

Kinetic Analysis and Simulation of the Curing Behavior



Do You Understand Your Curing Process?

We help you

- Simulate your curing behavior
- Predict your degree of curing
- Save time and money

Example: Epoxy Resin

- Model-free fitting fails
- *Kinetics Neo* can model endothermal melting before exothermal curing
- Predictions for different mold temperatures

Differential Scanning Calorimetry (DSC)

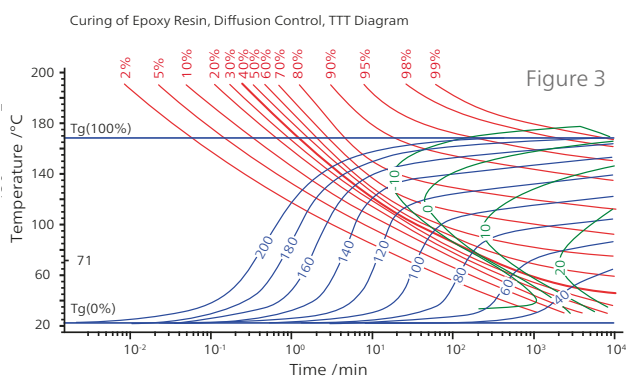
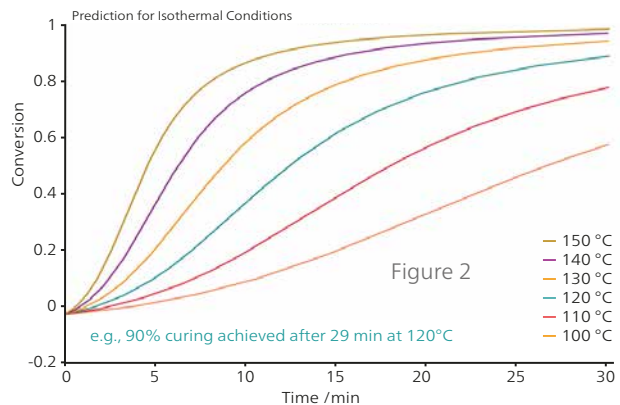
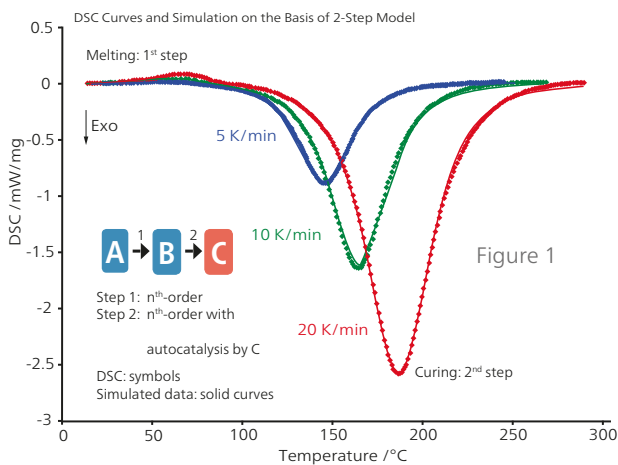


Figure 1: DSC curing measurement (symbols) and modelling (solid curves)

Figure 2: Predictions at different mold temperatures

Figure 3: TTT diagram for an epoxy resin with influence of glass transition, T_g

Clear-Cut Determination of the Curing Behavior

Dielectric Analysis, or DEA, is an in-process technique for monitoring changes in the ion viscosity and cure state of thermosetting resins, adhesives, paints and composites.

What Makes *Kinetics Neo* So Valuable

- Fast and easy to handle; improved user interface
- Includes all model-free and model-based methods; statistical comparison of the results obtained from different methods
- Powerful new numerical model-free method ensures fast determination of the best model-free solution
- Predictions and optimizations possible with model-free and model-based methods
- Quick visual creation of model-based method
- Kinetic model can contain any number of individual reaction steps in any combination; it is easy to add, remove or change reaction steps
- Visual adjustment of individual reaction steps at any time
- Optimization of individual steps or of the entire kinetic model by one mouse click
- Formal concentration of each reactant and reaction rate for each reaction step can be shown as a function of time or temperature

Dielectric Analysis (DEA)

Measurement

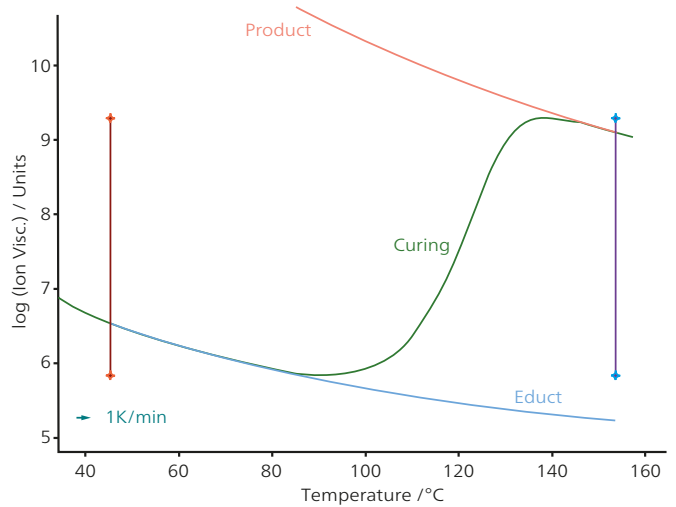


Figure 4: Baselines eliminate temperature dependence

Modelling

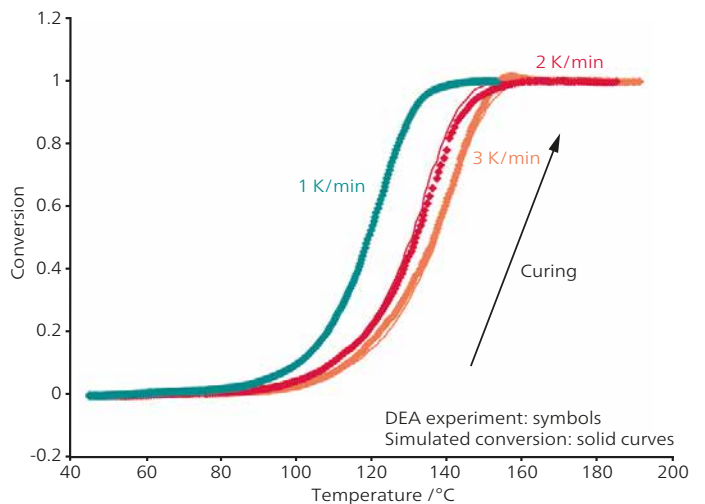


Figure 5: Modelling of curing

Prediction

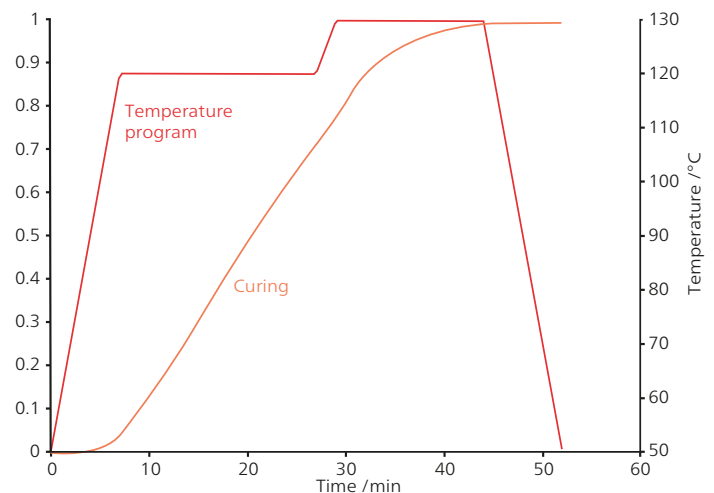


Figure 6: Predictions for a curing cycle