Investigations of Structural and Rheological Properties at high and low temperature of bitumen for warm recycling technology

Cesare Oliviero Rossi¹*, Noemi Baldino², Bagdat Teltayev³, Francesca Romana Lupi², Domenico Gabriele²

¹Department of Chemistry and Chemical Technologies, University of Calabria, 87036 Arcavacata di Rende (CS), Italy; tel./fax. +39 0984492045
²Department of Information, Modeling, Electronics and System Engineering, (D.I.M.E.S) University of Calabria, Via P. Bucci, Cubo 39C, I-87036 Rende (CS), Italy
³Kazakhstan Highway Research Institute, Nurpeisova Str., 2A, Almaty 050061 Kazakhstan

*cesare.oliviero@unical.it

The low quantity of bitumen (colloidal system) and your expensive cost, the high intrinsic value of resulting materials of the old superstructures have attracted increased attention on the reuse of reclaimed asphalt pavement (RAP) [1].

The goal of this study was to investigate the effects of two different rejuvenation additives on the RAP bitumen. In general, there is still a lack in the comprehension and description of the real mechanism of the additive action on the colloidal structure.

These additives are oil based and surfactant based rejuvenators. In particular, the rheological properties were investigated in order to understand the efficiency of rejuvenation of these additives and the structural changes of the colloidal bitumen system were monitored by ILT NMR analysis [2]. This methodology is very powerful to correlate the mechanical properties and the morphology of the soft matter system.