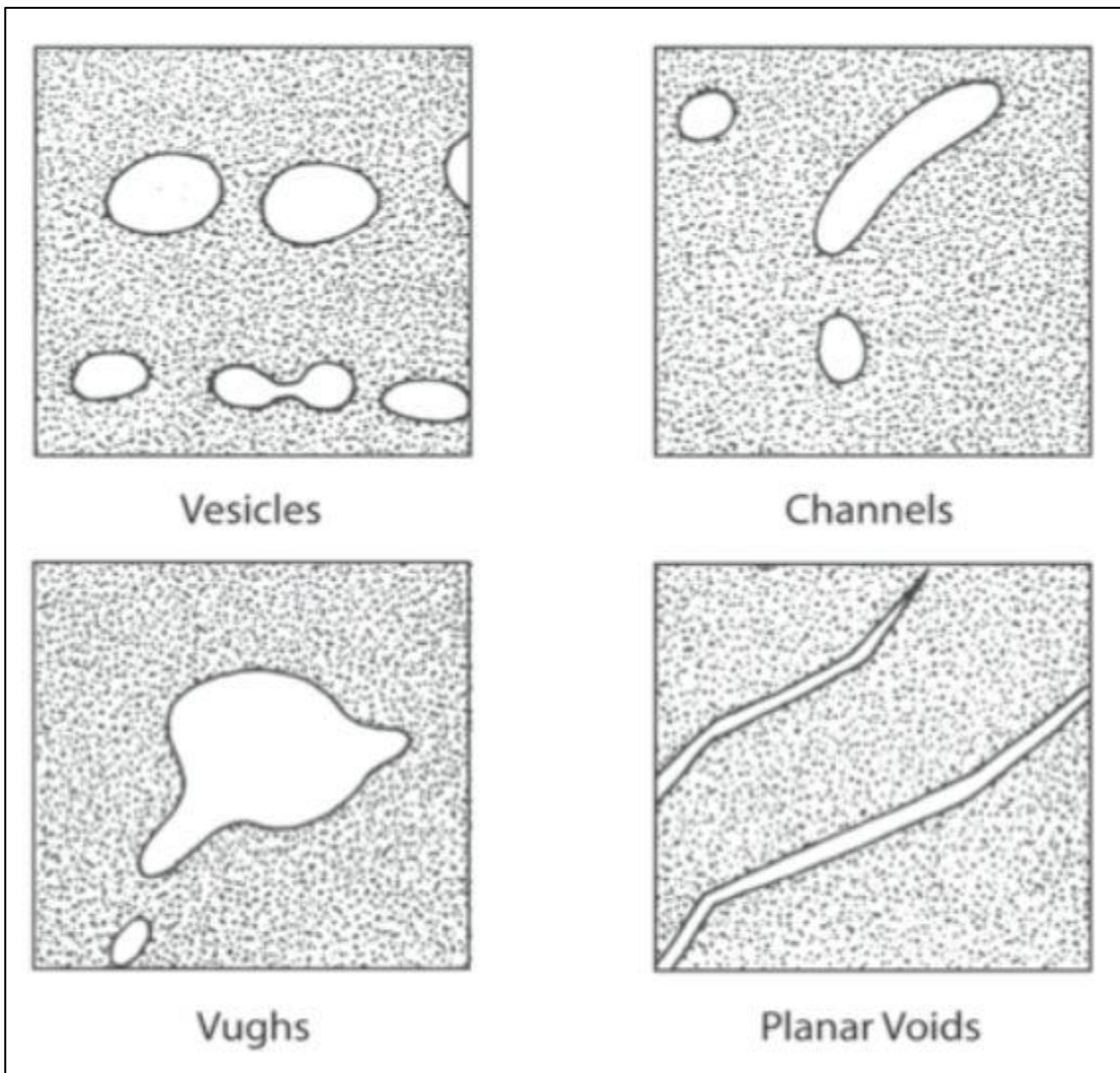


Figure 6: Shape of voids (after Stoops 2003).

3 BIBLIOGRAPHY

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