

## **Accelerated Solvent Extraction (ASE®): Sample Preparation for Brominated Flame-Retardants in Solid Materials**

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Accelerated Solvent Extraction (ASE), first introduced in 1995, is an innovative approach to liquid-solid extraction. ASE reduces the amount of solvent required for extraction and increases the speed and efficiency of sample preparation. Since its introduction, the benefits of ASE (automation, speed, and low solvent usage) have been utilized for the extraction of environmental toxins such as PCBs, dioxins, PAHs, and brominated flame-retardants (BFRs). ASE has also been used to provide rapid extraction results from catastrophic events.

Increasing concern about the presence of BFRs in the environment has created a need for international standards that outline sample preparation and analysis methods for compounds such as polybrominated diphenyl ethers (PBDEs). PBDEs are part of a class of halogenated flame-retardants formerly used in the manufacturing of textiles, furniture, and various polymeric materials. Numerous reports have shown that PBDEs have entered our biosphere and have been reported in human breast milk, plant and animal tissues, drinking water, and house dust. As a result of the widespread environmental presence of PBDEs, many countries have limited the use of these compounds and manufactures have ceased production. The resulting regulations have created a need for rugged, accurate test methods for BFRs to establish compliance. Accurate test methods are also required to monitor the transport and future environmental effects of PBDEs.

Accelerated Solvent Extraction (ASE) has proven to successfully extract PBDEs from most every sample matrix. This paper will detail the extraction and analysis of PBDEs from polymeric materials in consumer and industrial products. ASE and Soxhlet extracts will be analyzed and compared using gas chromatography with electron capture detection (GC-ECD).