

The Mummification Deposit in the Courtyard of TT 209: Description of its Fabrics and Questions it Raises

Pía RODRÍGUEZ FRADE

This study offers a detailed analysis of the contents of five ceramic vessels, predominantly of the type known as "sausage jars", which make up a mummification deposit that appeared in the courtyard of the Theban Tomb 209. They were found on the west side of the entrance to its underground chambers, although the specific context of the find showed that they had slipped from an adjacent area. The association of the objects with the tomb would allow us to assign them to the Twenty-Fifth Dynasty. The procedure used to individualize and catalogue each piece of fabric is described, as well as conservation and storage. From the analysis of the fabrics and their spatial arrangement inside the jars, practical aspects of the mummification ritual are addressed and the specific functions of the different types of fabrics in this context are reflected upon.

El depósito de momificación del patio de la TT 209. Descripción de sus tejidos e interrogantes que plantea

Este estudio ofrece un análisis detallado del contenido de cinco recipientes cerámicos, predominantemente del tipo conocido como «jarras salchichas», que componen un depósito de momificación aparecido en el patio de la Tumba Tebana 209. Se hallaron en el lado oeste de la entrada a sus cámaras subterráneas, aunque por el contexto específico del hallazgo podrían haber sido desplazados desde un área adyacente. La asociación de estos objetos con la tumba permite asignarles una cronología de la Dinastía XXV. Se describe el procedimiento empleado para individualizar y catalogar cada pieza de tejido, su conservación y almacenamiento. A partir del análisis de los tejidos y su disposición espacial en el interior de las jarras, se abordan aspectos prácticos del ritual de momificación y se reflexiona sobre la función específica de los diferentes tipos de telas en este contexto.

Keywords: linen, Luxor, natron, resins, Theban West Bank, Twenty-Fifth Dynasty.

Palabras clave: Dinastía XXV, lino, Luxor, natrón, resinas, orilla occidental tebana.

The mummification deposit that is the object of this study consists of a set of ceramic vessels located in area C2 (Courtyard 2) of Theban Tomb 209 (hereafter: TT 209), in stratigraphic units (hereafter: SU) 64 and SU 65, which covered the remains of the western wall of the courtyard. In this article its name will be abbreviated as MDC2

(Mummification Deposit of area C2). It was found in January 2014, during the second season of the Project dos cero nueve (fig. 1). The vessels contained conglomerates of dirty and residual fabrics, collected and stored by the embalmers. The specialized literature suggests that religious reasons prompted the preservation of these remains from the mum-

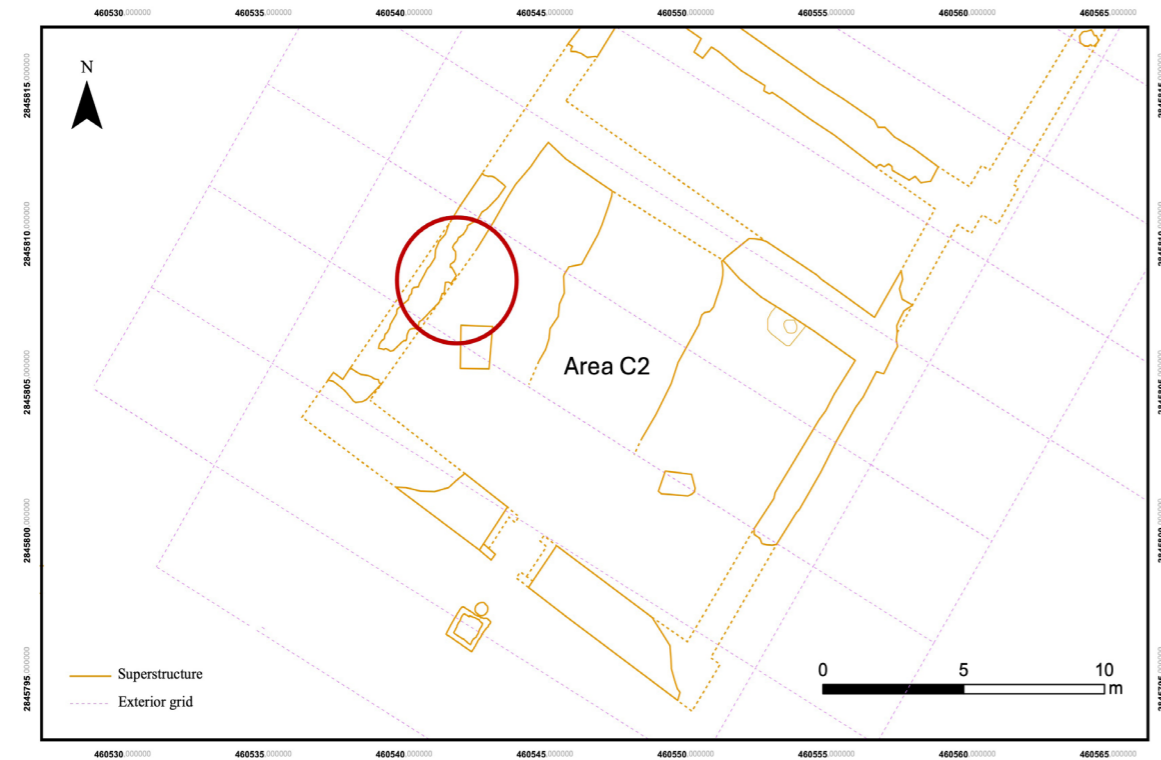


Figure 1. Findspot of the mummification deposit in the courtyard of TT 209. Plan: Proyecto dos cero nueve / S. Pou Hernández.

mification process, promoting their burial in a location close to that of the deceased.¹ Each textile was named after the jar that contained it: MDC2.1, MDC2.2, MDC2.3, MDC2.4 and MDC2.5 followed by a correlative number.

The availability of the five jars with their respective contents offers a unique opportunity to obtain more comprehensive data than those provided by isolated finds. This makes it possible to relate the linens within a single vessel and compare them with the linens in the others. It should be noted that the vessels were fragmented, which facilitated the extraction of the large blocks of fabric, a task that would otherwise have

been complicated due to the reduced opening of their mouths.

The purpose of this article is to publish the discovery of the deposit, to explain the process of working with the contents of the jars to individualise each piece and preserve the whole, and to present the detailed study of the contents which consist exclusively of linen textiles and small quantities of natron. To achieve these objectives, individual records were made of the most important data for each piece and tables were drawn up to illustrate the characteristics, similarities and differences of the material obtained from each jar in this mummification deposit.

¹ The literature on this subject is extensive. See, among other titles: Andrews 2004: 26; Eaton-Kraus 2009: 70.



Figure 2. A jar of the mummification deposit (MDC2.1) at the time of its discovery, January 2014. Photograph: Proyecto dos cero nueve / M.Á. Molinero Polo.

Hypotheses have been put forward that relate the location of the fabrics inside each vessel to their use in the different stages of the mummification process.

Finally, the novelty of this study must be emphasised, as there are no publications of this type of material in which such exhaustive and individualised documentation has been carried out. Only when a larger number of cases have been presented in detail will it be possible to appreciate whether details are repeated and parallels can be found or whether, on the contrary, the differences may lead us to think of specific behaviours linked to workshops, geographical locations or fashions linked to specific historical periods.

1 | The Mummification Deposit MDC2

The studied set was comprised of at least six ceramic vessels. All contained textiles at the time of their discovery except one that was found to be extremely fragmented, possibly due to its falling at some point, and whose



Figure 3. Securing the position of jar MDC2.2 fragments with cotton gauze. Photograph: Proyecto dos cero nueve / M.Á. Molinero Polo.



Figures 4a-4b. Two consecutive moments of the micro-excavation of MDC2.4. Photographs: Proyecto dos cero nueve / F. Guerra-Librero Fernández.

contents must have been dispersed by subsequent flooding events. For this reason, the rest of the article refers to five jars, as this is the number preserved with content that could be studied. Despite their fragmented condition, the vessels in this deposit generally maintained their shape, which

contributed to the protection of the materials contained inside (fig. 2)². Remains of a possible seventh jar —of different composition and coloration than the others— were identified in the 2020 season, south of the original find. It was unrecoverable in its complete form due to its highly fragmented state. Its contents, of organic nature, were also too deteriorated to allow the recovery of samples suitable for study.

At the time of their discovery, a meticulous approach was adopted for the extraction of the containers, applying gauze impregnated with Paraloid B-72 acrylic resin dissolved at 15% in acetone to reinforce them, allowing their original arrangement to be kept intact (fig. 3). This procedure facilitated both the detailed micro-excavation of each jar (figs. 4a-b)³ and its subsequent reassembly through the detailed register of the original location of the fragments (fig. 5).

The dating of the set of jars in the Twenty-Fifth Dynasty is based both on the stratigraphic analysis of the find in the context of TT 209, and on the study of its pastes and morphological characteristics. The tomb was built for a high official of Nubian origin.⁴ The jars appeared in a stratum resulting from the crumbling of the western wall of the courtyard, which had fallen towards the interior of the courtyard, possibly in the Ptolemaic period. This has led to the assumption that they were originally located on the outside of the courtyard.⁵ Although that context could open the chronological framework of the deposit, the analysis of the containers brings them back to the time of construction. These are jars made of paste of the Nile C type, without slip (fig. 6), which have their parallels in funerary contexts of the Theban necropolis and Abydos

² For an image of the discovery of MDC2.2 see Molinero Polo *et alii* 2017: 262, fig. 17.

³ For an image of the block MDC2.2B after its micro-excavation, see Molinero Polo *et alii* 2017: 263, fig. 18.

⁴ Molinero Polo 2016: 111–113.

⁵ Molinero Polo *et alii* 2017: 262–263.



Figure 5. The jars of MDC2 found in the season 2013-14. Photograph: Proyecto dos cero nueve / M.Á. Molinero Polo.



Figure 6. Jars of MDC2, season 2013/14. Drawing: Proyecto dos cero nueve / Z. Barahona Mendieta.

during the Twenty-Fifth and Twenty-Sixth Dynasties.⁶ Since no clear evidence of Saite chronology has been documented inside the

tomb, the deposit must be associated with the Kushite period burials identified in the underground chambers.⁷

⁶ Barahona Mendieta 2017: 21–22.

⁷ Personal communication by Miguel Á. Molinero Polo.

2 | Processing of the Fabrics

The sets of textiles from each jar were preserved in hermetically sealed plastic containers. These were selected for their resistance to the humidity inside the tomb where they were stored, which was particularly high during the intervals between seasons (fig. 7).⁸ The documentation and conservation works were finally carried out during the 2019, 2020 and 2021 seasons. All the activities were carried out in the first of the underground chambers of the tomb, which was used as a working space. No treatments or laboratory studies have been carried out so far.

At the start of processing in the 2019 season, the airtightness of the hermetic boxes used for storing the fabrics was verified. Their periodic opening since 2014 revealed that they showed no signs of deterioration due to humidity and, remarkably, they emanated a pleasant aroma of resins, in contrast to the characteristic odour of fabrics that have been in contact with bodies during conservation treatments (fig. 8). This phenomenon highlights the importance of resins in mummification, both for their preservative properties and for their potential symbolic or ceremonial value. These resins seem to have been in use since the Late Neolithic period.⁹

The first tests were carried out with some fabrics from MDC2.4. Two different methods were tested to soften them, to facilitate their separation from the blocks glued by resins, and to flatten them, in order to establish the protocol for the rest of the material. This methodological practice is crucial for the conservation and study of archaeological

materials, especially in the case of fabrics that can be very fragile.¹⁰

The smaller block was placed in a humidity chamber to gradually and naturally hydrate it. It was kept that way for three days without any significant change. In the absence of results, it was decided to try a spray of distilled water and 50% alcohol, which proved to be the most effective and quickest method. Spatulas, blotting paper, flat weights and thread counters were also used for this work. Given the limited time available to work in the field, it was decided to apply this system to all the material.

The procedure for each block of fabric began with the mechanical removal of soil particles adhering to the surface, using dry brushes. Small areas were then moistened by spraying water and alcohol, thus facilitating the softening of the resins and the separation of the different textiles. Once detached, these pieces seemed wrinkled and twisted, so they required additional treatment for proper documentation and conservation (fig. 9).¹¹ To flatten them, they were moistened again and, while still wet, were placed between sheets of blotting paper with weights on top of them (fig. 10), until they were individualized and flattened, leaving them in optimal conditions for their documentation (fig. 11).

In certain instances, it was impossible to soften the material that held several fabrics together. In these situations, it is likely that the binders were resins or blends with properties less susceptible to the action of solvents.

Once the pieces were completely spread out and dried, their characteristics, description and measurements were identified, following a similar protocol. The steps of which are described below.

⁸ For analysis of temperatures and humidity levels in TT 209 see Molinero Polo and Soler Javaloyes 2019.

⁹ On the religious value see Buckley and Evershed 2001; Taylor 2001; for the use in Prehistory, see Jones *et alii* 2018.

¹⁰ Pritchard 2015.

¹¹ Illustrations for which no authorship is indicated from figure 9 onwards are all copyrighted by: Proyecto dos cero nueve and P. Rodríguez Frade.



Figure 7. The textiles, after their recovery, in a plastic container (jar MD2C.1A). Photograph: Proyecto dos cero nueve / F. Guerra-Librero Fernández.

Figure 8. Sets of fabrics extracted from one of the sausage jars (jar MD2C.1B). Photograph: Proyecto dos cero nueve / F. Guerra-Librero Fernández.

Figure 9. Sets of fabrics extracted from a block before the stretching process (jar MD2C.1B).

Figure 10. The process of stretching the fabrics.

Figure 11. Individualized and flattened bands (jar MD2C.1B).



Figures 12 a, b, c, d Different moments of the packaging of treated material coming from the same jar.

- Classification of the piece (natron bag, rectangular cloth, etc.) and its raw material.
- Identification of warp and weft, to photograph the piece with the latter in horizontal position and the type of thread used.
- Measuring of the piece. Where possible, measurements of the diameter of the yarns have been taken.
- Determining the density of the fabric and its quality. To define the former, a 2 cm² thread counter was used and a window made of 1 cm² in a millimetre paper was used. This window was photographed, and the count was made on the computer screen, which made it easier to recognise the threads and calculate their thickness by enlarging the image.
- Collection of data on the shade of the fabric and the presence or absence of resin or other adhered elements.
- Recognition of characteristics linked to the manufacturing process (starting edge, hem, self-band...) and the state of the piece when it was used.

When the documentation process was finished, each piece was packed individually in neutral tissue paper, either flat or rolled around a polystyrene tube depending on their size, the latter also lined with neutral tissue paper. They were then placed in perforated plastic bags to prevent moisture accumulation. Finally, the sets corresponding to each jar were collected in a single box and labelled with the consequent acronym (figs. 12a, 12b, 12c and 12d).

3 | General Description of the Fabrics

The fabrics contained in the ceramic jars of MDC2 were all linen fragments, intentionally torn into shapes to be used in mummification processes such as cleaning, drying and anointing the body. Far from being irregular pieces, they present deliberate shapes: narrow strips of variable length, rectangles and circles, the latter corresponding to empty natron sachets.

These textiles feature diagnostic characteristics, detailed individually in the appendix, which are as follows.

- **Material.** All fragments are derived from used pieces made from linen, the predominant material used in the manufacture of textiles in ancient Egypt. It has already been pointed out that no microscopic analysis was carried out for this study, which would have confirmed the material from which the fabrics were made. It is classified as linen by *de visu* observation of its appearance. Systematic sampling is planned for the near future, in accordance with the rules of the Egyptian Antiquities Service. Based on the observation of the size and shape of the lumen of the fibres in cross-sections under a polarised light microscope, it will provide specific data on the nature of the raw material.
- **Quality.** All fabrics are of medium quality. In its determination the Jones (2008) proposal was used, whereby a medium quality linen fabric corresponds to: 24–36 warp yarns / 1 cm²; 12 weft yarns / 1 cm²; yarn \varnothing : 0.3–0.37 mm. However, the fabrics show certain variability caused by the differentiated wear due to their use.
- **Shade.** The original light beige colour of the linen is observed in the less altered areas. The darkened areas are the result of the accumulation of resins and other materials that have caused the rigidity and fragility of the fabric, while the light areas denote conservation and flexibility. The



Figure 13. Example of light shade.



Figure 14. Example of medium tonality.



Figure 15. Example of dark tonality.

shade is illustrated in figures 13 to 15, using terms such as light, medium and dark.

- **Measurements.** In each individualized data sheet two measurements will be given: the width and the height (in that order) to be given in centimetres. The pieces are fragmented and in the case of bands, probably cut off from a longer one, it is impossible to recognise the original length.
- **Weave.** All fabrics are made with a 1/1 plain weave, the basic weave used in ancient Egyptian fabrics (figs. 16 and 17).
- **Threads.** All the threads studied here feature the S-twist, which is the usual twist in pharaonic weavings. The thickness ranges from 0.05 to 0.1 cm, the average

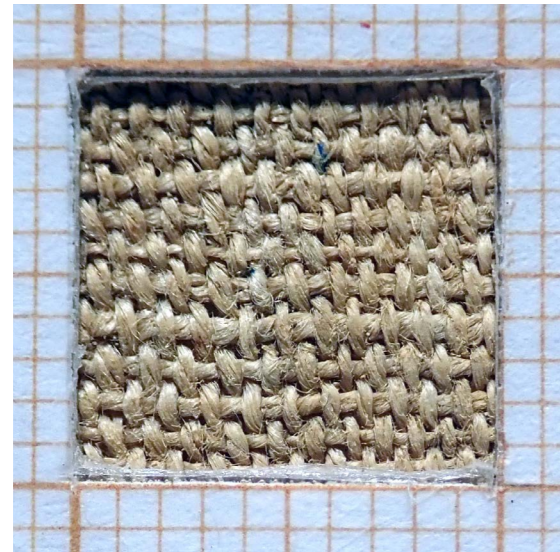


Figure 16. Plain weave 1/1.

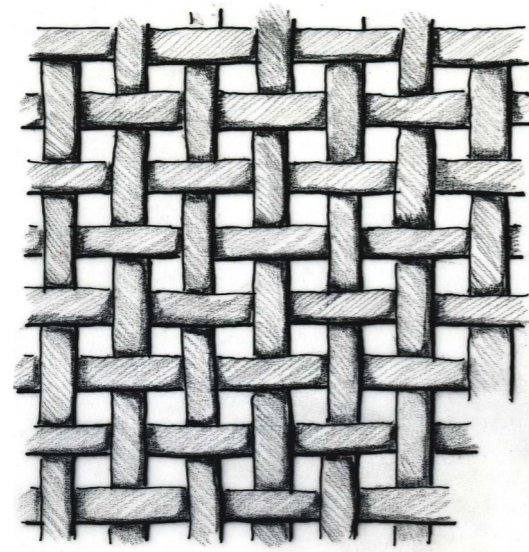


Figure 17. Realistic representation of Plain weave 1/1.



Figure 18. Example of medium density with thick yarns. 22 warp yarns x 14 weft yarns.

Figure 19. Example of medium density with medium diameter yarns. 20 warp yarns x 10 weft.

Figure 20. Example of low density with fine yarns. 18 warp yarns x 12 weft yarns.

being 0.08 cm. They are thick threads that provide dense and coarse fabrics with few threads per centimetre.

- Density and quality. Density is measured by counting the number of warp and weft threads in 1 cm². The thread count has been carried out in the best-preserved areas. The average number of warp threads is between 17 and 25 threads and

the weft thread count varies between 8 and 13. This is the usual ratio, as the number of warp threads is usually about twice the number of weft threads. The density is also closely related to the thickness of the yarns as can be seen in figures 18, 19 and 20. If the threads are very fine, the result is very fine, dense and delicate fabric, while dense fabrics with thick threads are

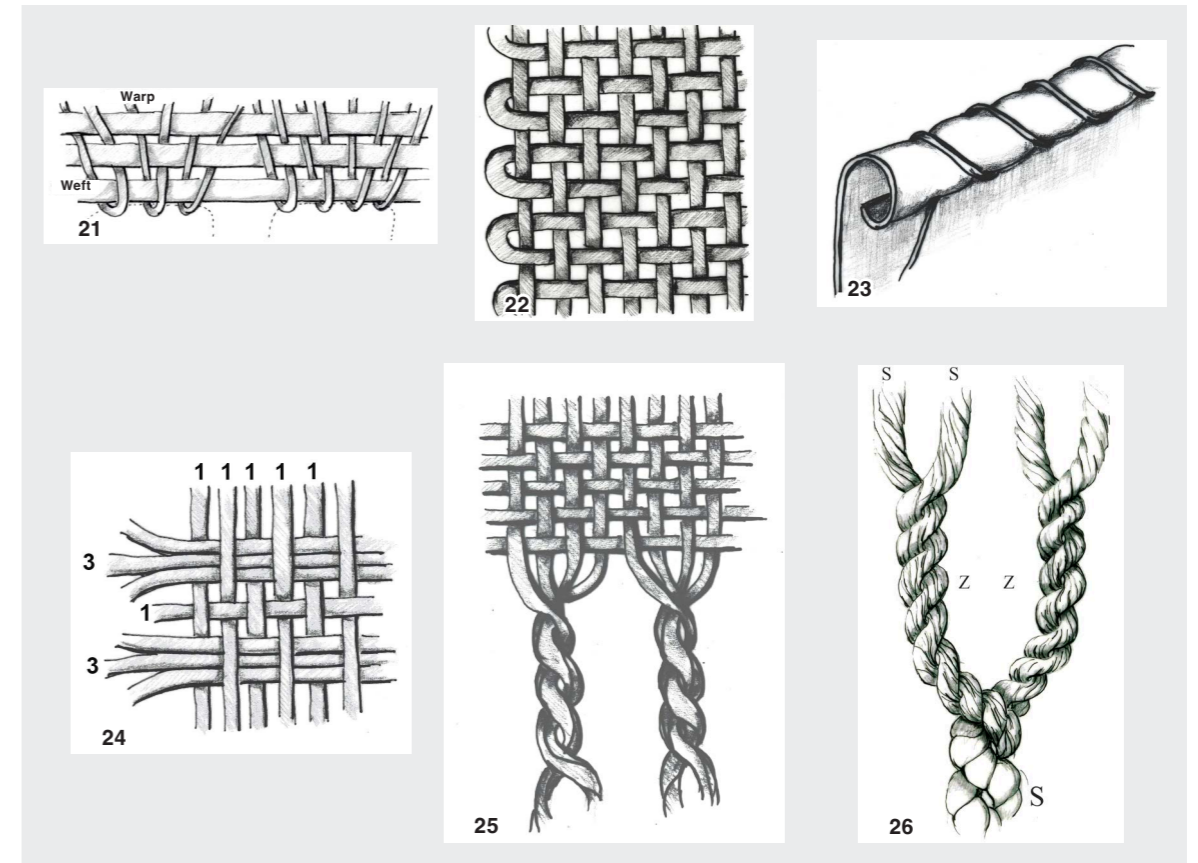


Figure 21. Starting border.

Figure 22. Selvage.

Figure 23. Hem.

Figure 24. Self band.

Figure 25. Fringe.

Figure 26. Compound fringes.

coarser. In the individualized description of each piece the number of warp yarns per weft yarns is given.

- Starting edge. The transverse edge through which a piece is started on the loom that is recognized by a specific grouping of warp threads (fig. 21).
- Selvage. These are the longitudinal edges that correspond to the ends where the weft changes direction as the fabric is created on the loom (fig. 22).

- Hem. Finishing touches made once the piece has been disassembled from the loom. They are intended to avoid fraying in the cuts created to make specific garments (fig. 23).

- Self-band. A decoration that serves as reinforcement and is found in areas close to the fringe. The picks are usually made with three threads instead of using only one, creating characteristic highlighted lines (fig. 24).



Figure 27. Reinforcements of worn fabric to extend its use.

- Fringe. Usually on the opposite edge to the starting edge and consist of groupings of different numbers of warp threads. They can be defined by their length, their manufacture and by the number of warp threads with which they are made, which is usually an even number, normally four or six threads, although there can be more (fig. 25). These individual threads, twisted in s, are grouped in pairs, which in turn are twisted together, in Z, and every two groups are twisted again in [S]¹². The twists are alternated S-twist and Z-twist, as this is the way to keep the fringes from unravelling. To define the manufacture of the fringe, a formula has been used that the author of this article considers easy to understand (fig. 26).
- Reinforcements. Stitches made in the most worn areas of the fabric to extend its use (fig. 27). Figure 28 shows the areas corresponding to the different details found in the linens contained in the MDC2 jars.

¹² The lowercase s is used to define the twisting of single threads. The capital S is used for the twisting of threads to form a compound thread and the [S] in square brackets is used for the result of joining two compound threads twisted together to form a thicker thread.

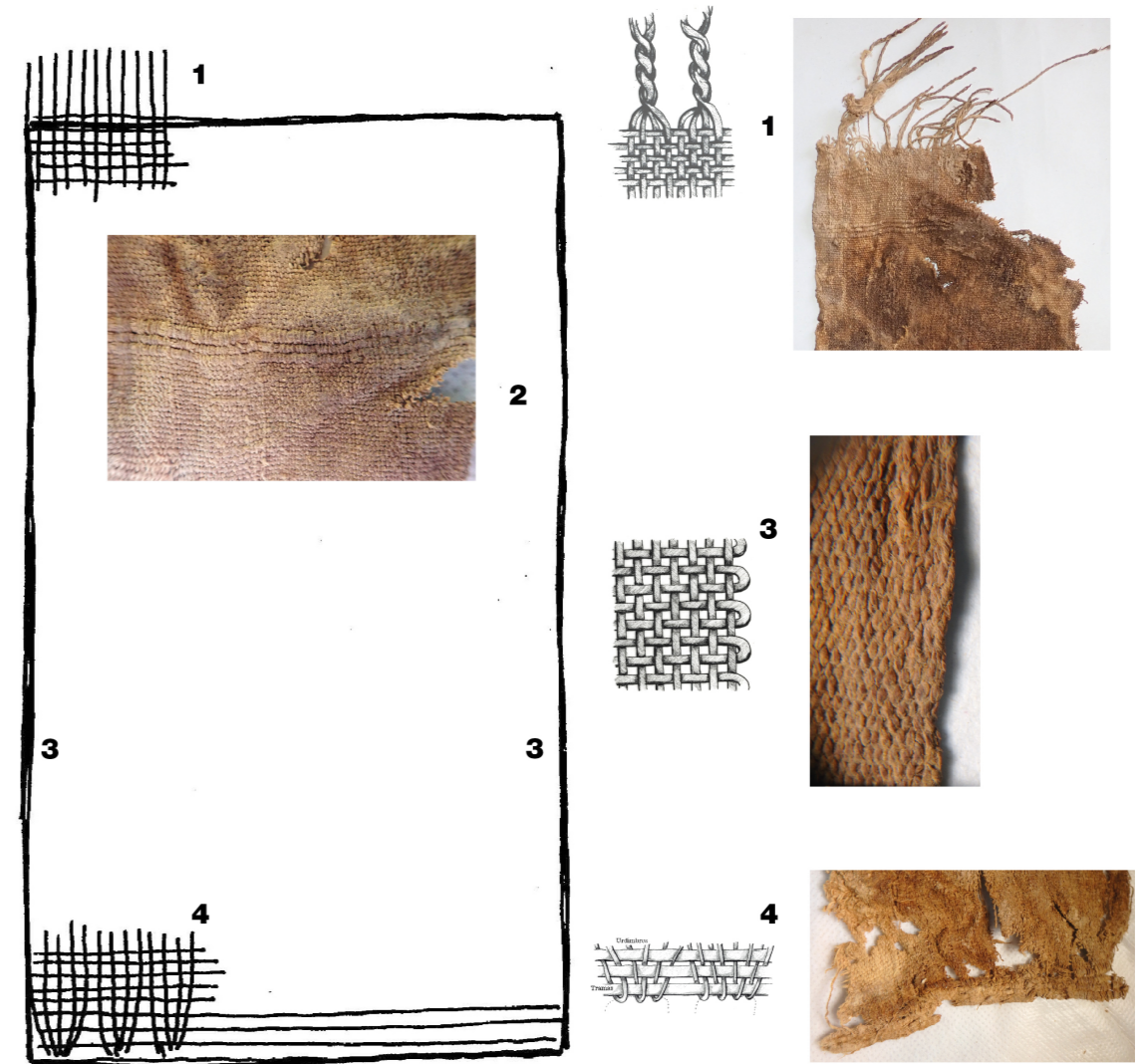


Figure 28. Provenance of the various details of a piece of fabric. 1: Compound fringes. 2: Self band. 3: Selvedge. 4: Starting border.

4 | Typology of the Fabrics Included in the Jars of the C2 Deposit

The fabrics recovered from these containers derive from the intentional partitioning of larger pieces, showing cuts aligned with the weft of the weave—ripped to the thread—and, occasionally, finishes that suggest they come

from the edges of the piece. Although it might be expected that each vessel would house a single type of material—such as bands, natron bags or clean cloths, reflecting segregation by specific phases of the mummification process—the reality is different. Each jar houses a constant diversity of types of pieces, varying only in their proportion. This uniformity

in composition underlines the standardization in the practice of treatment and classification of the materials used and discarded in embalming, regardless of the quantitative differences between containers. The fabrics found in the ceramic jars correspond to the following typologies:

- **Bands.** They represent a crucial component of the materials associated with mummification practices. In MDC2, they are linen strips or bands of different lengths—the longest reaching 126.0 cm—and widths varying from 4.5 to 10.0 cm, predominantly between 7.0 and 8.0 cm. They all seem to have been cut from longer ones suitable for a variety of uses, and show very different conditions: some are clean, others are impregnated with resins—often forming a hand-sized assemblage that would reflect the gesture when holding them to work—and some contain natron and sand deposits. This diversity suggests their use in several stages of the mummification process, from cleaning and purification to preservation and protection of the body. Obviously, those found inside the jars were not used for the final wrapping of the body. For this reason, the term bandage, often used to describe the bands found in mummification deposits, has been avoided in favour of a term that refers to their form rather than their function.
- **Natron bags.** These bags, made from square or rounded pieces of cloth and closed with a string, contain a variable amount of natron, between 109 to 480 grams, indicating a lack of uniformity in their preparation. The closing strip is formed with four strands, twisted individually and twisted two by two in a Z-twist and finally these two strands were twisted together with an S-twist (S=2z=2s+2s). The variability in the state of the natron

(loose or clumped) suggests different uses or stages in the treatment process of the corpse. The presence of clumped natron could indicate that it has been used for the absorption of body fluids during body desiccation processes, whereas loose natron appears not to have been used for temporary filling during work processes. The occasional deterioration of the linen by natron indicates an intense chemical reaction that has caused the partial loss of its contents. These findings highlight the importance of natron in mummification rituals, not only as a drying agent but possibly also in purification rituals, as evidenced by the cleanliness and light tonality of some bags, free of resins and other additives.

- **Rectangular fabrics.** These are one or two rectangular cloths, in each jar, of different sizes. It seems that they may have had a specific function in the mummification processes, of which there is insufficient evidence to determine what it may have been. As in the case of the bands, some are clean while others are dirty and rigid.
- **Small and rounded bundles.** These are small balls, very hard, dark and impregnated with resins that have been found in only two jars (MDC2.1 and MDC2.2). It could be proposed that they were used as “stamp-bags” to apply resins on the surface of the body or as small ritual natron bags.¹³

The evidence suggests that the textile materials found were not part of a single piece of cloth, but that fragments of various fabrics were probably selected based on their good state of preservation. These fragments were then used in the mummification process, indicating an exploitation of available textile resources rather than the use of pieces specifically designed or manufactured for this purpose.

5 | General Description of the Sets Corresponding to Each Jar

5.1 | MDC2 Jar 1

The fabrics from jar MDC2.1, were distributed in two groupings: MDC2.1A and MDC2.1B (table 1, fig. 29). Group 1A consists of a small block composed of natron bag remnants located at the top of the jar, while 1B, a larger block, contains clusters of fragile fabrics that filled most of the jar, including the bottom.

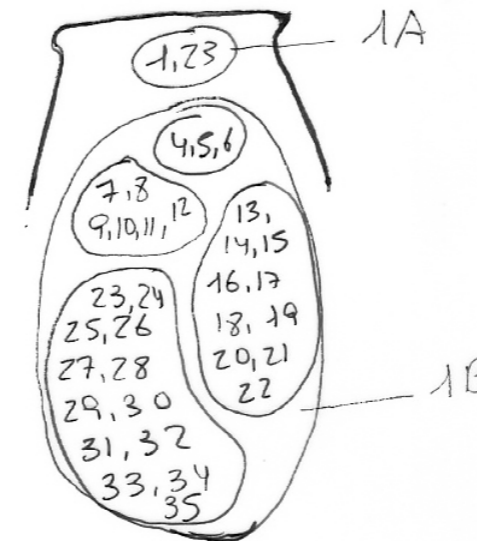


Figure 29. Schematic representation of jar MDC2.1 contents.



Figure 30. Various fabrics adhered by the action of imbedded resin.

Set MDC2.1A

MDC2.1A-1	Bag of natron
MDC2.1A-2	Bag of natron
MDC2.1A-3	Bag of natron

Set MDC2.1B

MDC2.1B-4	Rectangular fabric
MDC2.1B-5	Band
MDC2.1B-6	Band
MDC2.1B-7	Band
MDC2.1B-8	Band
MDC2.1B-9	Band
MDC2.1B-10	Band
MDC2.1B-11	Band
MDC2.1B-12	Band
MDC2.1B-13	Band
MDC2.1B-14	Band
MDC2.1B-15	Band
MDC2.1B-16	Band
MDC2.1B-17	Band
MDC2.1B-18	Band
MDC2.1B-19	Band
MDC2.1B-20	Band
MDC2.1B-21	Band
MDC2.1B-22	Band
MDC2.1B-23	Bands
MDC2.1B-24	Rectangular fabric
MDC2.1B-25	Band
MDC2.1B-26	Band
MDC2.1B-27	Band
MDC2.1B-28	Band
MDC2.1B-29	Band
MDC2.1B-30	Band
MDC2.1B-31	Band
MDC2.1B-32	Small rounds packets
MDC2.1B-33	Small rounds packets
MDC2.1B-34	Small rounds packets
MDC2.1B-35	Small rounds packets

Table 1. Listing and distribution of jar MDC2.1 contents. The alternating shades of grey in the tables correspond to the different blocks of fabric found inside each jar.

¹³ Winlock 2010: 40.



Figure 31. Contents of jar MDC2.1 on a surface of 1.20 x 1.20 m. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

This deposit included 35 pieces in total: 28 bands, three remains of natron bags, two rectangular pieces, and two small balls heavily impregnated with resin. The interior

of the blocks, filled with earth, had an orange hue. The fabrics were lighter in colour, although they showed dark concentrations of resin in some areas (fig. 30).



Figure 32. Not flattened fabrics from jar MDC2.1 on a 1.20 x 1.20 m surface. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

As common technical characteristics, the vast majority are fabric strips without selvedge; three pieces have; and three others also have a hem of the same type.

After completing the individual documentation of the pieces contained in MDC2.1, they were unfold over a surface of 1.20 x 1.20 m. This process was carried out with the objective of estimating, approximately, the number of square metres of fabric present

in the deposit and examining the set as a whole. The fabrics that could be completely spread out were distributed over the previously prepared area and the remaining material, which was either very fragmented or could not be completely spread out, in a second section. By tentatively adding the two quantities together, it was estimated that the total surface area could reach 1.50 m² (figs. 31 and 32).

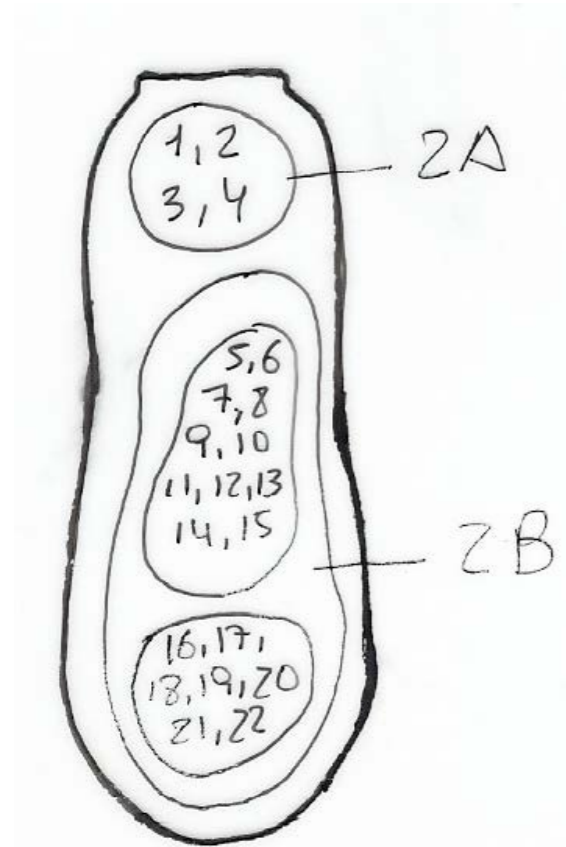


Figure 33. Schematic representation of jar MDC2.2 contents.

Set MDC2.2A

MDC2.2A-1	Rectangular fabric
MDC2.2A-2	Rectangular fabric
MDC2.2A-3	Band
MDC2.2A-4	Bag of natron

Set MDC2.2B

MDC2.2B-5	Bag of natron
MDC2.2B-6	Bag of natron
MDC2.2B-7	Bag of natron
MDC2.2B-8	Bag of natron
MDC2.2B-9	Bag of natron
MDC2.2B-10	Bag of natron
MDC2.2B-11	Band
MDC2.2B-12	Band
MDC2.2B-13	Band
MDC2.2B-14	Band
MDC2.2B-15	Band
MDC2.2B-16	Band
MDC2.2B-17	Band
MDC2.2B-18	Band
MDC2.2B-19	Band
MDC2.2B-20	Band
MDC2.2B-21	Band
MDC2.2B-22	Small round packet

Table 2. Listing and distribution of jar MDC2.2 contents.



Figure 34. Block with natron bags and fabrics imbedded with resin of MDC2.2.



Figure 35. Separation of natron bags from the block.

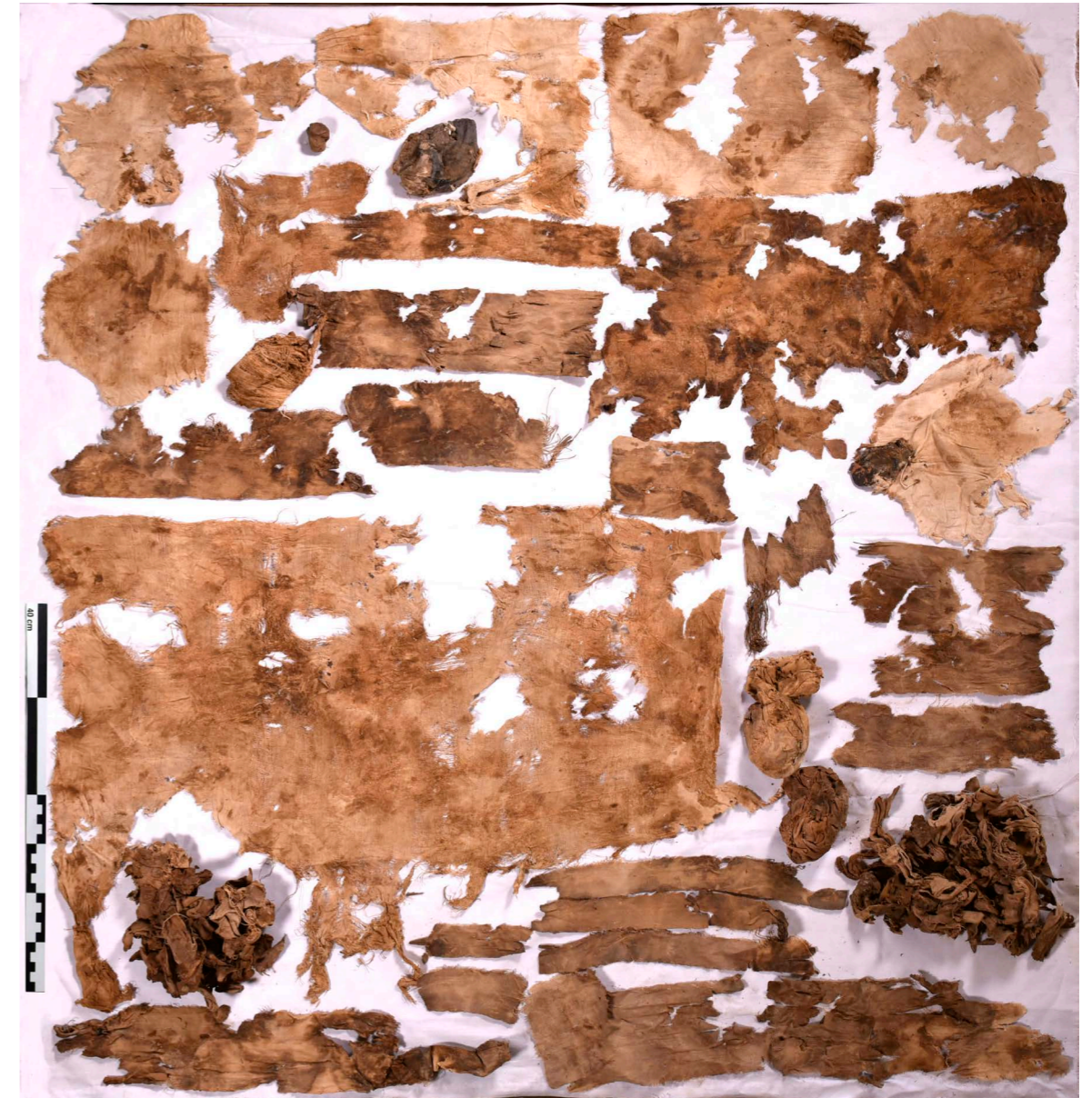


Figure 36. Contents of jar MDC2.2 on a surface of 1.20 x 1.20 m. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

5.2 | MDC2 Jar 2

This deposit was comprised of two distinct sections, identified as MDC2.2A and MDC2.2B (table 2, fig. 33). Section MDC2.2A is defined as a single block containing very few fabrics, with a very compact section and the presence

of significant resin accumulations. On the other hand, MDC2.2B consists of five natron bags, which are adhered to a solid block of fabrics (figs. 34 and 35). These natron bags can be separated from the block relatively easily, since they are not impregnated with resin.



Figure 37. Not extended fabrics from jar MDC2.2. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

Although the contents of each block vary, it can be seen that both have been placed in the jar following a certain organization.

From this set, 22 pieces were obtained: twelve bands, seven natron bags, two rectangular cloths and one small, rounded bundle. In a first surface of 1.20 x 1.20, the material that could be unfolded was placed and in a second batch the remaining material which was more fragmented or that could not be stretched. Adding the two quantities together, an approximate surface area of 1.50 m² could be calculated (figs. 36 and 37). This deposit contained a large amount of resin/gum, so the fabrics were very tightly stuck together.

5.3 | MDC2 Jar 3

This deposit is organized into two distinct sets, identified as 3A and 3B (table 3, fig. 38), comprising a total of four natron bags and ten bands, as detailed in table 3. A distinctive aspect of this collection is that MDC2.3A comprises bands of a light shade and free of resins, in contrast to MDC2.3B, whose bands are noticeably darkened due to the profuse presence of resins and soils. The overall quality of the fabrics is considered medium to low.

This assemblage contains a smaller amount of material compared to the other jars, estimating a total fabric surface of approximately

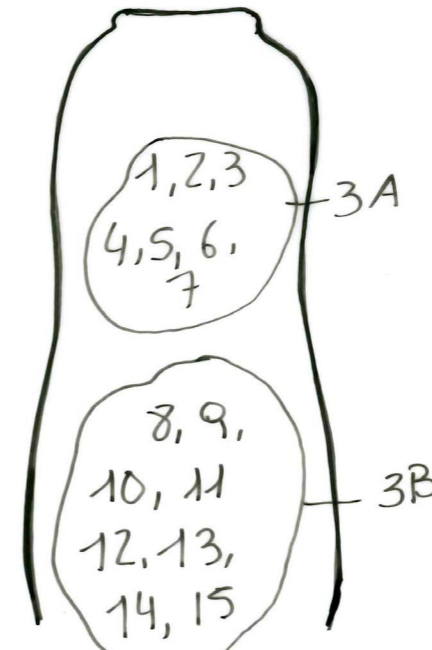


Figure 38. Schematic representation of jar MDC2.3 contents.

0.50 m², taking into account that a certain volume of material that has not been recovered (fig. 39).

5.4 | MDC2 Jar 4

The contents of the jar labelled 4 are composed of two groups, labelled 4A and 4B. A total of 14 bands were recovered, along with two rectangular-shaped pieces and three bags of natron (table 4, fig. 40). These blocks, MDC2.4A and MDC2.4B, contained linen, earth and limestone fragments, and still maintained the shape of the ceramic container in which they were originally deposited. They were characterized by being compact and extremely hard, which made it very difficult to distinguish the continuity between the different pieces of linen.

After the removal of soil and superficial dirt, the usual work of separating the fabrics began. However, due to their poor state of preservation, characterized by gaps, breaks

Set MDC2.3A

MDC2.3A-1	Bag of natron
MDC2.3A-2	Bag of natron
MDC2.3A-3	Bag of natron
MDC2.3A-4	Bag of natron
MDC2.3A-5	Band
MDC2.3A-6	Band
MDC2.3A-7	Band

Set MDC2.3B

MDC2.3B-8	Band
MDC2.3B-9	Band
MDC2.3B-10	Band
MDC2.3B-11	Band
MDC2.3B-12	Band
MDC2.3B-13	Band
MDC2.3B-14	Band
MDC2.3B-15	Block of fabrics

Table 3. Listing and distribution of jar MDC2.3 contents.

and tears, some pieces were fragmented in the process or unrecoverable. The initial work focused on block MDCD.4B, which, due to its configuration, was presumably located in a deeper position inside the jar. A pupa was discovered inside this block, suggesting that the activity of insects, ancient or modern, has had adverse effects on the preservation of the jar contents.

The fabrics retained the natural light colour of the linen, noticeable in the cleanest and least altered areas. However, many sections showed darkening due to the action of resins and other components used in the mummification processes, as well as the accumulation of these materials in thick masses.

The fabrics that had been stretched were laid out on one surface, while the material that could not be stretched was placed on another. From this procedure, it was estimated that the total area of fabric could be around 1.50 square meters, as illustrated in Figures 41 and 42.



Figure 39. Contents of jar MDC2.3 on a surface of 1.20 x 1.20 m. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

5.5 | MDC2 Jar 5

This is the only deposit consisting of a single block of fabrics, composed mainly of bands except for one natron bag (table 5, fig. 43). The light colour of the bands is noteworthy and, exceptionally, none of them has resin. Although they were dirty with soil, it was not adhered to the surface and could be cleaned with some ease. These fabrics also stand out

for their superior quality compared to the others, evidenced by a higher density of warp threads.

A homogeneity in the type of fabrics is observed, with several of them presenting the same type of fringe, similar density and diameter of the threads and a similar light tonality, which suggests that they could be fragments of the same piece.

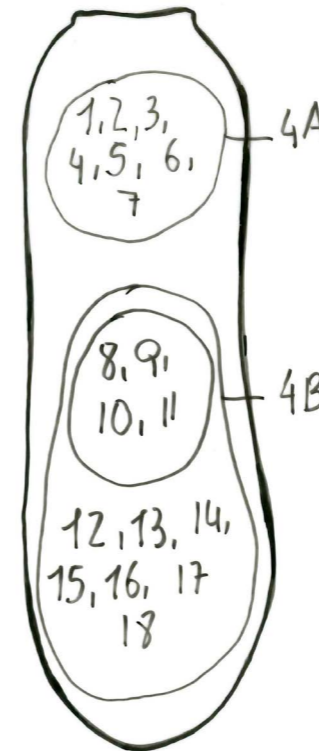


Figure 40. Schematic representation of jar MDC2.4 contents.

MDC2.4A

MDC2.4A-1	Band
MDC2.4A-2	Band
MDC2.4A-3	Band
MDC2.4A-4	Band
MDC2.4A-5	Band
MDC2.4A-6	Band
MDC2.4A-7	Band

MDC2.4B

MDC2.4B-8	Band
MDC2.4B-9	Band
MDC2.4B-10	Band
MDC2.4B-11	Band
MDC2.4B-12	Band
MDC2.4B-13	Band
MDC2.4B-14	Band
MDC2.4B-15	Rectangular fabric
MDC2.4B-16	Rectangular fabric
MDC2.4B-17	Two bags of natron

Table 4. Listing and distribution of jar MDC2.4 contents.

Bands MDC2.5-1 and MDC2.5-2 may have been part of the same lateral with selvedge. Although the width varies slightly, possibly due to the state of preservation, the combination of these fragments would result in a band approximately 62 cm long and 9 cm wide.

Bands MDC2.5-3 to MDC2.5-5, all with selvedge, could also be part of a high quality fabric, as they share characteristics such as high and uniform weave density, thread diameter and tonality. They also have a similar width. The sum of the lengths of these bands would provide a piece of at least 62 cm in length and 9.5 cm in width.

Bands MCD2.5-8 and 5-9, which exhibit similar properties, would collectively reach a

total length of at least 102 cm and a width of between 7 and 8cm.

As for MCD2.5-13 and 5-14 bands, the combination of the two would result in a length of at least 156 cm and a width of 6 cm.

Adding all these measurements, it can be estimated that the sum of these fabrics would cover an approximate surface of 1.50 m² (fig. 44).

These characteristics not only highlight the cohesion and uniformity of the contents of this jar in relation to the rest of the deposit but could also provide valuable clues about the mummification process. The absence of resin and the presence of poorly adhering soils in these high-quality fabrics could reflect specific practices of preparation and conservation of some materials used in the rituals.



Figure 41. Contents of jar MDC2.4 on a surface of 1.20 x 1.20 m. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

6 | General State of Conservation of the Fabrics

The state of preservation of the textiles in the C2 mummification deposit is uniformly common, as is their average quality, so their condition must be closely linked

to the use they had in the process. The most worn pieces, the ones preserved here, would be destined for specific functions, while the newer and better-preserved ones would be reserved for wrapping the body of the deceased, and are not found in the deposits.



Figure 42. Not flattened fabrics from jar MDC2.4. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

The contents of the five jars are composed of the textile material used to clean and collect the remains of the products used in the mummification and present concretions and stains of the products involved in the process and that have influenced their conservation, soiling, hardening and breaking these fabrics.

In some cases, these products seem to have been used in a rather thick state, leaving dark and shiny accumulations mixed with natron

or sand. In other cases, they would have been used in a more fluid state, impregnating, soaking and darkening the fabrics. In this report the term “resins” will be used generically to refer to this material that impregnates the bands, although there may be several different products in each case or a combination of these.

All the jars present dirty, dark and slimy pieces, but there are also clean, clear and

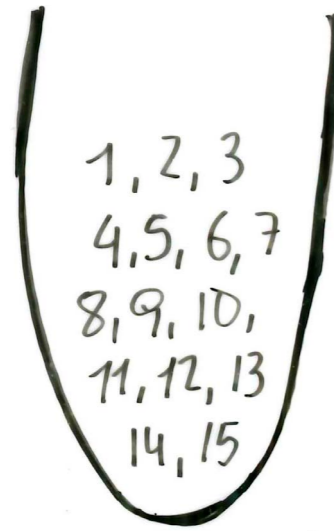


Figure 43. Schematic representation of jar MDC2.5 contents.

flexible bands, as well as natron bags, suggesting the introduction of material corresponding to different phases of the work. The exception is jar 5, whose contents consist of clean strips.

Overall, the different stages of the process would provide the fabrics with varied aspects: the initial purification and washing of the body would leave the fabrics clean, as they would presumably be done with water (fig. 45).¹⁴ During evisceration, it is likely that fragments of linen were used, which would be left dirty, possibly with traces of organic material (fig. 46). During the drying process, large quantities of natron and sand would be used, which could be used either to be introduced inside the body—in bags—or to cover it. The elimination of these

MDC2.5

MDC2.5-1	Band
MDC2.5-2	Band
MDC2.5-3	Band
MDC2.5-4	Band
MDC2.5-5	Band
MDC2.5-6	Band
MDC2.5-7	Band
MDC2.5-8	Band
MDC2.5-9	Band
MDC2.5-10	Band
MDC2.5-11	Band
MDC2.5-12	Band
MDC2.5-13	Band
MDC2.5-14	Band
MDC2.5-15	Remains of bags of natron

Table 5. Listing and distribution of jar MDC2.5 contents.

second substances would be carried out with linen fragments, which would be left with superficial concretions of sandy aspect (fig. 47). In addition, a certain amount of an earthy-looking material is usually found among the fabrics. Given its presence inside the fabric blocks, it seems unlikely that it is the sediments of the site, suggesting rather that it is a product used intentionally in the mummification process, possibly the natron or sand mentioned above.

After the body was emptied and dried, resins and ointments were applied to give it flexibility and a pleasant aroma. The fabrics used in this procedure would be highly impregnated with these substances, with an odour that—in the case of this deposit—has survived to the present day (fig. 48).

¹⁴ For this purpose, it does not seem that having direct access to water was an indispensable condition for the location of the mummification workshops, but rather their proximity to the necropolis. Andrews (2004: 16) mentions the possibility that the first mummification workshops were temporary structures with access to water, in the West Bank, in necropolis zones far from populated areas. However, two large mummification workshops have recently been excavated in the necropolis itself, in Saqqara dated between the late 30th Dynasty and the Ptolemaic period, (https://historia.nationalgeographic.com.es/a/hallan-egipto-espectacular-deposito-materiales-antiguos-embalsamadores_17725) where direct access to water is not so clear.



Figure 44. Contents of jar MDC2.5 on a surface of 1.20 x 1.20 m. Photograph: Proyecto dos cero nueve / J.M. Barrios Mufrege.

Those in the lower part of the jar filling were darker and more tightly packed due to the hardening of the resins, had a high cohesion, in extremely compacted blocks (fig. 49) and often retained the shape of the bottom of the vessel (fig. 50). In contrast, natron bags and looser fragments were located in the upper part of the assemblage. The gums are softened with water and the resins with alcohol. Therefore, in the process of separating each piece from the block to which it was attached, the combination of water and alcohol has generally been effective.

The materials recovered may present tears, losses, dirt, and in some cases it is impossible to determine if the length obtained is the original or if they have been fragmented in the ancient processes of mummification or in the present conservation works.

Conclusions

Although their finding is not unusual in the Theban necropolis, especially for the Late Period,¹⁵ mummification deposits have not attracted the attention of researchers

¹⁵ Aston 2003: 153–155.



Figure 45. Example of clean cloth (MDC2.5-2).

Figure 46. Example of dirty cloth (MDC2.1B-4).

Figure 47. Example of band with natron and sand deposits (MDC2.4A-3).

Figure 48. Accumulation of resins and soil (MDC2.1B-22).

Figure 49. Fabrics impregnated with resins and ointments (MD2C.3B-8 to MD2C.3B-15).

Figure 50. Block of fabrics with the shape of the bottom of the jar (MDC2.4B).

Figure 51. Block with natron bags (MDC2.1A-3).

until very recently.¹⁶ Even those found in such an emblematic area as the Valley of the Kings did not merit greater scientific interest until the discovery, in 2005, of KV 63.¹⁷ The deposit associated with Tutankhamun in KV 54, discovered twenty years before his tomb, was not identified as such at the time, and the contents of its jars were inappropriately emptied to live up a meal.¹⁸ Neither were the similar findings in KV 36 and KV 46 adequately assessed.¹⁹ Today, this situation is reversing and mummification deposits are seen as the main source, along with the mummified remains themselves, for studying the embalming process from an “archaeological perspective”.²⁰ The main studies conducted on them cover the classification of deposits according to location, method of deposition and containers,²¹ the containers themselves,²² the materials that formed the contents of the deposit,²³ as well as analysis of substances and organic and inorganic remains present in the fabrics (plants, parasites, residues of materials used in the mummification process, fluids).²⁴

This article has focused on the study of the unfolded fabrics themselves, their typology

and characteristics of the weave, as well as their arrangement inside their corresponding jars which, by way of summary, are shown in tables 6 and 7. In the final count it would be necessary to also incorporate a certain number of fabrics that could not be recovered in each jar. These fabrics formed balls or bundles of different sizes with which it has not been possible to work due to their poor state of preservation and fragility or because they were too densely packed and adhered to each other with large amounts of very hardened resins.²⁵

The fabrics deposited in the jars could add up to approximately 6 m² of surface area. Considering the volume of the most commonly used pieces of garments, this deposit would have contained the equivalent of a tunic and a large skirt.²⁶ However, the absence of proper borders and hems does not allow us to relate them to specific garments, suggesting instead that the linen content consists of fragments obtained from different pieces, probably in poor condition due to use and of average quality, which were reused in the mummification workshop. This is only logical

¹⁶ Budka 2006: 85.

¹⁷ Eaton-Krauss 2009.

¹⁸ Winlock 2010: 26–28, 21–22; Allen 2003: 23.

¹⁹ Allen 2003: 24.

²⁰ Chapman 2017: 165.

²¹ Aston 2003; 2011; Budka 2006.

²² Ikram and López Grande 2011: 205–228.

²³ Chapman 2016.

²⁴ Lauer and Iskander 1955: 167–194 and Harter et alii 2002: 119–121; Iskander and Shaheen 1964: 204–208; 1973: 71–76.

²⁵ The ratio of non-individualized fabric bundles in each jar is as follows:

Jar MDC2.1: 12 small bundles of very fragile groups of fabrics.

Jar MDC2.2: 8 medium-sized bundles of very fragile fabrics.

Jar MDC2.3: 1 large bundle with a large amount of resin.

Jar MDC2.4: 7 bundles of different sizes with fragile fabrics tightly packed together with resins.

Jar MDC2.5: 1 bundle of fragile fabrics.

²⁶ The measurements in the most common pieces of fabric are (Hall 1986; Donadoni Roveri 2001):

Small tunics: 2.45 x 0.75 = 1.80 m²; large tunics: 3.00 x 1.20 = 3.60 m².

Small skirts: 1.20 x 0.60 = 0.72 m²; large skirts: 3.00 x 0.80 = 2.40 m².

Small rectangular canvases, multipurpose: 1.20 x 0.55 = 0.66 m²; large canvases: 1.90 x 0.75 = 1.42 m².

On this subject see also Vogelsang-Eastwood 1992.

Type of piece	Jar MDC2.1	Jar MDC2.2	Jar MDC2.3	Jar MDC2.4	Jar MDC2.5
Bands	24	12	10	14	14
Bags of natron	3	7	4	3	1
Rectangular fabrics	2	2	0	2	0
Small rounds packets	2	1	0	0	0
Blocks with non-individualized fabrics	12	8	1	7	1
Total measured surface	1.5 m ²	1.5 m ²	1.0 m ²	1.5 m ²	0.5 m ²

Table 6. Textile contents of jars MDC2.1 to MDC2.5.

Characteristics of the fabrics	Jar MDC2.1	Jar MDC2.2	Jar MDC2.3	Jar MDC2.4	Jar MDC2.5
Seldvedges	0	10	2	3	10
Bands without selvedge	14	2	6	9	3
Hem	2	0	0	0	0
Starting border	0	0	0	1	0
Self band	3	2	0	0	1
Fringe	5	3	0	0	1
Reinforcement stitches	0	1	0	0	0

Table 7. Main characteristics of the fabrics of jars MDC2.1 to MDC2.5.

since, given the purpose for which they were intended, it does not seem reasonable that high quality and new fabrics were used in this phase of the mummification process. For the same reason, the author of this article considers that the economic status of the deceased cannot be directly deduced from the fabrics contained in the deposit.

The fabrics were carefully torn to obtain certain products, which, in this case, are bands, natron bags, rectangular pieces, and, in two jars, “stamp-bags” impregnated with resin (MDC2.1 and MDC2.2), to be used throughout the mummification process. During the mummification process, the embalmers carried out various tasks: washing, evisceration, drying of the corpse, application of oils, stuffing and wrapping of the body. These activities involved time intervals between each other, in some cases of long duration. A first hypothesis to explain the varied content of each jar

is that it corresponds to different moments during the long stay of the body in the mummification workshop. It implies either the conservation of the pieces in some space in the workshop if the jar was filled at the end of the process, or an introduction of the material at the end of its use and it was the half-filled jars that had to be conserved in the vicinity of the workplace.

All the jars (with the exception of MDC2.5) show a similar combination of contents: clean bands, dirty bands, a rectangular cloth and natron bags or sachets, in addition to the stamp-bags. In general, it is observed that at the bottom of the jars there are large blocks of dirty and slimy cloths. Next, the natron bags are arranged in greater or lesser quantities, followed by other looser and cleaner fabrics. If a relationship is established between these pieces and the different phases of the mummification process, the result would be that

in the purification and washing of the body, clean fabrics would be used that would not be excessively stained in the process and would correspond to those that appear in the upper part of the jar; evisceration and internal washing would result in dirty fabrics, which appear at the bottom of the jars; in the phase of dehydration and internal drying, the natron would be used, wrapped in cloth bags, without resin and fluid remains, which are located in the upper part of the container; finally, during the application of resins, dirty fabrics would be obtained again and the stamp-bags, located at the bottom of the jars. The rectangular pieces found in three of the jars raise questions about their usefulness and use in the process.

The repetition of this sequence in four jars of the deposit could indicate repeated work processes, perhaps carried out by different people who deposited the material with which they had worked in “their” jar or that the fabrics used were reserved and, at the end of the day or the whole process, were collected in those containers. However, from the above correlation it seems to be deduced that the introduction would not respond to the known sequence of the mummification process, but that the disposition of the fabrics would rather obey the state in which the fabric was left at the end of the process: the dirtiest were deposited at the bottom and the cleanest at the top of the containers.

In any case, the observation of similar contents in this set suggests the existence of standardized procedures in the selection and introduction of the materials in the jars that could obey to a different cause. With the exception of the large accumulations of jars (361 and 183) found in the temple of Sethy I, the number of vessels that usually constitute the mummification deposits in the Theban necropolis range from a single container to

ten.²⁷ The small number of jars in these deposits suggests that their contents do not correspond to the totality of the material that must have been used in the complete mummification process. S. Ikram and M.^a J. López Grande have pointed out that perhaps only a part of all the material used was given to the relatives for their deposition.²⁸ Although these authors refer specifically to natron, it is possible to extend the argument to the rest of the materials used, such as textiles: the varied and systematically repeated contents of each of these jars (bands, cloths, natron bags) could correspond to a selection, a sample, of some of the types of material used by the embalmers in their work and given to the family for burial as part of the funerary ritual.

On the other hand, if, as has been suggested,²⁹ the embalmers and their workshops were responsible for the selection of the contents of the mummification deposits, the repetition of the same combination of materials in the five jars of deposit MDC2, their homogeneous distribution and the care in their placement could be a distinctive characteristic of the mummification workshop to which the work was commissioned and an indicator to identify other deposits that may be attributed to that workshop.

The fact that it was not necessary to deposit all the materials used in the mummification process, but only a sample of them, would indicate a change in the funerary practices of the Late Period. This change would obey religious reasons, undoubtedly, but also economic, since it would reduce the cost of burying a high number of containers. It is also probable that the number of containers provided by the workshop influenced the final price of the service, which, together with the type of deposit, could explain the little

²⁷ Chapman 2017: DataBase.

²⁸ Ikram and López Grande 2011: 218.

²⁹ Ikram and López Grande 2011: 216 and 218.

difference in size and the small number of vessels found in the deposits.³⁰

The great variety of the published mummification deposits, together with the disparity in the register and in the description of the deposits and their contents complicates the comparison between them and the possibility of drawing conclusions to answer the multiple questions that they raise about the customs, rituals and funerary services in the Late Period. The appearance of a new deposit in the vicinity of TT 209 during the 2022 season will be an opportunity to compare two very close deposits, both in terms of location and chronology, and to verify the presence or absence of some of the characteristics observed in MDC2, which may corroborate some of the interpretations raised here or open new lines of research.

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³⁰ Budka 2006: 94.

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