

ASSESSING TEMPERATURE REDUCTION POTENTIAL OF VARIOUS ADDITIVES ON BINDER AND ASPHALT MIX LEVEL FOR MASTIC ASPHALT

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ABSTRACT

In an ongoing study, the wax concentration in a polymer-modified binder is varied for different wax types to study their impact on binder viscosity by rotational viscometer (RV) tests. In addition, mastic asphalt (MA 11) was produced with different wax-modified binders in a lab mixer. The mixer is equipped with a dynamic torque sensor to derive the mixing-torque as a measure of workability during mixing. Thus, temperature reduction potential is studied on binder and mix level. As an alternative approach for temperature reduction of mastic asphalt, crushed aggregates were substituted by rounded aggregates. It was found that amide wax has the highest potential for temperature reduction of mastic asphalt (-23 K at 4 wt.% related to binder mass). When substituting the 0/4 fraction by rounded aggregates, a reduction of 23 K can be realized, when substituting the 0/11 fraction, a reduction of 36 K is possible without use of waxes.