

THERMOTROPIC RESIN SYSTEMS: RELATIONSHIPS BETWEEN FORMULATION PARAMETERS, MATERIAL STRUCTURE AND OPTICAL PROPERTIES

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This paper focuses on a comprehensive characterization of various thermotropic resins under polymer physical aspects. Numerous thermotropic layers were produced under systematic variation of resin base, thermotropic additives and additive concentration. A detailed investigation of optical properties, switching temperature, switching process and residual transmittance was performed with a UV/Vis/NIR spectrophotometer. Switching temperatures are compared with thermal transitions in the material determined by Differential Scanning Calorimetry (DSC).

Whereas the different film types show a direct solar transparency between 64 and 83% in the clear state, the direct solar transmittance decreases to values of about 27% to 80% above the switching temperature. In general the thermotropic resins are characterized by a steep and rapid switching process. The switching temperature can be adapted by varying the additives. The comparison of films thermal transitions with the switching performance reveals a good correlation.

For the full text contact the author(s) or the publisher:

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