INSTITUTE OF ARCHEOLOGY AND ART HISTORY OF ROMANIAN ACADEMY CLUJ-NAPOCA

UNIVERSITATEA TEHNICĂ DIN CLUJ-NAPOCA

JAHA JOURNAL OF ANCIENT HISTORY AND ARCHAEOLOGY

editura MEGA

Journal of Ancient History and Archaeology

DOI: http://dx.doi.org/10.14795/j.v13i1

ISSN 2360 266x

ISSN–L 2360 266x

No. 13.1/2026

CONTENTS

STUDIES

HISTORIOGRAPHY

CULTURAL HERITAGE PROTECTION

REVIEWS

Design & layout: Petru Ureche

editura MEGA

Editura Mega | www.edituramega.ro
e-mail: mega@edituramega.ro

ARCHAEOLOGICAL MATERIAL

THE GLAZED EARTHENWARE OF SUTOR/*OPTATIANA*

Abstract: We discuss herein the glazed earthenware fragments discovered at Sutor during the rescue archaeological excavations conducted between 2021 and 2022. We thus address several key aspects regarding the study of glazed ceramics and make a brief introduction to the production history of such vessel types. Furthermore, we present the main production technologies and their development over the course of the centuries. We highlight the rareness of these earthenware categories, which due to the complex production technology involved higher costs that placed them among Roman-date luxury wares. The presence of these ceramic categories in the *vicus* at Sutor seems to suggest there existed trade relations with some of the centres in Dacia and, possibly, with a number of centres outside the province.

Key words: *Sutor/Optatiana, Roman wares, lead glaze, production techniques.*

Dan George ANGHEL
National Museum of the Union Alba Iulia
dnanghel@yahoo.com

Sergiu-Traian SOCACIU
Institute of Archaeology and Art History Cluj-Napoca
socaciu.sergiu@yahoo.com
https://orcid.org/0009-0009-5391-5419

Sorin Ilie COCIȘ
Institute of Archaeology and Art History Cluj-Napoca
scocis@yahoo.com
https://orcid.org/0000-0002-3175-7597

INTRODUCTION

The presence of the Roman fort and adjacent civil settlement at Sutor (Sălaj County) was reported as early as the mid-19th century, when K. Torma identified the fort for the first time, locating it on the left bank of the Almaș River at a site called "Gura Câpușului".[1] Moreover, K. Torma was the first to report the presence of Roman roads in the fort's vicinity. Thus, he describes the route of the imperial road that linked *Napoca* to *Porolissum*, running through the civil settlement at Sutor, where the road branched off westerly, towards the village of Cuzăplac, making the connection to the fort of Bologa (*Resculum*). Added to this is another possible branch of the Roman road, which linked the fort at Sutor to that of Buciumi, which Torma hypothesized based on information received from the local inhabitants.[2] In what the fort's civil settlement is concerned, Torma identifies it as the ancient *Optatiana*, present on *Tabula Peutingeriana*.[3]

Nevertheless, due to frequent flooding of the Almaș river and shifts of its course over time, the entire fort and civil settlement area was covered by silt, which made their location in the field impossible. A series of archaeological materials were reported following the drainage and road restoration works carried out subsequent to the 1980-flood. Based on these finds, N. Gudea made the first attempt to re-locate the fort within a synthesis work on the *limes* of Dacia.[4] However, the accurate location of the fort in the field was successfully achieved only after the initiation of systematic archaeological

[1] TORMA 1863, 10.
[2] TORMA 1863, 20-21; TORMA 1880, 114-115.
[3] TORMA 1880, 32, 119-121.
[4] GUDEA 1997, 101-102, no. 96.

investigations in the area, which began in 2001,[5] the entire perimeter of the fort being subsequently identified following the excavation campaigns of 2002, 2006[6] and 2008.[7] During this period, research in the military *vicus* area was sporadic, resulting in minor finds. The only structure delimited in the fort's civil settlement until 2021 was the building of the military baths, identified in a 2001-sondage,[8] extended later in 2014.[9]

Except for the above-mentioned archaeological investigations, the military *vicus* of Sutor remained largely unknown to the academic community until the commencement of the rescue excavations carried out prior to the construction of the A3 motorway, whose route partly overlapped the Roman *vicus*. The rescue excavations occurred between 2021 and 2022 and led to the identification and research of the civil settlement in the area northeast and east of the fort. During the first year of the archaeological campaign, the two Roman roads that crossed the settlement were identified, specifically, the imperial road running from *Napoca* and the secondary road running from *Bologa*. In addition, there were identified traces of wooden structures, a pottery firing kiln repurposed as a waste pit and the building of civil baths, fully excavated that year.[10] Research was extended the following year and led to the identification of three new stone structures, of numerous pottery firing kilns, as well as of a new stretch of the Bologa-*Porolissum* Roman road that transited the area.[11] These finds resulted in the documentation of an extended crafting centre within the settlement, likely dating to the its first phase, which included numerous kiln clusters, where earthenware, lamps and possibly even some terracotta figurines[12] were produced. Beside the many discovered archaeological features, the rescue excavations performed at Sutor yielded a large amount of archaeological materials. Amongst count a series of glazed ceramics sherds, which shall be analysed in detail herein.

LEAD GLAZE, HISTORY AND PRODUCTION TECHNOLOGY

Prior to the analysis of the glazed vessels of Sutor, it is appropriate to review the history and production technology of this earthenware category. Glaze is a thin, amorphous layer formed during the cooling of a silica-based melt (a supercooled liquid) that develops on the surface of a ceramic product subsequent to firing or as a result of a reaction with a refractory material.[13]

Pottery glazing is a technique firstly used in Mesopotamia as early as the mid-2nd millennium BC in order to provide a specific gloss, applied to various ware categories, including that decorative architectural.[14]

Beginning with the second half of the 1st century BC, different centres in Syria and Asia Minor (Antioch, Mytilene (Lesbos), Tarsus, Perge, Smyrna/Izmir)[15] began production of vessels coated with lead glaze.[16] The innovation consisted in replacing plant ash or sodium carbonate-based flux with lead oxide (litharge) as a flux, in order to reduce the silica melting temperature to approximately 717°C (at a litharge content of 70% SiO_2).[17]

Asia Minor products are mentioned by Cicero in 50 BC in a letter to his friend, Atticus, under the term of *Rhosica vasa*, after the city of Rhosos where he served as governor.[18] The technology diffuses to western Mediterranean[19] as a result of the migration of some artisans,[20] vessels of the type starting to be produced in Italic workshops in the southern (Puteoli),[21] central (Rome—Janiculum, Nuovo Mercato Testaccio)[22] and northern regions (Po Valley, Ticino)[23] by late 1st century BC and early 1st century AD.[24] Once with the 1st century, these vessels would be found in the repertoire of workshops from southern Gaul[25] (Lyon, Saint-Romain-en-Gal, Vienne), central Gaul[26] (Vichy, St.-Rémy-en-Rollat, Gannat, Lezoux) and eastern Gaul, on the Rhine Valley.[27] From the second half of the 1st century AD and early 2nd century,[28] glazed earthenware begins manufacture in Spain,[29] Britannia (Usk/Caerleon, Holt/Chester),[30] Germania Superior,[31] Moesia Superior (*Viminacium*),[32] Moesia Inferior (*Ulpia*, *Oescus*, *Novae*,[33] *Durostorum*[34]) and Pannonia (*Brigetio, Aquincum,*

[5] ILIEȘ *et alii* 2002; ILIEȘ *et alii* 2002a.
[6] ILIEȘ *et alii* 2007.
[7] ILIEȘ *et alii* 2009.
[8] ILIEȘ *et alii* 2002, 131-151.
[9] COCIȘ *et alii* 2015, 134-137. For a wider description of the archaeological research conducted in the civil settlement during these years see COCIȘ/LĂZĂRESCU/SOCACIU 2022, 88-91.
[10] GĂZDAC *et alii* 2021, 75-76; COCIȘ/LĂZĂRESCU/SOCACIU 2021, 228-231; COCIȘ/LĂZĂRESCU/SOCACIU 2022, 91-94.
[11] SOCACIU/LĂZĂRESCU/COCIȘ 2023, 86-90.
[12] SOCACIU/LĂZĂRESCU/COCIȘ 2023, 88-89; COCIȘ/LĂZĂRESCU/SOCACIU 2023, 200-201; SOCACIU/LĂZĂRESCU/COCIȘ 2023a, 170.
[13] PRADELL/MOLERA 2020.
[14] The vitreous layer was obtained from the ash resulted from burning various plants, whose composition consisted of large sodium and potassium quantities mixed with the calcium and silica oxides (Na_2O, K_2O)–CaO–SiO_2. The addition of alkaline substances played the role of flux to decrease the melting temperature of silica from 1670-1723°C to 793° C and which do produce a coloured layer, they being applied on surfaces polychromed with mineral-based oxide engobes (WALTON 2004, 5; GREENE 2007, 653; GIRALT 2014, 9; DI FEBO *et alii* 2018, 2121).
[15] GOHIER 2018a, 30-31; CERDÁN/MORAIS/CABELLO 2019, 152.
[16] HATCHER *et alii* 1994, 446; GREENE 2007, 653; WALTON/TITE 2010, 733.
[17] PRADELL/MOLERA 2020.
[18] GREENE 2007, 653, 656; CERDÁN/MORAIS/CABELLO 2019, 153.
[19] WALTON 2004, 2.
[20] MACCABRUNI 1987, 171; TABORELLI 2011, 129.
[21] CERDÁN 2017, 401-402.
[22] GOHIER 2018a, 31, 106, Fig. 53. The glazed pottery production is also recorded in Sicily in the form of imitations of micro-Asian prototypes (GIANNOSSA *et alii* 2015).
[23] BAUMANN 2010, 127.
[24] GOHIER 2018a, 31
[25] DESBAT 1986a, 33; RUSU-BOLINDEȚ 2007, 324; GREENE 2007, 660; GOHIER *et alii* 2018, 478.
[26] VERTET 1986.
[27] MUȘEȚEANU 1993, 232.
[28] WALTON 2004, 12.
[29] CERDÁN/MORAIS/CABELLO 2019, 155-156.
[30] ARTHUR 1978; GREENE 1977, 124; PEACOCK 1982, 64; WALTON 2004, 15.
[31] BAUMANN 2010, 127.
[32] WALTON/TITE 2010, 734, 141; JEREMIĆ *et alii* 2018; 141.
[33] KABAKCHIEVA 2018, 583.
[34] MUȘEȚEANU 1993.

Sirmium),[35] particularly in areas rich in lead ore.[36] Lead oxide (litharge) is not found in natural state. It is a byproduct resulting from crafting activities that involved lead smelting[37] or from processing associated ores, specifically the reduction of galena (lead sulfide) PbS for silver extraction.[38]

In Roman Dacia, production of glazed ceramics is documented at *Ampelum*,[39] Micăsasa,[40] likely *Ulpia Traiana Sarmizegetusa*[41] and *Apulum*, evidenced by finds of artefacts, discarded pieces (wasters) and elements related to the production operation chain (such as kiln spacers and residues).[42] After the first half of the 2nd century AD, other artefact classes such as lamps and figurines[43] also began to be glazed. Early Asia Minor and Italic products are characterised by mould-modelling,[44] so that later, glaze began to replace the red or black slip of wheel-thrown vessels specific to thinned-wall pottery decorated by incising, stamping or relief in the barbotine technique,[45] although the mould-casting technique was never entirely abandoned.[46]

The production technology involves two working phases. In the first phase, recipients fired in the kiln at temperatures specific to common wares (ca. 900°C) in either a reducing or oxidising atmosphere are modelled and decorated. This process achieves dimensional stabilization (phase known as bisque firing (or *biscuit firing*).[47]

The next step consists in refiring the vessels at temperatures between 800–1000°C[48] without the need for specific temperature plateaus, as the clay body no longer undergoes major shrinkage, while the chemically and molecularly bound water had already been removed from composition.[49] The glaze contraction during cooling (ca. 500°C) must be less than that of the clay body as incompatibilities could lead to cracking and peeling of the vitreous layer.[50] Simultaneously, maximum temperature must be maintained for a longer duration in order to "maturate" the glaze and remove the gases escaping between the clay body and the vitreous layer, which may cause defects such as porous surfaces, craters or pinholes.[51]

Another technique utilized starting with the second half of the 1st century AD consists of direct application of lead oxide onto the bodies of unfired vessels, which is a specific signature of Gallic production and, later, of those in Danube related areas.[52]

The litharge quantity represents 50-70% of the suspension volume, while the applied layer had to be relatively thick in order to ensure uniform coverage[53] and superior gloss.[54]

The method to apply glaze on a fired clay body results in a much more homogeneous vitreous layer, free of cracks and distinctly visible in the shard section.[55] In contrast, if the glaze mixture is applied to an unfired clay body, the reaction between body and glaze is significant and results in the formation of crystals at body-glaze interface, which then fuse together.[56]

Glaze obtained via the two-firing system is translucent, colour change being imparted by iron ions in the clay body, which offer different shades depending on the kiln firing atmosphere. Green and yellow intense hues are obtained by adding metal oxides to the solution, particularly iron and copper compounds, while depending on the nature and valence of metal ions (Fe^{2+}, Fe^{3+}, Cu^{2+}, Cu^{+}), crystals that absorb light differently form.[57] Fe^{3+} oxides yield yellow hues, while Fe^{2+} yields green. Copper imparts red or brown tints in a reducing atmosphere, green in the presence of oxygen[58] and an intense blue colour if alkalis are added to the suspension.[59] If the composition contains more iron than copper, the glaze colour will still be yellow.[60]

Another precaution consists in avoiding contact between the vessels during firing, as molten glaze is viscous, tends to leak and causes the pieces to merge.[61] This shortcoming was prevented by the use of firing supports. Spacers, interposed between the pottery pieces in order to achieve uniform firing conditions were extensively used in the production of *terra sigillata*,[62] but their specific forms could only be partially adapted to the new requirements imposed by the vitreous layer.

Potters experimented with a series of methods to separate products in the attempt to stack these so that contact points were minimal. Techniques included using potsherds fixed inside sand-filled vessels,[63] three-armed wedges[64] and cylindrical supports on which vessels were placed mouth down.[65] Most common are circular spacers supported by three legs of varying sizes[66] or pottery cones.[67] In Dacia, pottery supports have been documented in *officinae* B and G

[35] NAGY 1945; BRUKNER 1981, 34; MUȘEȚEANU 1993, 132; WALTON/TITE 2010, 734; CERDÁN/MORAIS/CABELLO 2019, 154, Fig. 2.
[36] PEACOCK 1982, 64; BAUMANN 2010, 127.
[37] At Durostorum are recorded lead working workshops connected to earthenware glazing (BAUMANN 2010, 128, note 155).
[38] HODGES 1965, 444; CUOMO DI CAPRIO 2017, 263; DI FEBO *et alii* 2018.
[39] LIPOVAN 1983-1984; LIPOVAN 1990.
[40] MITROFAN 1990, 137, Fig. 33/3; 35/1; ANGHEL/TĂNĂSELIA/BOER 2021, 237, pl. I/3.
[41] ALICU/SOROCEANU 1982; BENEA 2004, 210; RUSU-BOLINDEȚ 1995; RUSU-BOLINDEȚ 2007, 323.
[42] ANGHEL *et alii* 2021; ANGHEL/NAGY/BALTEȘ 2022; ANGHEL 2023, 249-250.
[43] ALICU/SOROCEANU 1982, 55, pl. VI/1, 4-6; LIPOVAN 1983-1984; DESBAT 1986a; MARTIN 1995, 64.
[44] GREENE 2007, 653.
[45] DESBAT 1986a, 33; RUSU-BOLINDEȚ 2007, 323; BAUMANN 2010, 127.
[46] GREENE 1978; DESBAT 1986a; DESBAT 1986b.
[47] CUOMO DI CAPRIO 1985, 97-103; LIPOVAN 1990, 274; CUOMO DI CAPRIO 2017, 261, graph. 14. CERDÁN/MORAIS/CABELLO 2019, 152.
[48] CERDÁN/MORAIS/CABELLO 2019, 152; DI FEBO *et alii* 2018, 2121.
[49] CUOMO DI CAPRIO 2017, 331-332.
[50] TITE *et alii* 1998, 246.
[51] HODGES 1965, 47; LIPOVAN 1990, 280; TITE *et alii* 1998, 246.
[52] WALTON/TITE 2010, 754.
[53] WALTON 2004, 5, 16; 45-60%, after TITE *et alii* 1998, 242; 75% PbO and 25% SiO_2, after DI FEBO *et alii* 2018, 2119; 70% PbO + 30% SiO_2 after PRADELL/MOLERA 2020.
[54] CUOMO DI CAPRIO 2017, 264.
[55] CERDÁN/MORAIS/CABELLO 2019, 152.
[56] DE VITO *et alii* 2017, 1780.
[57] PRADELL/MOLERA 2020.
[58] DESBAT 1986a, 33; PRADELL/MOLERA 2020.
[59] HODGES 1965, 45.
[60] TEKKÖK *et alii* 2009, 5.
[61] DOMŹALSKI 2003, 187.
[62] LERAT/JEANNIN 1960, 7, Fig. 2; ANGHEL 2019.
[63] HÖPKEN 2003, 365, Fig. 1.
[64] PASSELAC 1992, 216, Fig. 3/8; 5/8; 6/2; 7/10; 10/7-9; 12-13.
[65] ORANSKY 2001, 52. Fig. 2/a.
[66] GOHIER 2018b, 206, 208, Fig. 3, 5.
[67] ANGHEL/NAGY/BALTEȘ 2022, 87, pl. III.

at *Apulum*[68] and Micăsasa, with lead residues also originating from these contexts.[69]

The production of glazed earthenware during the 2nd–3rd century AD represented a secondary activity of the Roman *officinae,* its magic consisting in the resemblance with the shine or patina of metalware and the fact that vessel walls were waterproof.[70] The large quantity of litharge required to prepare the suspension limited the areas where production could unfold and the requirement of two firings for the same product, involving additional precautions, resulted in expensive and likely less accessible products.[71] Constraints related to the manufacturing operation chain are evidenced by the extremely low frequency of glazed earthenware discovered in most Roman-date sites throughout the Roman empire during the 1st century BC-3rd century AD.[72]

Many of the pieces duplicate metal or glass-made vessels, interpreted according to the artisan's inspiration that in some cases, acquired the character of a "unique"[73] object. Their rareness made them a "luxury product",[74] which also lead to a wider dispersion of vessels that stand out by their higher workmanship quality in various centres. Thus, Asia Minor products diffuse throughout the Mediterranean basin[75] and the northern Black Sea region (*Moesia Inferior*),[76] while Italic products reached southern Gaul,[77] the Iberian Peninsula, Britain[78] and northern Pannonia.[79] These are found as objects that mirror the social standing in graves from the Germanic peoples' territories north of the Rhine.[80] Vessels manufactured in workshops from Central Gaul[81] and the Rhineland (Cologne)[82] were exported to Belgica and Britannia, yet their numbers remained limited.

On the other hand, the limited production of smaller workshops or of individual potters, such as Caius Iulius Proculus of *Ampelum*,[83] resulted in a regional distribution of their products, quantitatively restricted, while the little information renders difficult the establishment of the place of origin based solely on typological interpretations. To date, no definitive imports from the Eastern Mediterranean or products from Gallic workshops have been identified in Dacia. The only piece that may be ascribed, with certain reservations, to Italic workshops is a *lanx* fragment bearing the CRISPINVS stamp, discovered at *Tibiscum*.[84]

[68] CIAUȘESCU 2004, 321, Fig. 7-8; ANGHEL/TĂNĂSELIA/BOER 2021, 247, pl. I/4; ANGHEL *et alii* 2021, 11, Fig. 3; ANGHEL 2023, 237, pl. VI/5-7.
[69] MITROFAN 1990, 137, Fig. 33/3; 35/1; ANGHEL/CIULAVU/BOUNEGRU 2021, 135; ANGHEL/NAGY/BALTEȘ 2022b, 99.
[70] CERDÁN/MORAIS/CABELLO 2019, 152.
[71] RUSU-BOLINDEȚ 2007, 322; HÖPKEN *et alii* 2009, 130.
[72] DESBAT 1986a, 33; MARTIN 1995, 63.
[73] BÓNIS 24 ,1990; MARTIN 64 ,1995; CERDÁN 383 ,2017; MACCABRUNI 168 ,1987, note 9.
[74] MACCABRUNI 1987, 174; CERDÁN 2017, 384.
[75] CERDÁN 2017, 397; CERDÁN/MORAIS/CABELLO 2019, 159-160, Fig. 4-6.
[76] KABAKCHIEVA 2018, 582.
[77] GOHIER 2018a, 65-73.
[78] CERDÁN 2017, 385.
[79] BÓNIS 24 ,1990, Fig. 1.
[80] KREKOVICI 1991.
[81] GREENE 1978.
[82] MONAGHAN 1997, 882-883, Fig. 325-326; HÖPKEN *et alii* 2009.
[83] LIPOVAN 1983-1984; LIPOVAN 1990.
[84] BENEA 2004, 204, no. 1, Fig. 3/6.

The find context

The items discussed here were almost exclusively yielded by the rescue excavations conducted at Sutor in 2022 (Pl. I). Only a single platter fragment (cat. no. 13) was discovered in 2021 during the earth removal phase of the area near the Bologa–*Porolissum* Roman road. The other analysed examples mostly originate from the filling of irregular pits that likely served as refuse pits. The filling of these pits generally consisted of various pottery fragments and animal bones, suggestive of their use as waste pits. Three of the analysed fragments (cat. nos. 5, 8, 14) come from the filling of the same pit (feature 1856), beside numerous other pottery fragments, including stamped pottery. From a similar context (feature 1206) comes a glazed bowl (cat. no. 11), discovered beside other archaeological materials, including a bronze knee brooch of type Cociș 19a1b1b, dated starting with the period between the reign of Trajan until approximately the second half of the 2nd century AD.[85] Beside the variety of materials and animal bones discovered, the refuse nature of this feature is also suggested by the find of a small fragment from the aforementioned glazed bowl in the filling of another waste pit (feature 1172), located several meters to the south. Regarding the dating of these features, the presence of an early brooch in the filling of a waste pit appears to indicate a relatively early date of their filling, thus framing sometime during the first development phases of the settlement, when, as already mentioned, an extensive crafting centre developed and operated there. Nevertheless, there is no specific indication that would confirm a certain relationship between respective features and therefore, their contemporaneity with the pit that contained the mentioned brooch remains merely a working hypothesis.

Out of the pieces discussed herein, only a single fragment originates from a more complex archaeological feature. This is a fragment of a small hemispherical bowl (cat. no. 10), discovered in a rectangular feature (4.96 × 2.38 m) interpreted as a possible house (feature 4334). Various archaeological materials were recovered from the filling of this feature, including glass and iron fragments, as well as various potshards, including a *terra sigillata* fragment and two fragments of a terracotta figurine.[86] In what the dating of the feature is concerned, there are no materials to allow a more restricted chronological framing, which places it within the general timeframe of Roman rule in Dacia.

Discussion

The excavations carried out at Sutor yielded fifteen glazed pieces, either fragmentary or restorable, of a wide typological and technological diversity.

The largest sample of glazed pottery produced by the Roman potters consists of drinking wares, one or two-handled cups, imitations of *skyphos* or *kantharos* types adopted from the repertoire of thin-walled wares or imitations of vessels made of other materials.

[85] COCIȘ 2004, 89-90.
[86] SOCACIU/LĂZĂRESCU/COCIȘ 2023a, 165, 176-177, nos. 26-27.

A common feature of many of the items is represented by the truncate cone base, hollow on the inside and the short foot (cat. nos. 3–4), which is also the part of recipients best preserved due to their bulkiness.[87] Another dominant feature of the glazed ceramics is the decoration made in the barbotine technique, set in the form of "pine needles" or "fish scales", in some cases these motifs predominating on this vessel category.[88]

Four of the pieces discovered at Sutor may be classified as *kantharos* imitations, three of which exhibit the specificities of thin-walled wares, the recipients being small-sized (cat. nos. 1–2, 4). To these also add three fragments (a base and two handles) that cannot be ascribed to a specific form (cat. nos. 3, 5–6).

The inspiration source is represented by the Hellenistic *kantharoi* produced after mid-3rd century BC,[89] a form transmitted via metal wares, although earthenware reproductions are few and their interpretation is rather varied (including versions of Dragendorff VII and Dragendorff VIII forms,[90] or of items in the thin-walled wares class).[91] Glazed *kantharoi* are documented at *Aventicum*,[92] the Athenian Agora[93] and Tienen (Belgium)[94] and are infrequent pieces.

In Dacia, glazed *kantharoi* of relatively similar forms are recorded at Ghirbom (Alba County)[95] and *Ulpia Traiana Sarmizegetusa*,[96] while an imitation of glass vessels (Isings 38c type)[97] was found at *Napoca*.[98]

A relatively large number of complete and fragmentary examples originate from *Apulum*, some being discarded pieces discovered in *officina G,* being crafted in a manner similar to the exemplars of Sutor in terms of form and decoration.[99] Differences lie in the fact that the vessels of *Apulum* are decorated on the neck with parallel vertical incisions, rarely horizontal, while the rim edge is plain, such decoration being specific to other cup categories produced in this centre, particularly *skyphos* replicas.[100]

Still in the class of *kantharos* imitations is a three-handled large vessel to which conical-shaped protrusions are applied to both the upper part and base (cat. no. 7).

Similar two or three-handled exemplars, unglazed, are frequent and produced for a prolonged period in Moesia,[101] Pannonia[102] and Dacia[103] during the 2nd–3rd centuries AD, some vessels being also decorated using various techniques.[104]

Starting with the 4th century, this form, yet glaze-coated, becomes highly frequent south of the Danube.[105]

This vessel stands out by the presence of applied decoration and a more vertically modelled ringfoot compared to unglazed examples. Other peculiarities consist of high-quality, deep green glaze, homogenous, lacking the micro-fissures present on local pottery.[106] Most glazed exemplars in Dacia,[107] Moesia Inferior,[108] Moesia Superior[109] and Pannonia[110] exhibit olive-yellow, brown and yellowish-brown hues, associated with a fabric fired in mixed or predominantly reducing atmosphere, the glaze being applied on the unfired vessel. In this case, glaze was clearly applied on the fired ceramic body, the deep colour being achieved through the addition of copper oxides. Glazes of deep green hues associated with a fabric fired in an oxidizing atmosphere are specific to glazed pottery of the Rhineland.[111] A *kantharos* of a similar form, provided with two handles and decorated with applied motifs[112] also originates from Cologne, its technological peculiarities being similar to those of the item from Sutor. Furthermore, several fragments of richly decorated *kantharoi* using various techniques (applied motifs, barbotine technique) are documented still in the Rhineland, characterised by the same previously mentioned technological parameters.[113] Decorated *kantharoi* produced in these workshops were also discovered at Tienen (Belgium) [114] and York (Britannia), being dated to early 3rd century AD.[115] A similar piece, undecorated and two-handled was discovered at Arles-Rhône and is framed between late 1st century and mid-2nd century AD.[116] Technological peculiarities and size parameters similar to this example are also present in an undeterminable fragment discovered also at Sutor (cat. no. 15).

Two handles, which belong to small-sized vessels (cat. nos. 5-6) may also be included in the cup category.

Decorating handles with rectangular or oval profiles in the barbotine technique is a common practice for vessels in this class. Circular handles are less frequent, with just a single cup discovered at *Alburnus Maior* (the cemetery of Tăul Secuilor/Pârâul Porcului).[117]

[87] ANGHEL *et alii* 2021, cat. no. 31-35.
[88] ANGHEL/NAGY/BALTEȘ 2022, 99.
[89] EDUARDS 1975, 87, pl. 16/802.
[90] BÓNIS 1942, 44, pl. XIX/2; SCHÖRGENDORFER 1942, 207, form 536; BELTRÁN LLORIS 1990, 40, Fig. 13/105-106.
[91] RICCI 1985, 260, pl. LXXXIII/1.
[92] CASTELLA/MEYLAN-KRAUSE 1994, 43, no. 112.
[93] Late 1st century BC, first half of the 1st century AD (HAYES 2008, 58, Fig. 28/881).
[94] MARTENS 2004, 34, Fig. 9,3.
[95] ANGHEL *et alii* 2021, cat.no. 13.
[96] ALICU/SOROCEANU 1982, 56, pl. II/4.
[97] ISINGS 1957, 54.
[98] RUSU-BOLINDEȚ 2007, 324-325, no. 396, pl. LXXIV.
[99] ANGHEL *et alii* 2021, cat.nos. 14, 15, ANGHEL/NAGY/BALTEȘ 2022, 91, pl. IV/8-10.
[100] ANGHEL *et alii* 2021, cat.nos. 9-10
[101] NIKOLIĆ *et alii* 2023, 84, Fig. 19c.
[102] BRUKNER 1981, 188, T. 103; T. 105
[103] Apulum (CIAUȘESCU 2004, 325, no. 63-64; ANGHEL/CIULAVU/BOUNEGRU 2021, 132, pl. IX/3a; MOGA *et alii* 2007, 93, cat.nos. 93, 99, cat.no. 121); Cristești (RUSU-BOLINDEȚ/BOTIȘ 2018, 97, cat.nos. 247-248); Gârla Mare (HAMAT 2018, 182, Fig. 12/1, 8); Ilișua (PROTASE *et alii* 1997, XLVII/5; L/7-8; RUSU-BOLINDEȚ *et alii* 2018, 44, cat.co. 97); Napoca (RUSU-BOLINDEȚ/BOTIȘ 2018, 47, cat.no. 106); Tibiscum (ARDEȚ 2009, 106-107, pl. LX-LXIII).
[104] NIKOLIĆ *et alii* 2023, 84, Fig. 18a-18c; 19a-19c.
[105] NÁDORFI 47 ,1992, pl. II; KŐLCZE 22 ,2018, table 1, Fig. 3.
[106] ANGHEL/TĂNĂSELIA/BOER 2021.
[107] ANGHEL *et alii* 2021.
[108] MUȘEȚEANU 1993.
[109] NIKOLIĆ *et alii* 2023, 33-34.
[110] BARKÓCZI 1992.
[111] HÖPKEN *et alii* 2009.
[112] HÖPKEN *et alii* 2009, 138, Abb. 8.
[113] HÖPKEN *et alii* 2009, 136-138, Abb. 7.
[114] MARTENS 2004, 34, Abb. 9,3.
[115] MONAGHAN 1997, 882-883, Fig. 325-326.
[116] GOHIER 2018a, 399, pl. 148, type 6.6.
[117] RUSU-BOLINDEȚ/BOTIȘ 2018, 58, cat.no. 135.

Bowls and tureens are also vessel categories frequently found among the lead-glazed earthenware. At Sutor were identified four fragments and one restorable vessel of different types, ranging from hemispherical forms to biconical vessels (cat. nos. 8–12).

Some of the exemplars are fragmentary, therefore their interpretation is possible only in part. In this class is included a tureen rim fragment (cat. no. 8) provided with a twisted handle and a triangular-shaped protome applied vertically on the rim.

A twisted handle originated from *Ulpia Traiana Sarmizegetusa*,[118] with counterparts among the glazed ceramics manufactured in central Italy starting with late 1st century AD until early 3rd century AD[119] and in southern Gaul during the 2nd century AD.[120] Protome application on handles is also encountered on glazed specimens produced in the workshop of Caius Iulius Proclus at *Ampelum*,[121] yet the style and glaze specificities are different.

A bowl fragment rendering the shape of a seashell valve (cat. no. 9) is still a transposition into pottery of vessels originally made of metal[122] or glass.[123] Items that faithfully duplicate containers made of other materials are produced by mould-pressing, a vessel of the type being documented at *Aventicum*.[124] In the case of the Sutor fragment, decoration is rendered by wide incisions made on the interior of the vessel. In Dacia, finds of glazed vessels decorated in the same technique have been reported at *Apulum* (a fragment dated to the first half of the 2nd century AD) and Micăsasa (two fragments with a general dating).[125]

A rim fragment of a small bowl, decorated with oval impressions and on both the exterior and interior with horizontal incisions (cat. no. 10), also belongs to the class of thin-walled wares. This bowl type is widely distributed,[126] some specimens being glazed,[127] representing in such cases a customised model made by a specific potter. In Dacia, similar bowls were produced in the *Ampelum*[128] workshop, however the making technique, fabric and colour of the vitreous layer are different.

The most interesting piece discovered at Sutor is a biconical bowl with a decorated upper section, featuring two applied ornamental handles attached to the vessel body, imitating metalware lugs (cat. no. 11). The shape, however, is uncommon to pottery vessels and we have been unable to identify any correspondences within metalware examples. The glaze is homogenous and of very high quality, differing from that of most exemplars produced in Dacia (the workshops at *Ampelum* and *Apulum*), with similarities with that present on a *kantharos* discovered at Berghin, which is also a "unique" piece within the ensemble of this ceramic category.[129]

A form less commonly found among lead-glazed vessel types produced in the Roman empire during the 1st–3rd century AD is represented by *mortarium*-type vessels, evidenced at Sutor still by a single fragment (cat. no. 12).

Alike other ceramic classes, *mortarium, pelves* are an adoption and adaptation of forms developed in the Aegean region (Corinth), from where they diffuse throughout the Mediterranean basin.[130] Their production in the Italian Peninsula[131] is attested starting from the 3rd century BC. They are made of coarse or semi-fine fabric, typical of common wares intended for to grind grains[132] and plain *terra sigillata* (Drag. 43, Drag. 45, Ritterling 12, Curle 11 and Curle 21), being used for mixing and pouring various products. Glazed *mortaria* were produced in the workshops of central Italy during the 2nd–3rd century AD, however they are relatively rare.[133] Small bowls that reproduce the specific *mortarium* shape were manufactured in the Iberian Peninsula.[134] A *mortarium* fragment with flange decorated in the barbotine technique is attested in Pannonia at *Gorsium* and may be attributed to workshops operating at *Aquincum*,[135] while another vessel was found in Moesia Superior at *Viminacium Margum*.[136] During the late Roman period, large-size *mortaria* coated with lead glaze[137] would be mass-produced in centres across Raetia, Moesia and Pannonia.

The only exemplar of the type known to date in Dacia originates from *Apulum*,[138] being discovered in a context that may be dated to early 2nd century AD, framing in Ritterling 12 type, a *mortarium* variant specific to workshops in Southern Gaul.[139] The small sizes of the vessel of Sutor correspond to a container used to prepare various potions.

Platters are represented by a single exemplar, an imitation of form Drag. 39 in the *terra sigillata* repertoire, a platter (*lanx*), oval-shaped, rarely circular or rectangular, characterized by two large, decorated handles and occasionally transversally perforated.

These platters were originally produced in Central Gaul starting with the first half of the 2nd century AD,[140] the form being adopted from the repertoire of metal[141] or glass[142] vessels. They represent the only recipient type in the relief-decorated *terra sigillata* produced using a convex mould, a fact that makes them easy to copy and multiply. This type of platter is a common form in Dacia, found among both glazed and unglazed pieces.

[118] ALICU/SOROCEANU 1982, 56, pl. I/2.
[119] GOHIER 2018a, 178,179, 187, pl. 23/108, 116; 47/242-243.
[120] GOHIER 2018a, 197, pl. 73/376.
[121] LIPOVAN 1990, 288, no. 22, 23, 26, Fig. 8/5-6; 9/2; ANGHEL *et alii* 2021, cat. nos. 77-78.
[122] TASSINARI 1993, type N. 2100; ЈЕПЕНА 1995, 184, T. 1/1a.
[123] ISINGS 1957, 18, type 3 bowl.
[124] CASTELLA/MEYLAN-KRAUSE 1994, 59, tip. 183.
[125] Novel, forthcoming (Dan Anghel, *Ceramica glazurată din Dacia*).
[126] RICCI 1985, tav. XCIII-XCIV.
[127] GOHIER 2018a, pl. 98/525;pl. 105/556; pl. 125/ type 3.3.1
[128] LIPOVAN 1990 287, no. 10, Fig. 7/6; ANGHEL *et alii* 2021, cat.nos. 60, 67.
[129] ANGHEL *et alii* 2021, cat. no. 13.
[130] VILLING/PEMBERTON 2010, 556; ESPINOSA 2011, 285.
[131] RUSU-BOLINDEȚ 2007, 407.
[132] CRAMP/EVERSHED/ECKARDT 2011, 1341.
[133] GOHIER 2018a, 346, pl.122.
[134] BELTRÁN LLORIS 1990,185, pl. 93/855, type López XIb.
[135] BARKÓCZI 1992, 21, Abb. 35.
[136] NIKOLIĆ *et alii* 2023, 270, no. III/96.
[137] BJELAJAC 1995; CVJETIĆANIN 2006, 22-32; RUSU-BOLINDEȚ 2007, 408.
[138] Novel (forthcoming).
[139] BELTRÁN LLORIS 1990, 90, Fig. 41/343; DELAGE 2010, 63.
[140] BELTRÁN LLORIS 1990, Fig. 39/313.
[141] BIENERT 2007, 182-184.
[142] ISINGS 1957, 117; WELKER 1985, 55.

Glazed vessels with the same type of rim decoration are known at Micăsasa (decorated on the interior with a fish),[143] where a mould for this type of container was also discovered[144] and at *Tibiscum* (two pieces).[145] From *Apulum* come several platters discovered in the southern cemetery,[146] the inventory of *officina* G[147] and the southern area of the *canabae*.[148] A fragment originating from the waste pit of the workshop at *Apulum* is identical in firing, sizes and colour to the exemplar here. A glazed piece with a more elaborate decoration, with a partially surviving handle, is documented in the fort at Bologa.[149] Glazed platters of the Drag. 39 type were also produced in Moesia Inferior (*Durostorum*),[150] Moesia Superior (*Viminacium Margum*[151] and *Singidunum*)[152] and Germania Inferior.[153] A *lanx*, dated to the Hadrianic period, was discovered in a burial at *Aquincum*.[154] Each centre distinguishes itself through the production of specific forms that are not found in neighboring areas. In the case of the specimens from Dacia, the crafting manner is similar to the vessel of *Aquincum*. Moreover, glazed forms of Drag. 39 type are absent or very rare in the repertoire of workshops of the Italian Peninsula,[155] Gaul,[156] the Iberian Peninsula[157] or Britannia.[158]

TECHNOLOGICAL DETAILS

Most of the pieces exhibit micro-fissures and glaze "bubbling" (a spongy appearance) as a result of applying it directly onto the unfired clay, making in these cases, the fusion of the glaze into the clay body obvious. Exceptions are two exemplars (the three-handled *kantharos* and a similar atypical fragment), which exhibit a homogeneous vitreous layer and limited crazing.

Reduced atmosphere (cat. no. 11) or mixed firing (cat. nos. 1-5; 9-10; 12-14) predominate, evidenced by a very thin oxidised layer formed on the exterior of the sherd in the contact area with the glaze. Uniform oxidizing firing is present in four fragments (cat. nos. 6-8; 15).

The biconical bowl exhibits the same distinct glaze layer, yet of a smaller thickness. The item is also notable for the ceramic residues on its base, resulting from the vessel sticking to the kiln floor during firing and its subsequent forced removal.

Also evident is a glaze leak in the form of a drip that trickled down to the base of a cup foot during firing, a phenomenon frequently encountered in glazed ceramics.[159] Also common are light yellowish stains caused by the inhomogeneous composition of the litharge suspension, a technological flaw frequently found on the glazed earthenware from Dacia.

DETERMINATION OF THE CHEMICAL COMPOSITION

A group of five pieces have been non-invasively investigated through X-ray fluorescence (XRF)[160] using a pXRF Bruker Tracer 5i spectrometer (beryllium window, 8 mm collimator, without filters or controlled atmosphere, 60-second exposure: 30 sec. at 45kV/8μA, 30 sec. at 20kV/13μA) (Table I). While this method is only partially applicable to the study of archaeological pottery, it provides a database that, alongside the archaeological information offered by the object, may aid to confirm or refute certain hypotheses.

The working methodology is based on the comparative analysis aimed at identifying similarities and differences between the proportions of different chemical elements present in the pottery fabric of each object and their comparison with archaeological artefacts. Significant differences between the identified elements are taken into account, as well as the presence of common features specific only to certain analysed samples.

Table I.

mg/kg	s1	s2	s4	s5	s6
Mg	15183	14347	4918	34359	17242
Al	132844	67223	219056	37939	149852
Si	243419	254116	272425	204386	249598
P	757	285	1842	66	572
S	<LOD	<LOD	<LOD	61024	<LOD
K	137	2341	<LOD	1262	156
Ca	<LOD	<LOD	<LOD	1241	<LOD
V	24	32	19	18	12
Fe	<LOD	5317	<LOD	2353	<LOD
Ni	28	32	34	24	<LOD
Cu	<LOD	<LOD	<LOD	133	1054
Zn	292	257	240	187	260
Pb	224728	90765	208560	153564	271952
Sr	1409	590	1281	728	1501
Zr	9056	1343	12962	1876	13572
Cd	32587	8255	38544	11125	43636
Sn	9631	2375	14476	7292	17381
Hg	337	153	603	102	411

[143] MITROFAN 1990, 138, Fig. 36/1; MITROFAN 1995, 9, pl. 21/2; MITROFAN/POP 1996, 23, Pl. XXIV/293; RUSU-BOLINDEȚ/BOTIȘ 2018, cat.no. 302.
[144] MITROFAN 1990, 177, pl. 16/3; RUSU-BOLINDEȚ 2016, 286, Fig. XV, Fig. 8.
[145] BENEA 2004, Fig. 4/1, 3.
[146] BOLOG 2017, 47, Pl. 58; BOUNEGRU *et alii* 2021, 111, pl. I/2; ANGHEL *et alii* 2021, cat.no. 44.
[147] ANGHEL/CIULAVU/BOUNEGRU 2021, 135, pl. XV/9; ANGHEL *et alii* 2021, cat.no. 45.
[148] Unpublished (forthcoming).
[149] GUDEA 1990, 157, Taf. 2/2.
[150] MUȘEȚEANU 1993, 242, cat.no. 13–14, pl. III/13–14; RUSU-BOLINDEȚ/BOTIȘ 2018, cat.no. 816-817.
[151] NIKOLIĆ *et alii* 2023, 252, type III/23.
[152] NIKOLIĆ-ĐORĐEVIĆ 2000, type III/23; III/36.
[153] https://www.antike-tischkultur.de/keramikglasurrheinisch.html.
[154] BARKÓCZI 1992, 7.
[155] MARTIN 1995; GOHIER 2018a, 332-332, Fig. 112-113.
[156] VILVORDER 2010.
[157] BELTRÁN LLORIS 1990, 187-188.
[158] ARTHUR 1978.
[159] ANGHEL/TĂNĂSELIA/BOER 2021.
[160] Analyses were performed within INCDO-INOE 2000 Cluj Branch of the Research Institute for ICIA Analytical Instrumenting courtesy of dr. Claudiu Tănăselia.

The analyses confirm that a lead-based (Pb) emulsion was applied onto the clay body (Mg, Al, Si). In some cases, the high amount of silica and the amorphous structure of the vitreous layer impede the determination of certain elements, like for instance Fe, present in the composition of the ceramic body and/or the glaze (S1, S4, S6). Concurrently, a massive presence of copper (Cu) is noted in the composition of the emulsion used to glaze the three-handled *kantharos* (S6) and in smaller quantities in the case of the biconical bowl, these being the only items where Cu was identified. The calcium absence evidences the use of non-calcareous clays (Ca<5%), which is a specific signature of Gallic productions and of centres in the Danube region, glaze being applied directly onto the unfired ceramic body.[161]

The remaining determined values are variable and groups specific to one category or another cannot be observed.

CONCLUSIONS

The majority of the glazed earthenware of Sutor frames within the known typology of vessels manufactured in the workshops of Dacia and/or Pannonia, with close parallels existing in particular with the products of the *officinae* at *Apulum*. On the other hand, there are also pieces of a different provenance, which, in the current state of research, cannot be securely ascribed to a specific centre. Of real use in this endeavour would be the determination of lead isotopes in order to identify raw material sources (litharge) used to prepare the suspension.

Nevertheless, the presence of these vessel categories in the military *vicus* of Sutor is further indicative of the extensive economic activity that occurred in this centre. Moreover, it also suggests there existed trade relations with other centres in Dacia Porolissensis, particularly with *Apulum*, and possibly even with centres outside Dacia.

CATALOGUE

1. Cup (*kantharos*): Fragment of the maximum diameter area. Surviving the junction part of the walls, decorated in the barbotine technique with a "fish scale" motif set horizontally. In the upper part is present another point of profile change (Pl. II/1).

The fabric is fine, with very fine mica inclusions.

Firing in a reduced atmosphere on the interior and oxidised layers on the exterior of the ceramic body.

Yellowish-brown lead glaze (Munsell 10YR 5/6).

Dimensions: L. 35 mm; W. 16 mm.

Context: Sutor 2022, Sup. 2A; Feature 4630; SF. 1035; 13.10.2022.

2. Cup (*kantharos*): Surviving two fragments of the same vessel with biconical profile, cylindrical neck and a wide rim in the form of profiled sleeve on the exterior. The outer edge of the rim is decorated with three parallel incisions, while on the interior it is arched, tracing the exterior profile. The transition towards the neck is slightly diagonal, with two fine horizontal grooves present at the junction point. The body is decorated in the barbotine technique with horizontally set brace-shaped motifs, glaze in this area exhibiting a firing defect. Below the maximum diameter, there are two horizontal parallel incisions. The recipient is part of the category of thin-walled pottery of very good quality, with a ceramic body thickness ranging between 1.5 and 2.2 mm (Pl. II/2).

The fabric is fine, with fine mica flakes.

The firing is mixed, black on the interior and a superficial red layer on the exterior.

Brownish-green lead glaze (Munsell 2.5Y 5/4), with light flecks in shades varying from yellow to reddish-brown, fused into the ceramic body.

Dimensions: Rim D. 96 mm.

Context: Sutor 2022; Sup. 2B; Feature 2148; SF. 580; 4.08.2022.

3. Cup base: Truncated cone shape, hollow on the interior, decorated above the edge with a horizontal incision. At foot base, it exhibits a horizontal rib that marks the transition to the recipient's body. The lower part of the base is profiled (Pl. II/3).

The fabric is fine, with mica inclusions. The firing is predominantly reducing with an oxidised layer on the exterior.

Dark-brown lead glaze (Munsell 7.5YR 6/6) and light-coloured spots (Munsell 2.5Y 8/4). A glaze leak formed on the upper edge of the foot, having trickled down during the vessel firing.

Dimensions: D. 65 mm; H. 53 mm; Stem D. 39 mm.

Context: Sutor 2022; Sup. 2A; Feature 4666; SF. 1023; 12.10.2022.

4. Cup base (*kantharos*?): Lower part of a cup with a truncated cone-shaped base, slightly flared edge, decorated with an incision. The lower part of the base, hollow on the interior, is profiled by a median incision. The foot is short and profiled with a rounded horizontal rib. The lower part of the recipient is truncated cone-shaped and slightly rounded. In the junction area of the walls, below the maximum diameter, a horizontal incision was traced (Pl. II/4).

Fine fabric, with mica inclusions.

The core of the ceramic body is reduction-fired, while the exterior is red.

Lead glaze, brownish-green (Munsell 2.5Y 5/4) with light yellowish spots (Munsell 2.5Y 8/4), fused to the ceramic body.

Dimensions: Base D. 44 mm; H. 42 mm; Foot H. 17 mm; Max. D. 86 mm.

Analysis 1

Context: Sutor 2022; Sup. 2B; Feature 1812; SF. 525; 28.07.2022.

5. Handle: It has an oval cross-section with straight-cut edges and a concave lower part.

The exterior is decorated in the barbotine technique with a "pine needle" motif applied above two horizontal, parallel incisions (Pl. II/5).

Fine fabric, reduced firing on the interior with oxidised superficial layer on the exterior.

Lead glaze, yellowish-brown (Munsell 10YR 5/6), fused to the ceramic body.

Dimensions: L. 31 mm; W. 15 mm; G. 9 mm.

Context: Sutor 2022; Sup. 2B; Feature 1856; SF. 238; 13.07.2022.

6. Handle: It has a round profile and is slightly arched upwards. The lower contact point with the vessel has partially survived. Fine fabric, without macroscopically visible inclusions, oxidizing firing (Pl. II/6).

Lead glaze, brownish-green (Munsell 2.5Y 8/4), very thin.

Dimensions: L. 55 mm; W. 11 mm; G. 12 mm.

Context: Sutor 2022; Sup. 2B; Feature Dec. 1188; SF. 904; 15.09.2022.

7. *Kantharos*: Biconical vessel, ovalised, with cylindrical neck slightly tapering towards the rim. The rim is flared with rounded

[161] WALTON/TITE 2010.

edge, upper flat part, decorated with two concentric grooves. The recipient exhibits three wide, oval, bifid handles attached below the rim and above the maximum diameter, of which only one has survived. On the rim, above the handles and by their base, cylindrical-profiled protuberances were applied, but their overall shape cannot be determined due to the fragmentary state. Ring-foot (Pl. III/7).

Fine fabric, without macroscopically visible impurities, uniformly fired in an oxidizing atmosphere.

Dark green, lead glaze (Munsell 5GY 2/4).

Analysis: S6.

Dimensions: H. 178 mm; Rim D. 140 mm; Base D. 60 mm.

Context: Sutor 2022; Sup. 2; Feature 3524; SF. 900; 15.09.2022 (most fragments composing the vessel) and Sutor 2022; Sup. 2; Feature 3524; SF. 561; 03.08.2022 (two fragments).

8. Tureen (?): Preserving the upper part of the recipient, in the form of a dome, with straight rim, to which a triangular, slightly arched protome was applied vertically, marked on the interior by a vertical incision. To the exterior, aligned with the protome, is attached the upper end of a massive, twisted handle. Fine fabric, with small ferruginous nodules, oxidizing firing (Pl. IV/8).

Lead glaze of un-uniform colour, shifting from brownish-green (Munsell 2.5Y 8/4) to dark-brown (Munsell 10YR 3/2), with areas of excess accretion, fused to the ceramic body.

Dimensions: L. 52 mm; W. 37 mm; Rim D. 180 mm?.

Context: Sutor 2022; Sup. S2B; Feature 1856; SF 317; 15.07.2022.

9. Bowl: Hemispherical vessel (dome-shaped) with flared rim, rounded edge and straight upper section decorated with oval impressions. Below the rim, on the exterior, it is decorated with two horizontal, parallel incisions. On the interior, a horizontal incision was traced (Pl. IV/9).

Fine fabric, with reducing firing and an oxidising layer on the exterior.

Lead glaze, brownish-green (Munsell 2.5Y 8/4), fused into the ceramic body.

Dimensions: Rim D. 100 mm; L. 38 mm; W. 27 mm.

Context: Sutor 2022; Sup. 2; Feature 2606; SF. 765; 31.08.2022.

10. Bowl: Small-sized hemispherical vessel, decorated on the interior with wide, parallel incisions that converge towards the base, imitating the appearance of a seashell. On the exterior, it exhibits two parallel incisions traced on the maximum diameter, below the rim (Pl. IV/10).

Fine fabric, with mica inclusions; reducing firing with oxidising effects on the exterior. Lead glaze, olive-yellow (Munsell 5Y 6/6), fused into the ceramic body.

Dimensions: Max. D. 120 mm; L. 48 mm; W. 38 mm.

Context: Sutor 2022; Sup. 2; Feature 4334; SF. 865; 13.09.2022.

11. Bowl: Short vessel with a marked biconical profile. Ring-foot; the lower part is flat and slightly arched towards the maximum diameter. From the point of incidence, the upper section is sharply tilting inwards, ending in a slightly everted rim with a rounded edge. Below the rim, an ornamental handle is horizontally applied, attached to the vessel wall and decorated with three groups composed of two parallel lines placed by the extremities and centrally. The upper part is decorated with fine incisions in the form of parallelly-set meanders and braces. Several ceramic residues are fixed into the vitreous layer by the base, glued in the kiln during the vessel firing (Pl. IV/11).

Fine fabric, with fine, unevenly distributed white quartz sand particles; uniform reducing firing. Uniform lead glaze, dark olive-green (Munsell 2.5GY 3/4), present as a distinct layer in the profile of the ceramic body.

Analysis: S5.

Dimensions: Base D. 100 mm; H. 61 mm; F 81 mm.

Context: Sutor 2022; Sup. 2B; Feature 1206; SF 62; 30.06.2022 and Sutor 2022; Sup. 2B; Feature 1172; SF. 460; 29.06.2022 (one small-sized fragment).

12. Bowl (*Mortaria*): A rim fragment in the form of a wide, horizontal flange, decorated with horizontal, parallel incisions set transversely has survived. To the interior, the rim displays a well-defined border, that turns outward, forming the right side of the spout. Below the border, on the interior, a horizontal incision was traced. The recipient body is hemispherical, the transition to the rim being marked by a brief shift of the angle vertically. The walls are thin, the thickness varying between 2 mm towards the base and 5 mm at the flange base (Pl. V/12).

Fine fabric, with very fine, irregularly distributed quartz sand grains. The ceramic body is reduction-fired with an oxidizing layer on the exterior.

Lead glaze, reddish-brown (Munsell 5YR 4/6) with lighter-coloured spots.

Analysis: S4.

Dimensions: Rim D. 110 mm; H. 25 mm; Flange W. 16 mm.

Context: Sutor 2022; Sup. 2; Feature 3494; SF. 1001; 10.01.2022.

13. *Lanx* (Drag. 39): Rim fragment of a platter with wide, everted lip, decorated on the upper part with parallel, transverse lines made by impression and bordered towards the exterior by an incision. Straight-cut edge. On the interior, it exhibited an incised decoration, of which a wavy line still survives (Pl. V/13).

Fine fabric, reducing firing with oxidizing effects in the form of a superficial layer on the exterior.

Lead glaze, dark-brown (Munsell 7.5YR 3/3). Yellowish-red spots (Munsell 7.5YR 7/8) present on the exterior. The layer is very thin, fused into the ceramic body mass.

Dimensions: L. 59 mm; W. 30 mm.

Analysis S2.

Context: Sutor 2021; CIC. 01; SF. 375; 05.05.2021.

14. Undetermined: Pottery fragment with a very slight curvature and fragmenting appearance in the area where the wall angle of incidence shifts (toward the rim?). It exhibits a fine horizontal incision. Fine fabric; reducing firing (Pl. V/14).

Lead glaze, brown (Munsell 7.5YR5.6).

Dimensions: L. 25 mm; W. 22 mm.

Context: Sutor 2022; Sup. 2B; Feature 1856; SF. 230; 13.07.2022.

15. Undetermined: Wall fragment from the area of the edge marking the transition toward the vessel base (Pl. V/15).

Fine fabric; oxidizing firing. In terms of shape, thickness, glaze appearance and fabric colour, the fragment may belong to a *kantharos* similar to number 5 in the catalogue.

Lead glaze, dark olive-brown (Munsell 5Y 3/2).

Dimensions: L. 48 mm; W. 37 mm.

Context: Sutor 2022; Sup. 2; Feature 2694; SF. 446; 22.07.2022.

REFERENCES

ALICU/SOROCEANU 1982
Alicu, D./Soroceanu, A., Ceramica cu glazură plombiferă de la Ulpia Traiana Sarmizegetusa, *Potaissa* 3, 52-65.

ANGHEL 2019
Anghel, D., Suporturi pentru arderea ceramicii descoperite la Apulum, *Apulum* 56, 227-240.

ANGHEL/CIULAVU/BOUNEGRU 2021
Anghel, D./Ciulavu, F./Bounegru, G., Noi date privind activitatea atelierelor de olari de la Apulum, *Apulum* 58, 122-163.

ANGHEL/TĂNĂSELIA/BOER 2021
Dan G. Anghel, D. G./Tănăselia, C./Boer, O. T., Contribuții cu privire la identificarea metodelor de ardere a ceramicii glazurate romane, *Acta Musei Porolissensis* 43, 243-260.

ANGHEL *et alii* 2021
Anghel, D./Timofan, A./Bounegru, Ge./Tănăselia, C./Rusu-Bolindeț, V./Lascu, I./Dana, D., *Roman Lead-Glazed Ceramics from the Collection of the National Museum of the Unification Alba Iulia* (Cluj-Napoca: Mega).

ANGHEL/NAGY/BALTEȘ 2022
Anghel, D. G./Nagy, I.-G./Balteș, G., Noi date despre producția de ceramică cu glazură plombiferă de la Apulum, *Terra Sebus* 14/2, 81-111.

ANGHEL 2023
Anghel, D. G., Olăritul la Apulum - ateliere, inventar tehnologic și produsele ceramice specifice, *Apulum* 60, 194-234.

ARDEȚ 2009
Ardeț, A., *Tibiscum. Ceramica romană descoperită la Iaz "Traianu"* (Cluj-Napoca: Mega).

ARTHUR 1978
Arthur, P., The lead glazed wares of Roman Britain. In: Arthur, P./Marsh, G. (eds.), *Early fine wares in Britain*, BAR, British Series, 57, 294-354.

BARKÓCZI 1992
Barkóczi, L., *Frührömische glasierte Keramik in Ungarn*. In: Bánki, Z./Cserményi, V. (eds.), *Glasierte keramik in Pannonién, Konig Sankt Sthepan Museum* (Székesfehérvár), 8-35.

BAUMANN 2010
Baumann, V. H., Introducere în studiul ceramicii fine de la Noviodunum, *Peuce* SN 8, 109-146.

BENEA 2004
Benea, D., Ceramica glazurată de la Tibiscum, *Apulum* 41, 203-217.

BJELAJAC 1995
Bjelajac, L., Late roman glazed pottery in Singidunum (Moesia I), *Rei Cretariae Romanae Fautores Acta* 34, 33-38.

BELTRÁN LLORIS 1990
Beltrán Lloris, M., *Guia de la cerámica romana* (Zaragoza).

BIENERT 2007
Bienert, B., *Die römische bronzengafäße im Rheinischen Lendesmuseum Trier*, Trierer Zeitschrift 31 (Trier).

BOLOG 2017
Bolog, A. C., *Necropola romană de la Apulum, Dealul Furcilor-„Podei" (campaniile 2008-2012)*, Bibliotheca Musei Apulensis 27 (Cluj-Napoca: Mega).

BÓNIS 1942
Bónis, E., *Die kaiserzeitliche Keramik von Pannonien (ausser den Sigillaten). Die Materialen der fruhen Kaiserzeit*, Dissertationes Pannonicae II/20 (Budapest).

BÓNIS 1990
Bónis, E., A Màzas kerámia Pannoniàban. Előzmények és gyártási központok, *Archaeologiai Értesítő* 117, 24-38.

BOUNEGRU *et alii* 2021
Bounegru, G./Anghel, D. G./Bolog, A. C./Timofan, A./Tănăselia, C./Angyus, B., Ceramică glazurată descoperită în necropolele romane de la Apulum, *Banatica* 31, 107-128.

BRUKNER 1981
Brukner, O., *Rimska Keramika U Jugoslovenskom delu provincje donje Panonije*, (Beograd).

CASTELLA/MEYLAN-KRAUSE 1994
Castella, D./Meylan-Krause, M.-F., La céramique gallo-romaine d´Avenches et de sa région. Esquisse d´une typologie, *Bulletin de l´Association Pro Aventico, Avenches* 36, 5-126.

CERDÁN 2017
Cerdán, Á. M., La cerámica vidriada romana y su presencia en Hispania. In: Ochoa, C. F./Morillo, Á./Zarzalejos, M. (eds.), *Manual de cerámica romana III* (Alcalá de Henares), 383-433.

CERDÁN/MORAIS/CABELLO 2019
Cerdán, Á. M./Morais, R./Cabello, R. D., Cerámica vidriada romana en los contextos altoimperiales del campamento de León (España), *Sagvntvm* 51, 151-176.

CIAUȘESCU 2004
Ciaușescu, M., Early pottery production in Apulum (Partoș)- An Overview on recent research, *Rei Cretariae Romanae Fautorum Acta* 39, 321-329.

COCIȘ 2004
Cociș, S., *Fibulele din Dacia romană / The Brooches from Roman Dacia* (Cluj-Napoca: Mega).

COCIȘ/LĂZĂRESCU/SOCACIU 2021
Cociș, S./Lăzărescu, V.-A./Socaciu, S.-T., An Overview of the Archaeological Research in the Roman Fort and Vicus at Sutor (Sălaj County), *Ephemeris Napocensis* 31, 223-258.

COCIȘ/LĂZĂRESCU/SOCACIU 2022
Cociș, S./Lăzărescu, V.-A./Socaciu, S.-T., Cercetările arheologice din castrul și vicus-ul de la Sutor (2001- 2021), *Cercetări Arheologice* 29/1, 83-130.

COCIȘ/LĂZĂRESCU/SOCACIU 2023
Cociș, S./Lăzărescu, V.-A./Socaciu, S.-T., Date despre o nouă teracotă votivă de tip Dominus et Domina recent descoperită la Optatiana/Sutoru, jud. Sălaj. In: Firea, C./Rustoiu, A./Opreanu, C. H. (eds.), *Sub semnul artei. Studii în onoarea academicianului Marius Porumb la 80 de ani* (Cluj-Napoca), 197-204.

COCIȘ *et alii* 2015
Cociș, S./Opreanu, C. H./Lăzărescu, V.-A./Tamba, D./Onofrei, C./Blaga, D., Castrul roman de la Sutoru. In: *Cronica Cercetărilor Arheologice din România. Campania 2014* (București: Institutul Național al Patrimoniului), 134-137.

CRAMP/EVERSHED/ECKARDT 2011
Cramp, L. J. E./Evershed, R. P./Eckardt, H., What was a mortarium used for? Organic residues and cultural change in Iron Age and Roman Britain, *Antiquity* 85, 1339-1352.

CUOMO DI CAPRIO 1985
Cuomo di Caprio, N., *La ceramica in archeologia. Antiche techniche di lavoratione e moderni metodi d'indagine* (Roma).

CUOMO DI CAPRIO 2017
Cuomo di Caprio, N., *Ceramics in Archaeology, From*

prehistoric to medieval times in Europe and the Mediterranean: Ancient craftsmanship and modern laboratory technics (Roma).

CVJETIĆANIN 2006
Cvjetićanin, T., *Late roman glazed pottery. Glazed pottery from Moesia Prima, Dacia Ripensis, Dacia Mediterrana and Dardania* (Belgrad).

DELAGE 2010
Delage, R., La sigillée du Graufesenque. In: Brulet, R./ Vilvorder, F./Delage, R./Laduron, D. (eds.), *La céramique romaine en Gaule de Nord. Dictionaire des céramique. La vaiseele à large diffusion* (Brepols), 60-80.

DESBAT 1986a
Desbat, A., Céramiques romaines à glaçure plombifère de Lyon et de Vienne. In: *SFECAG, Actes du Congrès de Toulouse* (Marseille), 33-39.

DESBAT 1986b
Desbat, A., Céramiques romaines à glaçure plombifère des fouilles de Lyon (Hauts-de-Saint-Just, Rue des Farges, La Solitude), *Figlina* 7, 105-124.

DE VITO *et alii* 2017
De Vito, C./Medeghini L./Mignardi, S./Coletti, F./Contino, A., Roman glazed inkwells from the "Nuovo Mercato di Testaccio" (Rome, Italy): Production technology, *Journal of the European Ceramic Society* 37/4, 1779-1788.

DOMŹALSKI 2003
Domźalski, K., Central Italian lead-glazed vessels beyond the Northern Borders of the Roman Empire, *Rei Cretariae Romanae Fautorum Acta* 38, 181-190.

DI FEBO *et alii* 2018
Di Febo, R./Molera, J./Pradell, T./Melgarejo, J. C./Madrenas, J./Vallcorba, O., The production of a lead glaze with galena: Thermal transformations in the PbS–SiO2 system, *Journal of the American Ceramic Society* 101/5, 2119-2129.

EDUARDS 1975
Edwards, G. R., Corinthian Hellenistic Pottery, *Corninth* 7/3 (Princeton New Jersey).

ESPINOSA 2011
Espinosa, V. P., Mortaria Baeticae. La Produccción de morteros en la Bética durante el alto Imperio, *Cuadernos de Prehistoria y Arqueología de la Universidad de Granada* 21, 2011, 283-302.

GĂZDAC *et alii* 2021
Găzdac, C./Lăzărescu, V.-A./Cociș, S./Socaciu, S.-T., Coins in Archaeological Context (II). The Civilian Baths of Auxiliary Fort from Sutor (Romania, Sălaj County), *Journal of Ancient History and Archaeology* 8/3, 74-101.

GOHIER 2018a
Gohier, P., *Les céramiques à glaçure plombifère antiques en Gaule Méridionales dans la Vallée du Rhône (Ier siècle av. J.C. - IIIe siècle apr. J.C.)*, Archéologie Histoire Romaine 40 (Drémil Lafarge: Edition Mergoil).

GOHIER 2018b
Gohier, P., Roman Lead-Glazed Pottery Trade from Italy to Southern Gaul and Its Influence on Local Production: The Example of the Capitou Workshop (France), *Rei Cretariae Romanae Fautorum Acta* 45, 203- 210.

GOHIER *et alii* 2018
Gohier, P./Desbat, A./Béal, J.-C./Bonnet, C., Deux vases remarquables en céramique à glaçure plombifère du début du Ier siècle mis au jour à Saint-Vulbas (Ain), *Revue Archéologique de l'Est* 67, 473-479.

GIANNOSSA *et alii* 2015
Giannossa, L. C./Fico, D./Pennetta, A./Mangone, A./ Laviano, R./De Benedetto, G. E., Integrated investigations for the characterisation of Roman lead-glazed pottery from Pompeii and Herculaneum (Italy), *Chemical Papers* 69/8, 1033-1043. DOI: 10.1515/chempap-2015-0110.

GIRALT 2014
Giralt, G. M., *Colour and technology in historic decorated glazes and glasses*, PhD thesis (Barcelona).

GREENE 1977
Greene, K., Legionary pottery and the significance of Holt. In: Dore, J./ Greene, K. (eds.), *Roman pottery studies in Britain and Beyond*, BAR Supplementary Series 30 (Oxford), 113-138.

GREENE 1978
Greene, C., Mould-decorated Central Gaulish glazed ware in Britain. In: Arthur, P./Marsh, G. (eds.), *Early Fine Wares in Roman Britain*, BAR British Series I7 (Oxford), 31-68.

GREENE 2007
Greene, K., Late Hellenistic and Early Roman Invention and Innovation: The Case of Lead-Glazed Pottery, *American Journal of Archaeology* 111/4, 653-671.

GUDEA 1990
Gudea, N., *Über die glasierte keramik aus dem 3-2 jahrhundert u. Z. in dern Dakishen provinzen*, *Rei Cretariae Romanae Fautorum Acta* 27/28, 155-169.

GUDEA 1997
Gudea, N., Der dakische Limes. Materialien zu seiner Geschichte, *Jahrbuch des Römisch-Germanischen Zentralmuseum Mainz* 44/1, 1-113.

HAMAT 2018
Hamat, A. C., The pottery workshops at Gârla Mare (Mehedinți County). In: RUSU-BOLINDEȚ *et alii* 2018, 175-189.

HATCHER *et alii* 1994
Hatcher, H./Kaczmarczyk, A./Symonds, R., Chemical Classification and Provenance of some Glazed Ceamics, *American Journal of Archaeology* 98/3, 431-456.

HAYES 2008
John W. Hayes, *Roman pottery: fine-ware imports*, The Athenian Agora 32 (Princeton/New Jersey).

HODGES 1965
Hodges, H., *The Artifacts* (London).

HÖPKEN 2003
Höpken, C., Die produktionen glasierter keramik im Römischen Köln, *Rei Cretariae Romanae Fautorum Acta* 38, 365-366.

HÖPKEN *et alii* 2009
Höpken, C./Döhner, G./Fiedler, M., Zur Produktion glasierter Keramik während der mittleren Kaiserzeit in der Provinz Germania inferior Zeugnisse aus Köln, Bonn und Soller, *Bonner Jahrbücher* 209, 129-146.

ILIEȘ *et alii* 2002
Ilieș, C./Cociș, S./Marcu, F./ Tamba, D./Matei, Al., Raport privind cercetările arheologice de la Sutor, *Studia Universitatis Babes-Bolyai, Theologia Greco-Catholica Varadiensis* 47/1, 131-151.

ILIEȘ *et alii* 2002a
Ilieș, C./Cociș, S./Marcu, F./ Tamba, D./Matei, Al., Săpăturile de la Sutor din 2001. In: *Cronica Cercetărilor Arheologice din România, Campania 2001* (București: Institutul Național al Patrimoniului), 302-304.

ILIEŞ *et alii* 2007
Ilieș, C./Cociș, S./Mustață, S./Tamba, D./Matei, Al.V./Marcu, F./Ştefan, D./Dușescu, M., Săpăturile de la Sutoru, com. Zimbor, jud. Sălaj, Punct: La Cetate. In: *Cronica Cercetărilor Arheologice din România, Campania 2006* (București: Institutul Național al Patrimoniului), 355-356.

ILIEŞ *et alii* 2009
Ilieș, C./Cociș, S./Mustață, S./Matei, Al.V./Tamba, D./Marcu, F./Cupcea, G./Petiș, I., Sutoru, com. Zimbor, jud. Sălaj. In: *Cronica Cercetărilor Arheologice din România, Campania 2008* (București: Institutul Național al Patrimoniului), 208-209.

ISINGS 1957
Isings, C., *Roman Glass, From dated finds* (Djakarta).

ЈЕПЕНА 1995
Јепена, К., Касноатичко и рановизонтијске Ксрељрно посуђе из Србије. In: Popović, I./Cvjetićanin, T./Borić-Brešković, B. (eds.), *Silver workshops and Mints*, Monographs Series, 9 (Belgrade: National Museum), 184-187.

JEREMIĆ *et alii* 2018
Jeremić, G./Antonović, D./Vitezović, S., Craftsmanship Along the Middle Danubian Limes. In: Golubović, S./Mrđić, N. (eds.), *Vivere Militare Est. From Populus to Emperors - Living on the Frontier*, I, (Belgrade: Institute of Archaeology), 131-168.

KABAKCHIEVA 2018
Kabakchieva, G., Lead-glazed pottery in the lower Moesia and Thrace provinces in the period 1st–5th century AD, *Rei Cretariae Romanae Fautorum Acta* 45, 581-590.

KÖLCZE 2018
Kölcze, B., A typology of the Late Roman glazed pottery of Pannonia, *Hungarian Archaeology E-Journal* 2018, Autumn, 20- 26.

KREKOVICI 1991
Krekovici, E., Glasierte keramik in Mittleleurpaeischen freien Germanien, *Rei Cretariae Romanae Fautorum Acta* 29/30, 149-156.

LERAT/JEANNIN 1960
Lerat, L./Jeannin, Y., *La céramique sigille de Luxeuil,* Annales Littérrraires de L'Université de Besançon 31, Archéologie 9 (Paris: Les belles lettres).

LIPOVAN 1983-1984
Lipovan, I. T., Officina ceramistului Gaius Iulius Proclus la Ampelum, *Anuarul Institutului de Istorie și Arheologie* 26, 301-317.

LIPOVAN 1990
Lipovan, I. T., Cu privire la ceramica cu glazură plombiferă din Ampelum, *Studii și Cercetări de Istorie Veche și Arheologie* 41, 3/4, 273-292.

MACCABRUNI 1987
Maccabruni, C., Cerámica con invetriatura al piombo. In: Léveque, P./Morel, J.-P. (eds.), *Céramiques hellénistiques et romaines*, Annales Littdraires de l'Univ. de Besangon, 330/2 (Paris),167-189.

MARTENS 2004
Martens, M., The Mithraeum in Tienen (Belgium): small finds and what they can tell us, In: De Boe, G. (ed.), *Roman Mithraism. The evidence of the small finds*. Papers of the international conference, Tienen. 7–8 November 200, Arch. in Vlaanderen, 4, (Brüssel), 25-56.

MARTIN 1995
Martin, A., Central italian lead-glazed Ware, *Rei Cretariae Romanae Fautorum Acta* 34, 63-68.

MITROFAN 1990
Mitrofan, I., Les recherches archéologiques de l´établissement romain de Micăsasa, *Dacia: Recherches et découvertes archéologiques en Roumanie - Nouvelle Série* 34, 129-138.

MITROFAN 1995
Mitrofan, I., *Le centre de production céramique de Micăsasa* (Cluj-Napoca).

MITROFAN/POP 1996
Mitrofan, I./Pop, C. (eds.), *Marele centru ceramic roman de la Micăsasa. Îndeletniciri – Artă – Credințe* (Cluj-Napoca).

MOGA *et alii* 2007
Moga, V./Timofan, A./Lascu, I./Ota, R./Bounegru, G./Bălan, G./Anghel, D., *Descoperă arheologia urbană Apulum 2007, Catalog de expoziție* (Alba Iulia).

MONAGHAN 1997
Monaghan, J., Roman Pottery from York. In: Addyman, P.V. (ed.), *The Archaeology of York*, 16 The Pottery, (HalifaxYorkshire).

MUȘEȚEANU 1993
Mușețeanu, C., Céramique à glaçure plombiphère de Durostorum, *Pontica* 26, 231-244.

NÁDORFI 1992
Nádorfi, G., Glasierte Keramik in den spätrömischen Gräberfeldern Pannoniens In: Bánki, Z./Cserményi, V., *Glasierte Keramik in Pannonién* (Székesfehérvár: König Sankt Stephan Museums), 45-51.

NAGY 1945
Lajos, N., Zöldzománcos római dísztál Budáról. Le vase de luxe à glaçure verte de Buda, *Budapest Régiségei* 14, 285-301.

NIKOLIĆ-ĐORĐEVIĆ 2000
Nikolić-Đorđević, S., Antička Keramika Singidunuma. Oblici Posuda. In: Popović, M. (ed.), *Singidunum* 2 (Beograd), 11-244.

NIKOLIĆ *et alii* 2023
Nikolić, S./Raičković Savić, A./Mitić, A., *Roman pottery from Viminacium*, Institute of Archaeology Viminacium 7 (Belgrade: Institute of Archaeology).

ORANSKY 2001
Oransky, A., Antik çağdaanadolu'da kurşun sirli seramikel. In: *Uluslararasi eskişehir pişmiş toprak sempozyum dildiriler kitobi, 15 ağustos-5 eyül 2001* (Eskişehir), 47-55.

PASSELAC 1992
Passelac, M., Formes et techniques italiques dans les productions céramiques augustéennes du bassin de L'Aude: Mise en évidence d'un groupe d'ateliers, *Rei Cretariae Romanae Fautorum Acta* 31/32, 207-229.

PEACOCK 1982
Peacock, D. P. S., *Pottery in the Roman World: An Ethnoarchaeological Approach* (New York: Longman).

PRADELL/MOLERA 2020
Pradell, T./Molera, J., Ceramic Technology. How to Characterise Ceramic Glazes, *Archaeological and Anthropological Sciences* 12/8, no. 189. DOI: https://doi.org/10.1007/s12520-020-01136-9.

PROTASE *et alii* 1997
Protase, D./Gaiu, C./Marinescu, G., Castrul roman de la Ilișua, *Revista Bistriței* 10-11, 27-110.

RICCI 1985
Ricci, A., Ceramica a pareti sottili. In: Baldassarre, I. (coord.),

Atlante delle forme ceramique, II, Ceramica fine romana nel Bacino Mediterraneo (Rome), 231-357.

RUSU-BOLINDEȚ 1995
Rusu-Bolindeț, V., Céramiques romanine a glacure plombifere des foulles de Colonia Aurelia Apulensis et Ulpia Traiana Sarmisegetuza, *Rei Cretariae Romanae Fautorum Acta* 34, 147-154.

RUSU-BOLINDEȚ 2007
Rusu-Bolindeț, V., *Ceramica romană de la Napoca. Contribuții la studiul ceramicii din Dacia romană* (Cluj-Napoca: Mega).

RUSU-BOLINDEȚ 2016
Rusu-Bolindeț, V., Supply and Consumption of Terra Sigillata in Roman Dacia during the Severan Dynasty. In: Panaite, A./Cîrjan, R./Căpiță, C. (eds.), *Moesica et Christiana, Studies in honour of Professor Alexandru Barnea* (Brăila), 379-409.

RUSU-BOLINDEȚ/BOTIȘ 2018
Rusu-Bolindeț, V./Botiș, F.-O. (eds.) *The supply of ceramic goods in Dacia and Lower Moesia: Imports and local developments,* Exhibition Catalogue (Cluj-Napoca: Mega).

RUSU-BOLINDEȚ *et alii* 2018
Rusu-Bolindeț, V./Roman, C.-A./Gui, M./Iliescu, I.-A./Botiș, F.-O./Mustață, S./Petruț, D. (eds.), *Atlas of roman pottery workshops from the Provinces Dacia and Lower Moesia/Scythia Minor (1st-7st Centuries AD)* (I) (Cluj-Napoca: Mega).

SCHÖRGENDORFER 1942
Schörgendorfer, A., *Die romerzeitliche Keramik der Ostalpenlander* (Brunn–Wien–Munchen).

SOCACIU/LĂZĂRESCU/COCIȘ 2023
Socaciu, S.-T./Lăzărescu, V.-A./Cociș, S., Cercetări arheologice din vicus-ul de la Sutor. Campania 2022, *Cercetări Arheologice* 30/1, 85-108.

SOCACIU/LĂZĂRESCU/COCIȘ 2023a
Socaciu, S.-T./Lăzărescu, V.-A./Cociș, S., Terracottas from Sutor/Optatiana. New data concerning the artefacts discovered during the rescue excavations in 2021–2022, *Ephemeris Napocensis* 33, 163-199.

TABORELLI 2011
Taborelli, L. B., Skyphoi in ceramica invetriata. In: Taborelli, L. B. (ed.), *Oro pane e scrittura. Memorie di una comunità „inter Vercellas et Eporediam"* (Rome), 129-132.

TASSINARI 1993
Tassinari, S., *Il vasellame bronzzeo di Pompei* (Rome).

TEKKÖK *et alii* 2009
Tekkök, B./Akyol, A. A./Kadioğlu, Y. K./Demirci, Ș., The Importance of Archaeometric Analysis on Ceramics from Archaeological Excavation: The Example of Eary Roman Glazed Ware from Tarsus and Troia. In: SERES'09: I, International Ceramic, Glass, Porcelain Enamel, Glaze and Pigment Congress (Eskisehir), 1-21.

TITE *et alii* 1998
Tite, M. S./Freestone, I. C./Mason, R./Molera, J./Vendrell-Saz, M./Wood, N., Lead Glazes in Antiquity-Methods of Production and Reasons for Use, *Archaeometry* 40/2, 241-260.

TORMA 1863
Torma, C., *Adalek Északnyugati Dacia Föld- és Helyiratához* (Budapesta: A Magyar Tudományos Akadémia évkönyvei).

TORMA 1880
Torma, C., *A limes dacicus felsõ része* (Budapest: Magyar Tudományos Akadémia Könyvkiadó-Hivatala).

VERTET 1986
Vertet, H., Recherches sur les glaçure plombifères dans le centre de la Gaul, *SFECAG, Actes du Congrès de la Toulouse*, 25-38.

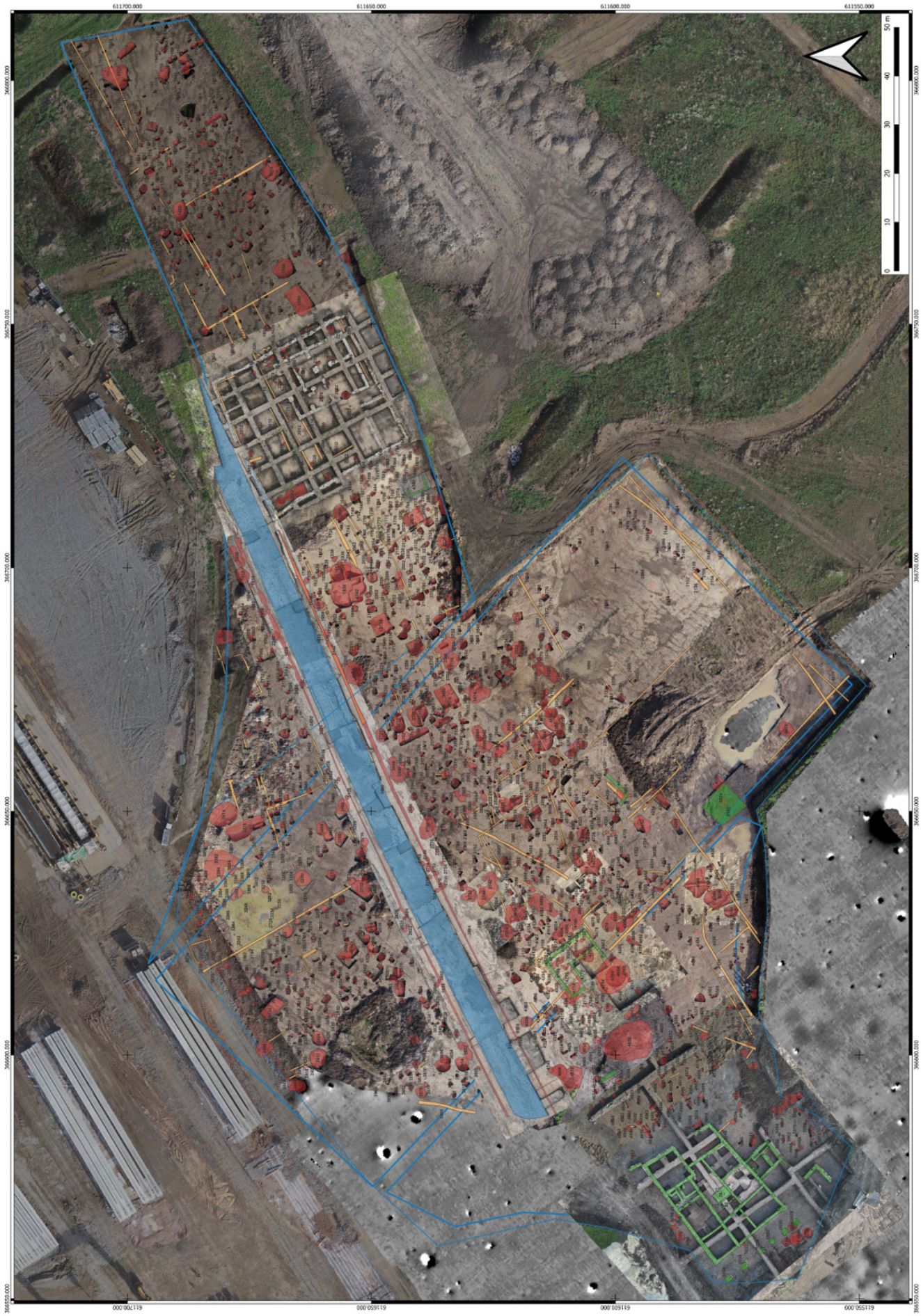
VILLING/PEMBERTON 2010
Villing, A./Pemberton, E. G., Mortaria from Ancient Corinth, form and function, *Hesperia* 79, 555-638.

VILVORDER 2010
Vilvorder, F., La cèramiques à glaçure plobifère du central Gaule. In: Brulet, R./Vilvorder, F./Delage, R./Laduron, D. (eds.), *La céramique romaine en Gaule de Nord. Dictionaire des céramique. La vaiseele à large diffusion* (Brepols), 86-88.

WALTON 2004
Walton, M. S., *A Materials Chemistry Investigation of Archaeological Lead Glazes,* PhD thesis (Michaelmas).

WALTON/TITE 2010
Walton, M. S./Tite, M. S., Production tehnology of Roman Lead-Glazed pottery and its continuance into Late Antiquity, *Archaeometry* 52/5, 733-759.

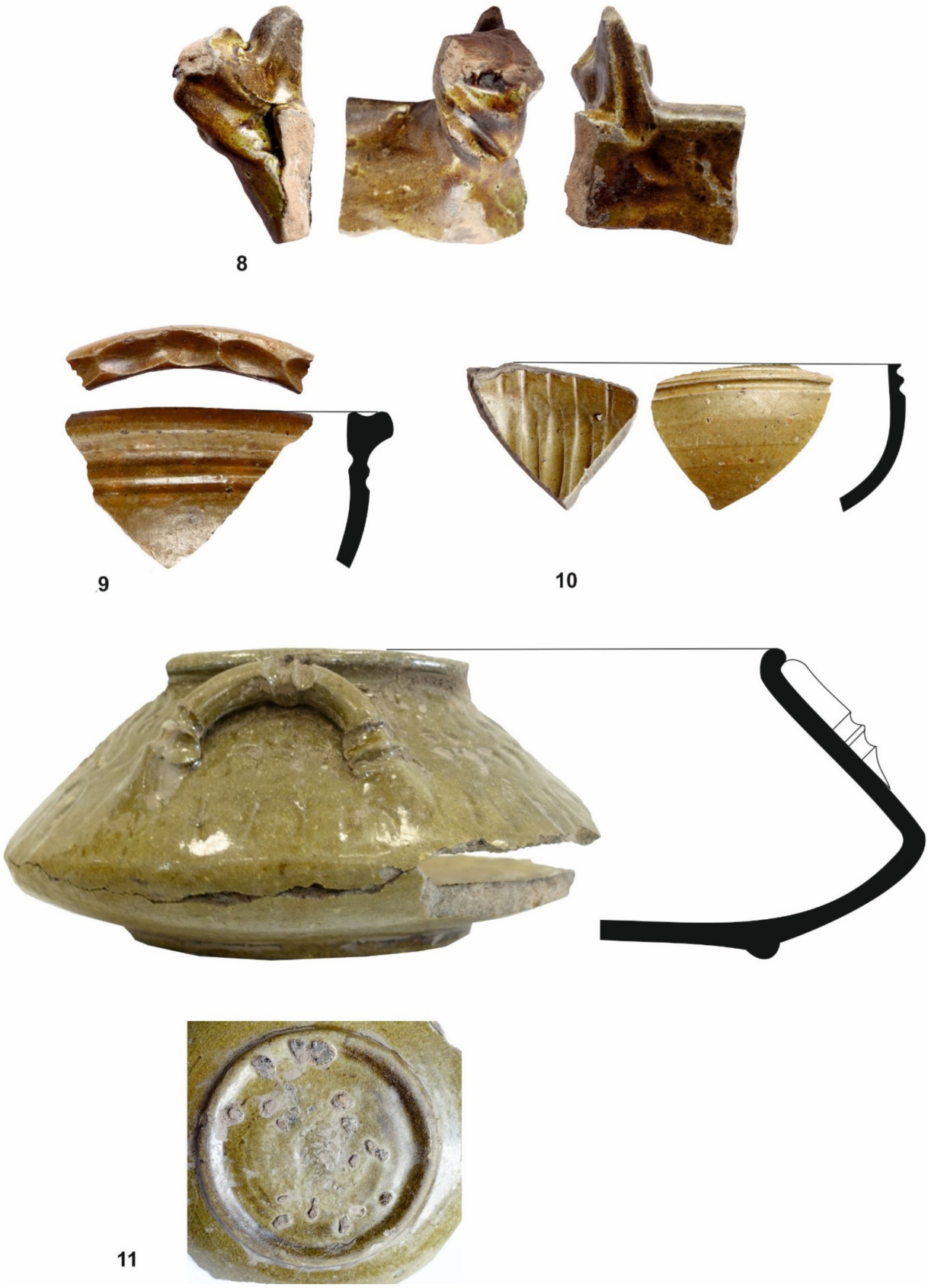
WELKER 1985
Welker, E., *Die römishen Gläser von Nida-Heddernheim*, II (Bonn).



Pl. I. Area investigated during the preventive excavations carried out at Sutor in 2022.

Pl. II. Glazed pottery of Sutor: cups (nos. 1-2), cup bases (nos. 3-4), handles (nos. 5-6).

Pl. III. Glazed *kantharos* discovered at Sutor.



Pl. IV. Glazed pottery of Sutor: fragments of different bowl types.

Pl. V. Glazed pottery of Sutor: bowl of *mortarium* type (no. 12), *lanx* (no. 13), undetermined fragments (nos. 14-15).