Designation: E1386 – 15

Standard Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Solvent Extraction[1]

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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

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

1.2 This practice is suitable for successfully extracting ignitable liquid residues over a wide range of concentrations.

1.3 Alternate separation and concentration procedures are listed in the referenced documents (Practices E1388, E1412, E1413, and E2154).

1.4 This practice offers a set of instructions for performing one or more specific operations. This standard cannot replace knowledge, skill, or ability acquired through appropriate education, training, and experience and should be used in conjunction with sound professional judgment.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.6 *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 5.5.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E1388 Practice for Sampling of Headspace Vapors from Fire Debris Samples

E1412 Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration With Activated Charcoal

E1413 Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Dynamic Headspace Concentration

E1459 Guide for Physical Evidence Labeling and Related Documentation

E1492 Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory

E1618 Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry

E2154 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration with Solid Phase Microextraction (SPME)

E2451 Practice for Preserving Ignitable Liquids and Ignitable Liquid Residue Extracts from Fire Debris Samples

3. Summary of Practice

3.1 A sample of fire debris is extracted with an organic solvent. The extract is filtered and concentrated as necessary.

4. Significance and Use

4.1 This practice is useful for preparing extracts from fire debris for later analysis by gas chromatography-mass spectrometry (GC/MS).

4.2 This is a very sensitive separation procedure, capable of isolating quantities smaller than 1 µL 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 ignitable liquid residues from very small samples, very large samples, or samples that are not suitable for heating.

4.5 This practice is not specific to ignitable liquids and 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 extremely volatile ignitable liquids, which may evaporate during the concentration step.

[1] 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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[2] 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.