

Towards improved correlations between bitumen properties and rutting resistance of bituminous mixtures – FunDBitS literature review

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Abstract. Bitumen is the most common binder used in the production of bituminous mixtures for road paving, having a fundamental influence on the performance of the pavement. However, it is not yet fully understood which bitumen properties have a significant influence on the behaviour of bituminous mixtures. In this context, the FunDBitS project was developed. Its main objective was to prepare recommendations on the properties of the bitumen to be specified in order to obtain suitable bituminous mixtures, namely in what concerns to its resistance to permanent deformation (rutting), stiffness, low temperature cracking, fatigue cracking and binder / aggregate interaction. In this framework, the research studies that have become internationally available since the BiTVal project were reviewed in order to assess performance-based bitumen characteristics, which may be introduced into bitumen specification standards. This paper specifically presents the main conclusions regarding the properties of bitumen related to the behaviour to permanent deformation of bituminous mixtures. It was concluded that the most promising test is the “non-recoverable creep compliance” (J_{nr}) from the Multiple Stress Creep and Recovery (MSCR) test method, although Zero/Low Shear Viscosity (ZSV/LSV) by creep or oscillation test method can also give good correlations with permanent deformation of bituminous mixtures.