

Properties of cup lump rubber modified asphalt binder

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ABSTRACT

Recently, the use of natural rubber polymer, such as cup lump rubber in asphalt, has increased due to the fluctuation in natural rubber prices and the demand for modified asphalt. However, information on this new type of rubberised asphalt product is still limited. Thus, a detailed investigation of its performance is necessary for in-depth understanding of this novel material. This study evaluated the effect of cup lump rubber (5%, 10%, and 15% by weight of binder) on the physical, chemical, and rheological properties of asphalt binder. The cup lump rubber was pre-treated with a chemical solvent to soften the rubber structure prior to blending it with asphalt. Results showed that the cup lump rubber is a porous material with high carbon element. Furthermore, the addition of cup lump rubber hardens the asphalt binder and increases resistance against rutting and fatigue cracking.

KEYWORDS

Cup lump modified asphalt; rubberised binder; physical properties; chemical properties; rheological properties

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