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# 2025 Flammables Proficiency Test
# FTS-25-FLAM1 Summary Report

**The Submission Deadline for this test was July 25, 2025**

*The test was manufactured by FTS at the FTS Laboratory Facility (127 W. Grand River Avenue, Williamston, MI 48895) and all activities were coordinated by Rebecca Smith (rsmith@forsci.com), Proficiency Test Program Manager. Ms. Smith is also authorizing the release of this report. This is the summary report issued on 8/19/25. FTS considers all reports confidential and does not release information regarding participant's results without authorization from that participant.*

## Summary

Test results were received in 37 of 42 tests distributed (88% response rate). Of the 37 respondents:

Item 1 (No Ignitable Liquids)
35 of 37 (94%) reported that Item 1 did not contain an ignitable liquid.
1 of 37 (3%) reported that Item 1 contained Toluene and Tetrachloroethylene.
1 of 37 (3%) reported "Analysis for item#1 is inconclusive, the results did not meet the criteria for identifying or classifying the ignitable liquid."

Item 2 (Zippo Lighter Fuel)
35 of 37 (94%) reported that Item 2 contained a light petroleum distillate.
1 of 37 (3%) reported that Item 2 contained a heavy miscellaneous product.
1 of 37 (3%) reported that Item 2 did not contain an ignitable liquid.

## Manufacturer's Information

All items were produced at separate times, the area was cleaned and the item was stored before another item was produced. ~5" x 5" sections of a black t-shirt (100% cotton) were utilized for all items. For items 1 and 2, the fabric was burned using a propane torch and allowed to cool prior to production.

Item 1 was produced by placing a section of the burnt black t-shirt inside of a half-gallon size paint can (Berlin packaging, Item# 1800T21), sealed and labeled per FTS guidelines.

Item 2 was produced by placing a section of the burnt black t-shirt inside of a half-gallon size paint can (Berlin packaging, Item# 1800T21) and adding 20 µl of Zippo Lighter Fuel (080428824UVED, UPC 4168930122) directly onto the fabric with a pipette. The can was labeled and sealed per FTS guidelines. Zippo Lighter Fuel is classified in the ILRC database (National Center for Forensic Science) as a light petroleum distillate (LPD).

Item 3 was produced by placing an unburnt section of the black t-shirt inside of a half-gallon size paint can (Berlin packaging, Item# 1800T21), sealed and labeled per FTS guidelines.

All items with matching UTICs were packaged together into a cardboard box, sealed and labeled per FTS guidelines.

**Assigned Value**

Proficiency tests under ISO 17043:2023 are assessed via comparison of the participant result to the assigned value of a proficiency test item or items. For quantitative tests, FTS determines the assigned value based on statistical methods described in ISO 13528:2022. For qualitative tests, the FTS study coordinator determines the assigned value based on a number of factors, including product source information, internal and/or external pre-distribution laboratory analysis, and consensus of responses (consensus value).

Quality systems and laboratory reporting guidelines vary greatly from laboratory to laboratory, therefore participating laboratories and their accrediting bodies are responsible for the assessment of whether a reported result is an outlying result.

For this proficiency test, the following assigned values are based on source information which was then confirmed by laboratory analysis:

Item 1: No ignitable liquids present.
Item 2: Light petroleum distillate (LPD).

Please examine the questioned fabric to identify any ignitable liquid(s) present.

**Items Submitted**

**Item 1:** Burnt piece of fabric with possible ignitable liquid(s) present.
**Item 2:** Burnt piece of fabric with possible ignitable liquid(s) present.
**Item 3:** Negative control unburnt piece of fabric intended as a comparison control.

3) Indicate analytical methods used for analysis (select all that apply):

A) GC/FID/TEA/ECD

B) GC/MS

C) Other

| UTIC | Webcode | Indicate all methods used for analysis (select all that apply) |
|---|---|---|
| p20251801 | W182 | GC/MS |
| p20251802 | W051 | GC/FID/TEA/ECD; GC/MS |
| p20251803 | W119 | GC/MS |
| p20251804 | W061 | GC/MS |
| p20251808 | W028 | GC/MS |
| p20251809 | W267 | GC/MS |
| p20251810 | W153 | GC/FID/TEA/ECD; GC/MS |
| p20251811 | W114 | GC/MS |

| UTIC | Webcode | Indicate all methods used for analysis (select all that apply) |
|---|---|---|
| p20251812 | W114 | GC/MS |
| p20251813 | W114 | GC/MS |
| p20251814 | W114 | GC/MS |
| p20251815 | W114 | GC/MS |
| p20251816 | W114 | GC/MS |
| p20251817 | W268 | GC/MS |
| p20251818 | W068 | GC/MS |
| p20251819 | W030 | GC/MS |
| p20251820 | W135 | GC/MS |
| p20251821 | W012 | GC/FID/TEA/ECD; GC/MS |
| p20251822 | W012 | GC/FID/TEA/ECD; GC/MS |
| p20251823 | W058 | GC/MS |
| p20251824 | W130 | GC/MS |
| p20251825 | W130 | GC/MS |
| p20251826 | W048 | GC/MS |
| p20251827 | W048 | GC/MS |
| p20251829 | W010 | GC/MS |
| p20251831 | W122 | GC/MS |
| p20251832 | W122 | GC/MS |
| p20251833 | W117 | GC/FID/TEA/ECD; GC/MS |
| p20251834 | W117 | GC/MS |
| p20251835 | W051 | GC/MS; GC/FID/TEA/ECD |
| p20251836 | W051 | GC/FID/TEA/ECD; GC/MS |
| p20251837 | W076 | GC/MS |
| p20251838 | W042 | GC/MS |
| p20251839 | W129 | GC/MS |
| p20251840 | W129 | GC/MS |
| p20251841 | W055 | GC/MS |
| p20251842 | W244 | GC/MS |

4) Flammable Recovery Techniques (select all that apply):

A) Headspace - Room Temperature

B) Headspace Heated

C) Passive Adsorption-Elution

D) Dynamic Adsorption-Elution

E) Solvent Desorption - CS2

F) Solvent Desorption - Other

G) Thermal Desorption

H) Other

| UTIC | Webcode | Flammable Recovery Techniques (select all that apply) |
|---|---|---|
| p20251801 | W182 | Passive Adsorption-Elution |
| p20251802 | W051 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251803 | W119 | Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251804 | W061 | Headspace - Room Temperature; Thermal Desorption |
| p20251808 | W028 | Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251809 | W267 | Headspace Heated; Passive Adsorption-Elution |
| p20251810 | W153 | Headspace Heated; Solvent Desorption - Other |
| p20251811 | W114 | Headspace Heated; Dynamic Adsorption-Elution |
| p20251812 | W114 | Headspace Heated; Dynamic Adsorption-Elution |
| p20251813 | W114 | Dynamic Adsorption-Elution; Headspace Heated |
| p20251814 | W114 | Headspace Heated; Dynamic Adsorption-Elution |
| p20251815 | W114 | Headspace Heated; Dynamic Adsorption-Elution |
| p20251816 | W114 | Headspace Heated; Dynamic Adsorption-Elution |
| p20251817 | W268 | Headspace Heated; Dynamic Adsorption-Elution |
| p20251818 | W068 | Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251819 | W030 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251820 | W135 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - Other |
| p20251821 | W012 | Passive Adsorption-Elution; Other |
| p20251822 | W012 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251823 | W058 | Headspace Heated; Passive Adsorption-Elution |
| p20251824 | W130 | Passive Adsorption-Elution |
| p20251825 | W130 | Passive Adsorption-Elution |
| p20251826 | W048 | Passive Adsorption-Elution |
| p20251827 | W048 | Passive Adsorption-Elution |
| p20251829 | W010 | Headspace Heated; Passive Adsorption-Elution |
| p20251831 | W122 | Passive Adsorption-Elution; Solvent Desorption - Other |
| p20251832 | W122 | Passive Adsorption-Elution |
| p20251833 | W117 | Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251834 | W117 | Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251835 | W051 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251836 | W051 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251837 | W076 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |
| p20251838 | W042 | Headspace Heated; Passive Adsorption-Elution |
| p20251839 | W129 | Passive Adsorption-Elution |
| p20251840 | W129 | Passive Adsorption-Elution |
| p20251841 | W055 | Headspace Heated; Passive Adsorption-Elution; Solvent Desorption - CS2 |

| UTIC | Webcode | Flammable Recovery Techniques (select all that apply) |
|---|---|---|
| p20251842 | W244 | Headspace Heated; Other |

5) Other methods used (if none, please enter "N/A"):

| UTIC | Webcode | Other methods used |
|---|---|---|
| p20251804 | W061 | Sample was collected using dynamic headspace absorption. |
| p20251808 | W028 | Heated passive headspace adsorption onto an activated charcoal strip at 70 degrees celcius overnight for 16 hours. Desorption by CS2 with 4-phenyltoluene internal standard. |
| p20251821 | W012 | heated headspace concentration/heated passive diffusion in oven at ~90 degrees C using carbon strip<br>CS2 used to elute |
| p20251831 | W122 | Solvent desorption = pentane |
| p20251842 | W244 | Solid Phase Microextraction (SPME) |

6) **Item 1:**

Using the ASTM E1618-19 Ignitable Liquid Classification Scheme, indicate the class for any ignitable substance detected in Item 1. With the exception of the gasoline and oxygenated class, there are three subclasses for each major class based on n-alkane range: Light (C4-C9), Medium (C8-C13) and Heavy (C9-C20+). When the carbon range does not fit clearly into one of the previous categories (e.g. "light to medium, "medium to heavy''), report the carbon number range. Typical chromatograms for some of the classes/subclasses may be found in the published ASTM standard.

| UTIC | Webcode | **Item 1:**<br><br>Using the ASTM E1618-19 Ignitable Liquid Classification Scheme, indicate the class for any ignitable substance detected in Item 1. |
|---|---|---|
| p20251801 | W182 | No ignitable liquids detected. |
| p20251802 | W051 | No ignitable liquid residues detected. |
| p20251803 | W119 | No ignitable liquids detected |
| p20251804 | W061 | Toluene (light aromatic-C7) and tetrachloroethylene were detected. |
| p20251808 | W028 | Analysis conducted on Item 1 did not identify the presence of an ignitable liquid. |
| p20251809 | W267 | No Ignitable Liquids were identified. |
| p20251810 | W153 | No products were detected. |
| p20251811 | W114 | No ignitable liquid detected |

| UTIC | Webcode | **Item 1:**<br><br>Using the ASTM E1618-19 Ignitable Liquid Classification Scheme, indicate the class for any ignitable substance detected in Item 1. |
|---|---|---|
| p20251812 | W114 | No ignitable liquids were found |
| p20251813 | W114 | No ignitable liquids were found |
| p20251814 | W114 | No ignitable liquids were found. |
| p20251815 | W114 | No ignitable liquids were found |
| p20251816 | W114 | No ignitable liquids were found. |
| p20251817 | W268 | No ignitable liquids were found. |
| p20251818 | W068 | No ignitable liquids were identified. |
| p20251819 | W030 | negative for ignitable liquids |
| p20251820 | W135 | No ignitable liquids were identified. |
| p20251821 | W012 | No ignitable liquids identified. |
| p20251822 | W012 | No ignitable liquids were identified in Item 1-1. |
| p20251823 | W058 | none |
| p20251824 | W130 | No ignitable liquids |
| p20251825 | W130 | No ignitable liquids were identified |
| p20251826 | W048 | no ignitable liquid residues identified |
| p20251827 | W048 | No ignitable liquid residues were identified in item 1. |
| p20251829 | W010 | No ignitable liquids detected. |
| p20251831 | W122 | No common ignitable liquid residues were detected in Item 1. |
| p20251832 | W122 | No common ignitable liquid residues detected |
| p20251833 | W117 | No identifiable ignitable liquid residues were detected in Item 1. |
| p20251834 | W117 | no identifiable ignitable liquid residues |
| p20251835 | W051 | No ignitable liquid residues were detected. |
| p20251836 | W051 | No ignitable liquid residues detected |
| p20251837 | W076 | No Ignitable Liquids |
| p20251838 | W042 | No ignitable liquids identified |
| p20251839 | W129 | No ignitable liquids were identified. |
| p20251840 | W129 | no ignitable liquids |
| p20251841 | W055 | No ignitable liquid classification identified. |
| p20251842 | W244 | Analysis for item#1 is inconclusive, the results did not meet the criteria for identifying or classifying the ignitable liquid. |

7) **Item 2:**

Using the ASTM E1618-19 Ignitable Liquid Classification Scheme, indicate the class for any ignitable substance detected in Item 2. With the exception of the gasoline and oxygenated class, there are three subclasses for each major class based on n-alkane range: Light (C4-C9), Medium (C8-C13) and Heavy (C9-C20+). When the carbon range does not fit clearly into one of the previous categories (e.g. "light to medium, "medium to heavy''), report the carbon number range. Typical chromatograms for some of the classes/subclasses may be found in the published ASTM standard.

| UTIC | Webcode | **Item 2:**<br><br>Using the ASTM E1618-19 Ignitable Liquid Classification Scheme, indicate the class for any ignitable substance detected in Item 2. |
|---|---|---|
| p20251801 | W182 | Light petroleum distillate. |
| p20251802 | W051 | Light petroleum distillate. |
| p20251803 | W119 | Light-range petrolem distillate detected |
| p20251804 | W061 | Light petroleum distillate was detected (C4-C9). |
| p20251808 | W028 | Analysis of Item 2 disclosed the presence of an ignitable liquid from the light petroleum distillate class. |
| p20251809 | W267 | Positive for a Light Petroleum Distillate. |
| p20251810 | W153 | Light petroleum distillate. |
| p20251811 | W114 | Light petroleum distillate |
| p20251812 | W114 | Light petroleum distillate |
| p20251813 | W114 | Light petroleum distillate |
| p20251814 | W114 | Light petroleum distillate |
| p20251815 | W114 | Light petroleum distillate |
| p20251816 | W114 | Light petroleum distillate |
| p20251817 | W268 | Petroleum Distillate: Light |
| p20251818 | W068 | Light Petroleum Distillate |
| p20251819 | W030 | petroleum distillate-light range |
| p20251820 | W135 | A light petroleum distillate ignitable liquid residue was identified. Examples of this include but are not limited to some camping fuels, some cigarette lighter fluids, and petroleum ether. |
| p20251821 | W012 | Light petrolleum distillate (LPD) |
| p20251822 | W012 | A light petroleum distillate was identified in Item 1-2. |
| p20251823 | W058 | light petroleum distillate |
| p20251824 | W130 | light petroleum distillate |
| p20251825 | W130 | A light petroleum distillate was identified |
| p20251826 | W048 | petroleum distillates - light |
| p20251827 | W048 | A petroleum distillate in the light range was identified in item 2. Examples of petroleum distillates in the light range include, but are not limited to, petroleum ether, some cigarette lighter fluids, some camping fuels, and naphtha. |

| UTIC | Webcode | **Item 2:**<br><br>Using the ASTM E1618-19 Ignitable Liquid Classification Scheme, indicate the class for any ignitable substance detected in Item 2. |
|---|---|---|
| p20251829 | W010 | No ignitable liquids detected. |
| p20251831 | W122 | Light petroleum distillate residues were detected in Item 2. |
| p20251832 | W122 | Light petroleum distillate residues were detected |
| p20251833 | W117 | A light petroleum distillate (C7-C9) was detected in Item 2. |
| p20251834 | W117 | light petroleum distillate (C7-C9) |
| p20251835 | W051 | Light petroleum distillate was detected. |
| p20251836 | W051 | Light petroleum distillate |
| p20251837 | W076 | Light Petroleum Distillate |
| p20251838 | W042 | Light petroleum distillate |
| p20251839 | W129 | An ignitable liquid in the light petroleum distillates class was identified. |
| p20251840 | W129 | light petroleum distillates |
| p20251841 | W055 | Light Petroleum Distillate (LPD) was identified. |
| p20251842 | W244 | Analysis of item#2 revealed a heavy miscellaneous product in this rance includes but not limited to automotive parts cleaner, kerosene, lamp oil, spray lubricant, fuel additive and insecticides. |

8) How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). In order to maintain confidentiality, please refrain from including identifying information specific to your laboratory.

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251801 | W182 | No ignitable liquids were detected in Item #1. Item #2 showed the presence of a light petroleum distillate. |
| p20251802 | W051 | "Item 1": A piece of partially burnt black fabric.<br>The exhibit was analysed for the presence of ignitable liquid residues and none were detected.<br><br>"Item 2": A piece of partially burnt black fabric.<br>The exhibit was analysed for the presence of ignitable liquid residues and light petroleum distillate was detected.<br>Note: Examples of light petroleum distillates include petroleum ether, cigarette lighter fluids, camping fuels and naphtha.<br><br>"Item 3": A piece of unburnt black fabric submitted for comparison with the exhibits marked "Item 1" to "Item 2".<br>The exhibit was analysed for the presence of ignitable liquid residues and none were detected. |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251803 | W119 | **Description:**<br>1 - One sealed cardboard box holding Items 1A - 1C:<br><br>1A - One sealed one-half gallon metal can, labeled to contain "FTS-25-FLAM1 Item 1," holding one small piece of burnt black fabric<br><br>1B - One sealed one-half gallon metal can, labeled to contain "FTS-25-FLAM1 Item 2," holding one small piece of burnt black fabric<br><br>1C - One sealed one-half gallon metal can, labeled to contain "FTS-25-FLAM1 Item 3," holding one small piece of black fabric<br><br>**Conclusions:**<br>Items 1A – 1C were analyzed by Gas Chromatography Mass Spectrometry for the presence of ignitable liquids.<br><br>No ignitable liquids were detected in Items 1A & 1C.<br><br>A light-range petroleum distillate was detected in Item 1B. Examples of light-range petroleum distillates include cigarette lighter fluid and camping fuels.<br><br>**Notes:**<br>The absence of an ignitable liquid can be attributed to several factors:<br>- No ignitable liquid was present in the sample;<br>- An ignitable liquid was originally present, but was consumed in the fire, lost during fire suppression, or lost during overhaul of the scene;<br>- An ignitable liquid is present, but the amount is not detectable with current laboratory instrumentation. |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251804 | W061 | Item 1- Nil common ignitable liquid residues were detected. Toluene and tetrachloroethylene were detected at low levels, these compounds were also detected in the control sample (item 3), it is likely that these compounds are inherent in the substrate. See notes A1 and A2.<br><br>Item 2- Light petroleum distillate was detected. Comparison with an in-house standard (lighter fluid) showed similarities, however the exact source could not be identified.<br>Note- Light petroleum distillates are flammable products produced by the process of fractional distillation, an example of LPD is cigarette lighter fluid.<br><br>Item 3- (Control)- Nil common ignitable liquid residues were detected. Toluene and tetrachloroethylene were detected at low levels.<br><br>Although an ignitable liquid type or class has been nominated, it must be noted that some commercial products incorporate similar liquids into their products – either within their specific formulation (e.g. degreasers, carburettor cleaners, etc), or as "carrier" for the key compounds (e.g. some aerosol or liquid products).<br><br>The absence of ILR in an exhibit can be due to any of a number of factors, including:<br>ILR was never present in exhibit<br>ILR was present, but not in the portion of exhibit collected<br>ILR was present in the submitted exhibit, but at levels too low for identification<br>ILR was originally present but subsequently lost (evaporation) prior to analysis<br>ILR was originally present but consumed in the fire<br><br>A1-Toluene is a flammable liquid, commonly found in products such as paint, paint thinners and varnishes.<br>A2- Tetrachloroethylene is a volatile, non-flammable compound commonly used in drycleaning and as a mechnical degreaser. |
| p20251808 | W028 | Analysis conducted on Item 1 did not identify the presence of an ignitable liquid. This does not preclude the possibility that an ignitable liquid was present at an earlier time.<br><br>Analysis of Item 2 disclosed the presence of an ignitable liquid from the light petroleum distillate class. Examples of this class include petroleum ether, some cigarette lighter fluids, and some camping fuels.<br><br>Analysis conducted on Item 3 did not identify the presence of an ignitable liquid. Item 3 was submitted as a substrate comparison control sample. |

<table>
<tr><th>UTIC</th><th>Webcode</th><th>How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court).</th></tr>
<tr><td>p20251809</td><td>W267</td><td>
<table>
<tr><td>Item(s)</td><td>Ignitable Liquid Residue Identified</td><td>Examples/Statements/Information</td></tr>
<tr><td>1</td><td>No Ignitable Liquids were identified</td><td>N/A</td></tr>
<tr><td>2</td><td>Positive for a Light Petroleum Distillate</td><td>Examples of Light Petroleum Distillates may include but are not limited to some lighter fluids, some camping fuels, and petroleum ether.</td></tr>
<tr><td>3</td><td>No Ignitable Liquids were identified</td><td>N/A</td></tr>
</table>
<br>Item 3 was used as a comparison sample for Item 1 and 2.</td></tr>
<tr><td>p20251810</td><td>W153</td><td>No products were detected in item 1.<br><br>According to ASTM E1618-19, the detected product in item 2 can be classified as a light petroleum distillate (some petroleum ether, cigarette lighter fluids, camping fuels, naphta).<br><br>Remarks :<ul><li>usually, there is no reference to ASTM in our report conclusion.</li><li>item 1 : no products were detected. Some specific compounds at trace level (acetic acid, 2-furanmethanol) were detected, but they cannot be attributed to any products (intensities very low and no specific pattern).</li><li>item 2 : some compounds were also detected after C9, the carbon range does not fit perfectly into the LPD category and could be broaden to light-to-medium.</li></ul></td></tr>
<tr><td>p20251811</td><td>W114</td><td>Item 1: No ignitable liquids were found<br><br>Item 2: Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br><br>Item 3: No ignitable liquids were found</td></tr>
<tr><td>p20251812</td><td>W114</td><td>Item 1. No ignitable liquids were found<br><br>Item 2. Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br><br>Item 3. No ignitable liquids were found</td></tr>
</table>

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251813 | W114 | Item 1: No ignitable liquids were found<br>Item 2: Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br>Item 3: No ignitable liquids were found |
| p20251814 | W114 | Item 1: No ignitable liquids were found<br>Item 2: Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br>Item 3: No ignitable liquids were found |
| p20251815 | W114 | Item 1: No ignitable liquids were found<br>Item 2: Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br>Item 3: No ignitable liquids were found |
| p20251816 | W114 | Item 1-1: No ignitable liquids were found<br>Item 1-2: Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br>Item 1-3: No ignitable liquids were found |
| p20251817 | W268 | **Item** **Findings**<br>1 No ignitable liquids were found.<br>2 Light petroleum distillate, examples of which are petroleum ether, some cigarette lighter fluids, and some camping fuels<br>3 No ignitable liquids were found. Used for comparison to Items 1 and 2. |
| p20251818 | W068 | **Opinions/Interpretations:**<br>Item 1 was determined to contain the following:<br>No ignitable liquids were identified. M1, M5<br><br>Item 2 was determined to contain the following:<br>- Light Petroleum Distillate, an ignitable liquid, examples of which include petroleum ether, cigarette lighter fluids, camping fuels, and naphtha. M1, M5<br><br>Item 3 was submitted as a comparative sample. This sample was analyzed and the results were used in evaluating possible matrix influences on Items 1 and 2. For comparison purposes only. D1, M1, M5<br><br>**Disposition:**<br>D1 The unextracted portion of the charcoal strip was retained archived in the laboratory. No unextracted portion remains for Items 1 or 2.<br>All submitted items not otherwise addressed will be retained archived in the laboratory.<br><br>**Methodology:**<br>M1 Item was extracted using passive adsorption.<br>M5 Item was analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251819 | W030 | It was determined utilizing activated charcoal strip extraction and gas chromatography/mass spectrometry analysis that item 002 exhibited the presence of a petroleum distillate in the light range. Some examples of a petroleum distillate in the light range include but are not limited to some types of camping fuels and some types of paint thinners.<br><br>It was determined utilizing activated charcoal strip extraction and gas chromatography/mass spectrometry analysis that item 001 did not exhibit the presence of an ignitable liquid. |
| p20251820 | W135 | No ignitable liquids were identified. This item is listed as a comparison sample. |
| p20251821 | W012 | No ignitable liquids were identified in Item 1-1 (FTS-25-FLAM1 Item 1 p20251821) and Item 1-3 (FTS-25-FLAM1 Item 3 p20251821).<br>A light petroleum distillate was identified in Item 1-2 (FTS-25-FLAM1 Item 2 p20251821). Some examples of light petroleum distillates would include some brands of pocket lighter fluids, camping fuels, and specialty products. |
| p20251822 | W012 | No ignitable liquids were identified in Item 1-1 and Item 1-3.<br><br>A light petroleum distillate was identified in Item 1-2. Some examples of light petroleum distillates would include some brands of pocket lighter fluids, camping fuels, and specialty products. |
| p20251823 | W058 | The above items were examined in accordance with *** Forensic Science Services methods and procedures based upon ASTM International standard test methods and practices. The samples were extracted using passive headspace sampling and analyzed via gas chromatography - mass spectrometry. An extract generated from each item will be retained with the evidence (Items 1A, 2A, and 3A).<br><br>Item 1: No ignitable liquid residues were detected.<br><br>Item 2: An ignitable liquid residue was detected- a light petroleum distillate. Light petroleum distillates (LPDs) may originate from petroleum ether, some cigarette lighter fluids, and some camping fuels.<br><br>Item 3: No ignitable liquid residues were detected. Item 3 was submitted as a comparison sample for Items 1 and 2. |
| p20251824 | W130 | Laboratory Item #2: A light petroleum distillate was identified. Examples of light petroleum distillates include, but are not limited to, cigarette lighter fluids, petroleum ether, and camping fuels.<br><br>Laboratory Item #1 and #3: No ignitable liquids were identified. |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251825 | W130 | 1.Laboratory item #1: No ignitable liquids were identified.<br>2. Laboratory item #2: A light petroleum distillate was identified. Examples of light petroleum distillates include, but are not limited to, cigarette lighter fluids, petroleum ether and camping fuels.<br>3. Laboratory item #3 (Comparison Sample for Items 1 and 2): No ignitable liquids were identified. |
| p20251826 | W048 | A petroleum distillate in the light range was identified in item 2. Examples of petroleum distillates in the light range include, but are not limited to, some cigarette lighter fluids, some camping fuels and petroleum ether.<br><br>No ignitable liquid residues were identified in items 1 and 3. |
| p20251827 | W048 | No ignitable liquid residues were identified in items 1 and 3.<br><br>A petroleum distillate in the light range was identified in item 2. Examples of petroleum distillates in the light range include, but are not limited to, petroleum ether, some cigarette lighter fluids, some camping fuels, and naphtha. |
| p20251829 | W010 | No ignitable liquids were detected in FTS Items #1-3. |
| p20251831 | W122 | No common ignitable liquid residues were detected in item 1.<br><br>Light petroleum distillate residues were detected in item 2.<br><br>No common ignitable liquid residues were detected in item 3. |
| p20251832 | W122 | No common ignitable liquid residues were detected in item 001-01.<br><br>Light petroleum distillate residues were detected in items 001-02.<br><br>No common ignitable liquid residues were detected in item 001-03. |
| p20251833 | W117 | A light petroleum distillate (C7-C9) was detected in Item 2. Examples of a light petroleum distillate include, but are not limited to: petroleum ether, cigerette lighter fluids, and camping fuels.<br><br>No identifiable ignitable liquid residues were detected on Item 1 and Item 3. |
| p20251834 | W117 | No identifiable ignitable liquid residues were detected in Item 1 and Item 3.<br><br>A light petroleum distillate was detected in Item 2. Examples of these include, but are not limited to: some cigarette lighter fluids, some camping fuels, and petroleum ether. |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251835 | W051 | "Item 1"<br>1. The exhibit was analysed for the presence of ignitable liquid residues and none were detected.<br><br>"Item 2"<br>2. The exhibit was analysed for the presence of ignitable liquid residues and light petroleum distillate was detected.<br><br>"Item 3"<br>3. The exhibit was analysed for the presence of ignitable liquid residues and none were detected.<br><br>*4. Note: According to literature, examples of light petroleum distillates include lighter fluids, camping fuel, petroleum ether and naphtha, among other products.* |
| p20251836 | W051 | "Item 1": A piece of burnt black fabric.<br>The exhibit was analysed for the presence of ignitable liquid residues and none were detected.<br><br>"Item 2": A piece of burnt black fabric.<br>The exhibit was analysed for the presence of ignitable liquid residues and light petroleum distillate was detected.<br>*Note: According to literature, examples of light petroleum distillates include petroleum ether, cigarette lighter fluids, camping fuels and naphtha.*<br><br>"Item 3": A piece of black fabric submitted for comparison with the exhibits marked "Item 1" and "Item 2".<br>The exhibit was analysed for the presence of ignitable liquid residues and none were detected. |
| p20251837 | W076 | No ignitable liquid residues were detected in the ACS sample extract (item 1-1-1-1) from the burnt piece of fabric with possible ignitable liquid(s) (item 1-1-1).<br><br>A Light Petroleum Distillate ignitable liquid residue was detected in the ACS sample extract (item 1-2-1-1) from the burnt piece of fabric with possible ignitable liquid(s) (item 1-2-1). Examples of Light Petroleum Distillate ignitable liquids are petroleum ether, cigarette lighter fluids, camping fuels, and naphtha.<br><br>No ignitable liquid residues were detected in the ACS sample extract (item 1-3-1-1) from the negative control unburnt piece of fabric intended as a comparison control (item 1-3-1). |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251838 | W042 | Item #01 - No ignitqable liquids were identified.<br>Item #02 - A light petroleum distillate was identified. Examples of light petroleum distillates of the type identified include, but are not limited to, some petroleum ether, some cigarette lighter fluids, and some camping fuels.<br>Item #03 (comparison sample for #01 and #02) - No ignitable liquids were identified.<br><br>The identification of an ignitable liquid residue does not necessarily lead to the conclusion that a fire was incendiary in nature. The absence of an ignitable liquid residue does not preclude the possibility that ignitable liquids were present. |
| p20251839 | W129 | Description of Evidence<br>Item 1 Burnt piece of fabric<br>Item 1-1 Extract from item 1<br>Item 2 Burnt piece of fabric<br>Item 2-1 Extract from item 2<br>Item 3 Negative control unburnt piece of fabric<br>Item 3-1 Extract from item 3<br><br>Results / Findings<br>Item 1-1:<br>No ignitable liquids were identified.<br>Item 2-1:<br>An ignitable liquid in the light petroleum distillates class was identified.<br>Examples of products in the light petroleum distillates class include camping fuels and cigarette lighter fluids.<br>Item 3-1:<br>No ignitable liquids were identified. |
| p20251840 | W129 | Item 1-1:<br>No ignitable liquids were identified.<br>Item 2-1:<br>An ignitable liquid in the light petroleum distillates class was identified.<br>Examples of products in the light petroleum distillates class include cigarette lighter fluids and camping fuels.<br>Item 3-1:<br>No ignitable liquids were identified. |

| UTIC | Webcode | How would you state your findings in a report? (Use the same wording as you would to submit a report to the lead investigator and/or court). |
|---|---|---|
| p20251841 | W055 | 1. Volatile residues from Exhibits 1 (burnt piece of fabric), 2 (burnt piece of fabric), and 3 (unburned piece of fabric - control) were collected using simple heated headspace and passive heated headspace concentration techniques and were analyzed for the presence of ignitable liquid residues. Exhibit 3 was analyzed in a burned and an unburned condition as a comparison sample for Exhibits 1 and 2.<br><br>2. A light petroleum distillate (LPD) was identified in the concentrated headspace vapors from Exhibit 2. Ignitable liquids belonging to this classification are commercially available as some cigarette lighter fluids, camping fuels, and naphtha.<br><br>3. No ignitable liquid residue classifications were identified in the concentrated headspace vapors from Exhibits 1 or 3. |
| p20251842 | W244 | Ignitable liquid ideitified<br>Results Inconclusive<br>No ignitable liquid identified |

9) How long did it take to complete this test (in hours)? Please report actual analytical hours only.

10) Did you find this test to be a fair test of the process of the examination and interpretation of ignitable liquids?

A) Yes

B) No

| UTIC | Webcode | How long did it take to complete this test (in hours)? Please report actual analytical hours only. | Did you find this test to be a fair test of the process of the examination and interpretation of ignitable liquids? |
|---|---|---|---|
| p20251801 | W182 | 10 | Yes |
| p20251802 | W051 | 19 | Yes |
| p20251803 | W119 | 5 | Yes |
| p20251804 | W061 | 3 | Yes |
| p20251808 | W028 | 2 | Yes |
| p20251809 | W267 | 6 | Yes |
| p20251810 | W153 | 6 | Yes |
| p20251811 | W114 | 9 | Yes |
| p20251812 | W114 | 10 | Yes |

| UTIC | Webcode | How long did it take to complete this test (in hours)? Please report actual analytical hours only. | Did you find this test to be a fair test of the process of the examination and interpretation of ignitable liquids? |
|---|---|---|---|
| p20251813 | W114 | 7hrs | Yes |
| p20251814 | W114 | 9.5 hours | Yes |
| p20251815 | W114 | 12 hours | Yes |
| p20251816 | W114 | 9.5 hours | Yes |
| p20251817 | W268 | 7 | Yes |
| p20251818 | W068 | 6 | Yes |
| p20251819 | W030 | 3 | Yes |
| p20251820 | W135 | 4 | Yes |
| p20251821 | W012 | 19 | Yes |
| p20251822 | W012 | 16-18 hours | Yes |
| p20251823 | W058 | 2 | Yes |
| p20251824 | W130 | Approximately 24 hours | Yes |
| p20251825 | W130 | 6 | Yes |
| p20251826 | W048 | 8 hours | Yes |
| p20251827 | W048 | 8 | Yes |
| p20251829 | W010 | 18 | Yes |
| p20251831 | W122 | 8 hours | Yes |
| p20251832 | W122 | 6 | Yes |
| p20251833 | W117 | 28 | Yes |
| p20251834 | W117 | 18 | Yes |
| p20251835 | W051 | 18 | Yes |
| p20251836 | W051 | 20 hours | Yes |
| p20251837 | W076 | 40 | Yes |
| p20251838 | W042 | ~8 | Yes |
| p20251839 | W129 | 8 | Yes |
| p20251840 | W129 | 8 | Yes |
| p20251841 | W055 | 20 hours | Yes |
| p20251842 | W244 | 11 Hours | Yes |

11) How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome.

Additionally, this question is a means to provide you with an opportunity to explain or include information about your findings or interpretation, as needed. In order to maintain confidentiality, please refrain from including identifying information specific to your laboratory.

| UTIC | Webcode | How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome. | FTS Response |
|---|---|---|---|
| p20251802 | W051 | Feedback regarding the labels on the tins: They turned black after heating and the markings on the labels became less legible. | Thank you for the suggestion. FTS is looking into better labels for our Flammables PT. |
| p20251803 | W119 | Given the amount of fabric submitted in each of the three items in this test, the cans that were used were substantially oversized. A pint can or perhaps a quart can as the largest would be more appropriate so as not to dilute the headspace inside the cans during adsorption. | Thank you for the suggestion. FTS has been having more difficulty procuring cans that pass internal QAQC. |
| p20251808 | W028 | Found the test to be appropriate. | |
| p20251811 | W114 | The labels on the cans discolor to the point of being illegible when heated. I would look into using different labels. | Thank you. Please see FTS Response for p20251802. |
| p20251813 | W114 | There was a pattern observed in the heavy/waxy region of all of these samples. A typical case rarely provides a “true comparison” sample to rule out any suspicious pattern resembling an ignitable liquid | Thank you for clarifying your response. |
| p20251817 | W268 | All facets of the test were A-OK. No changes are recommended. | |
| p20251819 | W030 | I like the fact you include a substrate along with or without an ignitable liquid. I would not change a thing. | |
| p20251824 | W130 | The labels on the evidence are thermal labels and when heated you can no longer read anything on the labels. | Thank you. Please see FTS Response for p20251802. |

| UTIC | Webcode | How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome. | FTS Response |
|---|---|---|---|
| p20251825 | W130 | Please do not use heat sensitive labels on the cans. After heating at 80 degrees celsius, the labels on the can become completely black. This may cause the numbering of items to be switched. | Thank you. Please see FTS Response for p20251802. |
| p20251829 | W010 | Question 9 - analytical hours encompass entire exam from start to finish (evidence opening to report writing). It does not include time for report review. | Thank you for clarifying. |
| p20251831 | W122 | I don't think any changes are necessary. | |
| p20251833 | W117 | There was something present from either the evidence can or the substrate used that caused carry-over between samples. It was present on both the GC-FID and GC-MS instrumentation used. It did not affect the results of the test, fortunately. I would suggest reevaluating both the substrate used and the evidence cans for future tests. | Thank you for the suggestion. All cans have been quality tested prior to use for this PT. Additionally, pre-distribution laboratories did not report carry-over. We will look into using different substrates in future Flammable PTs. |
| p20251834 | W117 | I noticed carryover in the majority of my blank samples throughout the run. The carryover did not affect the sample runs. For future tests I would re-evaluate the substrate, type of cans or perhaps evaluate the lot number of the cans for future tests. | Thank you. Please see FTS Response for p20251833. |
| p20251835 | W051 | 1. The metal tin design: the tin lid sits too deep and the thread from the carbon strip breaks easily.<br>2. The labels turns dark after heating in the oven, making them difficult to read. | Thank you. Please see FTS Response for p20251802 and p20251803. |

| UTIC | Webcode | How would you change the aspects of the test (i.e. scenario, test samples, question sections, report format) to improve a future version of this test? Comments and suggestions are welcome. | FTS Response |
|---|---|---|---|
| p20251836 | W051 | Tins are unfriendly for use when passive adsorption using activated charcoal strip is done as the string tied to it is often at the brink of breaking when taking out. The label also turned black after heating which made the markings difficult to read unless read up close. | Thank you. Please see FTS Response for p20251802 and p20251803. |
| p20251841 | W055 | You need to use different sample labels. Your labels turn dark when exposed to heat. | Thank you. Please see FTS Response for p20251802. |
| p20251842 | W244 | Information on how long the samples was sealed for, whether is was sealed immediately after burning or was it exposed a few hours before being placed into the metal can. After results is given test method should be provided | Thank you for the suggestion. FTS will consider providing additional details to the manufacturer's information for future PTs. |