

The *Jaboncillo* Gypsum Plaster in the Traditional Architecture of the Northwest Region of Murcia (Spain): History, Technique and Conservation

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Abstract

Plaster has been a fundamental material in the Murcian region architecture, playing a significant role both in past and present. Its historical use includes various techniques that not only embellish local constructions, but also add functionality to spaces. Among these techniques, stands out «The jaboncillo», a traditional method of exterior cladding characterized by its smooth and glossy finish that imitates marble. This finish reflects the cultural and architectural richness of the region, integrating itself into the local identity. The jaboncillo is used in the architecture of the Northwest region of Murcia (Moratalla, Calasparra, Caravaca de la Cruz, Bullas and Cehegín) until the 1990s. This technique is relevant not only for its physical and aesthetic properties, but also for its deep connection with the regional culture. The research will focus on 'jaboncillo' technique, analyzing its construction characteristics and its current state of conservation, carrying out a bibliographic and historical review to analyze the literature of this technique and document examples of «The jaboncillo» in the Northwest of Murcia. It is essential to understand how this technique has been applied in the historical architecture of the region, especially on the facades of emblematic buildings that form a part of Murcia's cultural heritage. An essential aspect of this research is the review of the history, evolution and applications of The jaboncillo, as well as the identification and classification of the main pathologies and deterioration processes affecting this material in historic buildings. The aim is to provide a comprehensive understanding of «The jaboncillo» technique and its application in the historic architecture of the northwest region. By examining the pathologies, we seek to preserve a valuable heritage and promote the continuity of the cultural identity of the región, as well as rescue its associated intangible heritage.

Keywords: plaster; jaboncillo; Cehegín; technique; conservation

1. Introduction

The *jaboncillo* gypsum is a traditional coating technique widely used in the architecture of the Northwestern Region of Murcia (Moratalla,

Calasparra, Caravaca de la Cruz, Bullas, and Cehegín), especially in old residential mansions.

This material was appreciated for its marble-like effect and its ability to provide façades with a distinctive texture and tonality.

1.1. The North-West region

The Northwest Region of Murcia, located in the extreme northwest of the province, borders the provinces of Albacete, Granada and Almería. It is composed of the municipalities of Bullas, Calasparra, Caravaca de la Cruz, Cehegín, and Moratalla (Fig. 1) and possesses a rich history that has profoundly influenced its construction techniques and use of materials over the centuries. During the Roman era, constructions reflected the use of local materials such as stone and gypsum, due to the mountainous terrain and an architectural tradition linked to local resources. After the Reconquest in the 13th century, the exploitation of natural resources such as wood and minerals intensified, impacting architecture and construction (Águila Guillén et al., 2018).

By the end of the 19th century, mining activity in the Northwestern mountains boosted the exploitation of deposits and natural resources of the region (Ruiz & Serrano, 1999). Gypsum, abundant in the region, has been fundamental in the construction of walls, ceilings, and ornamentation because of its capacity to regulate humidity, making it ideal for the local climate.



Fig. 1 – Location of the north-west region (Murcia) (Instituto Geográfico Nacional, 2007).

1.2. “The *jaboncillo*” in the Northwest region of Murcia, past and present

Jaboncillo gypsum is a coating technique with a long tradition in Spanish architecture, particularly in the Northwestern Region of Murcia. Despite its historical and heritage value, its origin and composition have not been fully documented. The first written reference dates back to the 18th century, when master Alonso Jiménez de la Fuente used it in the Casa Jaspe of Cehegín (Alcázar, 1991), describing its application and noting that even then it was already considered an outdated technique. At the end of the 20th century, some vocational schools attempted to recover the technique using gypsum, pigment, and talc, but there are no records of its continued use in the 21st century (Sandoval, 2023).

This technique has gradually disappeared due to the lack of written documentation and the loss of oral transmission between masters and apprentices, a traditional teaching model that has vanished with the industrialization of construction. Recent studies highlight that the lack of specific training in the conservation of these types of coatings has led to the application of inadequate techniques (Sandoval, 2023), such as the use of industrial cements in restorations, accelerating deterioration instead of preserving the material.

2. Objectives and methodology

This study aims to deepen preliminary knowledge of the *jaboncillo* gypsum technique in the Northwestern Region of Murcia, analyzing its evolution, conservation state, and potential intervention strategies. To this end, the following objectives are proposed:

- Analyze the history, evolution, and applications of the *jaboncillo* gypsum technique in Northwestern Murcia.

- Identify the use of gypsum and *jaboncillo* techniques in the Northwestern Region.
- Study and classify the main pathologies and deterioration processes affecting *jaboncillo* gypsum in historic buildings in Cehegín.
- Evaluate intervention methods compatible with the properties of *jaboncillo* gypsum to ensure the conservation of its historical and aesthetic value.

The study has been structured into three main approaches: documentary research, fieldwork identifying pathologies in the specific case of Cehegín, and a preliminary evaluation of conservation methods. Thus, a descriptive-deductive methodology has been developed.

3. The traditional technique of *jaboncillo* gypsum plaster

Gypsum has played a significant role in the Region of Murcia, both in its historical use and in contemporary techniques. Among them, the *jaboncillo* gypsum stands out as a traditional coating technique used in the architecture of Northwestern Murcia.

3.1. History and definition

The *jaboncillo* gypsum technique has an uncertain origin but was widely used in the Northwestern Region of Murcia. It is based on two fundamental materials: gypsum, extracted from local quarries, such as the Pateta Gypsum Quarry in Cehegín, operated by the Muñoz family (La Spina, 2016), and *jaboncillo*, derived either from pine resin, a common species in the region, or, more recently, talc, a white mineral. Its commercialization facilitated its use in exterior coatings, where pigment acquired importance, adapting the technique to new materials and environmental conditions to improve the durability of historic façades.

In its traditional form, the glossy finish was achieved through a laborious process of

polishing with a trowel. In its contemporary evolution, the use of talc subtly modified its texture, maintaining its silky and satin appearance.

3.2. Composition and properties

Composition: *Jaboncillo* gypsum is a mixture of gypsum, water, pigments, and *jaboncillo*. In interiors, *jaboncillo* is documented as colophony (pine resin), which, along with polishing, provided brightness. In exteriors, white talc has been used since the 20th century to improve resistance (Alcázar, 1991).

The gypsum, abundant in the region, has a low hardness ($H=2$ on the Mohs scale) and a water solubility of 2.05 g/L at 20°C (La Spina, 2016).

Natural pigments were key in the decoration of façades: ochre tones from iron oxide and limonite, reddish hues from almagra and hematite, and blues from indigo, although less frequent due to their high cost. For gray tones, charcoal or ash was used, and over time, exposure to the elements caused chromatic changes through oxidation (Sandoval, 2023).

Properties: *Jaboncillo* gypsum is lightweight, easy to work with, and offers a shiny finish. It was historically used in ornamental coatings for its durability and aesthetic appeal. Due to its gypsum base, it has low thermal conductivity, making it fireproof; when exposed to fire, it releases water vapor, delaying the spread of heat and improving fire resistance. Its porous structure also provides good thermal and acoustic insulation, absorbing and attenuating sound, improving the soundproofing of spaces (La Spina, 2016).

3.3. Technique and craftsmanship

Gypsum stuccoes were used in Europe from the 16th to 19th centuries to imitate noble stones, using pure gypsum, pigments, and additives (Portillo et al., 2022).

Among them were embedded stuccoes with inlays of different colors and textures, and mass stuccoes with pigmented mixtures polished to a bright finish (Fornés, 1857). *Jaboncillo* gypsum can be considered a mass stucco, applied in thin, polished, pigmented layers to achieve similar finishes.

These techniques were deeply rooted in the local culture, maintaining the architectural tradition of the region until the 1990s when the craftsmanship of this technique was lost (Sandoval, 2023).

In the specific case of *jaboncillo* gypsum, it was used to coat and decorate walls and ceilings, both indoors and outdoors (Sandoval, 2023). Its application began with sample preparation to define the tone, followed by the dry mixing of gypsum and pigment, forming a solution diluted in water known as “creciente.” The gypsum was spread, imperfections corrected, *jaboncillo* sprinkled, and polished with a trowel in three passes (Espín, 2010).

Traditionally, *jaboncillo* gypsum was applied in thin, polished layers, achieving smooth, resistant surfaces. Over time, the number of layers and thickness of the coatings were reduced (La Spina, 2015).

The technique evolved depending on geographic context and material availability—from traditional methods using hand-ground gypsum and natural resin to modern methods using industrial gypsum, talc, and water repellents (Alcázar, 1991).

Despite its historical roots, the technique has fallen into disuse due to the introduction of industrial materials and the loss of knowledge about its application.

4. Case study: Historic centre of Cehegín

The historic center of Cehegín, declared a Historic-Artistic Site in 1982, stands out for its architectural richness, composed of numerous

palaces built between the 17th and 19th centuries (Espín, 2010).

The use of gypsum was conditioned by its abundance in the region, extracted from nearby quarries, and by the artisanal tradition that transmitted the techniques. In Cehegín, the quarry operated by the Muñoz family, owners of Yesos Pateta, has been active for more than three generations. Although production is now industrial, the artisanal process knowledge is still preserved.

The gypsum kilns of this quarry (Fig. 2), built between 1965 and 1967, operated with a traditional system, using masonry kilns. Grinding was done manually with iron mallets or mechanical crushers. The last batch in these traditional kilns took place in the 1970s (La Spina, 2016).



Fig. 2 – Traditional ovens in Cehegín, Murcia (Grau & La Spina, 2016).

4.1. Documented examples of *jaboncillo* gypsum plaster

Along the emblematic streets of Cehegín's historic center (Fig. 3), various applications of the *jaboncillo* gypsum technique can be observed.

The Casa Jaspe, located in Calle López Chicheri, is a late 18th-century Baroque building whose *jaboncillo* gypsum façade imitates jasper stone in a pinkish tone with veins.

This solution was used to imitate ashlar in jambs and lintels, while the upper part presents a simple ochre-toned finish, with color variations possibly caused by moisture (Alcázar, 1991).

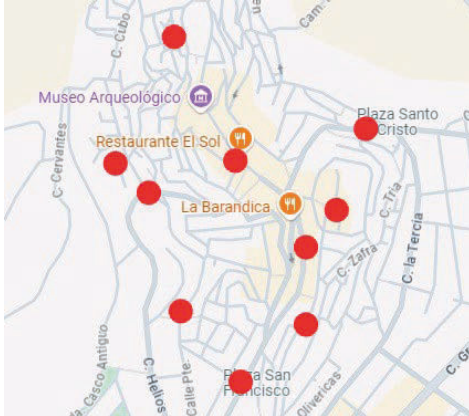


Fig. 3 – Cehegin visitor points (Google Maps).

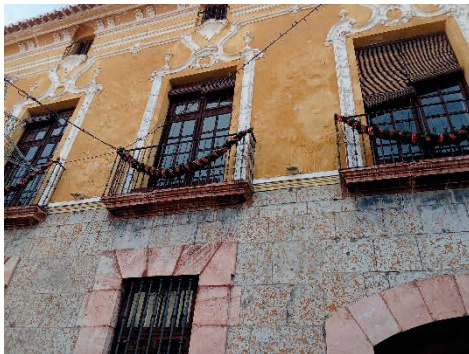


Fig. 4 – Façade of the Casa Jaspe, López Chicheri Street, Cehegin (Nezreg, 2024).



Fig. 5 – Façade of the Casa de las boticarias, Cehegin (Nezreg, 2024).

On the same street, La Casa del Conde de Campillos, a 19th-century neoclassical building, preserves much of its grayish *jaboncillo* gypsum façade (De la Ossa & Pérez, 1993), contrasting with white openings, although it shows cracks and detachments at corners and openings. On Calle Mayor, from the 17th-18th centuries, features a beige-ochre *jaboncillo* gypsum coating, combining Baroque and Neoclassical elements (García, 2002), although it shows worn areas and material loss.

In Cuesta del Parador Street and Cuesta Moreno (Fig. 6), façades stand out with reddish-toned *jaboncillo* gypsum, derived from iron oxides or almagra. Some areas maintain their original color and texture; others show cracking and detachment, especially in zones most exposed to humidity and thermal changes.



Fig. 6 – Façade of a house with *jaboncillo*, Cuesta Moreno Street Cehegin (Nezreg, 2024).

The architecture the historic center of Cehegin, shows the richness of the *jaboncillo* gypsum in its architecture, as well as the need for its conservation.

4.2. Main degradations processes

The various damages affecting *jaboncillo* gypsum are derived from environmental, construction, and maintenance factors:

Detachments and loss of material: The degradation of *jaboncillo* gypsum is due to humidity, soluble salts and thermal fluctuations, which causes the progressive loss of its surface layers, leaving the masonry exposed (La Spina, 2016). It is the case of the façades of the façades of López Chicheri and Cuesta Moreno streets, where advanced erosion and lack of maintenance have accelerated their deterioration.

Cracks and crazing: Caused by structural movements. They can be classified as microcracks (affecting only the surface) and structural cracks (compromising the stability of the coating).

Surface cracks have been identified in buildings such as the Casa Jaspe, and the Palacio de los Condes de Arriba (Fig. 7), where cracks have facilitated water infiltration, accelerating the degradation of the material.

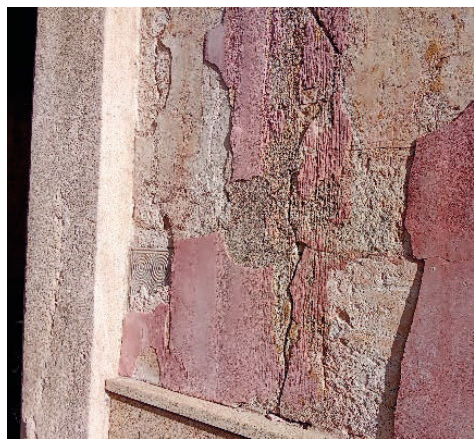


Fig. 7 – Palace Los Condes de Arriba, López Chicheri Street, Cehegín (Nezreg, 2024).

Exfoliation and lamination: Exfoliation and lamination of *jaboncillo* gypsum, occurs due to water infiltration and temperature changes, generating internal stresses that lead to the detachment of surface layers. This problem is common in areas with high humidity and can be seen in buildings such as the Jasper House and houses on the High Street, where the gypsum

peels off in layers, exposing the internal layers of the material.

Salt efflorescence formation: This phenomenon occurs when water carries dissolved salts to the surface, where they crystallise and progressively degrade the coating (La Spina & Grau, 2018). They manifest themselves in the form of whitish stains that not only affect the aesthetics of the material, but also contribute to its disintegration. In Cehegín, the Casa del Conde de Campillos and other buildings in López Chicheri street, Cuesta Moreno street, and the main street, show visible efflorescence.

Chromatic alteration and staining: *Jaboncillo* gypsum can suffer chromatic alterations due to exposure to UV rays, contamination and pigment degradation, manifesting in darkening or staining due to run-off and dirt (La Spina, 2018). The Casa de las Boticarias shows variations that affect the homogeneity of the original cladding.

Inadequate repairs: Interventions with incompatible materials, such as plastic paints, cements or mixtures of gypsum, cement and water, which generate disruptive "ettringite" salts, have caused significant damage to many plaster façades. These modern materials impede the breathability of the plaster, trapping moisture inside and generating additional spalling and cracking (Sanchez, et al., 2001).

5. Preliminary assessment of conservation methods

The conservation of gypsum in historical buildings has been the subject of various studies aiming to preserve the material without compromising its authenticity or physical-chemical properties.

The conservation of *jaboncillo* gypsum requires an approach based on material compatibility, support breathability, and respect for the original application technique.

5.1. Assessment of compatible intervention strategies

Reintegration with traditional plaster mortars: Studies have demonstrated that traditional gypsum mortars are the best option for the reintegration of deteriorated areas, ensuring cohesion, adhesion, and compatibility with original coatings (La Spina, 2016). When applied in compacted layers, they preserve the appearance and mechanical properties (La Spina & Grau, 2018).

Their use in restoration has been revived in Albarracín, where an artisanal kiln produces gypsum with natural impurities that improve resistance to atmospheric agents (La Spina, 2015).

Application of breathable water repellents: In many cases, it is not recommended to apply water repellents to gypsum, as they may alter its ability to absorb and release moisture naturally. Some stabilisers, such as silicates, are incompatible with gypsum mortars and surfaces with conventional paints, so the choice of water repellent must consider compatibility with the base material (Solà et al., 2015).

In the Casa Jaspe, the water repellent Durcidry, an aqueous solution based on potassium methylsiliconate, was applied, protecting the plaster without affecting its breathability or colour, and was applied by brush or roller on dry surfaces.

Removal of incompatible materials: The use of cements, acrylic paints, and synthetic varnishes has sealed gypsum surfaces, preventing water evaporation and accelerating degradation (La Spina, 2016).

To reverse this damage, non-invasive cleaning techniques are used, such as mechanical removal with fiberglass spatulas or the application of specific gels that dissolve coatings without affecting the original material (La Spina, 2016).

6. Conclusions and reflections

Traditional Spanish gypsum is at risk of disappearing, affecting both architecture and the associated knowledge. Moreover, its scarce availability and high cost have limited its application to heritage restoration projects (La Spina, 2016). The conservation of *jaboncillo* gypsum requires strategies that combine traditional and modern techniques, adapted to each context. Its preservation faces challenges such as the lack of maintenance and the replacement of traditional methods. Thus, the dissemination of knowledge, the training of specialists, and the implementation of maintenance programs are key to ensuring the sustainability of *jaboncillo* gypsum in built heritage (Sandoval, 2023).

Recovering its application in future restorations is essential to guaranteeing its continuity and enhancing its value in the region.

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