

HPLC-Detection of PBFR's- Optimization and Improvement

Dr. Michael Riess¹, Dr. Ghirlanda Sandro²

¹Motorola Physical Realization Research Center Europe, Rapid Environmental Assessment Lab
Heinrich-Hertz-Str 1, 65232 Taunusstein, Germany

²European Market Development Manager Environmental, Dionex (Europe) Management AG
Solothurnerstrasse 259, 4600 Olten, Switzerland

Motorola operates the Rapid Environmental Assessment Lab REAL in Taunusstein, Germany as Center of Excellence for environmental product assessment. The lab service is provided internally to Motorola businesses and to external customers.

The REAL assesses the performance of electronic products according to the requirements of the EU directives on the restriction of the use of hazardous substances (RoHS) and of the Waste from Electrical and Electronic Equipment (WEEE). The lab determines: Material composition data Disassembly properties and Recyclability.

A series of material assay techniques is used to determine the material composition, such as ED-XRF, TG, FT-IR and High Pressure Liquid Chromatography HPLC/UV. HPLC/UV allows the determination of flame retardants (PBB, PBDE) banned by RoHS.

The performance of the HPLC/UV method, using Dionex HPLC equipment, developed to allow identification and quantification of brominated flame retardants from the PBB and PBDE families will be demonstrated. The method has been improved from method that had been introduced to the IEC about the standardization of test methods for RoHS testing. The improvements increase the stability of the test method and the lifetime of the column. The advantages and disadvantages compared to GC/MS will be discussed.

For additional verification of the method test measurements have been made using LC/MS.

Evaluations will include testing of Nona- versus Decabromodiphenylether, Nonabromodiphenylether is explicitly banned by RoHS.