

## **THE POTENTIAL USE OF CEMENT KILN DUST (CKD) AS FILLER IN ASPHALT**

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### *ABSTRACT*

Cement kiln dust (CKD) is a fine powder that is a by-product of the manufacture of cement. Laboratory studies using five different mixture types concluded that the replacement of filler by CKD filler has marginal effects on asphalt properties with, if anything, a small overall improvement. Further laboratory work using three sources of CKD found significant differences between the composition of CKD and limestone filler as well as between CKD from different sources. The differences between the CKD and limestone filler can affect workability, requiring an increase in mixing temperatures. Only one of the sources of CKD complied with both the grading and density requirements for filler in EN 13043. The water sensitivity improved with the replacement of limestone filler with CKD, and the improvement was more marked for mixtures with lower binder contents. A pilot-scale trial of both binder course and surface mixtures with and without CKD as the filler was undertaken without any change in mixing temperatures. The trial demonstrated that asphalt mixtures can be produced and laid without exceptional problems to produce a good looking mat, although the relative higher air voids content achieved with the surface course material incorporating CKD indicates that the use of CKD as filler without increasing the mixing temperature may increase the probability of the compaction being less effective with some, but not all, mixtures.

*KEY WORDS:* Filler, cement kiln dust, asphalt, mixture design, temperature