



ATF-LS-FD Standard Approach to Liquid Samples	Published Online: March 2018
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Step 1

Initial Evidence Examination
Macroscopic / Visual inspection

Step 2

Screening

Indicative of an ignitable liquid?

No

Yes

Step 3

Solvent Dilution, Solvent Extraction (FD-6)

Solvent Dilution, Head Space (FD-3), Solvent Extraction (FD-6)
- or -

Step 4

Gas Chromatography – Mass Spectrometry

Step 5

Data Interpretation / ATF Laboratory Services Ignitable Liquid Classification System

Step 6

Document all analyses and findings (4.13.2)

Step 7

Sample Preservation

Step 1. Initial Evidence Examination

- Perform macroscopic / visual inspection of the liquid sample. Confirm that the contents match the container labeling and/or transmittal documentation. Document any discrepancies.
- Note and document the physical properties of the sample such as color, clarity, viscosity, and obvious odors.
- If only one layer is present, the layer is assumed to be homogeneous and shall be screened.
- If multiple layers are present, each individual layer is assumed to be homogeneous, and, if possible, shall be screened.

Step 2. Screening Techniques

- When sufficient volume is available, at least one screening technique (ignition test or miscibility) shall be performed at the examiner's discretion.
 - The **ignition test** (FD-12) can be performed by placing a small sample in a crucible and applying a flame; igniting a drop at the end of a disposable pipette; or placing some of the liquid on a cotton swab and igniting with a flame.
 - **Miscibility** is determined by adding a drop of the liquid into either an organic solvent or an aqueous liquid. Examples of suitable organic solvents include pentane and carbon disulfide. The aqueous liquid shall be water.

Step 3. Sample Preparation

- Solvent Dilution – dilute small aliquot of sample with an appropriate organic solvent.
- Wet Needle – wet an injection syringe needle with some sample.
- Simple Headspace (FD-3)
- Solvent Extraction (FD-6)

Step 4. Instrumental Analysis

Analysis by Gas Chromatography – Mass Spectrometry (FD-1).

- Analyzes unknown liquid samples using GC-MS to identify ignitable liquids in the C₆ (hexane) to C₂₂ (docosane) range.

Step 5. Data Interpretation

- Use ATF Laboratory Services Ignitable Liquid Classification System (FD-8).

Step 6. Document and Report Findings

- Use all appropriate policies and procedures to clearly document exhibits and report all analyses and findings:
 - Case Records (4.13.2)
 - ATF Laboratory Services Ignitable Liquid Classification System (FD-8)
 - Report Wording (FD- 9)
- Use current standard laboratory report formatting as programmed through FACETS.

Step 7. Sample Preservation

- Samples should be preserved and returned to the submitter for potential reanalysis.
- If the liquid is not to be returned as submitted, then a sample of the liquid will be preserved by the addition of charcoal (i.e. strips or granular) prior to being returned to the submitter.
- If the liquid is a sample that did not burn, it may not be necessary to preserve a sample of the liquid with charcoal.