

Low Temperature Crosslinking for Powder Coatings

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Abstract:

This paper will focus on low temperature cure of hydroxyl polyesters with polymeric blocked isocyanate crosslinkers, carboxyl polyesters cured with TGIC and a discussion about the future of IR/UV cured powder coatings.

Specific polymeric blocked isocyanates have been formulated for low temperature cure of various hydroxyl polyesters. Cure capabilities in the range of 130 C have been achieved. Polymeric isocyanate crosslinkers blocked with ϵ -caprolactam and ϵ -caprolactam free crosslinkers will be described.

A novel approach to low temperature cure carboxyl terminated polyesters is described. The use of specific raw materials combined with selected catalysts has resulted in polyesters for triglycidyl isocyanurate, TGIC, cure which have cure capabilities at 121 C. Polymers and powder coating formulations which exhibit low temperature cure properties are described. This technology pushes conventional polyester powder resin raw material capabilities to the apparent limit of performance for low temperature cure.

For lower temperature cure than 120 C, ultraviolet, UV, cured powder coatings seem to be most feasible. Powder coating formulations melted with IR and cured with UV will be discussed.

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