

	ARSON-PM 5.1.4 Fire Debris Analysis - Interpretation	
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	<i>Revision #: 3</i>	<i>Issued Date: 09/16/2020</i>
	<i>Document Manager: Cheryl Lozen</i>	<i>Approved By: Ryan Larrison</i>

Data analysis is performed utilizing the current version of **ASTM E1618 Standard Test Method for Ignitable Liquid Residues In Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry** as a guideline.

NOTE: When evaluating the data of a questioned sample, the TIC is examined before viewing comparisons to known standards. The data of the questioned sample is also evaluated for peaks that may need to be searched via MS searches.

When interpreting the chromatogram of an exhibit, the interpretation will be made on the results on the analysis of that exhibit and on the analysis of any appropriate control samples and standards. For each sample extracted from fire debris, a chromatogram will be produced. The evidentiary chromatogram data is compared to known ignitable liquid chromatographic data. Pattern matching requires that the entire pattern used for comparison be displayed at the same sensitivity.

To provide sufficient detail for some comparisons, different amplitudes or presentations of the data may be necessary.

The carbon number range is determined by comparing the chromatogram to a reference or test mixture containing known normal alkanes.

Additional data analysis may be carried out using extracted ion profiling (mass chromatography), target compound analysis, or both.

When the comparison discloses a degree of similarity consistent with criteria as outlined in ASTM E1618, the analyst reports that the indicated class of ignitable liquid petroleum products has been detected.

Individual component identification can be performed by comparison to knowns or library searching, utilizing mass spectra and possibly retention time.

5.1.4.1 Ignitable Liquid Classification Scheme

Refer to ASTM E1618, Table 1: Ignitable Liquid Classification Scheme, as a guide.

5.1.4.2 Reference Table of Major Ions Present in Mass Spectra of Common Ignitable Liquids

Refer to ASTM E1618, Table 2: Major Ions Present in Mass Spectra of Common Ignitable Liquids, as a guide.

5.1.4.3 Minimum Requirements for Identification

Refer to ASTM Publication E1618, as a guide.

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5.1.4.4 Reference:

ASTM E1618 - (Current version) Standard Test Method for Ignitable Liquid Residues In Extracts from Fire Debris Samples by Gas Chromatography-Mass Spectrometry – See [ARSON-PM 5.1.7 Fire Debris Analysis](#) – References for most current version.