

STIFFNESS OF ASPHALT CONCRETE MIXTURE WITH LIMESTONE AND DIABASE AGGREGATES

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ABSTRACT

Stiffness modulus is considered to be one of the most important performance properties of the pavement's bituminous layers and also an essential property for analyzing pavement's response to traffic loading. Various methods have been introduced for measuring the stiffness modulus. The European standard EN 12697-26 contains the test methods to be used in Europe.

In this study, the effect of aggregate type on stiffness of an asphalt concrete mixture with a nominal size of 20mm, is examined. Limestone and diabase aggregates were used, while binder was selected to be a 50/70 conventional binder. By using the IT-CY EN 12697-26 method, stiffness modulus of the asphalt concrete mixtures was measured for both aggregate types.

By analyzing the results, statistical significant difference was found between the stiffness values obtained between mixtures with different types of aggregates (limestone and diabase).

Additionally, the correlation of the stiffness values (per aggregate type) with the volumetric and other fundamental properties of the mixtures was examined and useful conclusions were drawn.

Finally stiffness modulus prediction equations were derived and proposed.

KEY WORDS: Stiffness, Asphalt concrete, Diabase and limestone aggregates