

COMBINED ACTION OF WAXES AND SURFACTANTS IN WMA MIXTURES

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ABSTRACT

In the last few years several additives have been developed for the production of Warm Mix Asphalts (WMA). Some additives do not demand significant modifications to be made to the asphalt plant, namely those that are added to the binder. Previous work carried out by the authors using synthetic waxes and surfactants showed that both types of additive can be used in the production of WMAs. However, it was observed that waxes have a significant effect on the increase of the resistance to permanent deformation of the mixture while surfactants are more effective on the temperature reduction. Thus, in this paper the properties of a bituminous mixture that combines the effects of a Fischer-Tropsch (FT) wax with a surfactant were studied and compared to those of a conventional hot mix asphalt.

In this work, the properties of a 50/70 pen bitumen mixed with different percentages of the additives were analyzed, the production temperature was defined, and the fundamental properties of the mixture (moisture sensitivity and resistance to permanent deformation and fatigue) were obtained. The results obtained showed that the combined action of the additives allows a significant temperature reduction without compromising the mixture properties.

KEY WORDS: Warm Mix Asphalts; F-T waxes; Surfactants; performance.