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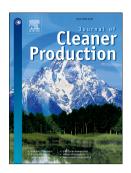
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## **Abstract**

Certain paper industry wastes display high recycling potential. In this investigation, the feasibility of using green liquor dregs and biomass fly ash from the paper industry as filler in hot-mix asphalt (HMA) for road pavement construction is analysed. Particularly, the moisture damage resistance (i.e., water sensitivity) of an AC 22 base B50/70 G has been studied using the Indirect Tensile Strength Test at the Marshall mix design optimum asphalt content. The most important filler properties have been determined to study water resistance: filler water content, grain size distribution using light scattering analysis techniques, morphology using a scanning electron microscope (SEM), chemical and mineralogical composition using X-ray fluorescence (XRF) and X-ray diffraction (XRD) techniques, detrimental fines content using the methylene blue test and the stiffening effect of the filler in the mastic by determining the ring and ball (R&B) softening temperature and the bitumen penetration grade. Additionally, the Rolling Bottle method and Boiling Water tests have been conducted to analyse the asphalt-aggregate bond. A control filler (i.e., commercial limestone filler) was used to compare the results. Also the mechanical properties (stiffness and resistance to the permanent deformation) of the mixtures were studied. As a result, it can be concluded that dregs have poor water resistance. Additionally, fly ash displayed inadequate water resistance for HMA.

Keywords: paper industry waste; dregs; biomass fly ash; filler; hot-mix asphalt; water resistance.

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