

	ARSON-PM 5.1.2.4 Fire Debris Analysis - Liquid Samples	
	Document #: 3110	Page 1 of 1
	Revision #: 1	Issued Date: 12/28/2017
	Document Manager: Cheryl Lozen	Approved By: Jeffrey Nye

5.1.2.4.1 Flame Test and Sample Evaluation

- If adequate sample is present, and at the discretion of the analyst, a flame test may be conducted. One method of conducting a flame test is by soaking a cotton-tipped swab in liquid and passing through a flame. Test is positive if liquid ignites; negative if it does not ignite.
- Odor may be noted, however intentional inhalation of the liquid is not recommended due to potential health concerns, and this procedure should be performed in a working fume hood.
- If adequate sample is available, a questioned ignitable liquid may have dye components that can be compared to a submitted known ignitable liquid sample. These dyes may be able to be compared via thin layer chromatography or possibly other techniques which are not listed here. If performed, references to published procedures, etc. will be included in the case record.
- If a **nonaqueous** liquid is present, if desired, test to confirm it is nonaqueous nature. A nonaqueous liquid will be immiscible with water and will be noted on the worksheet. A nonaqueous liquid or appropriate water miscible liquid (e.g., alcohols) may be injected directly into the gas chromatograph - mass spectrometer (GC-MS).
- An **aqueous** liquid will be analyzed by the Passive Adsorption-Elution procedure, Headspace analysis or by the Solvent Extraction procedure. A direct sampling (liquid sample) can be collected from an aqueous sample, however if the sample is negative or is being examined in an extraction-only lab, the previous methods mentioned should be utilized.

5.1.2.4.2 Sample Preparation of Liquid Samples for Instrumental Analysis

- If flame test is positive, prepare a 1% (vol/vol) solution of the ignitable liquid in CS₂ (e.g. 20 µl ignitable liquid in 2 ml. CS₂) in an auto sampler vial.
- If flame test is negative, or if it is evident that the liquid contains water, appropriate methods should be used to test for the presence of ignitable liquid residues.

OR: (if no flame test is performed)

- Prepare a 1% (vol/vol) solution of liquid in a solvent (e.g. 20 ul liquid in 2 ml CS₂) If the liquid is not miscible in the solvent or GC-MS analysis is negative for the liquid, appropriate methods should be performed to test for the presence of ignitable liquid residues.

Note: for labs doing extraction only, if the unknown liquid is sampled by placing some on a charcoal strip, a blank with a clean charcoal strip placed into a vial will also be made.

5.1.2.4.3 Direct Injection of a Liquid Sample

When a whole liquid is obtained, a direct injection may be performed. The purpose of a direct injection is to introduce a whole liquid into the GC-MS. A very small amount, determined by the examiner, should be injected to ensure that the GC-MS is not overloaded.