

Screening Liquids Under 100 mL with the Cobalt Insight Range by Agilent



Introduction

Following terrorist activities to down airliners in 2006, restrictions were put in place limiting the nonexempted liquids that could be carried onto aircraft by passengers. Individual items must be under 100 mL in volume, and all items carried must fit into a single 1 L, clear, sealable plastic bag. This bag is presented for screening at security checkpoints, and is usually only screened by X-ray in most countries.

UK Department for Transport Requires Screening of Liquids Under 100 mL

The UK Department for Transport (DfT) has a more stringent measure (MSM) in place that requires an amount of 1 L bags to be further screened by certain DfT-approved systems using the following techniques:

- Explosive vapor detection systems (EVD)
- Liquid screening test kits (liquid strips)
- Liquid explosive detection systems (LEDS)—Type A screening systems
- Limited Type B LEDSS, including all Agilent Insight systems



Figure 1. Insight systems are deployed at many UK airports.

The Insight Range

Supplied by Agilent, the Cobalt Insight range comprises the Insight100, Insight100M, and Insight200M systems. All these systems are approved for use in Type A and Type B modes at ECAC Standard 3, the highest standard achievable. Insight systems have been widely deployed throughout Europe, including many UK airports, following the introduction of the requirement to screen exempted liquids in 2014.

The DfT has tested several LEDSS Type B systems for screening liquids, aerosols, and gels (LAGs) at volumes of less than 100 mL. All Insight systems, plus one other Type B system, are approved screening devices. The Insight range is capable of screening all liquids regardless of container type and size in either Type A or Type B mode. When using Type B mode, only one item per bag needs to be screened for compliance.

<https://www.gov.uk/government/publications/approved-small-volume-liquid-explosive-detection-systems>



Figure 2. Insight200M (front) and Insight100M systems.

Advantages of Insight Systems

Insight100, Insight100M, and Insight200M are widely deployed globally, and have shown the lowest operational false alarm rates of all LEDS at the highest detection rates possible. Insight systems are fast, easy-to-use, and require minimal training. The Insight100M and Insight200M screen all container types, including metals.

Insight systems can be used with other LEDS, such as Type B or Type C systems, as well as for alarm resolution with EDS for Cabin Baggage Type C3. There is no requirement for additional Type B systems, as the Insight products screen items with the lowest operational alarm rates known.

If Insight systems are used for screening LAGs in less than 100 mL volumes, there is reduced equipment count, requiring less space, less clutter, and fewer maintenance contracts. The Insight systems have shown high reliability in operation with mean time between failure (MTBF) more than 30,000 hours.

Benefits of Insight Systems for LAGs Less than 100 mL

- Fastest processing for less than 100 mL—five seconds per bag
- Low false alarm rate
- Best possible detection
- Reduced equipment count—same systems used to screen all LAGs, all containers, all sizes, all fill levels
- Highly reliable—availability greater than 99.7 %
- No consumables in Type B mode
- Alarms can be resolved in Type A mode
- Items can be left in bags*

* The detection/false-alarm performance of Insight systems is not affected by the presence of clear plastic bags or the proximity of other bottles, provided the measurement is taken correctly on the container being examined. It is the responsibility of individual airports to approve processes with appropriate authorities.

Table 1. Comparing Insight200M to other DfT-approved systems for screening LAGs under 100 mL.

	Approximate scan time (sec)	Additional device for less than 100 mL	Reliability	Do items need to be opened?	Consumables
EVD	30	Yes	Moderate	No	No
Liquid strips	45	Yes	High	Yes	Yes
Type A	45	Yes	High	Yes	Yes
Other Type B	30	No	High	No	No
Insight200M	5	No	Very High	No, items can stay in 1 L bag*	No



Figure 3. Screening a 100 mL container in an Insight200M system.



Figure 4. Screening a 100 mL container while still inside a 1 L plastic bag.

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