Designation: E 1387 – 01

Standard Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography[1]

This standard is issued under the fixed designation E 1387; 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 test method covers the identification of residues of ignitable liquids in extracts from fire debris samples. Extraction procedures are described in the referenced documents.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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 precautionary statement, see 6.3.

2. Referenced Documents

2.1 *ASTM Standards:*

E 1385 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Steam Distillation[2]

E 1386 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Solvent Extraction[2]

E 1388 Practice for Sampling of Headspace Vapors from Fire Debris Samples[2]

E 1412 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration[2]

E 1413 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Dynamic Headspace Concentration[2]

E 1459 Guide for Physical Evidence Labeling and Related Documentation[2]

E 1492 Guide for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Laboratory[2]

E 1618 Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry[2]

3. Summary of Test Method

3.1 The sample extract or preparation is introduced into the gas chromatographic column containing a liquid phase suitable for the separation of common ignitable liquid components. The resulting chromatogram is interpreted by techniques of pattern recognition and pattern comparison described in this test method. Ignitable liquids may fall into one of eight major classifications, or into a "miscellaneous" category described in this test method.

4. Significance and Use

4.1 The identification of an ignitable liquid residue in samples from a fire scene can support a field investigator's opinion regarding the origin, fuel load, and incendiary nature of a fire.

4.1.1 The identification of an ignitable liquid residue in a fire scene does not necessarily lead to the conclusion that a fire was incendiary in nature. Further investigation may reveal a legitimate reason for the presence of ignitable liquid residues.

4.1.2 Due to the volatility of ignitable liquids and to variations in sampling techniques, the absence of detectable quantities of ignitable liquid residues does not necessarily lead to the conclusion that ignitable liquids were not present at the fire scene.

4.2 When the gas chromatographic pattern is not sufficiently complex, as described in 9.3, additional analytical techniques are required.

5. Apparatus

5.1 *Gas Chromatograph*—A chromatograph capable of using capillary columns and equipped with a flame ionization or mass spectral detector.

5.1.1 *Sensitivity*—The system shall be capable of detecting each component of the test mixture referenced in 6.5.

[1] This test method is under the jurisdiction of ASTM Committee E30 on Forensic Sciences and is the direct responsibility of Subcommittee E30.01 on Criminalistics.

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[2] *Annual Book of ASTM Standards,* Vol 14.02.

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