

RHEOLOGICAL PROPERTIES OF BITUMINOUS BINDERS IN REPEATED CREEP-RECOVERY AND OSCILLATORY TESTS

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ABSTRACT

The oscillation and repeated creep recovery tests in DSR including recently developed Multi Stress Creep Recovery Test (MSCR) implemented in USA were realized.

New cross-linked elastomer modified binder developed few years ago has lower value of $G^*/\sin\delta$ than binders used in the past for the sand asphalt layer of waterproofing system Etanplast. The program of binder and asphalt mix tests has been realized to verify, if its use for sand asphalt was possible without the risk of rutting. Behaviour of this cross-linked modified binder was also compared with harder road bitumen. Repeated creep recovery test showed that due to the excellent recovery of this PmB the permanent deformation was several times lower than of 20/30, even if the strain of PmB after 1 second of load was about 3 times larger at 50 °C. New binder has good resistance against repeated loading at 50 and 60°C. This was confirmed by rutting and indentation test on the asphalt mix.

Tests showed that criterion $G^*/\sin\delta$ underestimates the behaviour of highly modified binder with large delayed elasticity. Better behaviour of the mix with these binders at high temperatures could be expected.

KEY WORDS: Modified bitumen, creep recovery test, DSR, rutting,