

Abstract

This paper describes the main results of an experimental program that was carried out to assess the mechanical properties of two local aggregates for construction purposes in road pavement. The scope of the experimental study consisted of three main stages: (1) to evaluate engineering characteristics in accordance with empirical classification and relevant tests standards, (2) to evaluate the resilient deformations characteristics of the local aggregates under cyclic loading and to assess the effect of non-linear stress dependency on their resilient behaviour for road pavement design, and (3) to determine from repeated load triaxial (RLT) tests, the parameters of a constitutive model to be used at a later stage in non-linear finite element analysis of flexible pavement structures. It is found, in accordance with empirical ranking, that the local aggregates of basaltic origin exhibit better impact and abrasion resistance than the local limestone aggregates. However, from the RLT tests results and values of the model parameters, it is clearly shown that limestone aggregates exhibit higher stiffness than aggregates of basaltic origin, contrary to the results issued from empirical ranking tests. In addition, the effects of geological origin, density and moisture content on the resilient behaviour of the studied aggregates are also investigated.