



ENTECH
INSTRUMENTS

See What's Really There™



2022 CATALOG

Solutions for Chemical Monitoring & Analysis

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President's Letter



Entech Instruments is continuing its tradition of providing the most advanced and accurate sample preparations systems available for headspace and gas sample analysis by GC and GCMS. Our new Multi-Capillary Column Trapping Systems (MCCTS) are transforming the way that gas phase sample preconcentration is performed prior to GC injection, all without the use of liquid nitrogen or even electronic cooling systems. These "fan cooled", extremely robust and reliable multi-stage capillary column traps manage water and CO₂ hundreds of times better than any packed trap system. This means much faster release for better chromatography, supporting "faster" GC methods, while also demonstrating far better immunity to contamination when exposed to high concentration

samples. Our MCCTS traps have been implemented in a full cryogen free TO15 solution with much faster GC injections and shorter run times than other TO15 systems on the market. Other applications using this revolutionary capillary trapping technology will also soon be announced.

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Entech's patent pending Sorbent Pen™ technology takes SPME to the next level by providing enhanced sensitivity, improved quantitation, and greater robustness than its fiber-based predecessor. Sorbent Pens utilize a unique flow through cartridge that forms a seal on a vial allowing a vacuum to be created within the vial. This new technique called VASE (Vacuum Assisted Sorbent Extraction) has been demonstrated to cover the entire range of analytes from the lightest volatile compounds (Freon 12/Vinyl Chloride and others) to very heavy 5-6 ring PAH compounds, while remaining in the headspace to avoid actual contact with the sample matrix. With 50-150x higher phase loading and the use of traditional adsorbents with thousands of times more surface area than SPME, the Sorbent Pen™ can fully extract difficult compounds from complex matrices providing superior sensitivity and reproducibility. Sorbent Pens are also available for performing Diffusive and Active air monitoring, making the Sorbent Pen technique extremely versatile. Our newly released SPR40 -Sample Preparation Rail promises to be a game changer for headspace sample preparation and general thermal desorption methods. Rather than desorbing a TD tube into a completely different instrument with separate traps, transfer lines, and rotary valves to have to clean and maintain, the SPR40 allows thermal desorption of Sorbent Pens directly into a GC or GCMS to allow dramatically improved recovery, consistency, and easy of maintenance. Watch for a new wave of applications coming out in 2019-2020 using the SPR40 Robotic inlet.

Our unmatched Silonite™ surface coatings continue to be perfected, resulting in the most consistent, durable, and inert coatings available for GC inlet systems and for mercury vapor handling without surface interactions. Silonite™ surface treatments play a vital role in achieving our ultimate goal; to provide our customers with complete solutions for "analytical grade" VOC and SVOC handling and inlet systems that can sample, store, and recover virtually all GCMS compatible compounds.

Finally, for US EPA Method TO-15 and China HJ-759, Entech is proud to be the only supplier that manufacturers and supports the complete solution for sampling and analysis of airborne contaminants using Silonite™ coated stainless steel canisters. Entech has assembled an extraordinary and talented team of Chemists and Service Engineers with a combined knowledge of over 200 years of laboratory and field experience – to provide our clients with premier customer service and on-site support. To our valued customers we would like to say thank you for your patronage through the years and we look forward to servicing your analytical needs for many years to come.

Sincerely,
Daniel B. Cardin – President



Entech Instruments is a leading developer and manufacturer of analytical instrumentation that supports professionals around the world in the Environmental, Industrial Hygiene, Food & Beverage, Product Testing, Forensics, and Clinical Analysis markets.

To provide solutions for such a diverse set of industry applications, Entech has assembled an extraordinary and talented team – a combined knowledge of over 200 years of laboratory and field experience – to provide our clients with premier customer service and on-site support. We invite you to share your application challenges and requirements so we can create a customized solution just for you.

~ The Entech Team

MillionAir-CTS™ System

Advanced injection control

10⁶ Concentration Range without Dilution

SHIMADZU

ThermoFisher
SCIENTIFIC

Agilent Technologies



Next Generation Air & Gas Analysis

High Throughput Canister Analysis of Air & Soil Gas That Dramatically Improves Your Bottom Line

Introduction

The 7200CTS / 7650-M combination, also known as the "MillionAir-CTS™ Analysis System," is the most advanced instrumentation ever developed for the analysis of volatile and light semi-volatile compounds in air and soil gas. Now, analyze any size canister in your inventory with the quality assurance of direct inlet robotics. The 7650-M includes the "SampleSafe" feature that performs rapid screening of samples without exposure to the 7200CTS trapping system, thereby maintaining far superior system hygiene relative to other preconcentration systems.

The MillionAir-CTS™ system gets its name by being able to handle samples with a million fold difference in concentration without pre-dilution. Air labs have always been faced with the dilemma of having to screen potentially high concentration air samples to determine if dilution will be needed, while at the same time preventing the contamination of their analyzer. Rotary valve autosamplers, used by all other manufacturers, expose potentially high concentration samples to inlet lines for hours or even days, creating a background in the system that may take days or even weeks of flushing to eliminate.

With the MillionAir-CTS™ system, contact with the sample is only a few seconds to a few minutes long. The 7650-M contains its own loop valve that can bypass the 7200CTS primary traps altogether, injecting the sample directly to the GCMS either for screening purposes or for quantitative analysis. Samples can be screened in as little as 4–6 minutes using an isothermal analysis to determine levels of TCE, PCE, and BTEX, which are the major contaminants

in soil gas that can raise havoc in other systems when high concentration samples are processed without dilution. With the Entech MillionAir-CTS™ system, both screening and analysis using sample volumes as low as 0.1 cc can extend the calibration curve well into the PPM range, drastically reducing the number of samples that have to be diluted before analysis. The MillionAir-CTS™ system is the ideal solution for today's competitive TO-15 laboratory.

Introducing the Cyrogen-Free 7200CTS

Entech is proud to release the world's first multi-capillary column trapping system (MCCTS - Patent Pending), for the precise concentration of vapor phased volatile chemicals in the boiling point range of -50°C to 230°C without the need for liquid nitrogen or complicated electronic cooling. Evolving from 28 years of continuous improvements and industry feedback on earlier preconcentrators, the 7200CTS is dramatically improving TO15 performance and sample throughput. Many of the important advancements that have led to its unparalleled reproducibility, such as quantitative volumetric measurements utilizing "Accu-Sample Technology," and digital valve isolation, are left unchanged from its market leading LN2 based 7200 predecessor. The core trapping system, however, has been completely reengineered, giving way to a technology that will likely replace the utilization of packed traps for most, if not all methods requiring the preconcentration of vapor phase volatile organic compounds.

Description	Unit	Part #
7200CTS 7650-M, MillionAir CTS System*		
System Includes:		
7200CTS Preconcentrator (with 1cc Loop)	EA	7200CTS-01
7650 with Loop Injection	EA	7650-M

*Order 7200CTS-01-HV and 7650-M-HV for 220/240VAC Operation.

Features

- Direct Inlet Robotics**
The 7650-M features a single inlet with a Silonite-D™ coated transfer line to eliminate stream select rotary valves and multiple inlet lines from the inlet flow path for the best possible sample isolation and analytical accuracy.
- New! MCCTS (Multi-Capillary Column Trapping) & Cryogen-Free Analysis**
Experience precise concentration of vapor phased volatile chemicals in the boiling point range of -50°C to 230°C without the need for liquid nitrogen or complicated electronic cooling.
- SampleSafe Screening**
The 7650-M features SampleSafe that includes the ability to perform rapid screening of samples without exposure to the 7200CTS trapping system, thereby maintaining far superior system hygiene relative to other preconcentration systems.
- A new standard of system hygiene & uptime.**
The elimination of packed traps has led to a system with unrivalled uptime as there is far less trap carry-over, even after high concentration samples.
- Improved precision and sensitivity.**
Full TO15 validation with low %RSDs for most compounds in 0.1- 30PPBv standard curve.
- Near complete elimination of water!**
Water is almost unretained when using capillary traps without the need for cryogen or complex electronic cooling.
- Quantitative Accuracy**
Sampling and analytical precision is not affected by changing matrices (air, humid air, nitrogen, helium, CO2, methane, argon, hydrogen).

Now, analyze all sample types, including Tedlar® bags, canisters, and thermal desorption tubes!



24 to 80 Minicans



24 to 80 Bottle-Vac Samplers

Sampling Media Options



Up to 20 Tedlar Bags



Up to 172 HDS Personal Monitors

7650-M with oven.

Position A
Short Tray

Oven

Position B
Long or Extra Long Trays

7650-M without oven.

Position A
Long or Extra Long Trays

Position B
Long or Extra Long Trays





7650-L20 GC Gas Autosampler

Features

High or Low Level Analysis

The 7650 Autosampler features stand-alone loop analysis, or pair with the 7200A Accelerated Preconcentrator for trace analysis.

Analyze up to 20 1L MiniCans/Bottle-Vacs

The 7650 holds 1 – 1.4L canisters in two, 10-position trays with intersample isolation far beyond rotary valve autosamplers.

TrueSeal™ Valve Compatibility

Now, add MiniCan™ autosampling for your canisters that use the popular TrueSeal™ and Nupro® valves by simply attaching a MicroValve™ to the top of the sampler valve prior to analysis.

Silonite–D™ Coated Inlet Lines

The 7650 1/8" heated Inlet line inserts directly into a canister's MicroValve™ for a zero dead volume, secure sample connection. After minimal sample contact during transfer to a Preconcentrator or GCMS, the inlet line is immediately flushed with UHP helium or nitrogen. Carryover is often less than one millionth the concentration of the previous sample!

Extended Autosampling Capacity

Analyze up to 18 additional 6L canisters or Tedlar® bags using expansion ports on the side of the 7650 Autosampler. Now, you can analyze any canister in your inventory using proven "direct inlet" reliability.

7650 Canister Autosampler

The 7650 brings the automated analysis of MiniCans™, Bottle-Vacs™, and even large volume sampling canisters to a whole new level! Drawing upon the benefits of its predecessors, the 7650 is the first canister autosampler to facilitate the analysis of up to twenty, 1–1.4L canisters while maintaining samples in a completely closed and isolated state until required for analysis. This level of isolation greatly reduces the potential for carryover, making the 7650 an ideal choice for today's soil gas laboratories. All samples, standards, and blanks flow through the same direct flow path, eliminating any problematic background level variations – a well-known challenge with rotary valve based autosamplers.

A Canister Autosampler with the amazing precision you need for today's demanding air analysis challenges.

The 7650 features a reliable and precise pneumatic z-axis control along with minimal transfer line sample contact. The brief sample transfer process is immediately followed with a nitrogen flush to greatly reduce any sample contamination risk due to high sample concentrations. The 7650 heated transfer line directly inserts into a MiniCan™ or Bottle-Vac™ canister via an ultra-compact MicroValve™ fitting, for absolutely zero unswept dead-volume.

When paired with the 7200A Accelerated Preconcentrator, the 7650 becomes an ideal autosampler solution for today's modern laboratories that must routinely analyze both high and low concentration samples. Learn more about the 7200A | 7650-M for PPM to sub-PPB level analysis with the new MillionAir™.

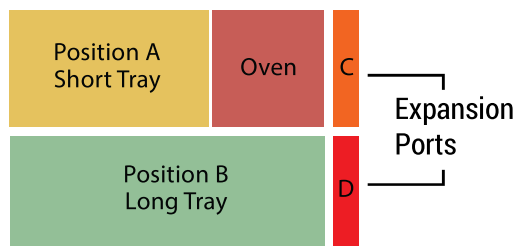
The 7650 also includes an easily accessible, array of inlet expansion ports in banks of 9, for the analysis of up to 18 additional canisters or Tedlar® bags.

Description	Unit	Part #
7650 Autosampler – Options		
7650 Headspace Autosampler	EA	7650-01
SmartLab™ II – USB Cable (2m)	EA	12-51120
9-Position external sample inlet*	EA	HS-EXPAND9S
7650 – 220-240VAC/50Hz Option	EA	7650-01-HV

* Optional Items – Contact Entech for more information and configurations.

Description	Positions	Unit	Part #
Long Sample Handling Trays – (7650)			
20mL / 40mL Vial	86	EA	HS-LT115-086
Silonite™ HDS™ Personal Monitor	86	EA	HS-ELT119-086
100mL / 200mL Silonite™ MiniCan™	53	EA	HS-LT158-053
125mL Bottle-Vac™	40	EA	HS-LT197-040
250mL Bottle-Vac™	24	EA	HS-LT248-024
450mL and 600mL MiniCan™	18	EA	HS-LT280-018
450mL and 600mL MiniCan™*	24	EA	HS-ELT278-024
500mL Bottle-Vac™	18	EA	HS-LT301-018
1L Bottle-Vac™	10	EA	HS-LT384-010
1L Silonite™ MiniCan™	10	EA	HS-LT407-010
1L Silonite™ MiniCan™*	12	EA	HS-ELT403-012
6L Canister Tray	6	EA	HS-FT906-06
6L Can Alignment Tool	N/A	EA	HS-FT906-Align
20-Position Tedlar® Bag Tray	20	EA	HS-LTTB-020

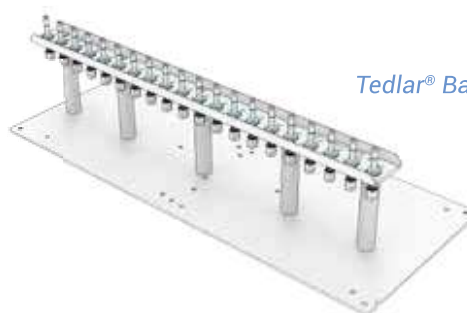
* Extra Long Tray does not allow 9 Pos. Expansion Ports



7650 Sample Handling



The 7200A Accelerated Preconcentrator and 7650 Canister Autosampler



Tedlar® Bag Tray



The 7650 Autosampler – Optimal sample throughput and superior accuracy with the lowest carryover available anywhere!

Five fixed ports are available to facilitate the introduction of UHP Nitrogen, Internal Standard, Calibration Standard, and two additional fixed ports without using up sample tray positions.



The 7650's amazing single inlet system is designed to easily handle 1L MiniCans™ and 1L Bottle-Vacs™.

Smaller canisters / vials can be analyzed using optimized trays. Add up to 18 additional canisters or Tedlar® bags with the 7650's expansion ports, or analyze / screen 6L canisters directly using the new 6L canister tray.

Air Toxics | Soil Gas | Vapor Intrusion by GC/MS



7200A | 7650-M – MillionAir™ System – High Throughput Air Analysis

The 7200 Preconcentrator and 7650-M Inlet combine for state-of-the-art whole air analysis.

Introducing the 7200A | 7650-M, MillionAir™ Analysis System. The most advanced instrumentation ever developed for analysis of volatile and light semi-volatile compounds in air and soil gas. Now, analyze any size canister in your inventory with the quality assurance of direct inlet robotics. The 7650-M features the new MillionAir™ option that includes the ability to perform rapid screening of samples without exposure to the 7200A Trapping system, thereby maintaining far superior system hygiene relative to other preconcentration systems.

The 7650-M autosampler minimizes carryover when exposed to high concentration samples by combining brief sample contact time, zero dead-volume canister connections, and Accu-Sample™ technology found in the 7200A. Accu-Sample™ completely isolates samples within specific, low-volume flow-path segments, and prevents trap exposure during important sample select and preflush operations. The dual 0.1cc loop in the 7650-M and 1cc loop in the 7200A allows a vastly extended range when combined with the accurate 10–1000cc preconcentration range of the 7200A. The result is greater dynamic range and reduction in the number of sample dilutions required when analyzing soil gas and other high-concentration samples.

Description	Unit	Part #
7200A 7650-M, MillionAir™ Analysis System		
System Includes:		
7200A Accelerated VOC Preconcentrator (includes loop valve) 120VAC/60Hz	EA	7200A-01
7200A Accelerated VOC Preconcentrator (includes loop valve) 240VAC/50Hz	EA	7200A-01-HV
7650 w/ Loop Injection 120VAC/60Hz	EA	7650-M
7650 w/ Loop Injection 240VAC/50Hz	EA	7650-M-HV

[See p. 37 to select desired MiniCan™ Tray Sizes.](#)

7200A | 7650-M Air Analysis System

Features

- **Direct Inlet Robotics**

The 7650-M features a single inlet with a Silonite-D™ coated transfer line to eliminate rotary valves and multiple inlet lines from the inlet flow path for the best possible sample isolation and analytical accuracy.

- **Automated Analysis**

Accu-Sample™ technology provides superior water management to quantitatively analyze 10 – 1000cc of sample volume. Choose the 7200A Loop option to achieve accurate sample volumes from 0.1cc to 1cc.

- **New! MillionAir™ System**

New, very low volume injection mode that allows analysis of a concentration range of up to one million fold.

- **Extended Range Air Analysis**

Wide volume range (0.25–1000cc) for increased dynamic range without dilution. Directly handle PPM level samples without carryover. Supports single canister calibrations.

- **Quantitative Accuracy**

Sampling and analytical precision is not affected by changing matrices (air, humid air, nitrogen, helium, CO₂, methane, argon, hydrogen).

- **Large Silonite™ Canister and Tedlar® Bag Analysis**

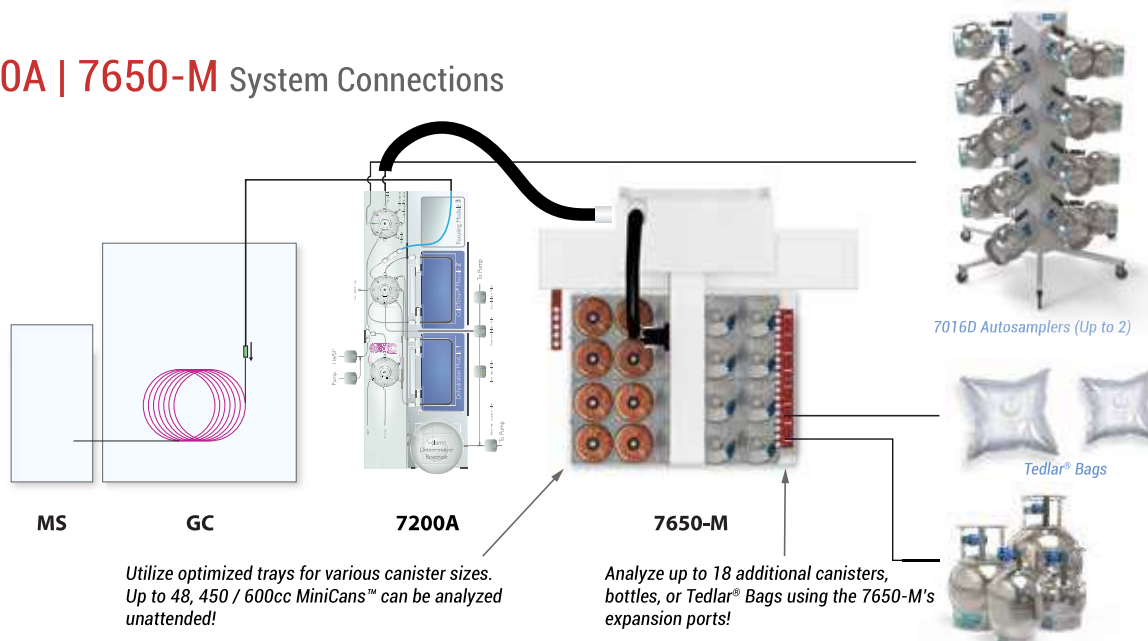
Add two, 9 port expansion ports to easily connect 18 large canisters and Tedlar® bags. The 7200A also features a built-in 4 sample inlet that can accommodate up to two 7016 or 7016D autosamplers in addition to the 7650-M for unsurpassed flexibility and sample throughput.

- **Screen High Concentration Samples**

Prevents trap exposure to high concentration samples.

Now, analyze all sample types, including Tedlar® bags, canisters, and thermal desorption tubes!

7200A | 7650-M System Connections



7650-L20 GC Gas AutoSampler

Enjoy the benefits of the 7650-L20 in your laboratory:



- Automation of Tedlar bags, Silonite MiniCans, HDS Personal Monitors, and Bottle-Vac vacuum samplers.
- Permanent Gases
- Volatiles & Semi-Volatiles Analysis (C1 - C20)
- Reduced Sulfur compounds to low PPBv Levels by GC/CLD
- Single sample inlet heated up to the point of sample contact
- Elimination of multiple sample lines that can become contaminated
- Oven option to heat sample containers to increase molecular weight range recovered (MiniCans or Bottle-Vacs)

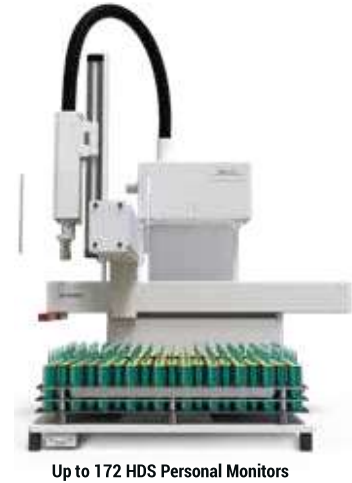
7650-L20 System

The Entech 7650-L20 is the only system handling automated injection of Tedlar bags and other gas phase samples using a single inlet robotic autosampler. The 7650-L20 can automate the analysis of up to 16 Tedlar bags, or 24 to 80 Bottle-Vac samplers or MiniCans depending on the size of the canister or Bottles. Canisters and gas sampling Bottle-Vacs can be heated prior to analysis to extend the molecular weight range of recoverable compounds, allowing a reliable way of measuring heavy volatiles or semi-volatiles. The dual loop system simultaneously injects an Internal standard along with the sample or calibration standard to support internal standard calibration methods. A 100% Silonite coated ceramic pathway ensures recovery of difficult compounds, creating the most comprehensive technique available for the quantitative measurement of organic compounds in gas phase samples. The 7650-L20 can automate the injection of gas samples to virtually all GCs by using the model specific communication cables available from Entech.

All other systems for the analysis of Tedlar bags use a rotary valve and individual lines that can suffer from contamination and carryover due to long exposure times, dead volume in connective fittings, and plastic rotors in the rotary valves. The 7650-L20 uses a single inlet that makes only momentary contact with the sample when drawing a sample through a calibrated loop for injection into a GC. This line is then immediately flushed to minimize exposure times. The unique inlet allows a $\frac{1}{16}$ " ceramic coated stainless steel tube to be inserted right into the sample fitting, called a Micro QT valve, that is heated right up the point of sample contact. By inserting the $\frac{1}{16}$ " continuous tubing right into the sample valve on the Tedlar bag, MiniCan, or Bottle-Vac, all dead volume and cold spots are eliminated. This ensures a clean, contamination free solution well into the semi-volatiles range. Entech has perfected this technology over the past 15 years, and no other system on the market has been designed with these capabilities.

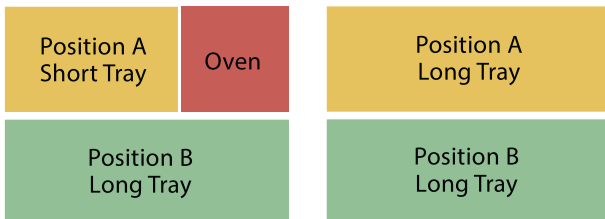


Sampling Media Options



7650-L20 with oven.

7650-L20 without oven.



Description	Unit	Part #
7650-L20 Autosampler	EA	7650-L20
SmartLab™ II – USB Cable (2m)	EA	12-51120
7650L-20 – 220-240VAC/50Hz	EA	7650-L20-HV

* Optional Items – Contact Entech for more information and configurations. Please specify GC type when ordering to obtain correct READY/START cable.

Description	Unit	Part #
Sample Oven	EA	HS-OVEN-407-1
Oven Reducing Bushings		
125mL Bottle-Vac Bushing	EA	19-76525
250mL Bottle-Vac Bushing	EA	19-76535
500mL Bottle-Vac Bushing	EA	19-76545
1L Bottle-Vac Bushing	EA	19-76555
50mL HDS Personal Monitor	EA	19-76565
100mL / 200mL MiniCan	EA	19-76570
450mL / 600mL MiniCan	EA	19-76580
1L MiniCan Extender	EA	19-76585

Height: 38" (44" height with transfer line clearance)
 Width: 23.5"
 Depth: 27"

Fuses
 120V Systems
 15A Main
 8A Heater/Valve
 240V Systems
 8A main, 6A Heater/Valve

Wattages
 125W Main Transfer line heater
 75W Gripper
 85W Mandrel/Loop
 70W 7200/GC Transfer line heater

Description	Positions	Unit	Part #
Long Sample Handling Trays – (7650)			
100mL / 200mL Silonite™ MiniCan™	53	EA	HS-LT158-053
125mL Bottle-Vac™	40	EA	HS-LT197-040
250mL Bottle-Vac™	24	EA	HS-LT248-024
450mL and 600mL MiniCan™	18	EA	HS-LT280-018
500mL Bottle-Vac™	18	EA	HS-LT301-018
1L Bottle-Vac™	10	EA	HS-LT384-010
1L Silonite™ MiniCan™	10	EA	HS-LT407-010
6L Canister	6	EA	HS-FT906-06
20-Position Tedlar® Bag Tray	16	EA	HS-LTTB-020
Short Sample Handling Trays – (7650)			
HDS Personal Monitor Tray	50	EA	HS-ST119-050
20 / 40 / 60 Vials	50	EA	HS-ST115-050
100mL / 200mL Silonite™ MiniCan™	32	EA	HS-ST158-032
125mL Bottle-Vac™	24	EA	HS-ST197-024
250mL Bottle-Vac™	15	EA	HS-ST248-015
500mL Bottle-Vac™	11	EA	HS-ST301-011
1L Bottle-Vac™	6	EA	HS-ST384-006
1L Silonite™ MiniCan™	6	EA	HS-ST407-006
Extended Sample Handling Trays – (7650)			
Silonite™ HDS™ Personal Monitor	86	EA	HS-ELT119-086
450 / 600cc Minican	24	EA	HS-ELT278-024
450 / 600cc Minican	24	EA	HS-ELT280-024
1L Bottle-Vac™	12	EA	HS-ELT384-012
1L Silonite™ MiniCan™	12	EA	HS-ELT403-012