



Designation: E1386 – 00 (Reapproved 2005)

# Standard Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Solvent Extraction<sup>1</sup>

This standard is issued under the fixed designation E1386; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice covers the procedure for removing small quantities of flammable or combustible liquid residue from samples of fire debris using solvent to extract the residue.

1.2 This practice is suitable for successfully extracting flammable or combustible liquid residues over the entire range of concentrations.

1.3 Alternate separation and concentration procedures are listed in Test Method [E1387](#).

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see [Note 1](#).

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[E752](#) Practice for Safety and Health Requirements Relating to Occupational Exposure to Carbon Disulfide

[E1387](#) Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography

[E1412](#) Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration With Activated Charcoal

[E1459](#) Guide for Physical Evidence Labeling and Related Documentation

[E1492](#) Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee [E30](#) on Forensic Sciences and is the direct responsibility of [E30.01](#) on Criminalistics.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[E1618](#) Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry

## 3. Summary of Practice

3.1 A sample of fire debris is extracted with an organic solvent. The extract is filtered and concentrated using dry nitrogen, filtered air, or inert gas.

## 4. Significance and Use

4.1 This practice is useful for preparing extracts from fire debris for later analysis by gas chromatography, GC/MS, or GC/IR.

4.2 This is a very sensitive separation procedure, capable of isolating quantities smaller than 1  $\mu$ L of ignitable liquid residue from a sample.

4.3 This practice is particularly useful when the potential for fractionation during separation must be reduced, as when attempting to distinguish between various grades of fuel oil.

4.4 This practice is particularly useful for the extraction of nonporous surfaces such as glass, or the interior of burned containers. It is also particularly well suited to the extraction of materials from very small samples.

4.5 This practice can be hampered by coincident extraction of interfering compounds present in the fire debris samples.

4.6 This practice may not be useful for the extraction of some Class 0 and Class 1 ignitable liquids, which may evaporate during the concentration step.

4.7 This is a destructive technique. Whenever possible, this technique should only be used when a representative portion of the sample subjected to this procedure may not be suitable for resampling. Consider using passive headspace concentration as described in Practice [E1412](#).

## 5. Reagents and Materials

5.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. It is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the