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Thermal Desorption GC/MS has become an official method approved by IEC for the analysis of restricted phthalates in electrotechnical products

Phthalates are widely used as plasticizers in manufacturing plastic products. With regard to additives in plastics used in electrical and electronic equipment, the maximum concentration of the restricted phthalates is limited to 1000 ppm by the RoHS directive.

In March 2017, the thermal desorption GC/MS using a pyrolyzer was adopted as the official method and approved by IEC (International Electrotechnical Commission) for the analysis of certain phthalates in electrotechnical products regulated by the RoHS directive ([IEC 62321-8:2017](#)). The thermal desorption GC/MS method using Frontier Lab products complies with the IEC method.

## 1. Frontier Lab recommended products

### a. [Multi-Shot Pyrolyzer \(EGA/PY-3030D\)](#)

In addition to thermal desorption method, various analytical techniques such as evolved gas analysis (EGA), single/double-shot analysis and heart-cut EGA-GC can be performed on this model.

### b. [Auto-Shot Sampler \(AS-1020E\)](#)

Working with the pyrolyzer, as many as 48 samples can be automatically analyzed. Not only does the AS-1020E help you save time and increase reliability, it also allows you to run each sample with a different analytical method.

### c. Separation columns for phthalates analysis

UA-PBDE ( $L=15$  m, i.d.=0.25 mm, df.=0.05  $\mu$ m) and UA<sup>+</sup>-5 ( $L=30$  m, i.d.=0.25 mm, df.= 0.25  $\mu$ m) are the most suitable columns for phthalate analysis.

### d. [Sampling tool kit 01](#)

The kit contains all the useful tools for collecting solid samples. The kit helps you choose the right tool for your sample in any form.

### e. [RoHS-Cup LN](#)

These are low cost, single use disposable sample cups specially made for phthalates analysis.

## 2. Literature

- [“A fast easy and green thermal desorption GC/MS method for the analysis of phthalate esters in PVC”](#), Frontier Laboratories' Technical Brief
- [“Standard Test Method for Determination of Low Level, Regulated Phthalates in Poly \(Vinyl Chloride\) Plastics by Thermal Desorption—Gas Chromatography/Mass Spectrometry”](#), ASTM D 7823-13
- [“Comparative study of thermal desorption and solvent extraction-gas chromatography—mass spectrometric analysis for the quantification of phthalates in polymers”](#), J. W. Kim *et al.*, *J. Chromatogr. A* 1451 (2016) 33–40
- [“Rapid and Simple Determination of Phthalates in Plastic Toys by a Thermal Desorption-GC/MS Method”](#), T. Yuzawa *et al.*, *Anal. Sci.* 25 (2009) 1057–1058

In addition to the above, we have a number of [technical papers](#) and [technical notes](#) using Frontier Labs products available on our website for your convenience.  
<http://www.frontier-lab.com/>