



## **Porosity features of travertines from SE Spain used as building stone in construction and architectural restoration. Preliminary report.**

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This abstract presents the preliminary scientific and operational results of the Project CGL200605027 (MEC, Spain). The aim of this project is to evaluate certain coloured travertine resources from SE Spain for use as a construction material. The travertine varieties studied are distinguished by colour: Travertino Oro or Yellow Gold Travertine (Albox), a yellowish to brown travertine; Travertino Agata/Madera (Huércal-Overa), a brown to red travertine, and Red Travertine (Alhama de Almeria) which has some extremely homogeneous layers. These travertines are currently used as cladding and paving and Barcelona's El Prat International Airport is a good example of their application (Red Travertine).

For this study, several lithotects, which are or have been worked as this type of dimensional stones, have been selected. These lithotects correspond basically to rock mass generated by hot waters related to the activity of the faults within the Internal zone of the Cordillera Bética, some of which are active (earthquakes detected in January of 2007). In Albox, the travertine deposit is highly complex and formed in several stages, included in stage 8 ( $354 \pm 76$  ka) and pre-stage 8 according to García *et al.* 2002.

The travertines present a specific porosity defined by their petrographical characteristics, which in turn are brought about mainly by their biogenic nature and, consequently, by the organisms involved in its formation. The water absorption coefficient

values at atmospheric pressure of the travertines studied range from 0,8 to 3,6%. The porous system is formed by different porosity types, which are, according to Choquette and Pray's classification, fenestral porosity, framework porosity and intercrystalline porosity. Scarce interparticle porosity in some layers (micropeloidal grainstones) has been also recognized. The latter two porosities show a relatively isotropic distribution, whilst both fenestral and framework porosities provide the stone with anisotropic properties. Also, bioturbation processes create a vug porosity that may can be significant in the case of the Red Travertine. The connectivity, size and arrangement of fenestral, framework and vug porosity are complex and variable.