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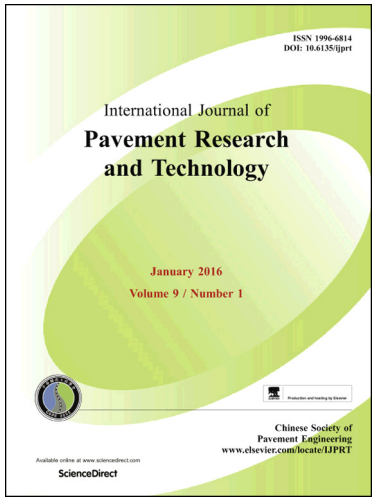

Characteristics relation model of asphalt pavement performance based on factor analysis

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Characteristics relation model of asphalt pavement performance based on factor analysis

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Abstract: Pavement performance of asphalt is an important criterion for road engineering quality evaluation. Proposed research paper designed an orthogonal experiment using three asphalt mixtures, including SMA-13, AC-20 and ATB-25 to get their relation models and evaluate pavement performances. Total twenty-seven samples from private companies have been selected and seven crucial parameters are analyzed via factor analysis. Further analysis concluded three main factors corresponding to the three main pavement performance parameters (i) high-temperature stability (ii) durability and (iii) shear resistance. Based on scores of each asphalt mixtures 3D scatter-map are plotted. Analysis found the relationship between three above-mentioned parameters. Relationship between the three main performance parameters has been established using graphical analysis. A separation plane can define the different type of asphalt mixtures scatter distribution area, and get the regression equation for the plane. Based on the equation for the plane a more intuitionistic model has been made which describes the relationship of asphalt pavement performance.

Key words: road engineering; asphalt; index correlation; surface fitting; 3D-model

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