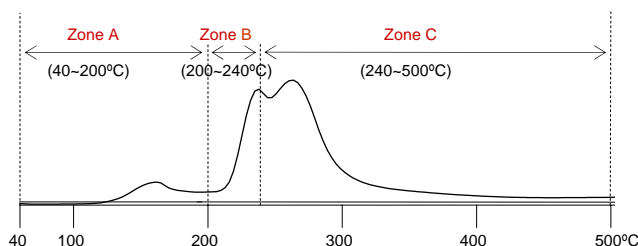


## Analysis of Food Wrap Films Using Double-Shot Pyrolyzer<sup>®</sup>

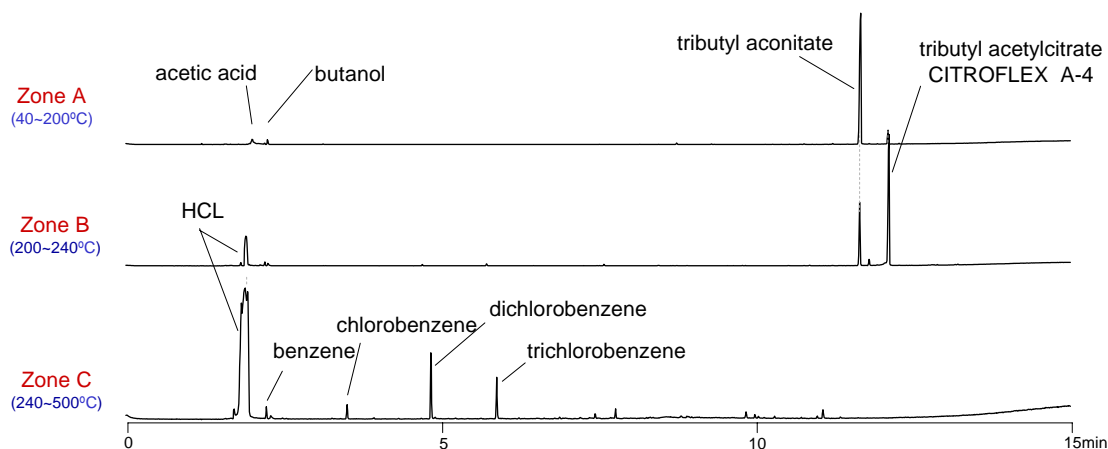
### Part 2: Analysis of Polyvinylidene chloride (PVDC) by EGA Heart-Cut GC/MS Technique

Polyvinylidene chloride food wrap films were analyzed using EGA-GC/MS technique. Fig. 1 shows an EGA profile obtained by programmed pyrolysis from 40°C~600°C at 20°C/min, while Fig. 2 shows results of GC/MS analysis of temperature zones A (40~200°C), B (200~240°C), and C (240~500°C) employing MicroJet Cryo-Trap (MJT-1030E). In Zone A, butanol, tributyl aconitate, and tributyl acetylacrylate (CITROFLEX A-4), a plasticizer, as low boiling components were found. In Zone B, tributyl acetylacrylate, tributyl aconitate, and HCl, which had been arisen from elimination of hydrogen chloride from polyvinylidene chloride, were found. Also found in low volatile Zone C were, in addition to HCl, aromatics and chlorine containing aromatics such as dichlorobenzene derived from the polyene structure.



**Fig. 1 EGA Profile of Polyvinylidene Chloride**

Pyrolysis temp: 40~600°C (30°C/min), carrier gas: He  
 Interface: deactivated metal capillary column (length: 2.5m, id: 0.15mm)  
 Injection port pressure: 50kPa



**Fig. 2 Analysis Results of Zones A, B, and C of Polyvinylidene Chloride**

Carrier gas: He, column flow rate: 1ml/min, Split injection, separation column: Ultra ALLOY-5 (5% diphenyl dimethyl polysiloxane), length: 30m, id: 0.25mm, film thickness: 0.25µm, GC oven temp: 40°C (1min hold) ~ 320°C (20°C/min), injection port temp: 320°C, Cryo trap temp: -196°C, sample: 0.25cm<sup>2</sup>

Reference: Hosaka et.al., 49th Japan Analytical Society Meeting (2000)

Keyword : Food Wrap Film, Evolved Gas, Plasticizer

Applications : Film manufacturer, Food producer, General polymer analysis

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