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Cure Kinetics of the Hydroxyl-Epoxide Reaction in DGEBA Epoxy Hardened with Diethanolamine[1] LEBELO HAILESILASSIE, NARJES FREDJ, CAITLYN M. CLARKSON, JOHN D. MCCOY, New Mexico Tech, MATHEW C. CELINA, JAMIE M. KROPKA, Sandia National Laboratories — The curing of a diglycidyl ether of bisphenol-A Epoxy (Epon 828) with diethanolamine (DEA) involves a fast amine-epoxide reaction followed by a slower hydroxyl-epoxide reaction. At curing temperatures below 70°C, the time scales of these two reactions are well separated. This permits the study of the hydroxyl addition as an "isolated" reaction. The reaction is strongly auto-catalyzed and is well fit to a modified form of the Kamal equation. Here we study the temperature dependence of the Kamal parameters with modulated differential scanning calorimetry and infrared spectroscopy.

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