

Natural cement in the nineteenth century city of Madrid. Identification of their application, conservation status and their compatibility with modern cements.

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Roman cement was patented in 1796 and it arrived to Spain in 1835.

Although the natural cement used in Madrid came mainly from Guipúzcoa's factories, there were a few small factories producing natural cement in the area. In the south east of Madrid, in "Morata de Tajuña", are the marl quarries of the Madrid Community.

Natural cement was extensively used to decorate buildings in Madrid during the 19th century and the beginning of the 20th.

It was highly demanded in various sectors of civil engineering: sewerage, water supply, canals, ports and tunnels. In the building sector, at first the use of cements was limited to building foundations and masonry mortars, but never as render mortar because it was considered an unsightly and vulgar material. For renders still traditional lime mortar was used. And is not till the end of the 19th century when it was used in facade decorations for the first time.

We have analysed 25 buildings in Madrid built in that period of time.

It was used microscopy techniques for the identification of these cements, checking how many of them used natural cement, how they used it, what is its conservation status and their compatibility with modern cements.