

Effect of wax crystallization on complex modulus of modified bitumen after varied temperature conditioning rates

Diana Simnofske¹ and Konrad Mollenhauer¹

¹University of Kassel, Mönchebergstraße 7, 34125 Kassel, Germany

E-mail: d.simnofske@uni-kassel.de

Abstract. Most of European roads are paved with asphalt materials. Mechanical properties as well as durability depend on bituminous binder properties. To influence viscous binder properties wax additives are applied in asphalt mixture for reducing temperature during production process. The crystallization of wax additives results in a rapid viscosity changes within a small temperature span. This allows the reduction of asphalt mix temperatures as well as affects the complex modulus within the performance temperature range. In order to evaluate the effect of wax crystallization in bituminous binders, three binders of different viscosity are modified with 0%, 1.5% and 3% Fisher-Tropsch wax. For the rheological characterization complex shear modulus and phase angle are measured by variation of the cooling rate after sample trimming. Furthermore physical properties were determined by softening point ring and ball again with varied cooling of the bitumen sample after specimen preparation.