



White Macael marble: a key element in the architectonic heritage of Andalusia for over 25 centuries

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Marble from Macael (Andalusia) is one of the most important natural stones in the architectonic heritage of Andalusia; in particular the variety commercially known as “White Macael”. This natural stone has been used outdoors as well as indoors for decorative, ornamental or structural purposes. During the 7th century (B.C.) the Phoenicians began to systematically extract these quarries to be used in their more social important elements such as sarcophagus. During the Roman period this rock had a greater importance in construction; we find columns, pavements, tombstones. . . in many historical buildings such as the Roman amphitheatre in Mérida (1st century B.C.) and the city of Itálica in Seville (3rd century B.C.). But it is during the Muslim period when marble from Macael is more widely used: the Mosque of Córdoba (8th century), the Lions Court in the Alhambra palace, the Alcazaba in Almería, the Medina-Azahara palace in Córdoba (10th century). Other important buildings using the white marble are: Carlos V palace or the Royal Chapel in Granada (15th century), the Almería cathedral or El Escorial monastery in Madrid (16th century), San Telmo palace in Seville (17th century) or The Royal Palace in Madrid (18th century). Uncountable number of buildings, both historical and contemporary, show different elements made of this marble. From a geological point of view, the quarries are located in the upper part of the Nevado-Filábride Complex, the lowest nappe of the Internal Zones of the Betic Chains. Under the “White Macael” name is also possible to include another commercial denominations such “White Macael Río” or “White Macael Río Veteado”. It is a clear white coloured, calcitic marble (up than 97% calcite), with average grain size between 0,16 y 3,2 mm in a mosaic texture with a very homogenous aspect. Regarding the main physical and mechanical properties, this rock has an open porosity value between 0,1-0,6%, bulk density 2,50-2,75 g/cm³, water absorption at atmospheric pressure between 0,1-0,2%, compressive strength (dry) between 81,1-87,4 MPa, flexural resistance (dry) between 12,1-14,2 MPa and salt crystallization loss of mass of 1,25-2,20%. We suggest to consider this natural stone as Global Heritage Stone Resource because of its aesthetic characteristics, its optimal behaviour when emplaced in construction as can be evident throughout the more than 25 centuries of use of this rock all over the country, and because the volume of international trade and exploitation. Macael white marble can be considered the main ornamental rock in Andalusia.

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