

[Polymer-coated sample cup for quantitative analysis of semi-volatile phthalates in polymeric materials by thermal desorption-gas chromatography–mass spectrometry](#)

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Abstract:

A new “polymer-coated” sample cup useful for the analysis of phthalates in polymeric materials by thermal desorption (TD)-GC/MS using a temperature programmable furnace type pyrolyzer as a TD device was developed to suppress the emission of semi-volatile phthalates such as dimethyl phthalate (DMP) and diethyl phthalate (DEP) during the measurements. The inner surface of a sample cup was coated by polymers which act as a sorbent for the phthalates. Three polymers, polyvinyl chloride, polystyrene and poly (methyl methacrylate), were chosen as the coating polymers. A mixture of ten phthalates including DMP and DEP was used as the test sample to estimate the performance of the sample cups. When a conventional sample cup without any polymer coating was used, 90 and 50% reductions in the peak areas of DMP and DEP were respectively observed at the waiting time of 200 min. On the contrary, no reduction of peak area of DMP and DEP during the same waiting time was observed with any one of the three coating polymers at the proper polymer film thickness. These results suggest that the polymer-coated sample cup suppresses the emission of semi-volatile phthalates and is effective for the analysis of phthalates containing DMP and DEP by TD-GC/MS.

\* Excerpted from online journal website (Click the title)

Frontier Labs products used:

Multi-Shot Pyrolyzer, Polymer coated cup G, UA<sup>+</sup>-5