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**RHEOLOGICAL ANALYSIS OF BITUMEN MODIFIED WITH COMBINATION OF WASTE TIRE POWDER (WTP) AND BIO POLYMERIC COATED HYDRATED LIME (BPCHL)**

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Bitumen, the air blown of heaviest petroleum cut, is widely using in road industry. This is to its good adhesivity, waterproofing and low cost. Some defects such as high temperature flowing (end in rutting in high temperatures) and low temperature cracking (end in brittle behavior in winter) have should to using some modifiers. In this work BPCHL and WTP as high and low temperature rheological modifiers, initially separately and then in combination together have been used to bitumen modification. Dynamic Shear Rheometry (DSR) in both frequency and temperature sweep modes were utilized to evaluate rheological modification. Also chemical interaction between bio polymeric coating, WTP and bitumen were investigated through FTIR. Results showed that BPHCL individually increased rutting temperature through increasing  $G^*/\sin\delta$  (SHRP stiffness factor). Increasing cross frequency of  $G'$  and  $G''$  (where in before that  $G' > G''$ ) by increasing BPCHL content also confirms rutting modification. Also an interaction between bio polymeric layer and bitumen emphasized, that end in saturation of bitumen and decreasing C/H ratio which causes more aggregate adhesivity (FTIR analysis). Also aging determination by RTFO (Rolling Thin Film Oven Test) showed increasing aging resistance in modified bitumen containing BPCHL. Decreasing stiffness factor by decreasing temperature conclude us that WTP can be considered as a low temperature modifier. Because by decreasing temperature soft viscous behavior is going to be more efficient than stiff elastic one. Also FTIR study for WTP modified bitumen in comparison with neat one confirmed same interaction (saturation of bitumen) through partial devulcanization of WTP. So combination of WTP and BPCHL was assumed as a temperature increasing range modifier. Results showed that using both modifier in optimum content, 10% of each them, leads in increasing both rutting temperature and also modification of low temperature flexibility of binder. Also these modifiers are completely storage stable.