TRACE EVIDENCE SYMPOSIUM

Clearwater Beach, Florida – August 16, 2007

Standards / Accreditation Panel

ASTM and the Forensic Sciences

Presented by

Ronald Kelly
FBI Laboratory
E30.01 Member

ASTM's primary objective:

…is to be the foremost developer and provider of consensus standards, related technical information, and services having globally recognized quality and market relevance.

Development of Technical Information

- Proven democratic and open process
- Staff management support for committee
- Staff administrative support
- Professional editors
- Meetings management
- Information Technology

ASTM INTERNATIONAL

Delivery of Technical Information

- Electronic publishing system
- Customized product selection
  e.g., selected standards
- Customized product format
  e.g., electronic, hard copy
- Global distribution network
- Available anywhere at anytime

ASTM INTERNATIONAL

Why ASTM?

- A Proven and Practical System
  - Established in 1898
  - 138 Committees & 12,000+ Standards
  - 30,000 members
    - 5,500+ International Members from 125 countries
    - 3,000 ASTM standards used in 60+ countries
  - 'Audited Designator' accreditation: American National Standards Institute (ANSI)
  - All stakeholders involved (Public & Private Sector)
  - Consensus-based procedures

ASTM INTERNATIONAL

Government/Industry Partnership

- Participants from: FBI, ATF, DEA, USPIS, IRS, Secret Service, NIST, state and local agencies
- Private sector laboratories & consultants
- Standards activities brought into E30 by:
  - SWGDOC
  - SWGDRUG
  - SWGMAT
  - TWGFEX/SWGFEX

Internal Revenue Service
United States Department of the Treasury

ASTM INTERNATIONAL

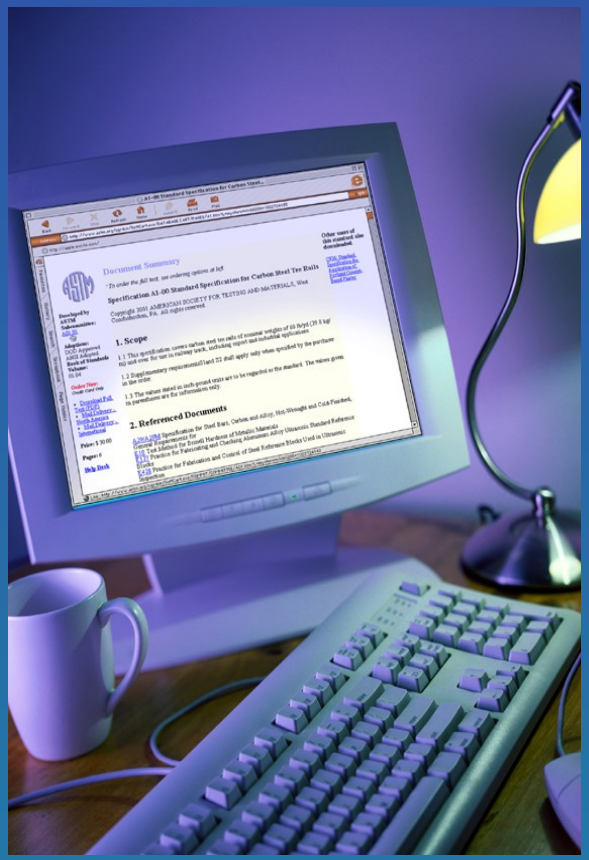
Committee E30 on Forensic Sciences

- Formed 1970
- Scope: The scope of the Committee shall be the promotion of knowledge and the development of standards (test methods, guides, practices, classifications, and terminology) for, but not limited to, definitions, methods and standard reference materials for the collection, preservation, scientific examination, preparation and reports relating to physical evidence for forensic purposes; and the general practice of forensic science; and other areas as determined by the scope.

ASTM INTERNATIONAL

Committee E30 on Forensic Sciences

- Over 50 Standards
- Over 700 Members
- 6 Technical Subcommittees
  - E30.01 – Criminalistics
  - E30.02 – Questioned Documents
  - E30.05 – Engineering
  - E30.11 – Interdisciplinary
  - E30.12 – Digital Evidence
  - E30.92 – Terminology

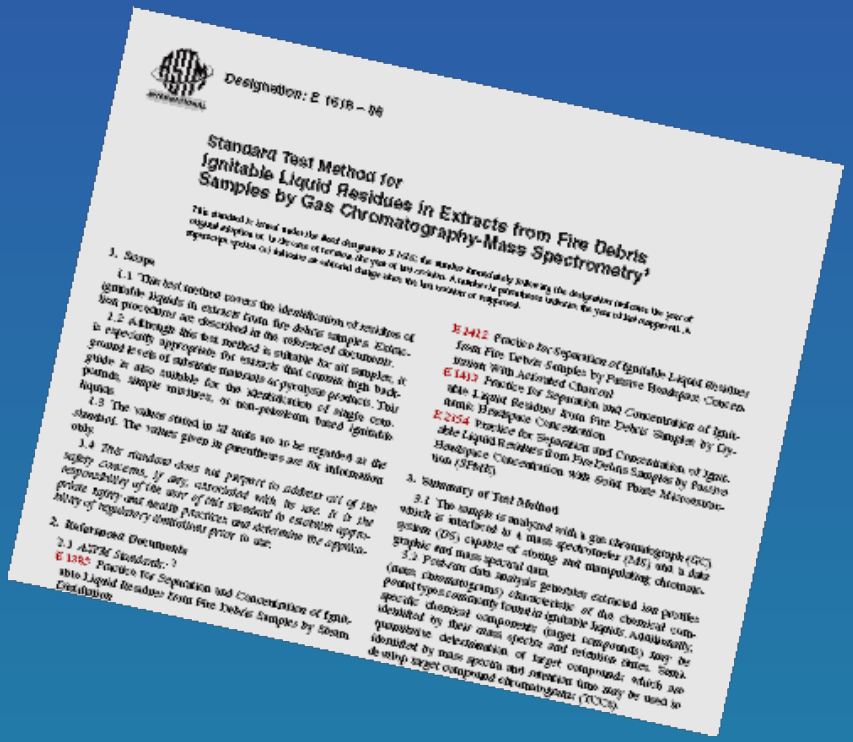


ASTM INTERNATIONAL

ASTM Standards, Volume 14.02

Contains test methods, guides, practices, or specifications for:

- General Test Methods
- Forensic Sciences
- Terminology
- Conformity Assessment
- Statistical Methods



Designation: E 1618 – 98

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

This standard is issued under the fixed designation E 1618; 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 Although this test method is suitable for all samples, it is especially appropriate for extracts that contain high background levels of substrate materials or pyrolysis products. This guide is also suitable for the identification of single compounds, simple mixtures, or non-petroleum based ignitable liquids.

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

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.

2. Referenced Documents

2.1 ASTM Standards:[2]

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

E 1412 Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration With Activated Charcoal

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

E 2154 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration with Solid Phase Microextraction (SPME)

3. Summary of Test Method

3.1 The sample is analyzed with a gas chromatograph (GC) which is interfaced to a mass spectrometer (MS) and a data system (DS) capable of storing and manipulating chromatographic and mass spectral data.

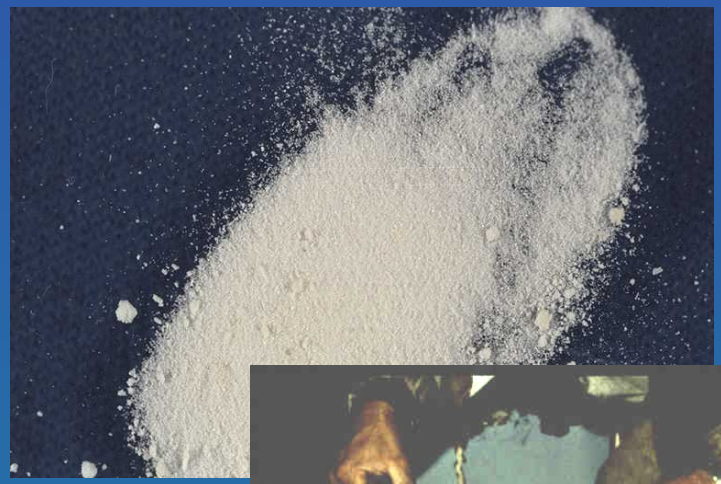
3.2 Post-run data analysis generates extracted ion profiles (mass chromatograms) characteristic of the chemical compound type commonly found in ignitable liquids. Additionally, specific chemical components (target compounds) may be identified by their mass spectra and retention times. Semi-quantitative determination of target compounds, which are identified by mass spectra and retention time, may be used to develop target compound chromatograms (TCCS).

ASTM INTERNATIONAL

E30.01 Criminalistics Subcommittee

Maintains most of the trace evidence standards on:

- Paints
- Gunshot Residue
- Drugs
- Sexual Assaults
- Fire Debris
- Glass



ASTM INTERNATIONAL

How Are ASTM Standards Used?

- Developed voluntarily and used voluntarily
- Cited in a contract
- Government agency reference them in codes, certification, regulations, and laws, supports P.L. 104-113
- Used by tens of thousands of individuals, companies, and agencies globally

ASTM INTERNATIONAL

The Birth of a ASTM Document

Start →

1

Work Item Registration

- New ideas discussed & agreed upon
- New standard or revision
- Registration provides an e-copy

2

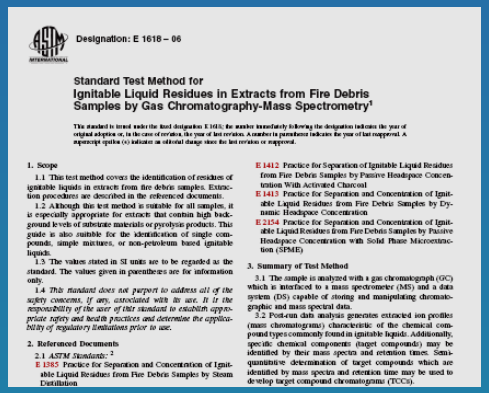
Document Construction

- Revisions: Word copy provided
- New: Templates
- Assistance: Up-front & back- end editorial services

3

Collaboration Tools / Authoring

- Conference calls
- Virtual Meetings
- Interactive Forums
- Email



Designation: E 1618 – 06

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

This standard is issued under the fixed designation E 1618; 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 Although this test method is suitable for all samples, it is especially appropriate for extracts that contain high background levels of substrate materials or pyrolysis products. This guide is also suitable for the identification of single compounds, simple mixtures, or non-petroleum based ignitable liquids.

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

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.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]

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

E 1412 Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration With Activated Charcoal

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

E 2154 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration with Solid Phase Microextraction (SPME)

3. Summary of Test Method

3.1 The sample is analyzed with a gas chromatograph (GC) which is interfaced to a mass spectrometer (MS) and a data system (DS) capable of storing and manipulating chromatographic and mass spectral data.

3.2 Post-run data analysis generates extracted ion profiles (mass chromatograms) characteristic of the chemical compound types commonly found in ignitable liquids. Additionally, specific chemical components (target compounds) may be identified by their mass spectra and retention times. Semi-quantitative determination of target compounds which are identified by mass spectra and retention time may be used to develop target compound chromatograms (TCCs).

The Birth of a ASTM Document

4

Ballot Submittal

- Deadline dates from Staff
- On-line submittal form
- Provide cover letter

5

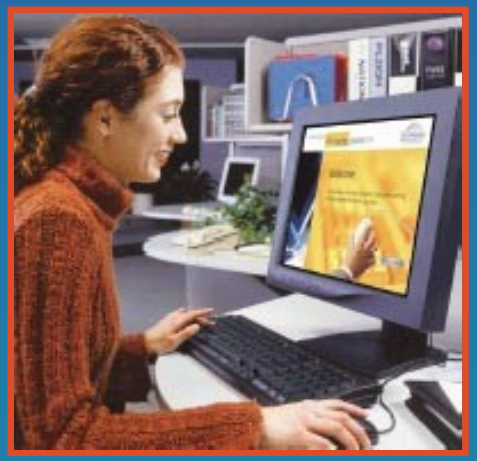
Electronic Balloting

- Automatic generation by staff upon receipt of a ballot item
- Email notification of ballot
- Platform independent, web-based system / write-in & uploaded input
- Electronic reporting & feedback

6

Negative Resolution

- Electronic receipt of feedback
- Done at a meeting or Virtual Meeting
- Future improvements



ASTM INTERNATIONAL

The Birth of a ASTM Document

→ Finished

7a

Important Information- Going into the Meeting

- Minutes & agendas
- Ballot reports & materials
- Schedules & logistics

7b

Important Information- Tools and Forms

- Tools page
- ”My ASTM”
- Standards Tracker
- Committee Page

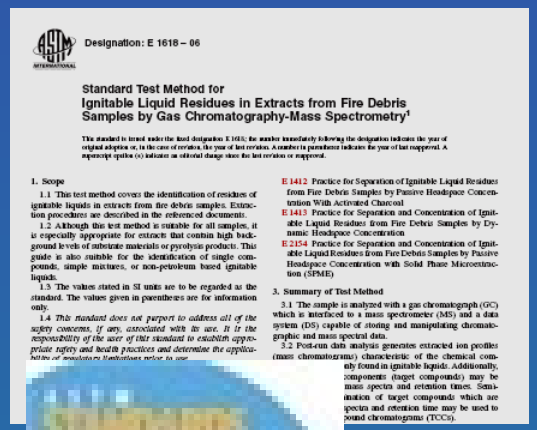
8

Production & Distribution

- Back-end editorial support
- Proofing / Editorial services
- Set in SGML & global distribution
- Product types (Web, CD, HC)

ASTM INTERNATIONAL

Approved standards are then periodically reviewed and revisions issued



Designation: E 1618 – 06

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

This standard is issued under the fixed designation E 1618; 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 Although this test method is suitable for all samples, it is especially appropriate for extracts that contain high background levels of nitrogen materials or pyrolysis products. This guide is also suitable for the identification of single compounds, simple mixtures, or non-petroleum based ignitable liquids.

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

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.*

E 1412 Practice for Separation of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration With Activated Charcoal

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

E 2154 Practice for Separation and Concentration of Ignitable Liquid Residues from Fire Debris Samples by Passive Headspace Concentration with Solid Phase Microextraction (SPME)

3. Summary of Test Method

3.1 The sample is analyzed with a gas chromatograph (GC) which is interfaced to a mass spectrometer (MS) and a data system (DS) capable of storing and manipulating chromatographic and mass spectral data.

3.2 Post-run data analysis generates extracted ion profiles (mass chromatograms) characteristic of the chemical com- only found in ignitable liquids. Additionally, components (target compounds) may be mass spectra and retention times. Semi- mination of target compounds which are spectra and retention time may be used to pound chromatograms (TCCs).

Volume 14.02 Standards are published yearly and are available in these formats:

Annual Book of Standards
On CD
On-line

Members receive a copy of the volume (or CD) each year.

ASTM INTERNATIONAL

Subcommittees represent most trace disciplines and membership is encouraged from both private and public forensic laboratories

- Membership is voluntary
- Must actively participate (on-line ballot reviews)
- E30 Subcommittees meet (in person) annually
- ASTM Staff streamlines administrative tasks in creating and publishing standards
- Submission of new standards from SWGs and other forensic groups is highly encouraged

ASTM INTERNATIONAL

Questions?

Ronald Kelly
703.632.7641
Ronald.Kelly @ IC.FBI.GOV

Tim Brooke (E30 Staff Manager)
610.832.9729
tbrooke@astm.org

Committee E30 Website
www.astm.org/COMMIT/E30.htm