

## **THE INFLUENCE OF DIFFERENT MINERALS ON THE MECHANICAL RESISTANCE OF ASPHALT MIXTURES**

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### *ABSTRACT*

The adsorption of five asphalts and their asphaltene and maltene constituents, dissolved in toluene onto quartz, feldspar and biotite and their effect on the mechanical properties of their respective asphalt cements have been investigated. The adsorption of asphalts A and C was greater than that of the all the other samples, maxima being observed between 3.5 and 4.0 mg.g<sup>-1</sup> for gneiss and quartz and increasing to 5 and 6 mg.g<sup>-1</sup> for feldspar and biotite. The electrophoretic mobility of quartz did not change on adsorption of different asphaltenes, in contrast to feldspar and biotite, indicating that the sites responsible for the surface charge of these minerals were affected by the presence of the adsorbed organic species. This fact was confirmed by FTIR. With regard to the mechanical resistance of asphalt mixtures, only the asphalts A and C gave values acceptable to Brazilian National Department of Terrestrial Infra-structure (DNIT). These results indicate that the chemical interaction among minerals and asphalts affected the mechanical resistance of the asphalt mixture.

**KEY WORDS:** adsorption, asphalt, asphaltenes, maltenes and minerals aggregates.