

The “Alpalhão Granite” (Alentejo, Portugal) as a Potential Ornamental Stone

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Abstract. “Alpalhão granite”, also called SPI, is used as a high quality ornamental stone for interior and exterior applications. It is fine grained and equigranular, and has disseminated feldspar phenocrysts showing a homogeneous bluish grey colour. The SPI was mapped and scanlines (14) and drill cores (4) were carried out for lithofacies and joints characterization, besides petrographical study. Three of the 5 granite outcrops were studied regarding their potential for ornamental blocks exploitation (Carvalhal, Pinheiral and Ribeira de Sor). The Carvalhal area has generally no potential, due to intense fracturing and frequent heterogeneities except for drill core SCA1 area. The Pinheiral area has been exploited in all its extent, but still assures 368,800m³ estimated resources of good granite at depth. Ribeira de Sor area presents a good potentiality for commercial blocks in the eastern zone and a limited potential in the western area due to subsurface fracturing and chromatic changes.

Introduction

The “Alpalhão granite”, also named SPI, is as an ornamental stone with remarkable characteristics such as textural uniformity and fine grain size, which make it relatively uncommon in the context of Portuguese ornamental stones. Apart from providing an aesthetically pleasing product, it satisfies high quality standards in terms of quality, namely durability and strength, allowing exterior and interior applications. This granite was exploited for many years in the Nisa area (Portalegre). It has been currently exploited in Fonte dos Bagos and Tapada Azul quarries. The latter quarry is labouring since 1974 and is one of the largest Portuguese ornamental granite quarries. The granite SPI is traded in Portuguese and international markets to be used as a natural building stone and for monuments and tombstone industry, particularly in Japan. The granite SPI occurs in 5 outcropping areas (2.71km²), which have been mapped and characterized before [1]. This study focuses on the 3 most promising outcropping areas, Carvalhal, Ribeira de Sor and Pinheiral, which totalize 2.09km², remaining the 2 other areas for a later research work.

The outcrops are small and sparse, rounded in shape, usually with a thin weathered surface layer. Apart from the Pinheiral area, which is mostly occupied by the Tapada Azul quarry, subsurface information is limited or inexistent, due to the absence of observation sites (e.g. quarries). Considering that the available information is limited to near surface in most of the area, the main goal of the present study is to contribute for the assessment of the granite SPI as an ornamental stone in the 3 areas, making use of core drilling, regarding an evaluation of its resources.

Geological Setting

The granites from this area belong to the Nisa Eruptive Complex (NEC) [2], which is located in the southernmost part of Central Iberian Zone of the Iberian Massif [3] and intersects the transition to the Ossa Morena Zone and the Coimbra-Córdoba shear zone [4] (Fig. 1).

The NEC is concentrically zoned. The Nisa Granite is a very coarse-grained porphyritic, two-mica monzogranite to syenogranite [4]. This facies occupies most of the batholith outcrop, surrounding four finer-grained granitoids, named as Gáfete and Alpalhão granites [1], Quareleiros