

## **INFLUENCE OF ANISOTROPY ON THE MECHANICAL PROPERTIES OF BAIXO ALENTEJO FLYSCH ROCKS (PORTUGAL)**

\*A. B. Pinho and I. M. R. Duarte

*Department of Geosciences, School of Sciences & Technology,  
University of Évora  
Rua Romão Ramalho, 59; 7000-671 Évora, Portugal  
& GeoBioTec Research Centre, FCT, University of Aveiro, Portugal  
(\*Corresponding author: apinho@uevora.pt)*

F. R. S. Rosa

*Department of Geosciences, School of Sciences & Technology,  
University of Évora  
Rua Romão Ramalho, 59; 7000-671 Évora, Portugal*

J. A. Rodrigues-Carvalho

*Department of Earth Sciences, Faculty of Sciences & Technology,  
New University of Lisbon  
Campus de Caparica; 2829-516 Caparica, Portugal*

### **ABSTRACT**

This paper aims to contribute to the knowledge of the mechanical properties of the shales and greywackes which constitute the flysch-type deposits of the Baixo Alentejo Flysch Group, in the south of Portugal. These formations are flysch-type deposits constituted by sequences of usually thick greywacke beds alternating with thin shale beds, which include sometimes intercalations of conglomerate beds. All the sedimentation of these flysch formations was controlled by tectonics. At the same time, should have occurred along with the first Hercynian deformation phase, a low-grade metamorphic event (chlorite zone), that affected these flysch deposits. This study highlights the influence of anisotropy and heterogeneity of these flysch rocks on their physical and mechanical characteristics. The anisotropy verified in some physical properties and on mechanical properties, due to the foliation makes difficult the sample preparation for the laboratory tests. Besides, it induces a scattering of the properties values measured, as for example, the strength and the deformability. The heterogeneity is related to the main features of these geological formations, which are constituted mostly by thinly stratified greywackes and shale beds, which sometimes may affect the results of the laboratory tests making them less representative. The study is made by using both shales and greywackes that constitute these flysch-type deposits in order to evaluate their geotechnical properties, mainly of the shales. Samples of these two rock materials, are tested accordingly a laboratory testing programme, which includes which included mineralogical analysis (X-ray diffraction), physical tests (bulk density, porosity, and void index) and mechanical tests (uniaxial compression, and deformability tests).

### **KEYWORDS**

Shales, greywackes, flysch rocks, mechanical properties, anisotropy, Baixo Alentejo Flysch

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