Failure Analysis of Rubber Materials Using Pyrolysis-GC/MS

R. Belganeh, W. Pipkin

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Abstract:

While subtle differences in polymer formulations are common, they rarely influence overall performance of the final product. However, there are instances in which a product suddenly becomes more brittle, easily deformed, or fails in routine use. When this occurs, it is important to conduct detailed analyses of the “good” and “bad” polymer, which often reveal differences in the additives, the presence of unwanted contaminants, or unexpected chemical linkages. This article describes a technique, or method map, that guides the analyst through the maze of analytical techniques used to characterize a polymeric material, providing the most useful information about the chemical composition of samples in the least amount of time.

Frontier Labs Products used:

Multi-Shot Pyrolyzer (EGA/PY-3030D), Selective Sampler, MicroJet Cryo-Trap