



Silicified Granites (Bleeding Stone and Ochre Granite) as Global Heritage Stones Resources from Avila (Central of Spain)

Jacinta Garcia-Talegon, Adolfo C. Iñigo, Santiago Vicente-Tavera , and Eloy Molina-Ballesteros
University of Salamanca, Salamanca, Spain (talegon@usal.es)

Silicified Granites have been widely used to build the main Romanesque monuments in the 12 th century of Avila city that was designated a World Heritage Site by the UNESCO in 1985. The stone was used in the Cathedral (12 th century); churches located interior and exterior of the Walls (e.g. Saint Vincent; Saint Peter). During the Renaissance and Gothic period, 15 th century Silicified Granites have been used mainly to build ribbed vaults in Avila city (e.g. Royal Palace of the Catholic Monarchs, and Chapel of Mosén Rubí).

Silicified Granites are related to an intermediate and upper parts of a complex palaeoweathering mantle developed on the Iberian Hercynian Basement (the greatest part of the western Iberian Peninsula and its oldest geological entity). In the Mesozoic the basement underwent tropical weathering processes. The weathered mantle were truncated by the Alpine tectonic movements during the Tertiary, and its remnants were unconformably covered by more recent sediments and are located in the west and south part of the Duero Basin and in the north edge of the Ambles Valley graben.

For the weathering profiles developed on the Hercynian Basement is possible to define three levels from bottom to top: 1) Lower level (biotitic granodiorite/porphyry and aplite dykes); 2) Intermediate level (ochre granite); 3) Upper level (red/white granite). The lower level has been much used as a source of ornamental stone, Avila Grey granite. The porphyry and aplite dykes are mainly used to build the Walls of the City. The intermediate level is called Ochre granite or Caleño and was formed from the previous level through a tropical weathering process that, apart from variations in the petrophysical characteristics of the stone, has been accompanied by important mineralogical changes (2:1 and 1:1 phyllosilicates) and decreases in the contents of the most mobile cations. The upper level has received several names, Bleeding stone, Red and White granite or Silcrete and was formed through a silicification process by CT opal, kaolinization and remobilisation of iron oxyhydroxides.

The historically and protected quarry is located in a village called La Colilla, about 5 km from the city of Avila. Currently, only this stone is exploited for restorations performed in the city e.g. The Walls (the best example of a military Romanesque Spanish architecture), the church of San Peter. Resources are limited and depleting so the stone will be scarce in the short term. Taking such points into account, it is suggested that Silicified Granite (Bleeding Stone and Ochre Granite) should be recognised as a Global Heritage Stone Resource