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Research Article

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Late Antique Amphorae from the Olba Excavation Site

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Abstract Olba was a city founded on the elevated terrain of eastern Rough Cilicia. A site of human settlement since early times, it served as an acropolis during the Hellenistic period, being located approximately 950 m above sea level. As the process of Romanization unfolded, the architectural landscape of Olba underwent a significant transformation, and expanded into the valleys and plains at the foot of the acropolis, evolving into a settlement characterized by residential structures developed around agricultural lands and terraces. With the rise of Christianity, Olba entered a new phase and emerged as a religious center during Late Antiquity. Among the archaeological evidence illuminating the Late Antique period of this inland/mountain center, ceramic finds hold particular significance. The African (ARS), Cypriot (CRS), and Phocaean (PRS) Late Roman Red Slip wares, which were widely distributed across the Mediterranean basin during this period, were found in Olba from the 5th to the 7th centuries AD. Within these centuries, various amphorae (LRA 4, LRA 5/6, D Snp I-III, and LRA 1) also made their way to the city. This study aims to classify and date the amphorae uncovered during the 2010–2019 excavations in Olba's theater and monastic structures. The amphorae analyzed here will be dated by their typological features and parallel examples. By examining these artifacts, the study seeks to shed light on these amphorae in the setting of a mountain settlement and contribute to the commercial amphora repertory of the region of Cilicia.

Keywords Olba · Cilicia · Late Antiquity · Late Roman Amphorae · Late Roman Pottery

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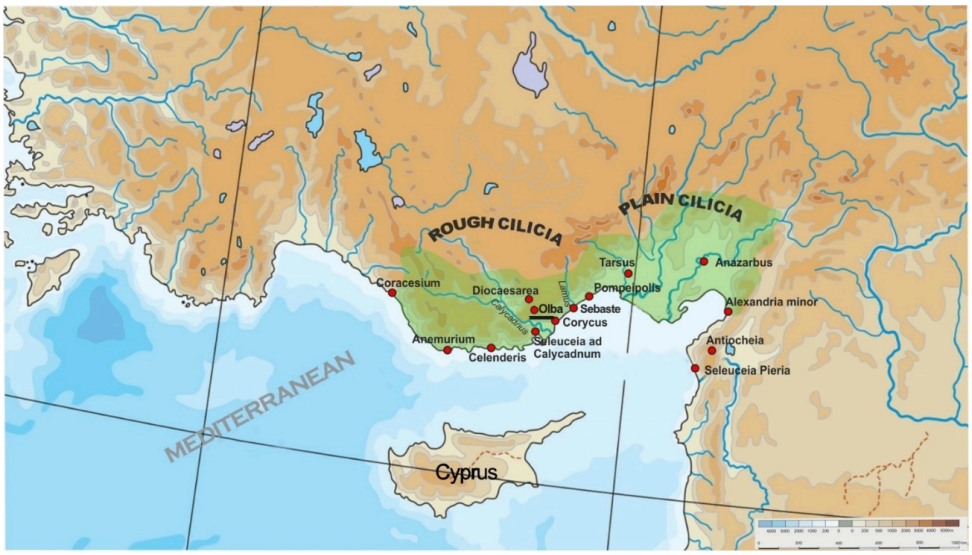
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Introduction

A city of Rough Cilicia in ancient times, Olba is now located within the boundaries of Örenköy in the Silifke district of Mersin province (Fig. 1). Archaeological data obtained from research at Olba provide insight into the settlement's history, which spans the prehistoric era to the end of the Iron Age (Erten, 2021, pp. 33-48). Situated at an elevation of approximately 950 m above sea level, the settlement subsequently functioned as an acropolis during the Hellenistic period. However, the most prominent archaeological evidence of urbanization dates, to the Roman Imperial period, when the cityscape was transformed by the construction of monumental structures (Erten, 2009, pp. 76-83). Since 2010, ongoing excavations at Olba's theater, which is situated on the northwestern slope of the acropolis, have yielded significant archaeological findings. The Olba Monastery, another monumental structure of the city, is a typical example of a Christian religious complex. The structure is located on the eastern slope of the Eastern Valley and has been under excavation since 2011.

Figure 1

Cilicia and the location of Olba (Aydın, 2019, p. 6)



Among the archaeological materials recovered from these structures, ceramics hold particular importance in defining the settlement's material culture repertory. Evidence indicates that vessels that were widely distributed across the Mediterranean basin during Late Antiquity also reached Olba. Among these were African Red Slip ware (ARS) from North African workshops, Phocaean Red Slip ware (PRS) from the production centre in Phocaea, Cypriot Red Slip ware (CRS) from Cyprus, as well as an example of Light Colored Ware (LCW). The presence of Late Roman red-slip ceramics in Olba spans the 5th to 7th centuries AD (Aydın, 2023, pp. 707-719). Commercial amphorae (LRA 1, LRA 4, LRA 5/6 and D Snp I-III) were also transported to Olba[1] during the same period (Table 1). The amphorae examined in this study were recovered from fill deposits within the theater[2] and monastery[3], often found alongside other Late Antique ceramics. They are dated according to their typological features and parallel examples. This study aims to shed light on these amphorae

[1] Basket-handled amphorae (Alkaç, 2017, pp. 113-128) and Rhodian stamped amphorae (Özyıldırım & Alkaç, 2015, pp. 141-152), found during excavations in various areas of Olba, constitute the Hellenistic Period amphora finds of the city. Although the data for the Roman Period are limited, sherds (rim, handle, and base fragments) of Zemer 41 (or "pinched handle") amphorae are especially noteworthy. Zemer 41 amphorae, produced in numerous workshops across the Cilicia region (Kızılarslanoğlu, 2023, pp. 1674-1701; Alkaç, 2024, p. 152) must have been important in the city's local trade.

[2] It has been proposed that the theater in the city—which had fallen into decline during the 6th and 7th centuries AD—likely lost its original function and, that the enclosed spaces, particularly the roofed, rectangular-plan skene, were used as shelters or dwellings. Erten, 2014, p. 65.

[3] Ceramics discovered during the excavations at the monastery, which was constructed atop a Roman villa, largely consist of Late Antique examples. Aydın, 2019, pp. 69-83.

within the context of a mountain settlement and contribute to our understanding of the commercial amphora repertory attested in the Cilician region.

Information on the Late Antique amphorae of Olba[4], their typological features, and the criteria used for their dating respectively, are presented, below.

Table 1

Amphorae types found at Olba

Types of amphorae	Number of Diagnostic Fragments	Dates
Basket handle amphora	1	3rd – 2nd centuries BC
Rhodian amphorae (stamps)	2	Period IV- 160–146 BC Period VII- from 85 BC to Augustus' era
Zemer 41 amphorae	7	1st – 2nd century AD
LRA 1	137	6th – 7th centuries AD
LRA 4	5	5th – 7th centuries AD
LRA 5/6	2	6th – 7th centuries AD
Sinopean Amphora	1	6th – 7th centuries AD

Late Roman Amphora 1 (LRA 1)

Late Roman 1 amphorae were produced in Seleucia Pieria, Rhosus, Magarsus, Tarsus (Empereur & Picon, 1989, p. 239, fig. 18), Aigai (Şenol & Alkaç, 2017, pp. 831-843), Soli (Autret et al., 2010), Elaiussa Sebaste (Burragato et al., 2007, pp. 690–691; Ferrazzoli & Ricci, 2009, p. 37, fig. 6), Corycus (Opait, 2004, p. 295, fig. 4; Alkaç, 2012, p. 331), on Cyprus (Demesticha, 2003, pp. 470-472) at Zygi-Petrini (Manning et al., 2000, p. 255), Paphos (Michaelides, 1996, p. 149), Amathus (Empereur & Picon, 1989, p. 239, fig. 18) and Kourion (Jacobsen, 2004, p. 145), and in the Aegean on Kos (Diamanti, 2010, p. 1), Paros (Diamanti, 2016, p. 691), and Egypt (Dixneuf, 2011; Şenol, 2018). The extensive production of LRA 1 in nearly identical forms across such a wide area suggests the presence of an organized system (Durukan, 2015, p. 247). These amphorae were distributed not only across the Mediterranean, Aegean and Black Sea regions but also as far as Britannia and India (Bezeczky, 2013, p. 159; Tomber, 2009, pp. 48-50, Fig. 4; Pieri, 2005, p. 74, Fig. 32; Reynolds, 2010, pp. 98–99). The *annona* system (*annona civica* and *annona militaris*), which was established to collect taxes and distribute goods in kind, was a key factor in the wide distribution of LRA 1 amphorae (Kara, 2021, pp. 65-79). Despite the debate on the contents of LRA 1 amphorae, olive oil and wine must have been transported (Komar, 2016, pp. 160-161; Reynolds, 2021, pp. 315-341).

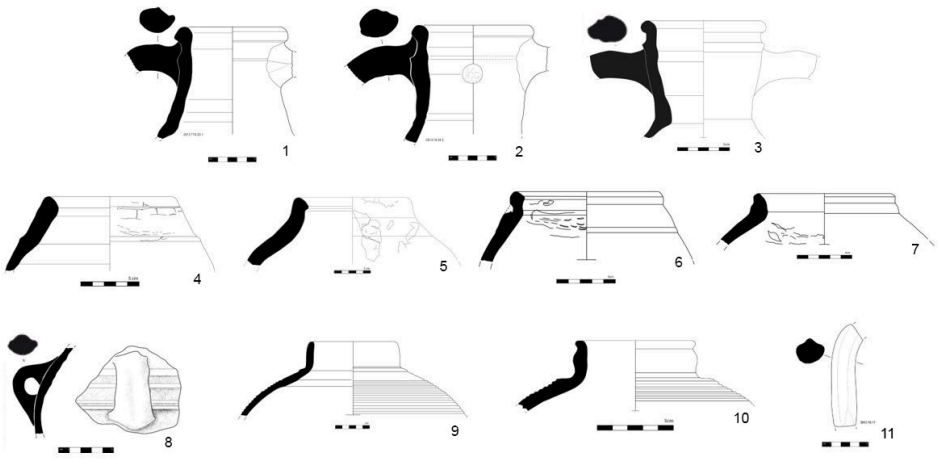
Late Roman 1 amphorae were classified according to variations in form and capacity (Pieri, 2005, p. 71, Fig. 26; Marchand et al., 2022, pp. 87–120). Excavations at Olba yielded fragments of 47 LRA 1 amphorae. All of these belong to the LRA 1B subtype.

LRA 1B amphorae feature an everted rim, a cylindrical neck, a ridge on the upper section of the neck that is characteristic of this form and thus forms a concave band on the upper neck, oval-sectioned grooved handles attached just below the rim to the shoulder, a cylindrical grooved body, and a protruding base (Alkaç, 2013, p. 114, Fig. 9). The specimens illustrated in Figs. 2.1-3 display these features. Fig. 2.2 bears a rounded stamp on the upper neck, which has yet to be deciphered[5]. Specimens of comparable form were discovered in Elaiussa Sebaste, dated to the 6th-early 7th centuries AD (Kızılarslanoğlu, 2016, pp. 362-363, cat. no. 65), in Limyra, dated to the 6th–7th centuries AD (Bes et al., 2023, pp. 133-137), and in Kelenderis, dated to the 6th–7th centuries AD (Tekocak & Zoroğlu, 2013, p. 122, 140, Fig. 28).

[4] In determining the statistical data, both the number of sherds (NOSH) and the minimum number of individuals (MNI) were used for all amphora forms recovered during the excavations in the theater and monastery.

[5] Some LRA 1B specimens bear stamps, which feature the ethnika of Sebaste and Corycus, as well as cross symbols, for which see: Kara, 2019, pp. 267-270, cat. no. 1-10; Pieri, 2007a, Fig. 2.1; Keleş et al. 2021, p. 65, no. 11; Diamanti, 2024, pp. 1-7, 60.

Figure 2
Late Antique Amphora forms found at the site of Olba



(**Fig. 2**: 1-3: LRA 1; 4-8: LRA 4; 9-10: LRA 5/6; 11: Sinopean-D Snp I-III)

Late Roman Amphora 4 (LRA 4)

LRA 4 amphorae were extensively produced between the 4th and 7th centuries AD. The 6th century AD was the period when this type of amphora was most widely used in the Mediterranean wine trade (Şenol, 2009, p. 158; Sezgin et al., 2022, p. 136; Pieri, 2005, pp. 101-114; Sazanov, 2017, pp. 629-647). These amphorae were produced in the wider region of Gaza (Pieri, 2007a, p. 622, Fig. 9) and, in the border region between Pelusium and the Negev (Majcherek, 1995, p. 165; Regev, 2004, p. 348). Wine, olive oil, sesame oil, fish sauce, and resin products were exported in LRA 4 amphorae (Pieri, 2005, p. 111) to cities and settlements across the Mediterranean, western Europe, North Africa, the Red Sea, the Black Sea, southern Pannonia, and Upper Moesia (Bezeczky, 2013, p. 171).

LRA 4 amphorae were typologically and chronologically classified into subgroups based on variations in form-A1, A2, B1, B2, and B3 (Pieri, 2005, pp. 103-109). The Olba findings exhibit similarities to the B1 and B2 subgroups in the classification of Pieri. Amphorae of these two subgroups typically feature a short upright rim, a steeply sloping shoulder, two oval-sectioned handles attached from the shoulder to the upper body, a long cylindrical body, and a rounded base. In both subgroups, grooves cover the base and the area right below the handles (Pieri, 2007a, p. 622, Fig. 8).

Fig. 2.4 shows an upright rim with a carinated transition from the rim to a sloping shoulder. Fig. 2.5 shows an upright rim and a sloping shoulder. It also has a notable protrusion on the interior rim. Fig. 2.6 shows an upright short rim. There is also a deep groove at the transition point from the rim to the shoulder. Based on these characteristics, the examples in Figs. 2.4–6 fall under the B1 subgroup, which is dated between the late 5th century and the first half of the 6th century AD (Pieri, 2007a, p. 622, Fig. 8). Fig. 2.7 features a short vertical rim and a sloping shoulder. It is similar in form to the amphorae of the B2 subgroup, which are dated to the 6th and 7th centuries AD. Fig. 2.8 exhibits a grooved body and an oval-sectioned vertical handle. It should be dated between the 5th and 7th centuries AD.

Late Roman Amphora 5/6 (LRA 5/6)

This group, known as LRA 5/6 or alternatively as bag-shaped, began production in the early 4th century AD and continued until the 10th century AD, primarily in various regions, including the Levant, Palestine, and Egypt (Pieri, 2005, pp. 124-125; Dixneuf, 2011, pp. 142-153). These vessels were primarily used to transport wine (Pieri, 2005, pp. 126-127; Şenol, 2018, p. 138; Kara, 2021, p. 81). Amphorae of this type were distributed mostly in northern Egypt and the southern Levant, with small numbers found further away (Pieri, 2005, pp. 121-122).

Based on their typology and chronology, Pieri classified bag-shaped amphorae into five main types and sub-types (Pieri, 2005, pp. 115-122). Amphorae of this type have an upright rim, a sloping shoulder, a smooth transition from shoulder to body, an ovoid body covered with thin grooves, and a flat bottom. Oval-sectioned handles are attached to the shoulder (Şenol, 2000, p. 255). An upright rim is shown in Fig. 2.9, and the transition from the rim to the shoulder is marked by a ridge (Pieri Type 3). The fragment has a sloping shoulder and a globular body, both of which are grooved. This type is characterized by a pinkish, more calcareous, and less sandy fabric. This type of bag-shaped amphora was widely distributed throughout the Mediterranean from the 6th century onward. A close example of Fig. 2.9 is known from Beirut (Pieri, 2007b, Fig. 8. 8). Fig. 2.10 displays an upright rim that is everted at the lip and has a convex exterior profile (Pieri Type 4). The transition from the rim to the deeply grooved shoulder is pronounced and slopes downward. Fig. 2.10 resembles Pieri's rim type 4A (Pieri, 2005, p. 122, Fig. 79) with these features. The red fabric has small calcareous and sandy. In the context of parallel examples, the Olba find dates to the 6th–7th centuries AD (Pieri, 2005, p. 122; Klenina, 2010, p. 1007, Fig. 7. 5).

Sinopean Amphora (D Snp I-III)

Sinope was one of the most important amphora-producing cities along the Black Sea coast. Amphora production began in the second half of the 4th century BC and continued uninterrupted until the 7th century AD (Cankardeş Şenol, 2006, p. 44; Garlan & Kassab Tezgör, 1996, pp. 325-334; Kassab Tezgör, 1996, pp. 335-354; Kassab Tezgör, 2020). As an important wine and olive oil producer in the region, Sinope experienced a surge in amphora production between the 4th century and the first half of the 7th century AD to accommodate the marketing of agricultural products. Excavations at Demirci, some 10 km to the south of Sinope, where amphora workshops were discovered, allowed for the establishment of a typology for Sinopean amphorae datable to the 4th to 7th centuries AD (Kassab Tezgör, 2010, pp. 134-137; Kassab Tezgör, 2011, pp. 200-264). Sinopean amphorae were typologically and chronologically divided into four main type groups, namely A, B, C, and D (Kassab Tezgör, 2010, pp. 124-136). During Late Antiquity, the workshops in Demirci produced Group C amphorae during the 4th to early 6th centuries AD and, Group D amphorae during the 6th and 7th centuries AD (Kassab Tezgör, 2010, pp. 136-137). Sinopean amphorae provide evidence for trade relations between the Mediterranean and Black Sea regions during Late Antiquity. In addition to the Black Sea basin, Sinopean amphorae have been found in Greece, Anatolia, the Eastern Mediterranean region, and Egypt (Bezeczky, 2013, p. 176; Bes, 2021, p. 515, Fig. 20).

Sinopean amphorae in *pâte claire* of types D Snp I-III are generally dated from the late 5th to the early 7th centuries AD (Kassab Tezgör, 2020, pp. 34-40). Identified as a Sinopean amphora, the handle fragment from Olba displays a fabric similar to that of amphora type D Snp I-III. This fragment, labeled Fig. 2.11, can be dated to the 6th–7th centuries AD (Aydın, 2024, pp. 355-379; Bes, 2021, p. 526). It is known that Sinopean amphorae, which provide evidence of trade relations between the Mediterranean and the Black Sea regions during Late Antiquity, also reached the Cilicia region. Examples closely resembling the C Snp III-1 and III-2 types found in Kelenderis were dated to the 5th century AD (Tekocak & Zoroğlu, 2013, pp. 115-116), while amphorae similar in form to the types designated as C Snp I-1, C Snp III- 1, 2 and D Snp I / LRA Snp 1 from Elaiussa Sebaste were dated to between the late 4th and the 6th centuries AD (Kızılarslanoğlu, 2022, pp. 160-171). Examples from Tarsus were assigned to the 5th–6th centuries AD (Adak-Adıbelli & Alkaç, 2024, p. 377).

Conclusion

The amphorae found during excavations in the theater and monastery buildings in Olba between 2010 and 2019 indicate the city's commercial life. Examples of amphorae classified in the literature as Late Roman 4, Late Roman 5/6, and Late Roman 1B have been found in the Olba excavations. Notable for their wide distribution among the amphorae produced in the eastern Mediterranean, LRA 4 are represented in Olba by examples dating between the end of the 5th and the 7th centuries AD. Their presence not only in the coastal cities of Cilicia, such as Anemurium, Elaiussa Sebaste, and Tarsus (Gözlü Kule), but also in the mountain settlement of Olba highlights their regional distribution. Late Roman 5/6 amphorae, also produced in the Eastern Mediterranean, are represented in Olba by examples dating from the 6th to

the 7th centuries AD. Additionally, evidence indicates that Sinopean amphorae, already documented in the Cilicia region, also reached Olba. The LRA 1 amphorae, represented by a greater number of examples in the assemblage, are entirely of the LRA 1B subtype. These amphorae began, to appear more frequently in Olba from the 6th century AD onwards and continued to arrive throughout the period the settlement remained active, into the 7th century AD (Erten, 2014, pp. 63-69).

Considering the commercial products transported in amphorae, in addition to basic imports such as wine and olive oil, luxury goods also played a role in the city's social life. Amphorae from the Eastern Mediterranean have been determined to have reached the city. However, amphorae of Aegean origin, such as LR 2 and LR 3, which are known from the cities of Elaiussa Sebaste (Kızılaslanoğlu, 2016, pp. 205–227) and Tarsus (Alkaç, 2025, pp. 67–68) in Cilicia, did not reach Olba because it is far from the port. The amphora examples discussed here are significant in understanding Olba's economic vitality, particularly between the 5th century and the mid-7th century AD, centuries that also reflect the period during which economic vitality continued across the region more widely. Hopefully, the excavation of new buildings in Olba will expand the amphora repertoire and thus better clarify the city's role during this period.

Catalogue

No: 1

Amphora: LRA 1

Location: 2013. Theater Trench T19

Diameter Rim: 12 cm

Height: 12.4 cm

Surface: 10 YR 8/4 very pale yellow

Clay: 2.5YR 6/8 - light red

Inclusions: limestone**,** lime

Date: 6th - 7th century AD

Bibliography: Aydın 2019, 355, cat. no. 110, pl. 55.

No: 2

Amphora: LRA 1

Location: 2013. Theater Trench T20

Diameter Rim: 12 cm

Height: 5.0 cm

Surface: 10 YR 8/4 very pale yellow

Clay: 10 YR 8/4 very pale yellow

Inclusions: lime, mica

Date: 6th - 7th century AD

Bibliography: Aydın 2019, 357, cat. no. 111, pl. 55.

No: 3

Amphora: LRA 1

Location: 2013. Theater Trench T17

Diameter Rim: 12 cm

Height: 11.2 cm

Surface: 10YR 8/4 very pale brown

Clay: 5YR 7/4 pink

Inclusions: limestone**,** lime

Date: 6th - 7th century AD

Bibliography: Aydın 2019, 341, cat. no. 95, pl. 45.

No: 4

Amphora: LRA 4–B1

Location: 2010. Theater (North-South Skene)

Diameter Rim: 12 cm

Height: 6.4 cm

Surface: 2.5 YR 7/8 light red

Clay: 2.5 YR 5/4 reddish yellow

Inclusions: limestone, sand

Date: Late 5th century–first half of the 6th century AD

Bibliography: Aydın 2019, 377, cat. no. 131, pl. 66

No: 5

Amphora: LRA 4–B1

Location: 2012. Theater Trench T6

Diameter Rim: 12 cm

Height: 4.5 cm

Surface: 5 YR 7/8 reddish yellow

Clay: 5 YR 6/8 reddish yellow

Inclusions: limestone, sand

Date: Late 5th century–first half of the 6th century AD

Bibliography: Aydın 2019, 377, cat. no. 132, pl. 66

No: 6

Amphora: LRA 4–B1

Location: 2017. Theater Trench T24

Diameter Rim: 12 cm

Height: 5.5 cm

Surface: 5 YR 7/6 reddish yellow

Clay: 2.5 YR 6/4 light reddish

Inclusions: limestone, sand

Date: Late 5th century–first half of the 6th century AD

Bibliography: Aydın 2019, 379, cat. no. 134, pl. 67

No: 7

Amphora: LR 4A–B2

Location: 2017. Theater Trench T24

Diameter Rim: 12 cm

Height: 4.3 cm

Surface: 5 YR 7/6 reddish yellow

Clay: 2.5 YR 6/4 light reddish

Inclusions: limestone, sand

Date: 6th - 7th century AD

Bibliography: Aydın 2019, 379, cat. no. 133, pl. 67

No: 8

Amphora: LRA 4

Location: 2015. Theater Trench T24

Height: 7.2 cm

Surface: 5 YR 7/6 reddish yellow

Clay: 2.5 YR 6/4 light reddish

Inclusions: limestone, sand

Date: 5th - 7th century AD

Bibliography: Aydın 2019, 381, cat. no. 135, pl. 68

No: 9

Amphora: LRA 5/6

Location: 2018. Theater Trench T28

Diameter Rim: 12 cm

Height: 10.7 cm

Surface: 2.5 YR 7/6 light red

Clay: 7.5 YR 7/3-6/3 light pink

Inclusions: limestone, mica

Date: 6th century AD

Bibliography: Aydın 2019, 383, cat. no. 137, pl. 69

No: 10

Amphora: LRA 5/6

Location: 2010. Theater (North-South Skene)

Diameter Rim: 10 cm

Height: 4.5 cm

Surface: 10 YR 8/4 very pale brown

Clay: 2.5 YR 6/8 light red

Inclusions: limestone, mica

Date: 6th - 7th century AD

Bibliography: Aydın 2019, 381, cat. no. 136, pl. 68

No: 11

Amphora: D Snp I-III

Location: 2012. Theater Trench T9

Height: 8.9 cm

Surface: 2.5 Y 8/2–8/4 pale yellow

Clay: 2.5 Y 8/2- 8/4 pale yellow

Inclusions: lime, black volcanic particles

Date: 6th - 7th century AD

Bibliography: Aydın 2024, pp. 355-379.

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