

Model 4560 Sample Concentrator



Purge-and-Trap Sample Concentrator

- Shortest purge-and-trap cycle time results in greater productivity for short GC analyses (i.e., GC/MS, BTEX).
- Includes Cyclone Water Management™ minimizes water interference without affecting polar recovery.
- Optional Infra-Sparge Sample Heater™ with temperature feedback from within sample.
- Provides means for handling sample foaming and spillover with removable foam/particle filter in sparger mount.
- Rapid trap heating (900°C/min) and cooling (250°C/min).
- Up to 14 sets of run-settings can be saved, loaded as files, and even linked during a sequence.
- Provides for 5- and 25-mL frit and needle spargers, and disposable tube spargers, using same needle and 18-mm mount.

The Model 4560 Sample Concentrator thermally traps and desorbs organic compounds for GC and GC/MS analysis. It is principally designed to purge volatiles from water and soil for concentration onto a sorbent trap in strict accordance with USEPA protocol and can also be used as a base unit for controlling automatic sampling products including the DPM-16 (a 16-position discrete autosampler) and the Model 4551 Vial Autosampler. The sample transfer line connects through an optional Low-Dead-Volume Injector to the GC column in an analytical system. Tactile keypad and a vacuum-fluorescent display enhance the user interface.

Principle of Operation: Liquid, solid, or gaseous (from a solid support) samples containing volatile organic compounds are sparged at a controlled temperature with a regulated flow of inert gas for a fixed period of time. Analytes stripped from the sample (or transferred from an upstream multisampling product) are concentrated on a cool sorbent trap specific to the application. The trap is then rapidly heated and, with a valve change, the analytes are desorbed as a “plug” under reversed flow of carrier gas onto the GC column. Virtually all water transferred from the sample matrix to the trap during sparging remains in the concentrator. The water is then baked out to vent, reducing interference with subsequent reconcentration, separation, or detection of the analytes.

Principal Applications:

- Volatile organics analysis by GC and GC/MS
- ASTM and Standard Methods
- USEPA 502.1, 502.2, 503.1, 524.2, 601, 602, 603, 624, 8010, 8015, 8020, 8021, 8030, 8260

Product Specifications

General Specifications

Dimensions

- 14.5" H x 10.2" W x 14.2" D
- Footprint - 145 in²

Weight

- 31 lbs

Programmable Time Range

- 0–999.99 min for all time parameters

Trap

- 0.125" O.D. x 0.105" I.D.
- Coil shape
- Stainless steel
- Direct resistive heating
- Trap oven size (to be cooled) <25 in³
- Trap backpressure internally optimized
- Minimum cooldown: ambient +1°C

Valve

- Electrically DC actuated
- 6-port, 60° rotation
- Removable rotor

Programmable Temp Ranges

- Trap: ambient to 300°C in PURGE, DESORB, and BAKE
- Sample Transfer Line: ambient to 200°C
- Valve oven: ambient to 300°C
- Sample inlet: ambient to 200°C
- External heater: ambient to 300°C
- Optional sample heater: ambient to 200°C
- All heated zones tested during self-test period

Transfer Line

- Fused-silica-lined stainless steel standard
- 48" standard
- 60" optional

Column Compatibility

- 0.20–0.53 mm with CFM™
- 0.32–0.53 mm (or packed) without CFM



* Under normal USEPA Method 502.2 times and temperatures

The OI Analytical Model 4560 Sample Concentrator is protected under Patent #5,250,093 and Patent #5,261,937.

Printed in U.S.A.
Publication 03880699

Standard Glassware

- 5-mL frit sparger (18 mm neck)

Optional Glassware

- 5-mL needle sparger (18 mm neck)
- 10-mL disposable test tubes (18 mm neck)
- 25-mL needle sparger (18 mm neck)
- 25-mL frit sparger (18 mm neck)

Electronic Control

- 80188 microprocessor
- 128K ROM
- 32K RAM
- 14 programmable methods with a battery backup
- STE Bus connector
- Tactile, elastomeric keypad
- 2 x 20 dot matrix, alpha-numeric, vacuum-fluorescent display

Performance Specifications

Trap

- >900°C/min heating rate (25°C to 180°C in approx. 10 sec)
- >250°C/min cooling rate (180°C to 25°C in approx. 35 sec)
- Minimum cooldown: ambient +1°C

Optional Sample Heater

- Up to 30°C/min sample heating rate

Temperature Accuracy

- ±1°C for *all* heated zones

Temperature Stability

- ±1°C for *all* heated zones

Water Management

- Eliminates all but approx. 0.063 µL of trapped water per minute of desorb*
- Operates at *ambient* temperature
- Water removal at level equivalent to condensation at 4.8°C
- Polar compounds unaffected

Communications

Output Signals

- 2 sec contact closure at PURGE READY or PURGE END, START DESORB, and START BAKE

Input Signals

- 50 ms contact closure at PURGE READY to PURGE and DESORB READY to DESORB

Communication Interface

- Standard RS-232-C (bi-directional)
- Baud Rate 9600
- Optional WinTrap *Plus*™ software package
- O•I•NET™ network interface for inter-instrument communication

Requirements

Gas Requirements

- 99.999% He or N₂ purge gas

Power Requirements

- Standard unit - 110 VAC (+10%, -15%) 50/60 Hz (800 VA max)
- Available unit - 220 VAC (±10%) 50/60 Hz operation

Major Options

- Internal carrier flow control
- WinTrap *Plus* Windows® control software
- Infra-Sparge™ Sample Heater
- Cryo-Focusing Module™

Safety Agency Approvals

- UL-1262 (UL)
- IEC 1010-1
- CSA 22.2 pending