



P-3-823

## EFFECTS OF ORGANOCCLAY ON CURE KINETICS OF THE VINYL ESTER RESIN USING RHEOLOGICAL METHODS

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Vinyl ester resin (VER) is amongst the most widely used thermoset polymers in marine and commercial industries due to its attractive features such as exceptional chemical resistance, thermal stability and mechanical strength. Recently, the application of nanoparticles such as organoclay has led to developing VER based nanocomposites with superior properties. In spite of the fact that the correlation of final properties and cure characteristics of the resin systems has been ascertained by many researchers, the investigation concerning the effect of nanoparticles on the cure kinetics of VER systems could be interesting; since it is possible to build a basis for better controlling of the final performance of nanocomposite in this way. For this purpose, rheometry experiments were performed on VER/organoclay nanocomposites with various organoclay contents (0-5 wt%) under isothermal condition. The most interesting point regarding the effect of organoclay on the cure behavior of VER systems was the chemisorption and physisorption of the reacting monomers and initiator molecules on the organoclay platelets surface which is appeared to be responsible for the retardation of the cure reaction caused by organoclay. Moreover, the modified Kamal-sourour model was found to adequately replicate the kinetic data over the entire cure life of prepared samples. Eventually, Hsich kinetic model was used to determine a characteristic relaxation time for the nanocomposites at different curing temperatures which implied that organoclay presence not only reduces the systems relaxation time but also broadens the relaxation spectrum of the cure reactions.