Sherlock® X Software for Fire Debris Analysis

Specification Sheet

General Description

The Sherlock X™ Software automatically identifies hydrocarbon compounds associated with ignitable liquids by GC-MS. The Sherlock System has been sold worldwide for over 25 years to analyze complex chemical mixtures and now has been extended to the forensics of fire debris analysis.

For an objective and automated fire debris analysis solution, the Sherlock X software and methods are combined with an Agilent GC-MS and Agilent ChemStation analysis software.

Sherlock's peak characterization and pattern recognition algorithms, combined with a calibration mixture, standardize each instrument and batch of samples. This virtually eliminates the manual calibration adjustments associated with a GC-MS.

Sherlock X determines an absolute response, as well as a relative percentage for each compound.

Hardware & Software

The Sherlock system is composed of a Windows® based computer loaded with the Sherlock X software and Agilent GC-MS ChemStation analysis software.

The computer is interfaced to one of the following Agilent GC-MS hardware combinations:

Agilent GC Models:
6850 / 6890 / 7820 / 7890

Agilent MS Models:
5973 / 5975 / 5977

GC-MS Column:
HP-1ms or HP-5ms

Agilent Technologies
Channel Partner

Methods

Sherlock X includes 2 Methods (E1618R & E1618D) which identify over 130 hydrocarbons from ignitable liquids.

Sample Preparation

Samples are prepared in accordance with ASTM E1412.

Calibration Standard

Sherlock X uses an external calibration standard in order for the system to accurately name compounds. Either of the following widely-used calibration standards work with Sherlock X::

- **NIST SRM # 2285**
- **ASTM E1618-PAK**

Instrument Throughput

Following the user's sample preparation, the sample vials are loaded into the instrument's autosampler. The Sherlock X software then automatically processes each sample.

- **Sherlock X – E1618R Processes approximately 4 samples per hour**
- **Sherlock X – E1618D Processes approximately 2 samples per hour**

Sherlock X Analysis

Following the chromatographic run, Sherlock X automatically characterizes major and minor peaks in **approximately one minute per sample.** This analysis occurs during the GC-MS cool-down cycle and thus has no impact on overall run-time of the method.

Categorization Tool

Along with its ability to identify individual compounds, Sherlock X includes categorization capabilities. These categories are based on ASTM E1618 compound types.

Visualization / Annotation

Sherlock X includes easy-to-understand visualization tools that provide an objective look at the sample data. These include TICs, EICs, quantitative and graphical data interpretation.

Pattern Recognition

Unknown samples can be graphically compared to ASTM E1618 compound types, as well as the presence / absence of target compounds. If the sample is one of the common ignitable liquid types (e.g. gasoline), the ignitable liquid will be displayed based on computerized pattern matching.

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