APPLICATION OF THE MMLS3 FOR EVALUATING THE PERFORMANCE OF SURFACING SEALS

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ABSTRACT

Surfacing seal design, in South Africa, and many parts of the world is governed mainly by empirical rules and experience guided practices. There is thus a need for a performance related seal design method, with a more scientific foundation. This study aims to address this challenge through the investigation of the failure mechanisms of seals with the aim of simulating its manifestation using an accelerated pavement tester, the Model Mobile Load Simulator (MMLS3). Based on this investigation and an analysis of the capabilities of the MMLS3, seal stone embedment was identified as the target failure mechanism. Three key seal design variables were prioritised in the study and identified as directly influencing the embedment of the stones in a seal. To this end, a seal testing setup was developed along with an analysis procedure to measure and quantify the embedment of the stones in a seal.

Based on the analysis of the data it was established that a large portion of the total embedment observed occurred during the bedding-in period. The following was noted:

- Aggregate configuration showed the lowest influence
- Binder type showed an intermediate influence
- Aggregate size showed the highest influence

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