

## [Rapid Quantification of N-Methyl-2-pyrrolidone in Polymer Matrices by Thermal Desorption-GC/MS](#)

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### Abstract:

Analysis of a residual solvent in polymeric materials has become an important issue due to the increased regulations and standards for its use. N-Methyl-2-pyrrolidone (NMP) is a solvent widely used in many industries and restricted as one of the chemicals under EU REACH regulations due to its potential harmful effects. In this study, thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) is applied for the quantitative analysis of NMP with the use of a polymer-coated sample cup. By using the polymer-coated sample cup, the vaporization of NMP was prevented during waiting time before TD-GC/MS analysis. The calibration curve for the TD method showed good linearity (correlation coefficient,  $r^2 = 0.9998$ ) and precision values (below 5.3% RSD). NMP recovery rates in different polymer matrices (PS, PMMA and PVC) were in the range of 98.8 to 106.6% with RSD values below 5.0%. The quantification result (600 mg NMP/kg PVC) for the blind NMP carrying sample in a PVC matrix by TD-GC/MS was higher than that (532 mg NMP/kg PVC) by solvent extraction-GC/MS method.

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

### Frontier Labs Products used:

Multi-Shot Pyrolyzer (EGA/PY-3030D), AS-1020E