

Cold Trap 9000

***The most flexible
Cryogenic trap
available on the
Market***

Lowest liquid nitrogen consumption

Easy to install on any Gaschromatograph

Flexible electronic interface

Cryogenic Trapping - trap your analytes of interest - at temperatures below -180°C

Gas chromatography (GC) involves the analysis of volatile organic compounds, that is, material that exist in the vapour phase, at least at the typical GC operating temperatures between 40 and 300°C . Since Aroma compounds must, by their very nature, leave the food matrix and travel through the air to be perceived, they are generally excellent candidates for analysis by GC. Although many of these compounds may be solvent extracted, distilled, or otherwise isolated from the food matrix, it is frequently preferable to take advantage of their volatility and rely instead on techniques of headspace analysis.

Headspace sampling techniques are frequently divided into three broad categories: static headspace, dynamic headspace and purge and trap. In each case, however, the fundamental principle is the same - volatile analytes from a solid or liquid material are sampled by investigating of the atmosphere adjacent to the sample, leaving the actual sample material behind.



Analytes sampled by a headspace technique may be trapped using sorbents like Tenax, Graphitized Carbons or Polymers. However trapping by using a cryogenic trap has a lot of advantages. For trace-level applications the presence of background peaks from the sorbent may be a problem. This is accentuated in the analysis of heavier organics, since they require a higher desorption temperature to transfer from the trap to the gas chromatograph. Frequently the desorption parameters become a compromise between temperatures high enough to desorb the analytes efficiently but low enough to minimize artifacts. One solution is to eliminate the sorbent altogether and collect the analytes cryogenically.

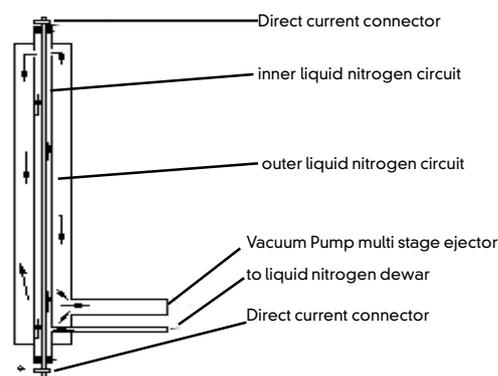
Cold Trap 9000 - Principle of operation.

The main disadvantages of existing Cold Traps on the market is the fact that pressurized systems need special solenoid valves capable of functioning at -180°C and due to the pressurised System they need a lot of liquid nitrogen.

The Cold Trap 9000 is designed in a way that no special solenoid valve is necessary and due to the fact that a Vacuum system is used the consumption of liquid nitrogen is very low (about 200 ml/run).

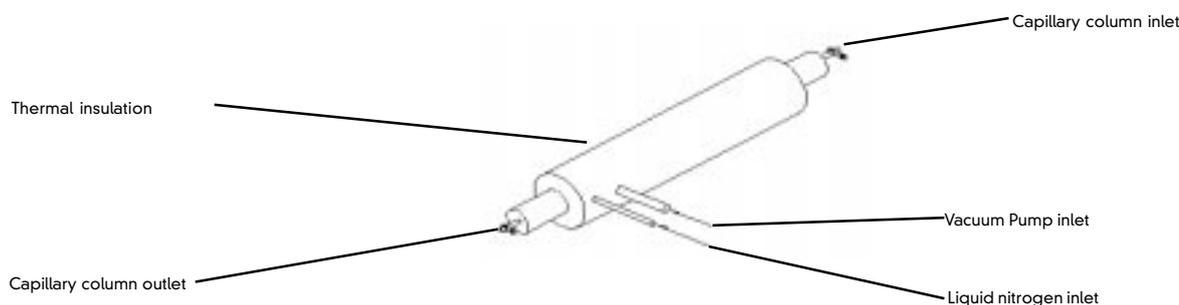
The Cold Trap 9000 uses a vacuum pump based on a multi stage ejector using a carrier fluid like pressurized air which allows a simple and precise adjustment of the refrigeration fluid.

The heating of the Cold Trap 9000 is performed by giving a direct current to a small tube which allows the system to be heated up from -150°C up to 300°C in less than 20 seconds, which results in a heating rate of $>1'350^{\circ}\text{C / minute}$.



Technical description

The Cold Trap 9000 may be cooled down between 1 minute 30 seconds (GC Oven at 50°C) and 4 Minutes (GC Oven at 200°C). The speed in cooling down the Cold Trap 9000 is therefore related to the GC Oven Temperature. Heating up the Cold Trap from -150°C up to 300°C may be performed in less than 20 seconds, which finally results in a heat up rate $>1'350^{\circ}\text{C}$ which is fairly higher than any other Cold Trap available on the market.



Technical description



The Cold Trap 9000 consists of a small cooling/heating chamber which has an outer diameter of 12 mm and a length of 120 mm. The trap may be mounted on any position in the GC oven (or outside the oven).

In the center of the Cold Trap 9000 chamber there is a small stainless steel tube which lets pass through the Capillary column up to megabore (ID 0,53 mm) can be used. This stainless steel tube is directly connected to a 3 Volt DC Current to provide the rapid heating of $>1'350^{\circ}\text{C}/\text{min}$.

The temperature control of the Cold Trap 9000 is provided through a dedicated temperature controller. Three different Operating modes can be chosen "Manual mode" for manual operation, "Automatic mode with internal timer" for automatic operation using an Autosampler but GC is working in isothermal mode and "Automatic mode" for automatic operation using a fully automated system including Autosampler and GC.

A specially designed I/O board allows the Cold Trap to accept any external signals like contact closure, TTL (positive or negative) and sync signals. This I/O board has been developed due to the fact that the most of the GC manufacturers on the market are using different synchronisation signals. This allows the customer to install the Cold Trap 9000 to any GC system available on the market.



The remote Handheld controller is used as the user interface to choose the desired working method, set temperatures and display actual status.

Technical data

Temperature range:	-180°C - 350°C
Heating rate	$>1'350^{\circ}\text{C}/\text{min}$
Heating system	direct heating 3 Volt AC
Operating modes	Manual, Semi Automatic, Automatic
Input remote control:	AS injected, GC end run (contact closure, TTL or sync)
Output remote control	AS start, GC start (contact closure, TTL or sync)

Ordering informations

Part No.	Description
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Base Unit

9 1000150

Cold Trap 9000

Cryogenic Trap system

includes:

Dedicated low liquid nitrogen consumption Cryogenic Trap

Heater/Cooling control unit

Hand held control unit

Multi I/O Board

Standard outfit, Manual

Accessories / Spare parts

Manufactured by:



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