CDS Analytical

Leaders In GC Sample Introduction Technology

Thermal Desorption Sample Introduction Instruments

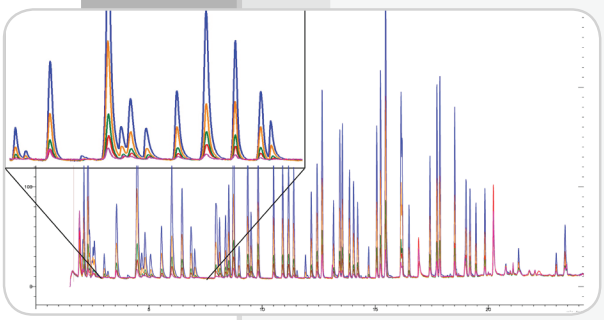
A Complete Suite of Thermal Desorption Sampling and Concentration Systems

465 Limestone Road, Oxford, PA 19363-0277, USA
Tel: 800-541-6593 Fax: 610-932-4158
www.cdsanalytical.com

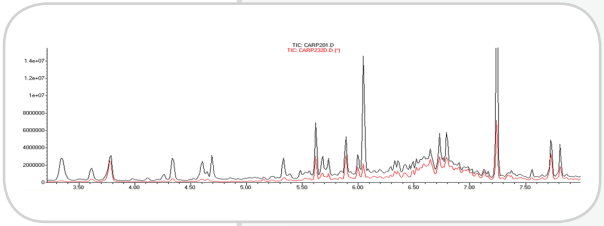
Introduction

CDS Analytical's Dynatherm brand thermal desorption systems are the name brand in the chemical weapons industry, known and respected for flexibility and reliability. Time and again, organizations like the U.S. Department of Defense, and worldwide Chemical Agent Demilitarization facilities in both fixed and mobile labs have relied on them in situations where there simply is no margin for error.

The CDS thermal desorbers cover a wide range of sample introduction instruments. These include a single tube desorber (9300), a near real-time sampling system (9305), a continuous sampler (9350), and and two autosamplers (7500 and 7500S) capable of handling any standard size thermal desorption tube.



65 Component TO-17 Standard
5ppbv through 100 ppbv



Carpet Emissions Over 72 Hours.

What We Can Measure:

- Any C_2 up to C_{33}; 5 ring PAH's maximum
- Halogenated C_1-C_{33} compounds
- High moisture samples are OK
- Levels from sub-ppt (parts per trillion) to %

Applications:

- Environmental research on pollution
- Air toxics in urban, industrial and indoor air
- Stack and fugitive emissions
- Chemical weapon and homeland security
- Soil gas and vapor intrusion
- Product emissions
- Occupational hygiene
- Food, flavors and fragrances

Thermal Desorption

Thermal desorption is best performed as a two-step technique. First, samples are collected and concentrated on a solid sorbent, then the analytes are re-focused on a sorbent trap before being transferred to an instrument for analysis.

CDS Analytical's thermal desorption instruments can be used with a variety of sorbent tubes (used to capture relevant compounds). Then the captured analytes are focused to improve chromatography and introduced into a gas chromatograph, where the components are separated, identified, and measured. Systems can be used for the thermal desorption of solids using heat, not solvent extraction, to release organic compounds. This eliminates long extraction times and interference from solvent peaks.

Two sorbent tubes work in tandem: a high capacity tube retains desired compounds from large sampling volumes and a smaller focusing trap focuses the compounds before injection them onto the GC column in a narrow band. Transferring analytes to the focus trap improves injection efficiency without the need for cryogenics or Peltier cooling. This second step is neccessary since the the sampling process may have required liters of flow to collect enough sample to meet the methods sensitivity requirements. The method also minimizes water interference because carrier gas evaporates water vapor from the sorbent tube and vents it from the unit with no sample loss.

9300 Series Thermal Desorption Systems

Building on the success of the 900 series Automated Concentrator for Environmental Matrices (ACEM), the 9300 series offers multiple configurations of the basic thermal desorber to provide maximum flexibility. All manual versions include sorbent tube chambers that accept 1/4", 6mm, 10mm OD and Volatile Organic Sampling Train (VOST) Thermal Desorption tubes, focus the analytes of interest on a smaller bore focus trap and connect to the GC by direct connection to the GC column, or by connecting using a transfer line to the injection port (to utilize the split functions of the injector).

All models feature electronic control with a hand-held plug-in for system maintenance and direct communication interface for PC control. Computer controls allow users to save and recall methods, preset maximums for identified tubes and traps, run different tubes with different methods or the same tube multiple times. Log files are generated that include, date/time of injection, method, start temperatures, and leak check verification. The flexible transfer line, reinforced with a Silco-nert™ liner, provides direct connection to GC column for maximum sensitivity, or connection to the GC inlet for use with the GCs split features. All systems have a dynamic range of C2-C33+, including volatiles, semi volatiles, polar and nonpolar compounds. Heating rates of 1000°C/min. for sample tubes and 900°C/min for focus traps. Systems include sorbent tube maintenance counters on all valves and various timed event capabilities.

9300 series Thermal Desorption systems operate in two stage trapping and desorption process without using any Peltier cooling or liquid cryogen to focus the analytes. This feature provides the most efficient capture and release of airborne contaminants possible within a field operable system.

Thermal Desorption Capability

CDS 9300 series has the widest collect and analyze range from VOC's to SVOC's. It can be configured to be compatible to one of the following Thermal Desorption tubes:

- CDS Dynatherm 6 mm OD X 4.5" L Tube
- CDS Dynatherm 10 mm OD X 4.5" L Fast Flow Tube
- Perkin Elmer & Markes 1/4" OD X 3.5" L Tube
- Tekmar 1/4" OD X 7" L Tube
- VOST 16 mm OD X 5" L Tube

Specification Summary

- Compatible to major GC systems
- Cyrogen free
- Accuracy of heated zones ± 1°C
- Tube heat rate of 1000°C/min and trap heat rate of 900°C/min
- Timed event is settable in 0.01 minute increments from 0-999.99 minutes
- Heated zone max temperature settings
    1. Valve Oven: 350°C
    2. Transfer Line: 350°C
    3. Sample Desorb: 375°C
    4. Focus Desorb: 375°C

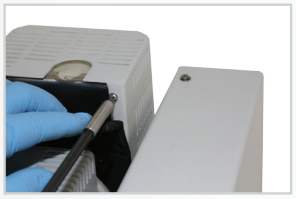
CDS 9300 Thermal Desorption System

Our base model instrument for single tube desorption. The 9300 connects to any model GC with a heated sample line for easy on/off installation. The system has unique cryogen free focusing trap to improve the resolution for the chromatogram.

1

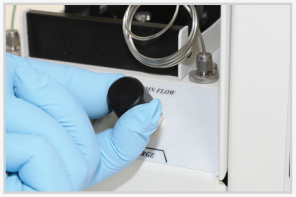
Versatile configuration to mainstream TD tubes

2



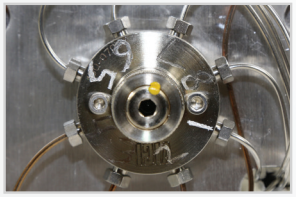
Quick access panels for easy maintenance

3



Manual flow controller

4

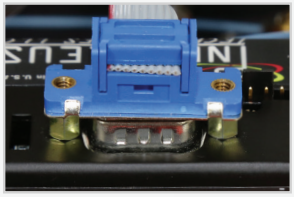


High temperature valve oven at max 350°C

CDS 9305 Thermal Desorption System

Our 9305 (Near-real time sampling and Thermal desorption system) adds a standard mass flow controller, a vacuum pump, and can be coupled with optional heated sampling line to collect air samples. This setup supports various sampling methods, including air sampling, environmental chamber sampling and connection to sampling vessels like tedlar bags, glass bulbs and Summa Canisters.

1

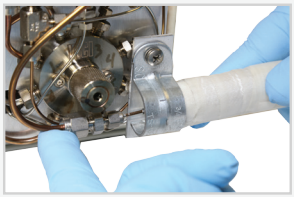


Standard option with Mass Flow Controller (MFC)

2

Quick connect to vacuum pump

3



Optional heated sampling line

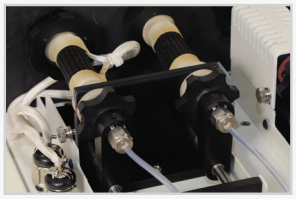
4

Can connect to Tedlar bags, Glass bulbs and Summa Canister

CDS 9350 Thermal Desorption System

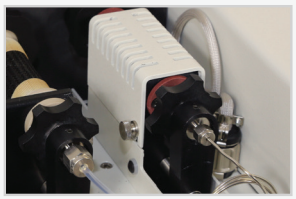
The CDS 9350, our continuous real time air monitoring system, is designed to deliver the functionality of thermal desorption to applications so demanding heretofore they were way out of reach. The two thermal desorption chamber design makes it possible for continuous air monitoring, single or dual tube desorption, soils and water analysis.

1



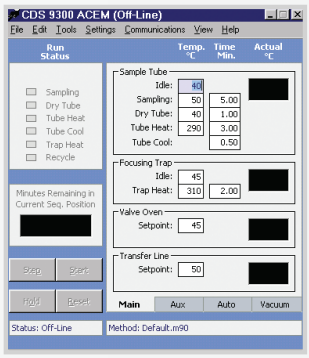
Two thermal desorption chamber for dual tubes

2



Low thermal mass focus trap with fastest heating and cooling

3



Powerful Windows based software with full controls on infinite sampling methods and sequences

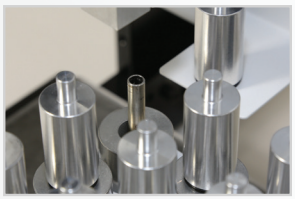
CDS 9300 Series Comparison Table

	9300	9305	9350
Desorb single TD tube	•	•	•
Focus Traps with Pre-desorb	•	•	•
High temperature oven at 350°C	•	•	•
Configurable with mainstream TD tubes	•	•	•
Soil desorption capabilities	•	•	•
Mass flow controller		•	•
Near Real Time Sampling (Single Tube)		•	•
Continuous sampling (Dual Tubes)			•

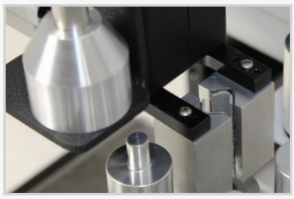
CDS 7500 Thermal Desorption Autosampler

As an extension to the 9300 thermal desorption product lines and the popular 7400 Purge & Trap Autosampler, the CDS 7500 serves as a 72 position TD autosampler to improve productivity and efficiency. The Autosampler offers optional automated IS addition and sample saver functionality. Besides the compatibility with the CDS 9300 TD system, it has the flexibility to be coupled with different front-end concentrators such as the CDS-7000 Purge and Trap concentrator, or even other PT concentrators from different manufacturers.

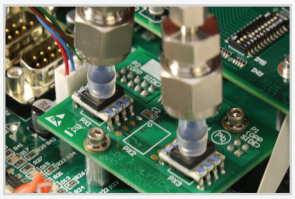
1 72 position tray streamlines automated operation



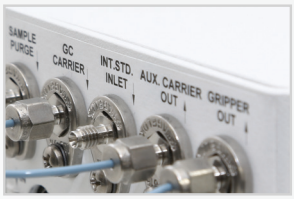
2 Configurable to take various sized TD tubes



3 Robotic arm with industry-leading reliability

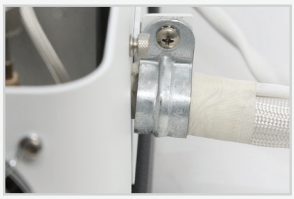


4 Automatic leak checking



5 Optional gas internal standard addition

6 Optional sample saver function



7 Heated zones support desorption at max 350°C

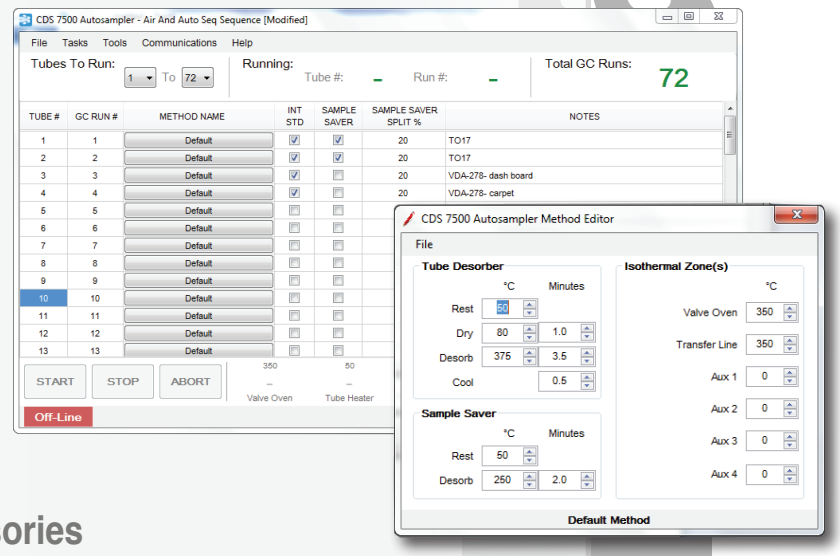
CDS 7500S Thermal Desorption Autosampler

CDS 7500S is a stand-alone Thermal Desorption Autosampler which does not need a separate sample concentrator. This unique feature saves money and valuable lab space. And like all of our thermal desorption products, there is no need for Peltier cooling or liquid cryogens. Our unique Desorb Pre-Heat function produces better chromatography without any of the hassles associated with Peltier devices or liquid cryogens.

CDS 7500S Features

- Tray Capacity: 72 Samples
- Optional Gas Internal Standard Addition
- No Need for Problematic Peltier Cooling Device
- No Sample Concentrator Required
- Competitively Priced
- Heated Transfer Line up to 350°C
- Can be Ordered to Desorb any Industry Standard Size Thermal Desorption Tube
- Compatible with TD tubes from 3.5” - 7”

- Stand-alone software control with programmable methods
- Windows XP to Windows 10 compatible
- Wait for Ready and Remote Start for any GC system
- Run multiple methods on each sample
- Add internal standards for any sample
- System status notification through email



Thermal Desorption Accessories

1. Sorbent Tubes and Focus Traps
2. Single-Tube Conditioner
3. Six-Tube Conditioner
4. Two-Channel Air Sampler
5. Four-Channel Air Sampler

Make CDS Your Universal Inlet Partner

Thermal Desorption Pyrolysis Purge and Trap

CDS Analytical Headquarters:
465 Limestone Road P.O. Box 277 Oxford, PA 19363-0277 Tel: 800.541.6593 610.932.3636 www.cdsanalytical.com