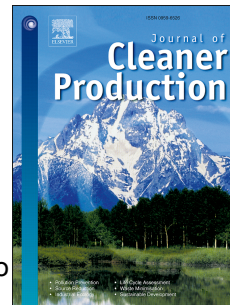


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Optimization of Preparation Procedure of Liquid Warm Mix Additive

Modified Asphalt Rubber

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Abstract

Warm mix asphalt (WMA) is an emerging clean production technology that alleviates the energy and environmental concerns of asphalt pavement industry. It is particularly suitable for asphalt rubber (AR) pavement, which provides longer service life and lower road-tyre noise but requires higher production temperature. Evotherm-DAT, a common liquid warm-mix asphalt (WMA) additive, can effectively improve the workability of AR binder, thus reducing the construction temperature of AR pavement. However, the properties of the Evotherm-DAT modified AR binders (Evo-AR) might be affected by the procedure of incorporating the WMA additive into AR, which unfortunately has not been fully studied yet. This study aims to address this issue by characterizing the rheological properties and chemical compositions of the Evo-ARs prepared by the following three procedures: 1) preparing AR first and then blending it with Evotherm-DAT (AR-E), the conventional approach; 2) mixing Evotherm-DAT and rubber first and then incorporating them to asphalt (ER-A); and 3) adding Evotherm-DAT during the mixing process of AR (REA). It was found that AR-E and REA had similar rheological properties.

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