

High temperature impact on fatigue life of asphalt mixture in Slovakia

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Abstract. Temperature dependence of materials bonded with bitumen is a well-known fact. The impact of temperature changes the behaviour of asphalt mixtures from elastic to viscous state, and it also influences the complex modulus, phase angle and other properties of asphalt mixtures. This study observed the summer temperature influence on fatigue behaviour of an asphalt mixture for the surface course of roads in conditions of Slovakia. Measurements were made using the four-point bending method on the asphalt mixture with maximum grain size of 11 mm bonded with polymer modified bitumen. Summer conditions were represented by environmental temperature of 27 °C according to the Slovakian pavement design method. Ordinary temperatures for fatigue measurements are 10 °C, 15 °C and 20 °C according to European standards for asphalt mixture testing. Structural changes in the material were observed by dissipation energy calculations for each loading cycle. The aim of the study was to find out if the influence of high environmental temperature is positive or negative for the lifespan of asphalt mixtures.