

Analysis of Thermoset Resin Using Double-Shot Pyrolyzer and Peripheral Devices

Part 2 : Analysis by EGA-GC/MS Technique

If more than one peak are observed in an evolved gas (EGA) curve, EGA-GC/MS is a useful technique to determine the composition of each peak observed. In this technique, components in each temperature region are introduced into a GC column and temporary trapped at the front of the column using Selective Sampler (SS-1010E) and MicroJet Cryo-Trap (MJT-1030E). They are then separated by GC and finally analyzed by MS. Using this technique, analysis of components in each peak allows detailed characterization of polymers. Fig. 2 shows chromatograms of three temperature regions, A, B, and C observed in the EGA curve of a thermoset resin described in *Double-Shot Pyrolyzer® Technical Note PYA1-016E*. Triphenylphosphineoxide, a reaction catalyst, was found in peak A, while various phenols, thermal decomposition products of phenol resin, and styrene monomer, thermal decomposition product from polystyrene, were found in peaks B and C. As shown here, analysis of each temperature region of an EGA Curve offers detailed information on polymers.

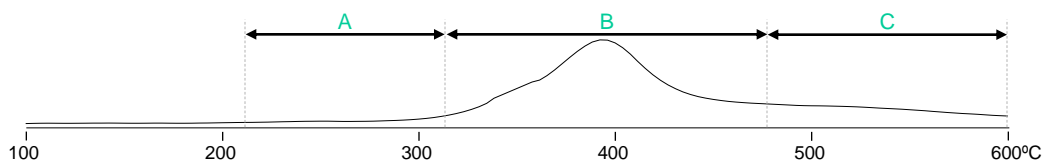


Fig. 1 EGA Curve of a Flame Retardant Resin

See *Double-Shot Pyrolyzer® Technical Note PYA1-016E* for analytical conditions

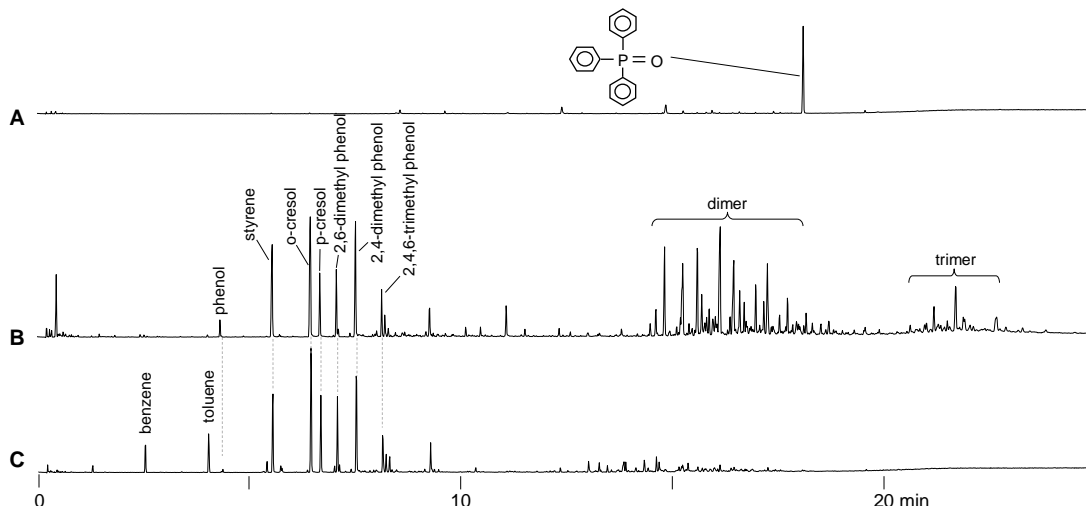


Fig. 2 Chromatogram of Each Temperature Region of EGA Curve

Separation column : Ultra ALLOY+5 (5% diphenyl polysiloxane) 30m, 0.25mm id, Film thickness : 0.25µm
Sample : 500µg, Detector : MS (m/z=10-400, 2scans/sec)

Keyword : Thermoset Resin, EGA-GC/MS, EGA, Selective Sampler, MiroJet Cryo-Trap

Applications : General Polymer Analysis

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