# Analysis of Food Wrap Films Using Double-Shot Pyrolyzer®

## Part 3: Analysis of Polypropylene (PP) + Nylon by EGA GC/MS Technique

Polypropylene (PP) + Nylon food wrap films were analyzed using EGA-GC/MS technique. Fig. 1 shows an EGA profile obtained by programmed pyrolysis from 40ºC~600ºC at 30ºC/min. Fig. 2 shows results of GC/MS analysis of temperature zones A (100~320ºC), and B (200~600ºC) employing MicroJet Cryo-Trap (MJT-1030E). In Zone A, volatile acetic acid, and fatty acids and their derivatives as plasticizer were found. In Zone B, olefinic hydrocarbons of $C_6$, $C_9$, $C_{12}$, and $C_{15}$ derived from pyrolysis of polypropylene, and ε-caprolactam, monomer of nylon-6, were found.

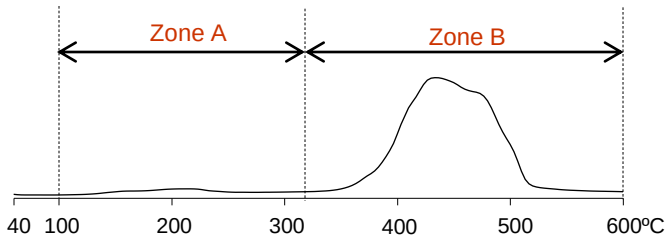


Fig. 1 EGA Profile of Polypropylene + Nylon

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

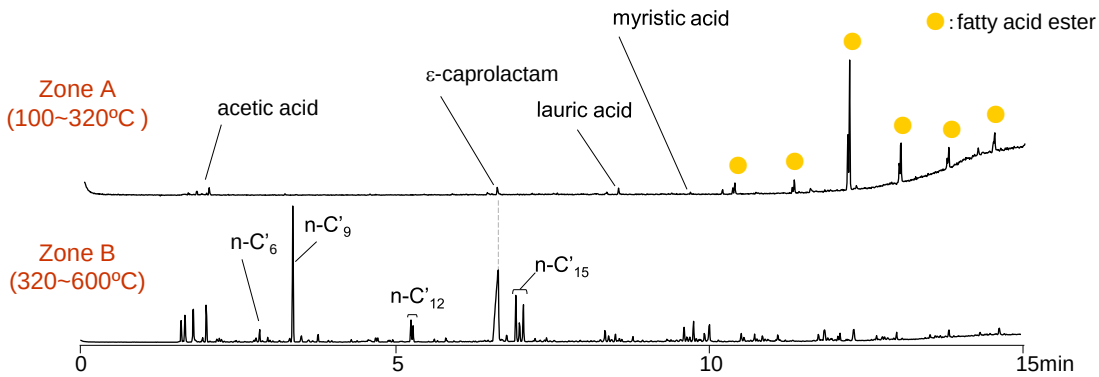


Fig. 2 Analysis Results of Zones A, B, and C of Polypropylene + Nylon

Carrier gas: He, column flow rate: 1ml/min, total carrier gas flow rate: 40ml/min, separation column: Ultra ALLOY-5 (5% diphenyl dimethyl polysiloxane), length: 30m, id: 0.25mm, film thickness: 0.25µm, GC oven temp: 40ºC (1min hold) ~ 320ºC (20ºC/min), injection port temp: 320ºC, Cryo trap temp: -196ºC, sample: 0.25cm²

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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