Analysis Examples Using Carrier Gas Switcher

Part 3: Pyrolysis of Polycarbonate (PC) in Air

Using Carrier Gas Switcher (CGS-1050E) , Selective Sampler (SS-1010E), and MicroJet Cryo-Trap (MJT-1030E), flash pyrolysis of polycarbonate (PC) was performed at 550ºC both in air and He atmosphere. Pyrolyzates were analyzed by GC/MS. Fig. 1 compares pyrograms obtained both in air and He atmosphere. In the pyrogram obtained in He atmosphere, a large amount of bis-phenol A, monomer of PC, was found, in addition to phenols such as phenol and p-cresol. On the other hand, in the pyrogram obtained in air, a large amount of carbon dioxide was observed with a trace amount of phenols. The results demonstrates that when PC was pyrolyzed, a major portion of it was decomposed and oxidized in air at high temperature.

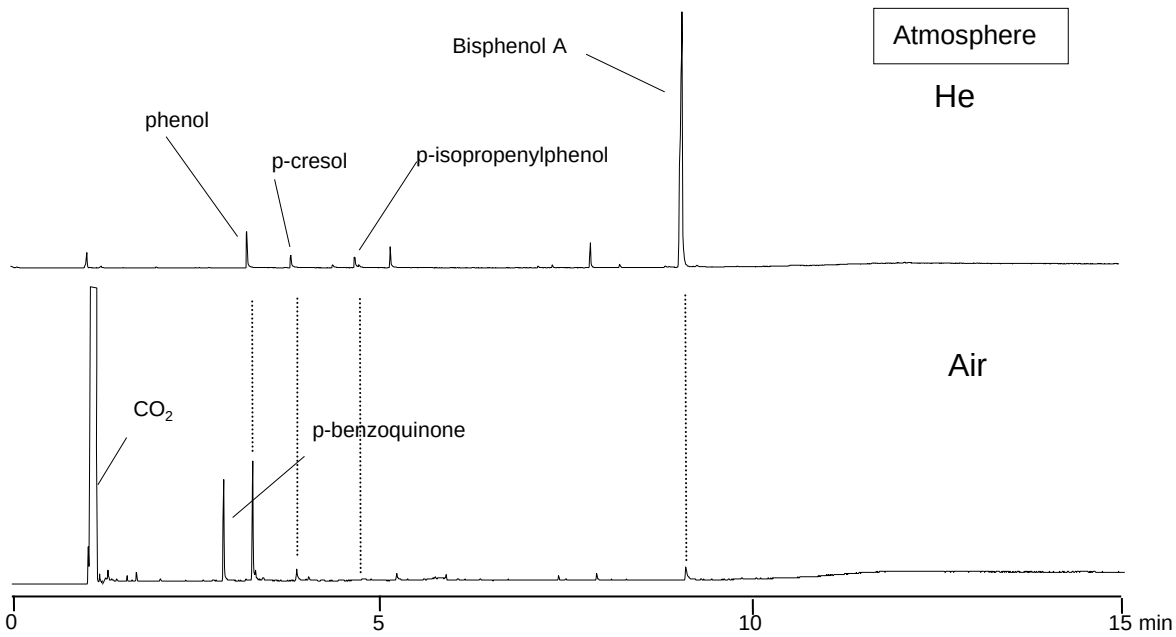

Fig. 1 Comparison of Pyrograms of PC Obtained in Air and He Atmosphere

Pyrolysis temp: 550ºC, Carrier gas; Helium, Column flow rate: 1 ml/min, Carrier gas total flow rate: 60 ml/min
Separation column: Ultra ALLOY-5 (5% diphenyldimethylpolysiloxane), Length: 30 m, Id: 0.25 mm, Film thickness: 0.25 µm
GC oven temperature: 40ºC (1min hold) ~ 320ºC (20 ºC/min), Injection port temp: 320ºC, Sample size: 3 0 µg

Reference: Hosaka et al. 5th Polymer Analysis Symposium, II-4, p43-44 (2000)

Keywords : Polycarbonate, Carrier Gas Switcher, Pyrolysis in air

Products used : Multi-functional pyrolyzer, Carrier Gas Selector, Selective Sampler, MicroJet Cryo-Trap, UA-5

Applications : General Polymer Analysis, Environmental analysis

Related technical notes :

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