

Designated E xxxx-xx

Standard Practice for Archiving Ignitable Liquid Residues in
Extracts from Fire Debris Samples and Questioned Liquid
Samples Submitted for Ignitable Liquid Analysis.

1. Scope

- 1.1. This practice describes procedures for archiving residues of ignitable liquids in extracts obtained from fire debris samples and questioned ignitable liquid samples. Extraction procedures are described in the referenced documents.
- 1.2. This practice does not attempt to address all the issues regarding sample archiving. Short term as well as long-term storage of archived samples, and the changes that may occur under various storage conditions, have not been documented.
- 1.3. This practice 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 practice to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 *ASTM Standards:*

- E 1385 Practice for the Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Steam Distillation.
- E 1386 Practice for the Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Solvent Extraction
- E 1387 Test Method for Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography
- E 1388 Practice for Sampling of Headspace Vapors from Fire Debris Samples
- E 1412 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration
- E 1413 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Dynamic Headspace Concentration
- E 1459 Guide for Physical Evidence Labeling and Related Documentation
- E 1492 Standard Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Laboratory
- E 1618 Guide for Identification of Ignitable Liquid Residues in Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry

E XXXX Practice for the Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Solid Phase Micro Extraction (SPME)

3. Summary of Practice

3.1. Extracts obtained from fire debris samples and questioned liquids analyzed for the presence of ignitable liquid residues are retained and archived for re-analysis.

4. Significance and Use:

- 4.1. Whenever possible, fire debris extracts should be retained for potential re-analysis. This practice is designed as an effort to preserve fire debris sample extracts.
- 4.2. The archiving of extracts recovered from fire debris or liquids submitted in a fire investigation provide a mechanism to preserve the extracts and liquids for re-analysis if required or requested.
- 4.3. This practice addresses the following concerns:
 - 4.3.1. Container failure, sample loss, and/or degradation which may occur over a period of time.
 - 4.3.2. The destructive nature of some extraction procedures which may preclude re-analysis.

5. Materials

- 5.1. Air tight, volatile free storage containers.
 - 5.1.1. Septum crimp seal vials with Teflon lined seals.
 - 5.1.2. Screw cap glass vials with Teflon lined seals.
 - 5.1.3. Polymer evidence bags.
- 5.2. Adsorption media
 - 5.2.1. Activated charcoal (coconut).
 - 5.2.2. Activated charcoal strip.

6. Procedures

6.1. *Passive Headspace Concentration with Activated Charcoal (E1412)*

6.1.1. **Single strip adsorption.**

- 6.1.1.1. After adsorption and prior to elution, cut the strip in half. One half of the strip is used for analysis, place the remaining half in an appropriate container for archiving.

- 6.1.1.2. Alternatively, upon completion of analysis, the eluted and analyzed sample may be retained for archiving. The extract is re-adsorbed onto the charcoal strip by allowing the eluant to evaporate. Store the charcoal strip in an appropriate container for archiving.
- 6.1.2. Two strip adsorption.
 - 6.1.2.1. After adsorption, one strip is used for analysis. Place the second strip in an appropriate container for archiving. Note: this procedure requires that the two strips be adsorbed simultaneously.
- 6.2 *Dynamic Headspace (E1413)*
 - 6.2.1 After analysis, re-adsorb any remaining extract on an adsorption media in an appropriate container for archiving. The extract is re-adsorbed onto the adsorbent by allowing the eluant to evaporate.
- 6.3 *Solvent Extraction (E1386)*
 - 6.3.1 After analysis, adsorb any remaining extract on an adsorption media in an appropriate container for archiving. The extract is adsorbed onto the adsorbent by allowing the extraction solvent to evaporate.
- 6.4 *Steam Distillation (E1385)*
 - 6.4.1 Place the liquid extract or an aliquot of the liquid extract in an appropriate container for archiving.
 - 6.4.2 Alternatively, adsorb any remaining extract on an adsorption media in an appropriate container for archiving. The extract is adsorbed onto the adsorbent by allowing the extraction solvent to evaporate.
- 6.5 *Liquid Samples*
 - 6.5.1 Place the liquid, extract, or an aliquot of the liquid in an appropriate container for archiving.
 - 6.5.2 Alternatively, adsorb an aliquot of the liquid or extract on an adsorption media in an appropriate container for archiving.
- 6.6 *SPME and Headspace Sampling (EXXXX, E1388)*
 - 6.6.1 Extracts using these sampling techniques are consumed by the analysis and are not amenable to archiving
 - 6.6.2 Alternative sampling methods may be used for the preservation of an extract for archiving purposes.

7 **Storage of Samples**

- 7.1. All vials containing samples retained for archival purposes must be properly labeled. Notations regarding the sample archiving must be maintained in the case notes and in accordance with laboratory procedures.
- 7.2. Archived samples may be released/returned with the evidence as an attachment or enclosure.
- 7.3. Alternatively, archived samples may be cataloged and stored.
 - 7.3.1. Archived samples may be stored at room temperature, under refrigeration, or frozen.
 - 7.3.2. Archived samples stored in the laboratory must be cataloged in logbooks with storage date, location, and date of disposal when appropriate.
 - 7.3.3. Archived samples shall be stored at the laboratory for a period of time as directed by laboratory policy, and federal, state or local laws.