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Fabrics of Akragas

Introduction

Starting from the petrographical and chemical analysis[1] of 21 samples of western Greek amphorae,[2] 17 samples of coarse wares and ceramic building materials[3] and seven samples of raw materials,[4] four local ceramic fabrics have been identified: one of transport amphorae[5] (AKR-A-1), two of coarse wares (AKR-C-1 and AKR-C-2) and one of ceramic building materials (AKR-CBM-1).

Fabric Descriptions

1. Transport Amphorae

AKR-A-1

Ref. M 208/3 (M 208/1, M 208/2, 208/5, M 208/43, M 208/44, M 208/47, M 179/168, M 179/232, M 179/332, M 119/177, M 119/192)

The colour of the matrix varies from reddish-orange, with different tones, to pale yellow-greenish or greenish-light grey colour (Munsell 2.5 Y 7/2, 7/3, 2.5 YR 6/6, 5 YR 6/6, 7/8 and 10 YR 7/2, 7/3, 8/3). To the naked eye, the clay appears rather fine and depurated, with no visible inclusions, or few and small ones of white colour.
Voids are quite frequent, mostly in form of vughies, channels and sporadic chambers, sized between 0.04/0.60-1.00 or 1.30 (sporadically) mm.
The texture of freshly broken section is fine, granular or porous, the matrix is rather carbonatic and the distribution of the temper is generally well-sorted silt, or in sporadic cases, poorly-sorted silt or unsorted. In general, the size of the inclusions varies from 0.02-04 to 1.19 mm circa. The calcium carbonate, mainly part of the matrix, is very frequent/infrequent and shows two variants, both of very spherical-spherical-subspherical/well rounded-rounded-subrounded shape: white or white-

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[1] Thin-section petrography at the polarizing microscope and chemical analysis (ICP-MS and ICP/OES) have been conducted by G. Montana (DiSTem, University of Palermo) and L. Randazzo (DiBEST, Università della Calabria) to whom we are very grateful for the permission to anticipate some of their forthcoming results.

[2] Eight fragments have been found at Agrigento (area South to the Temple of Zeus, University of Palermo) which include three items from the kiln area South to Porta V (Parco Archeologico di Agrigento and University of Bologna), in detail see Baldoni and Scalici 2020. Seven amphorae stem from the necropoleis of Himera (Soprintendenza BBCCAA di Palermo), four fragments from the major urban sanctuary of Selinunte (New York Univeristy – IFA) and two from the acropolis excavations at Pantelleria (University of Tübingen)

[3] Exception made for three samples yielded by the kiln area South to Porta V (Parco Archeologico di Agrigento and University of Bologna), the bulk stems from the excavations in the area South to the Temple of Zeus (University of Palermo).

[4] Sampled by G. Montana at the South-eastern slopes of the “Collina dei templi”.
The materials are compatible with the “MAB/F. Narbone Formation” (Marnoso-Arenacea del Belice) (see Montana et al. 2011, 78-81, 103, 130-32, 160-62).

[5] For first insights into production of western Greek amphorae at Agrigento, see Bechtold 2020 and Baldoni and Scalici 2020.

Fig. 1. Microphotos 8x: **a.** M 208/1; **b.** M 208/2; **c.** M 208/3; **d.** M 208/5; **e.** M 208/43; **f.** M 208/44; **g.** M 208/47; **h.** M 119/177

yellowish, small or medium sized (0.04-08/0.20-1.00-1.15 mm) grains; whitish-yellowish, small or medium sized (0.04/0.20-50-60 mm or 1.19 mm [singular]) micritic clots.[6]
In rare cases the calcium carbonate appears also in form of agglomerate sized more than 1.59 mm and of very elongate/rounded shape. Quartz can be frequent (M 179/232, fig. 2.c , M 119/177, fig. 1.h , M 119/192, fig. 2.a), infrequent (M 208/44, fig. 1.f , M 208/47, fig. 1.g , M179/332, fig. 2.d) or sporadic/rare (M 208/2, fig. 1.b, M 208/5, fig. 1.d, M 208/43, fig. 1.e, M179/168, fig. 2.b); in few cases it is not visible (M 208/1, fig. 1.a, M 208/3, fig.1.c). It appears in the form of whitish-greyish-transparent inclusions, of spherical-subspherical/rounded-subrounded-subangular-angular shape and small sized (0.04/0.16-28 mm).
Mica is generally infrequent/frequent - but is not always easily visible- very small (0.02-04/0.08 mm), of very spherical-spherical-elongate/very angular shape and usually of shiny aspect. In some samples (for example M 208/5, fig. 1.d), infrequent red iron oxide concretions, of subspherical subelongate/subrounded-subangular shape and sized between 0.04-08/0.40 mm, are visible. In addition, in some cases, the fabric presents infrequent or sporadic/rare, small-medium sized (0.04/0.36-50 mm) and reddish or reddish-brown inclusions of very spherical-subspherical/well rounded-rounded-subangular shape, and rare black particles, of spherical/subrounded-subangular shape and sized between 0.04/0.16 mm.

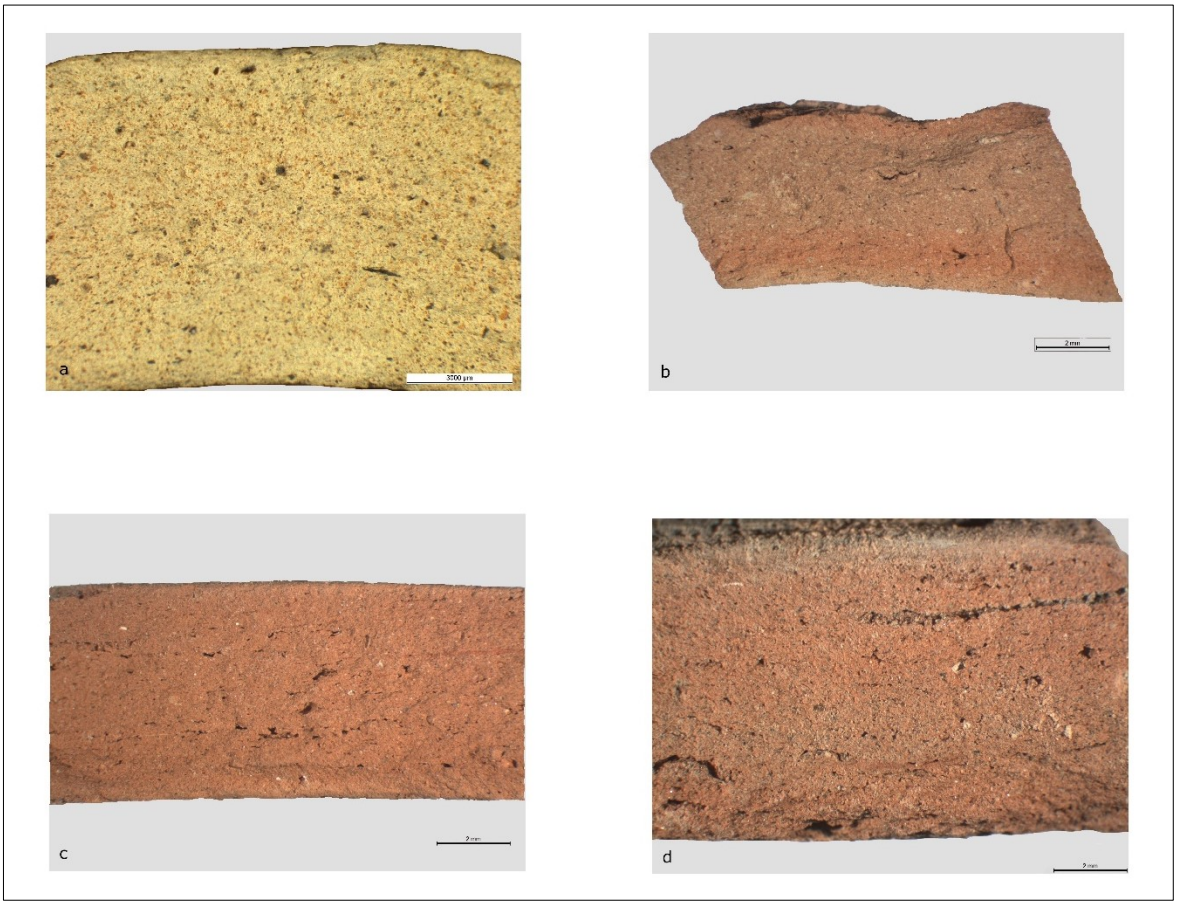

Fig. 2. Microphotos 8x: **a.** M 119/192; **b.** M 179/168; **c.** M 179/232; **d.** M 179/332

[6] See Cau Ontiveros, et al. 2002, 11-12: formations of secondary calcite, caused by high firing temperatures. This new term indicates the “dissolved carbonate grains” used for the descriptions in FACEM.

2. Coarse Ware

Two different fabrics of coarse ware have been distinguished: AKR-C-1 and AKR-C-2. The major differences between the two groups are the coarseness and the distribution of temper: AKR-C-1 is finer and AKR-C-2 is coarser, with probably intentional added temper, while both fabrics show the same composition and typologies of inclusions and a similar matrix' structure.

AKR-C-1
Ref. M 209/5 (M 209/2, M 209/4, M 209/6, M 209/10, M 209/11, M 209/13, M 209/15)

The colour of the matrix is generally pinkish-reddish or light brown (Munsell 5 YR 6/6, 7.5 YR 6/4, 7/4, 7/6 and 10 YR 6/3, 8/3). To the naked eye, the clay appears quite fine with visible, frequent or infrequent, whitish-yellowish and small-medium sized particles; in some cases, inclusions are invisible.
Voids are infrequent, sized between 0.04/0.67-1.19 mm, mostly in form of vughies and, sporadically, channels and chambers. The texture of freshly broken sections is fine or granular and the matrix is plenty carbonatic. The distribution of temper varies from well-sorted silt, poorly-sorted sand in well-sorted silt (bimodal), to poorly-sorted silt or unsorted.
In general, the size of the inclusions varies from 0.02-04 to 1.00-1.35 mm circa. The calcium carbonate, as above mentioned, is mainly part of the matrix and shows two variants: frequent/infrequent or rare, whitish-yellowish or white, small-medium sized grains (0.08-12/0.32-40 mm, in a singular case 1.35 mm) of very spherical-spherical-subspherical/rounded-subrounded and sporadically subangular-angular shape; very frequent-frequent, whitish-yellowish, small-medium sized (0.04/0.36-79 mm) micritic clots mostly of very spherical-subspherical-spherical/well rounded-rounded-subrounded-angular shape. Quartz is mostly infrequent or rare, and it is not visible in every sample. It appears in form of spherical-subspherical/subrounded-subangular, greyish-whitish-transparent inclusions, sized between 0.04/0.12 or 0.40 (rarely) mm. The fabric shows a frequent-infrequent or sporadic concentration of red iron concretions, not always visible, sized between 0.04-08/0.28-40 or 0.79-1.00 (rarely) mm. Their shape is variable: very spherical-spherical-subspherical-subelongate-elongate/well rounded-subrounded-subangular-angular. Mica is generally infrequent and not easily visible. Finally, in some cases, there is an infrequent presence of reddish-brown, small sized (0.04/0.12-48 mm) inclusions of spherical/subrounded-subangular shape, and a rare presence of black, small sized (0.04/0.12 mm) particles of very spherical-spherical/well rounded-rounded shape.

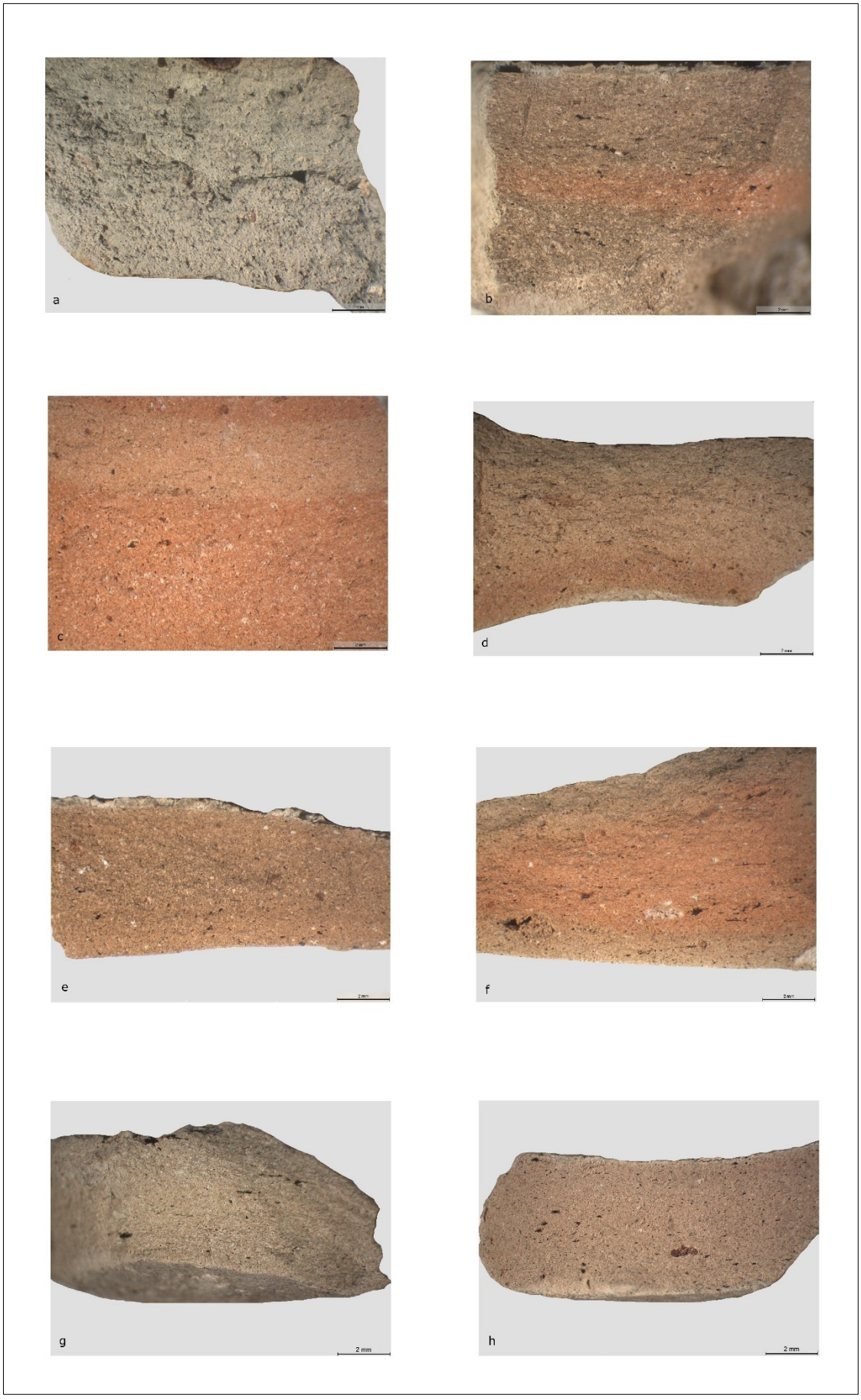

Fig. 3. Microphotos 8x: **a.** M 209/2; **b.** M 209/4; **c.** M 209/5; **d.** M 209/6; **e.** M 209/10; **f.** M 209/11; **g.** M 209/13; **h.** M 209/15

AKR-C-2
Ref. M 209/9 (M 209/1, M 258/1)

The colour of the matrix is light red or light brown with some pinkish tones (Munsell 2.5 YR 6/6, 7.5 YR 6/4, 7/4). To the naked eye, the clay appears quite compact with a good amount of visible, white or white-yellowish particles, small-medium sized. Voids are infrequent, mostly in form of vughies and channels or spongies, sized between 0.04-08/0.52-1.19 mm. As above mentioned, this fabric has the same characterics of texture of AKR-C-1, but it appears to be coarser and with intentional added temper. Furthermore, the matrix is carbonatic as well. The general size of the inclusions varies from 0.03-04 to 0.79-1.19 mm, and their distribution is mainly poorly-sorted sand in well-sorted silt (bimodal) or unsorted (M 209/9, fig. 4.b). The carbonatic component, intentional or part of the matrix, included the micritic clots, is very frequent/frequent, of white, whitish-yellowish or yellowish colour and sized between 0.04-08/0.20-48 or 0.79-1.19 mm. The shape of the grains is very variable: very spherical-spherical-subspherical-subelongate-elongate/well rounded-subrounded-subangular-angular. In some cases, for example in M 209/1 (fig. 4.a), that is also the coarser sample of this fabric, the inclusions of calcium carbonate can present a thin greyish layer on the surface. Mica is mostly frequent, very small sized and with the typical shiny aspect. The fabric shows a rare quantity of reddish or orangish, very spherical-subspherical/rounded-subangular and small sized (0.12/0.24 mm) particles and black, very spherical/subangular inclusions. Finally, only one sample (M 258/1, fig. 4.c) shows a sporadic presence of red iron oxide concretions of very spherical-subspherical/subrounded shape and small sized (0.04/0.16-20 mm).

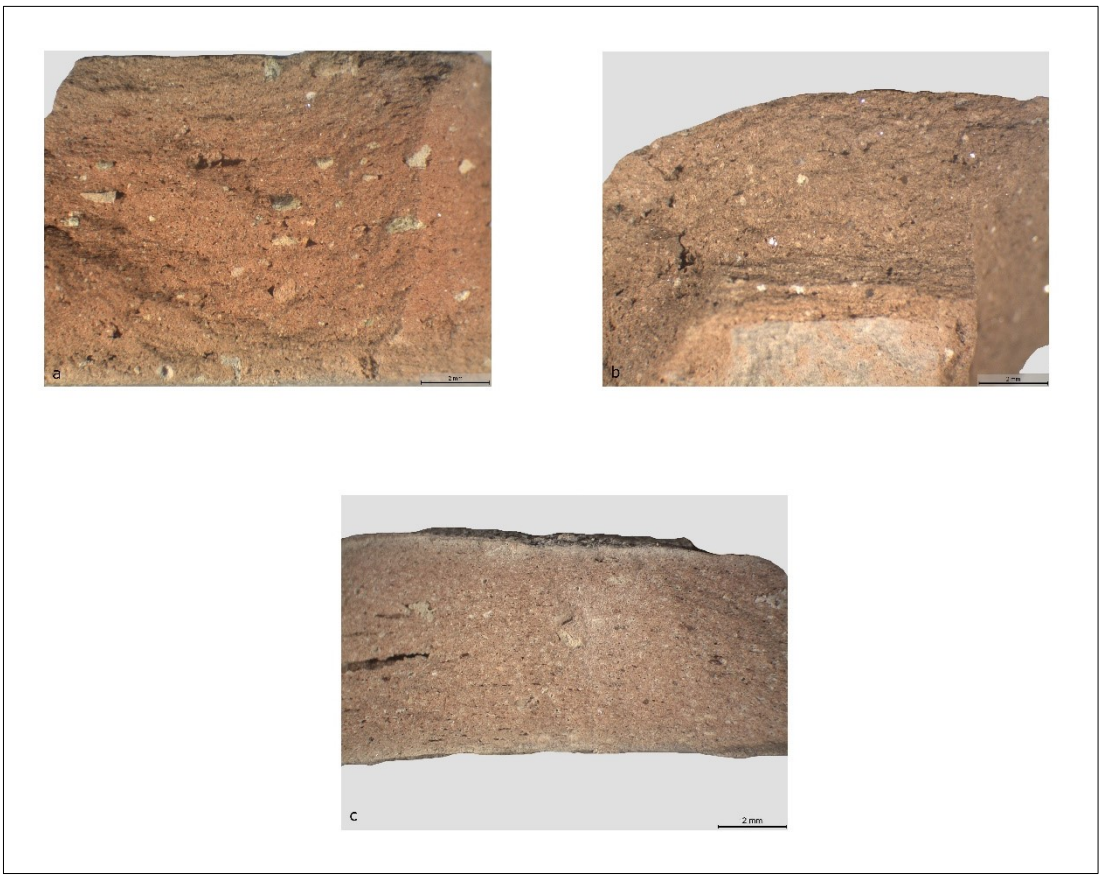

Fig. 4. Microphotos 8x: **a.** M 209/1; **b.** M 209/9; **c.** M 258/1

3. Ceramic Building Material

AKR-CBM-1
Ref. M 210/1 (M 210/3)

The colour of the matrix appears to be light yellowish (Munsell 2.5 YR 7/4) and the clay is hard but a little bit flaky. To the naked eye, the fabric is coarse with some visible inclusions of whitish-yellow colour and big-sized or greyish and medium-sized, and some particles of white colour and small-sized. The texture of freshly-broken sections is mainly granular, the matrix is quite carbonatic and temper distribution is unsorted.
Voids are frequent, mostly vughy- and channel-shaped and of different sizes (0.16-20/1.19-35 mm). The temper-size varies from a minimum of 0.08 to a maximum of 2.00-40 mm. White grains of calcium carbonate of spherical-subspherical/well rounded-subrounded shape are infrequently/sporadically attested and show variable sizes (0.08-16/0.83 mm or 2.00 mm in cases of agglomerates). Micritic clots appear to be frequent, whitish-yellowish and of very spherical-spherical/well rounded-subrounded-subangular shape (0.04-08/0.40-1.11 mm). Quartz is rare and visible just in one sample (M 210/3, fig. 5.b). It appears in form of greyish-transparent inclusions of spherical-subelongate/subangular-angular shape and medium-big sized (0.95 mm circa). In the same sample, a sporadic presence of black, very spherical-subspherical/subrounded-subangular iron oxide concretions is attested (0.12-16/0.40 mm). Furthermore, the fabric shows a presence of rare/infrequent, reddish-pinkish or light red inclusions of spherical-subspherical/well rounded-rounded shape and small-medium sized (0.08/0.48 mm) or rarely big-sized (1.59 mm circa), and singular, small-medium sized (0.40 mm), blackish particles of spherical/rounded shape (M 210/1, fig 5.a). Finally there is a sporadic presence of two types of temper: small-medium sized (0.08/0.40 mm) and dark yellow inclusions of very spherical/rounded shape; big-sized (0.20/0.79-2.40 mm) and very yellow inclusions/agglomerate of elongate/angular-very angular shape and with a sandy aspect.

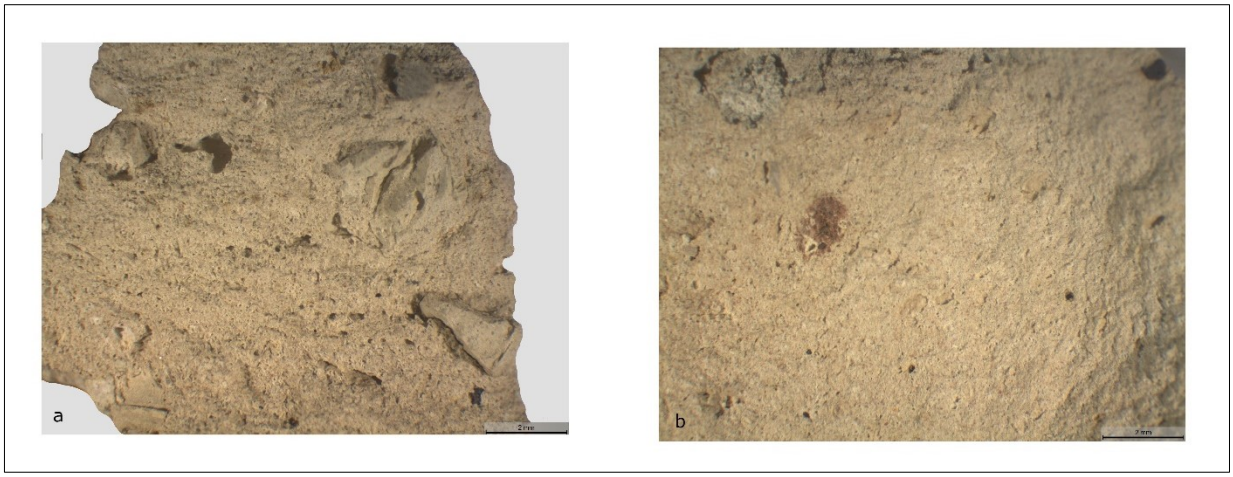

Fig. 5. Microphotos 8x: **a.** M 210/1; **b.** M 210/3

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