AGING BEHAVIOR OF BITUMEN AND ELASTOMER MODIFIED BITUMEN

J. Zicans, T. Ivanova, R. Merijs-Meri & R. Berzina
Riga Technical University, Faculty of Materials Science and Applied Chemistry, Institute of Polymer Materials, Riga, Latvia

V. Haritonovs
Riga Technical University, Faculty of Civil Engineering, Department of Roads and Bridges, Riga, Latvia

ABSTRACT
Bitumen is subjected to considerable aging already starting from its manufacturing in an asphalt plant. Although it is well known that bitumen aging during manufacturing and exploitation is evaluated by RTFOT and PAV tests, these approaches do not consider deterioration of bitumen properties under the influence of aggressive factors of external environment like UV radiation, temperature fluxes, water ingression, pollution (mainly acid gases, VOCs) etc. Consequently, in the current research investigations have been carried out to evaluate the effects of alternative aging protocols of conventional bitumen and polymer (such as styrene-butadiene styrene copolymer, ethylene-octene copolymer) modified bitumens on its structural (FTIR), thermal (MDSC) and rheological characteristics. It has been shown that some of the used aging protocols give similar results to classical ageing procedures (such as RTFOT) as well as can be used for prediction of real field aged bitumen in respects to certain evaluation criteria (such as sulphoxide index, carbonyl index).