

# Smiths Detection - HazMatID Elite



## GENERAL DESCRIPTION:

HazMatID Elite is a next-generation handheld chemical identifier that combines high performance with simplicity and performs an analysis in 1 minute or less. Analysis is performed by placing a small amount of unknown substance onto the diamond ATR sensor and applying pressure with an integrated press for solid samples. The sample interface also includes an integrated well for the containment of liquid samples. A second, touch-to-sample, diamond ATR interface is available for rapid analysis of pooled liquids and surface films, and enables robotics applications.



MIL-STD-810G certified for operation in harsh conditions, HazMatID Elite has the widest thermal and solar operational range of any portable or handheld chemical identifier. The HazMatID Elite user interface contains a large display screen with a high viewing angle, large keypad, and an intuitive software workflow design.

Long-range, embedded RF wireless transmission is included for rapid communication of data and connection to Reach Back IDTM 24/7/365 support services.

## TECHNICAL DESCRIPTION:

Incorporates FTIR spectroscopy to ID a broad range of materials. In this technique, infrared (IR) optical radiation from 4000 to 650 wavenumbers (cm<sup>-1</sup>) passes through a chemical medium where it is absorbed by the oscillating electric fields of bonding electrons and lattice vibrations. Purely ionic compounds (e.g., sodium chloride) do not possess the requisite electronic structure to be identified by any FTIR system. The diamond attenuated total reflection (ATR) sample interface allows users to analyze materials with virtually no sample prep. The ATR measurement involves attenuation of the evanescent field of a totally internally-reflected IR beam emanating from the diamond sensor into a sample. Technique permits easy, reproducible measurements with minimal training. To identify a solid or liquid chemical, the user places a small portion (at least 1 mg) on to diamond sensor and cleans sensor with an alcohol swab when finished.

## Tier Selection

Final tier assignment is based on overall product score.

- Top Tier
- Second Tier
- Third Tier
- ◐ Fourth Tier
- Bottom Tier

### RANKINGS

	Biological	Chemical	Radiological
<b>FIELD USE System</b>	N/A	<span style="color: green;">●</span>	N/A
<b>MOBILE Laboratory</b>	N/A	<span style="color: green;">●</span>	N/A
<b>DIAGNOSTIC Laboratory</b>	N/A	<span style="color: green;">●</span>	N/A
<b>ANALYTICAL Laboratory</b>	N/A	<span style="color: green;">●</span>	N/A

## CONTACT INFORMATION

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## COST

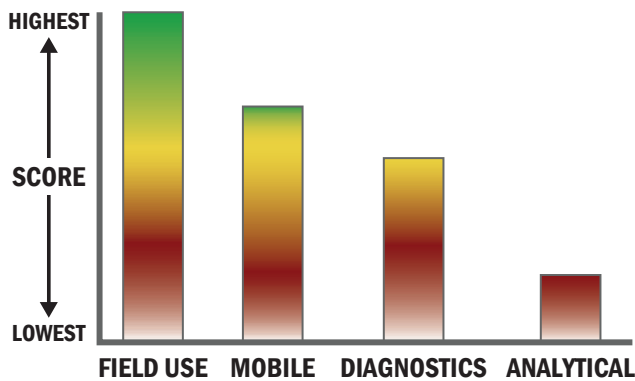
- >\$50,000/system
- \$0/analysis

## Survey Source

Vendor Supplied Information

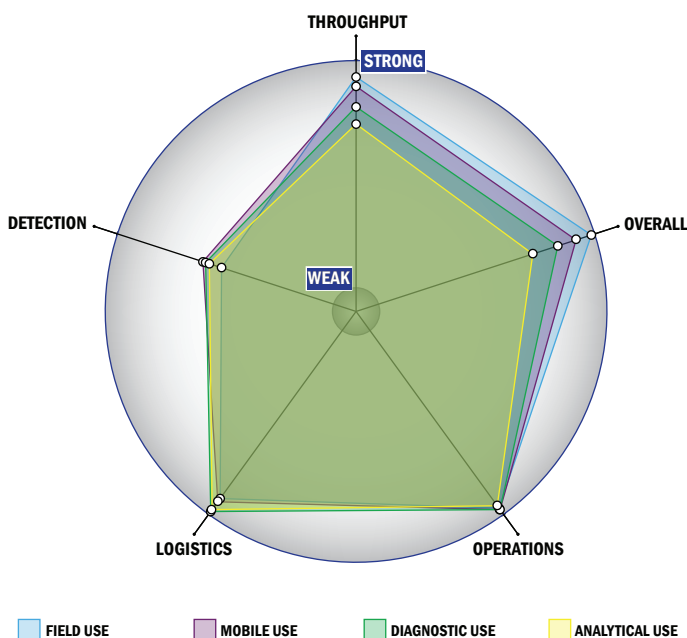
## Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.



## Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.



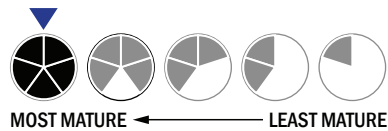
## Evaluation Criteria

### Throughput:

- 2 minutes or less for detection
- 1 sample, >10 tests/sample per run
- 349-96 samples every 2 hours
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 0 components
- No set-up of the system is required
- Automatic detection

### Logistics:

- Very brief (minutes-hours) training and minimal technical skills
- Approximately the size of a soda can
- Between 1 and 5 kg
- Wireless and wired connections are available
- System or device uses batteries
- 4-8 hours battery life



### Operations:

- Can be used from  $-21^{\circ}\text{C}$  to  $42^{\circ}\text{C}$  (All temperatures)
- Performance is not influenced by relative humidity
- Greater than 3 years shelf life
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system could easily be adapted into a fully autonomous system
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

### Detection:

- Possible the system could receive 510K clearance, no current efforts at this time
- Possible the system could receive FDA approval, no current efforts at this time
- Less than 10  $\mu\text{L}$
- Superior specificity. System has a false alarm rate approaching zero ( $\sim 0\%$ )
- 100 ppm-1 ppt
- Possible system could identify aerosolized chemical agent
- System currently can identify liquid chemical agent

