

Abstract

"Traditional process of slaking lime"

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A new interest in the preservation of the mortars, plasters and decorative finishes of façades has emerged in certain European countries in the past thirty or forty years, with a view to understanding how they have evolved throughout history. There is a growing interest in learning about the composition and techniques of original surfaces and a number of Institutions have encouraged the systematic application of conservation in this area.

In Portugal, there are many original renders and plasters which give to the buildings a special look. Due to the aesthetic value of these façades, we need to become acquainted with ancestral techniques. Following this more modern trends, we must look for authenticity in intervention and not eliminate the original surfaces. Also if we look for economic and sustainability aspects we know that is important to maintain the materials. Besides those aspects, there are problems of compatibility that come from the introduction of new materials and techniques, which sometimes cause greater damage to the old masonry than that which already existed.

Throughout history, lime has played an unique role in the building sector, and we cannot look at it as merely a "traditional material", because it is, in fact, a high quality building material.

Cement, discovered in the first half of the 19th century, started only to be used in Portugal's architectural surfaces in a more widely way during the 50's and the 60's of the 20th century.

Probably due to its cost, cement was first introduced in works where a hydraulic quality was fundamental due to the constant presence of water, septic tanks, water and sanitary infrastructures. Later, it started to be added to limes and sand, creating hydraulic mortars. From the 70's onwards, cement became the main binder, a tendency that is changing nowadays in patrimony interventions, once lime-cement mortars are back, and also, to a lesser extent, air lime mortars.

Up to the 20th century, limes were preferentially used in work as lime putty. After the transformation of quicklime into lime putty, it was stored to maintain its characteristics. Tanks or large pits were used to store the lime putty, always covered with water in order to prevent its carbonation. The quality of the material was guaranteed for many years with this process. In the villages of south of Portugal even today it is common to find a jar or a tank where the lime used for whitewashing is stored from one year to the next.

Another traditional method used was the slaking of quicklime added to sand. Oral records have revealed that this binder was added to sand in the previously defined volumetric proportions and the mortar remained humid for as long as necessary, and was used as work progressed. The necessary amount of water was added in order to provide the workability needed for its application. In this way, lime matured with the passing of time.

The evolution of the storage processes for materials has led to a change in this procedure and in most cases binders are used as powders. Slaking of lime is industrialised and the powder product is stored in Kraft paper bags, in order to prevent its contact with the carbon dioxide of the atmosphere.

The aim of this paper is to present some results obtained using the process of slaking quicklime added to sand and letting it age in different slaking periods, and compare to the other processes, ageing lime putty and hydrated lime. For this purpose, some physical and mechanical characteristics were analysed.