

# **Effects of RH-WMA additive on rheological properties of high amount reclaimed asphalt binders**

## **Abstract**

Warm mix asphalt (WMA) additive enables the utilization of more reclaimed asphalt pavement (RAP) in road construction. However, variations in RAP properties complicate the characterization of the rheological properties of virgin binder when blended with reclaimed asphalt binder. This study presents the evaluation of rheological properties of reclaimed asphalt binder incorporating RH-WMA, a new wax based WMA additive. The reclaimed asphalt binders recovered from two road sources were blended at various percentages with 3% RH-WMA additive. The rheological evaluations were carried out from the viscosity and dynamic shear rheometer (DSR) test results. The results indicated that the incorporation of reclaimed asphalt binder into virgin binder increased the viscosity and stiffness, while addition of RH-WMA additive slightly reduced the viscosity and stiffness. A non-dimensional viscosity index indicated an increase in relative viscosity for every 1% reclaimed asphalt binder. The SHRP Rutting Parameter, rheological master curves and multiple stress creep and recovery (MSCR) test results showed consistency in terms of binder stiffness. An interesting finding on the elasticity improvement demonstrated by percent recovery due to the addition of RH-WMA additive in the MSCR test, indicated the possibilities of rutting improvement when utilizing RAP and RH-WMA additive.