Thermo Fisher Scientific - Thermo Scientific TruDefender FTi

GENERAL DESCRIPTION:

Thermo Scientific TruDefender FTi analyzer is a rugged, handheld FTIR system for rapid, in-the-field identification of unknown chemicals including explosives, narcotics, toxic industrial chemicals, precursors and more. The instrument brings the power of FTIR directly into the hazard zone, enabling the responder to analyze—and act—faster than ever before. The TruDefender® FTi device was built to meet the needs of first responders. It is ergonomically designed for easy use in Level A gear and rugged enough to withstand the rigors of field use.

Key Benefits:

- Fast, accurate identification. Returns results in seconds. Onboard hazard database provides full safety and treatment information, further speeding appropriate response.
- Easy to use. Intuitive, menu-driven interface is consistent across instruments for fast training and proficiency.
- Built for field use. Certified to MIL-STD 810G for ruggedness including drop, shock, vibration and operation in extreme temperatures.
- Automatic mixture analysis. Enhances substance identification capability and eliminates the need for subtraction of spectra.
- Easy maintenance. Self-contained and requires no scheduled maintenance, calibration, warm up time or mirror alignment, and uses no consumables. -Embedded mobile phone technology allows users to send results directly from the hot zone via SMS text or email.

TECHNICAL DESCRIPTION:

Fourier Transform Infrared (FTIR) Spectroscopy FTIR is an absorption spectroscopy technique where an infrared light is passed through the sample. Some wavelengths may be absorbed, while others merely pass through the sample unaffected. Specific molecular bonds absorb a specific amount of energy and these losses of energy correspond to the peaks returned in an analysis. FTIR absorptions are strong and provide outstanding and easily interpretable results for substances which contain polar covalent bonds. FTIR spectroscopy is best used as a primary analysis technique for identifying colored substances such as industrial dyes, pigments and oils, and fluorescent materials.

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
FIELD USE System	N/A	🟢	N/A
MOBILE Laboratory	N/A	⚪	N/A
DIAGNOSTIC Laboratory	N/A	🔴	N/A
ANALYTICAL Laboratory	N/A	🔴	N/A

Survey Source

Vendor Supplied Information

CONTACT INFORMATION

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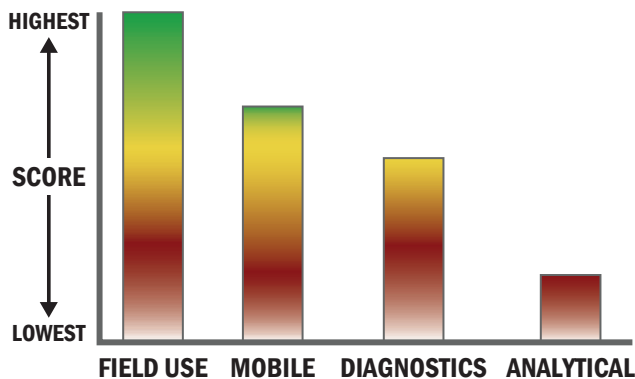john.kenneweg@thermofisher.com
www.thermoscientific.com/safety-chemid
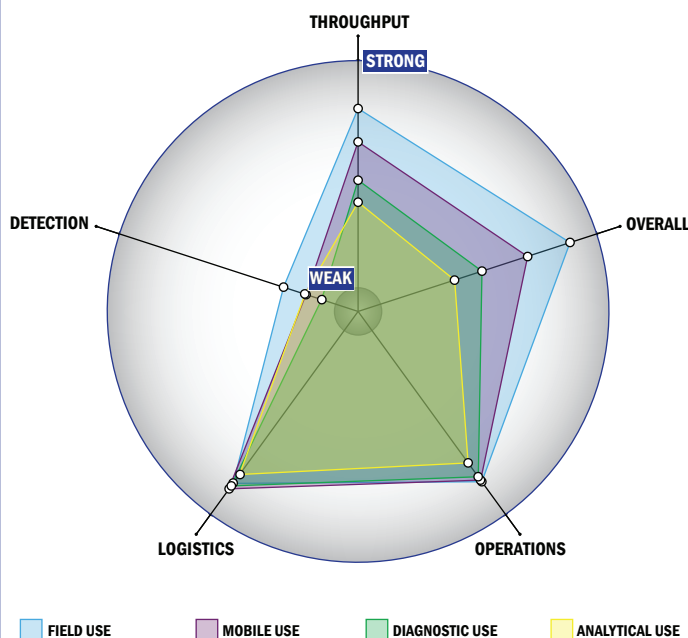
COST

- $46,500/system
- N/A/analysis

Scoring Analysis

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

HIGHEST

SCORE

LOWEST

FIELD USE   MOBILE   DIAGNOSTICS   ANALYTICAL

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.

THROUGHPUT

STRONG

DETECTION

WEAK

OVERALL

LOGISTICS

OPERATIONS

FIELD USE   MOBILE USE   DIAGNOSTIC USE   ANALYTICAL USE

Evaluation Criteria

Throughput:
- 2 minutes or less for detection
- 1 sample, single test/sample per run
- 95-32 samples every 2 hours
- The system could be adapted to a semi-automated system with some effort
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 0 components
- Less than 5 minutes is required for set-up
- 3-5 steps are required for detection

Logistics:
- 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

MOST MATURE ◄——— LEAST MATURE
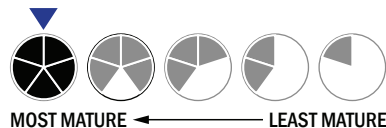
Operations:
- Can be used from < -21°C to > 42°C (All temperatures)
- Performance is not influenced by relative humidity
- 5-10 years expected life
- Results cannot be viewed in real-time
- The system is not capable of autonomy
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

Detection:
- Less than 10 µL
- Superior specificity. System has a false alarm rate approaching zero (~0%)
- System currently can identify liquid chemical agent