Sherlock X™ Software for Fire Debris Analysis

Specification Sheet

General Description

The Sherlock X™ Software automatically identifies hydrocarbon compounds found in fire debris samples 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 analysis of hydrocarbon-containing mixtures.

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

Sherlock's peak characterization, 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, Agilent GC-MS ChemStation analysis software and a spectral database (Wiley or NIST).

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

Agilent GC-MS Software
ChemStation Data Analysis D.01 or higher

GC-MS Spectral Libraries
Wiley or NIST

GC-MS Column:
HP-5ms, Agilent # 19091S-433I

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Methods

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

Sample Preparation

Samples are prepared in accordance with the ASTM E1412 Standard.

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 (NIST)**
- **ASTM E1618-PAK (Various)**

Instrument Throughput

Following the user's sample preparation, the extracts 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 and 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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MIDI, Inc.
125 Sandy Drive
Newark, Delaware 19713 USA
Phone: 302-737-4297
Fax: 302-737-7781
Email: fire@midi-inc.com
Web: www.midi-inc.com

VOSB