

Use White Cement Kiln Dust As A Mineral Filler In Asphalt Mixture

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Abstract

The white cement Kiln dust (WCKD) is a secondary production from the cement industry through its production operation. Environmentally, it is considered as an unwanted waste because it causes air pollution and ground congealment, and it is needed great efforts and financial support to disposal it. In this study, the WCKD was used partially instead of limestone as a filler in the asphalt mix, where it was used by ratios of 0%,25%,50%,75% and 100% from the weight of limestone. An evaluation of the mechanical characteristics was conducted by carrying out Marshall test and Indirect Tensile test, and the results showed that the increase in the WCKD percent reduces the asphalt mix density and increases the percentage of air voids, while the other characteristics (stability, Marshall Stiffness, flow and Indirect Tensile Strength)increase when the WCKD ratio is 25% and 50%. These those characteristics start decreasing when the WCKD ratio was 75% and 100%. The study showed that the optimum ratio of the WCKD is 50% from the limestone weight, and the WCKD cannot be used as a filler entirely in asphalt mix, but it can be used partially.

Keywords

Cement Dust, Cement Waste, Fill Material, Marshal Test, Asphalt Mix Metrics