

CASE STUDY

TRACE DETECTION CONSUMABLES

Use Genuine Smiths Detection Consumables to Ensure Equipment Readiness

SUMMARY

The high performance and reliability of Smiths Detection trace explosives and narcotics detection systems depend on the use of genuine Smiths Detection trace consumables. Smiths Detection trace consumables are designed and manufactured to optimize the detection capabilities and operational readiness of the systems which use them, while delivering consistent and reliable security mission success.

THE CHALLENGE

Trace systems like the IONSCAN™ 600, IONSCAN 500DT, IONSCAN 400B, SABRE™ 5000, and Multi Mode Threat Detector (MMDT™) work by ionizing trace particles of explosive and narcotic residues, producing negatively- and positively-charged ions. Samples are acquired by swabbing suspect surfaces to recover explosive and narcotic trace residues. The swab is introduced to the instrument, where it is heated to ionize those trace particles. Using non-Smiths Detection swabs during sampling is a primary way in which debris may contaminate these trace detectors. Specifically, these swabs may contain undesirable contaminants that are invisible to the naked eye, but also ionized during sample analysis. Over time, the use of non-Smiths Detection swabs erodes the ability of the trace system to properly detect and identify suspect trace compounds, thereby decreasing reliability and adversely impacting product performance. Contaminating debris associated with third party swabs can result in false alarms, which are expensive and time-consuming to resolve.

Third party supplies are not approved by Smiths Detection and may hurt system reliability, increase support costs, reduce system life, and affect security mission readiness.

THE SOLUTION

Optimal detection and identification by Smiths Detection trace systems rely on the use of genuine Smiths Detection consumables, which help ensure all internal system components remain free of contaminating debris as a result of the sampling process. Swabs and other consumables produced by Smiths Detection are the subject of rigorous manufacturing processes and quality control procedures, thus ensuring the highest levels of threat detection and identification with decreased chance of false alarms.

Tight compliance with rigorous quality standards really matters.

For example, the third party swab in **Figure 1** does not offer the same material properties or performance characteristics as its Smiths Detection equivalent in **Figure 2**. Unraveled fibers from the third party swab can become dislodged, and enter the detector, thereby degrading performance and damaging the detector. The performance degradation will vary, and is not predictable. Swabs with loose fibers also pose an additional risk since the design of the IONSCAN 500DT and other trace systems include precision openings that are as small as a human hair. When introduced to the trace system, swabs like this increase component failures and unit downtime and may render the unit inoperable. Using third party swabs on IONSCAN 600, IONSCAN 500DT, IONSCAN 400B, SABRE 5000, and MMDT introduces significant risk by not safeguarding against problems that may interfere with equipment uptime and productivity.

Repeated use of non-Smiths Detection swabs can lead to productivity losses and increased service costs to repair damaged units.



Fig 1: Third Party Swab



Fig 2: Smiths Swab

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Another example of a poor consumable, quality-induced failure involves out-of-specification DRIERITE bottles on the IONSCAN 400B. **Figure 3** highlights the significant inconsistency in the thickness of both top and bottom rims on these bottles that prevents maintaining a fully compliant seal. Compare these rims to those in **Figure 4** on a Smiths Detection DRIERITE bottle. The use of third party DRIERITE bottles has been identified as the root cause of a number of instrument alarms leading to system compromise along with significant equipment downtime.



Fig 3: Third Party Bottle



Fig 4: Smiths Bottle

Using lesser quality consumables will lead to equipment failures.

The pre-check process ensuring optimal performance of all Smiths Detection trace systems is done by using a Smiths'-manufactured verification pen or impregnated verification token before sampling. The verification pen and token were expertly developed using scientific rigor that introduces known chemicals at known quantities to each of its trace detectors. This known "formula" is used to validate that the unit detects the target substances, as specified. The presence of these chemicals is verified against pre-programmed values, which are only satisfied when the equipment is performing optimally. Smiths Detection realizes that some customers choose to verify their trace equipment using third party verification pens neither manufactured by nor supplied for Smiths Detection. Equipment downtime on IONSCAN 500DTs along with resultant productivity losses have been directly associated with using third party verification pens not approved by Smiths Detection to interface with its trace equipment.

Smiths Detection has perfected the entire sample pathway from system readiness through analysis.

Figure 5 illustrates the comparison of peak data extracted from plasmagrams that were created during the testing of verification pens from Smiths Detection and a third party supplier. Notably, it indicates that a lack of component in the third party formulation results in the absence of Peak C and associated suppression of Peak E. The direct consequence of these findings is a higher risk for verification failures when using third party verification pens, which leads to equipment non-performance. This downtime is further compounded by excess numbers of clear-down attempts due to oversaturation during repeated verification attempts. Smiths Detection, not third party suppliers, has mastered the formula for each of its verification pens to ensure peak performance of its trace systems.

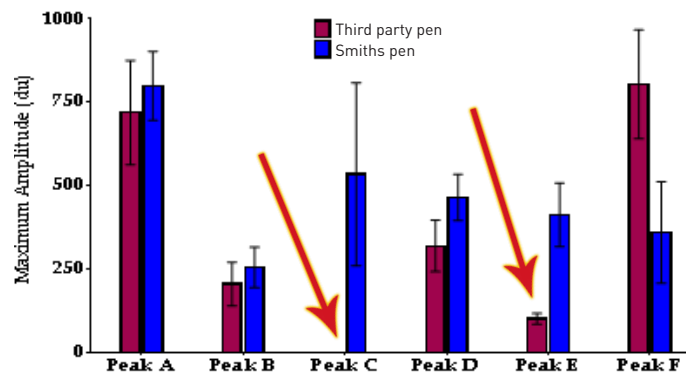


Fig 5: Comparison of Peak Data

Reducing the risk of equipment downtime depends on using the right verification supplies.

THE RESULT

The Smiths Detection brand of genuine trace consumables is exclusively manufactured and uniquely produced with performance in mind. Each part is consistently manufactured, and quality control processes applied, such that they are produced as clean and free of contamination and other debris as possible. Smiths Detection's fully-tested consumables are designed to deliver the expected performance characteristics, while increasing your confidence in knowing that your specific security needs will be met. As a result of high quality materials and standardized testing, Smiths Detection consumables are sure to prolong the life of your trace equipment. Be sure to look for the Smiths Detection label on all of your trace consumables.

Save time and money associated with costly repairs by using genuine Smiths Detection trace consumables.