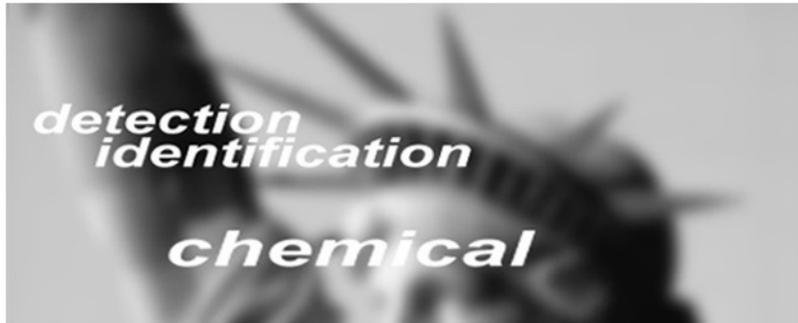


# ADVANCED TECHNOLOGY FOR A SAFER WORLD

**traceX**  
explosives  
**For Scrap Metal**



The TraceX™  
Explosives Kit  
detects all major  
HMEs with just  
one swab.



**Scrap Metal is Valuable;** Military scrap metal can be especially valuable because it often contains copper and other specialty metals, such as those used in armored vehicles and tanks. While most military scrap metal is harmless, some can be dangerous, if it contains explosive material from sources such as mortars, ammunition, or mines. This danger can be on a small scale when someone brings a single unexploded ordnance to a scrap yard, or on a large scale when large amounts of war scrap are transported in shipping containers for recycling. Explosive scrap metal has caused injuries and death to workers at scrap metal yards in many countries.

**Military Scrap Metal Can Be Valuable and Dangerous;** Military scrap metal can be especially valuable because it often contains copper and other specialty metals, such as those used in armored vehicles and tanks. While most military scrap metal is harmless, some can be dangerous, if it contains explosive material from sources such as mortars, ammunition, or mines. This danger can be on a small scale when someone brings a single unexploded ordnance to a scrap yard, or on a large scale when large amounts of war scrap are transported in shipping containers for recycling. Explosive scrap metal has caused injuries and death to workers at scrap metal yards in many countries.

**A Brief Case Study:** India has a vibrant and lucrative scrap metal recycling industry. Scrap metal from around the world is sent to India where it is processed and re-used. Sadly, India has experienced tragedies when workers were killed processing military scrap metal which contained explosives. The Indian government responded to this situation by creating a system where scrap metal imported into India must be inspected. A company must be approved by The Indian Directorate General of Foreign Trade (DGFT) to provide inspection of scrap metal. The approved companies are called Pre Shipment Inspection Agencies (PSIA) and they must issue a Pre Shipment Inspection Certificate (PSIC) for scrap metal entering India. The PSIA's inspect scrap metal for radiation and explosive material to ensure that they are safe.

**Explosives Detection Can Be Difficult and Expensive;** Detecting explosives in scrap metal is an important task, but it can be difficult to find the right tool. Pre shipment inspection agencies need an explosive detection capability that is reliable and cost-effective. While handheld explosive detection instruments can be accurate, they are often fragile and their use requires a great deal of specialized training, a large budget and regular maintenance. A more effective method of explosive detection is needed for issuing a pre shipment inspection certificate.

Colorimetric explosive test kits are often preferred over electronic detectors because they are more rugged, require less training and are lower cost. However, they often require the user to mix chemicals, perform serial analyses, conduct multiple swabs or tests, and then use a chart to interpret the results. Said plainly, most colorimetric explosives test kits are too difficult to use. Even worse, many explosive test kits can expose the user to dangerous chemicals, and expose the kit to contamination from the environment or the user, leading to unreliable results. See a comparison of the different types of colorimetric explosive test kits.

| Home Made Explosive (HME) Family | Representative Chemicals                     |
|----------------------------------|--|
| Nitroaromatics                   | TNT, DNT, Tetryl                             |
| Nitramines & Nitrate Esters      | RDX, HMX, PETN, EGDN, NG, R-Salt, Semtex     |
| Inorganic Nitrates               | urea nitrate, ammonium nitrate, black powder |
| Chlorates & Bromates             | potassium chlorate, potassium bromate        |
| Peroxides                        | TATP, HMTD                                   |
| Acids                            | nitric acid, sulfuric acid                   |
| Bases                            | potassium hydroxide, sodium hydroxide        |

# TraceX™ Explosives Kit

**TraceX Explosive Detection Kit is Affordable and Easy to Use;** The TraceX explosives detection kit is much more convenient. Simple to use and low cost, the user can be trained to use the kit by viewing a twelve minute training video. See more about Training for TraceX here. With a single swab, the TraceX explosives detection kit detects all the major families of explosive materials and their precursors. Thanks to the TraceX's simple color-change alert system, a single color indicates the presence of a particular family of explosive material. No longer does the user have to conduct serial tests, and then try to interpret the results. Explosive detecting has never been easier.

**More about TraceX;**The TraceX explosive detection kit was developed by Morphix Technologies under contract from the US Department of Defense, so you know it's tough. It is small enough to fit in a cargo pocket, lightweight and rugged. Each TraceX explosive detection kit comes in its own disposable protective plastic case, so it will be ready to use when needed. No more broken ampoules from rough handling, as can happen with other colorimetric explosive test kits. And, the innovative collection system protects the sample from user contamination, so you can have confidence in the result. As the name implies, TraceX is sensitive enough to be used for trace explosives detection but may be used for bulk detection too.

The TraceX explosives detection kit is available in boxes of five kits. Just request part number MOR-510100-05.

## COMPETITIVE COMPARISON

|  | TraceX™ Explosives Kit                      | Wipes   | Pens   |
|--|---|---|--|
| # of explosive families detected in one test cycle | 9   | 1-4 <sup>1</sup>  | 1-3 <sup>1</sup>   |
| Trace detection                                    | Yes   | Yes   | Yes or No <sup>1</sup>   |
| Bulk detection                                     | Yes   | Yes   | Yes  |
| Time for results                                   | < 3 minutes total                           | 2-12 minutes <sup>2</sup>   | 2-12 minutes <sup>2</sup>  |
| Ease of use  | Single swab and crush                       | Multiple swab and crush cycles, until a positive indication occurs  | Multiple swab and crush cycles, until a positive indication occurs |
| Interpretation of results                          | Results clearly indicated                   | User interprets results based on color formed after serial analyses | User interprets patterns from multiple pens                        |
| User safety  | All chemicals contained inside plastic case | Possible user exposure to chemicals                                 | Possible user exposure to chemicals                                |
| Potential for sample contamination                 | Low <sup>3</sup>                            | High <sup>3</sup>   | Medium <sup>3</sup>  |
| Ruggedness   | Each kit encased in protective plastic case | Fragile ampoules are minimally protected                            | Fragile ampoules have limited protection provided by pen casing    |
| Heat source required                               | No  | Yes or No <sup>1</sup>  | No   |

<sup>1</sup> Depends on specific product.

<sup>2</sup> Each test can take ~2 minutes; total time depends on number of tests run in series.

<sup>3</sup> For TraceX Explosives kit, sampling site is protected by cover, and user swabs with handle.

For Wipes, user touches sampling site when swabbing. In some kits, reuse of dropper may introduce contamination. For Pens, user must avoid touching tip of pen (which is sampling site).

## SPECIFICATIONS

|                             |   |
|-----------------------------|---|
| Operating Temperature Range | 2°C to 50°C (35°F to 122°F)                     |
| Operating Humidity Range    | 20% to 95% RH                                   |
| Sensitivity                 | Trace Level (can also detect bulk levels)       |
| Time for Color Change       | Less than 3 minutes                             |
| Kit Size                    | 131 mm x 92 mm x 17 mm (5-1/4" X 3-3/4" X 3/4") |
| Shelf Life                  | 12 months <sup>1</sup>                          |

