

The Effect of Nanoclay on Long Term Performance of Asphalt Concrete Pavement

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Abstract : The advantages of using modified asphalt binders are widely recognized—primarily, improved rutting resistance, reduced fatigue cracking and less cold-temperature cracking. Nanoclays are known to enhance the properties of many polymers. Nanoclays are used to improve modulus and tensile strength, flame resistance and thermal and structural properties of many materials. This paper intends to investigate the application and development of nano-technological concepts for bituminous materials and asphalt pavements. The application of nano clay on the fatigue life of asphalt pavement have not been yet thoroughly understood. In this research, two type of highway asphalt materials, dense Marshall specimens, with 2% nano clay and without nano clay, were employed for the fatigue behavior of the asphalt pavement. The effect of nano additive on the performance of flexible pavements has been investigated through the indirect tensile test for the samples prepared with 2% nano clay and without nano clay in four stress levels from 200–500 kPa. The primary results indicated samples with 2% nano clay have almost double or even more fatigue life in most of stress levels.

Keywords : Nano clay, Asphalt, fatigue life, pavement

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