

Desorption of Air Samples from ORBO Tubes using the PeakMaster

The **CDS Analytical PeakMaster EV** with Thermal Desorber can be equipped with an interface that will fit ORBO air sampling tubes so that the entire tube is held in the heated zone of the desorber. This results in complete sample desorption from the tube.

ORBO tubes are glass tubes filled with an adsorbent material. During sampling, air is drawn through the cartridge and any volatiles present are adsorbed onto the material. The tubes are then placed in a thermal desorber and heated, with an inert gas purge flow, to flush the volatiles off the adsorbent material, into an analytical instrument. ORBO tubes can be used for EPA air sampling protocols such as T0-1 and T0-2. The PeakMaster EV conforms to all EPA protocol requirements for desorption of the tubes.

In this application, the air above kitty litter samples was drawn onto ORSO tubes filled with activated coconut charcoal at intervals after wetting the sample, to determine how long the fragrance in the sample lingers after wetting. This is an indication of the effectiveness of the litter in masking animal odors, as well as a direct measure of the level of artificial fragrance released into the air. After sampling, the ORSO tubes were inserted into the thermal desorber of the PeakMaster, heated to 150 C, and desorbed onto a Tenax trap. The trap was then backflushed directly onto the head of a GC column, and the column was temperature programmed to separate the volatiles.

Figure 1 shows the air sample that resulted

Figure 1

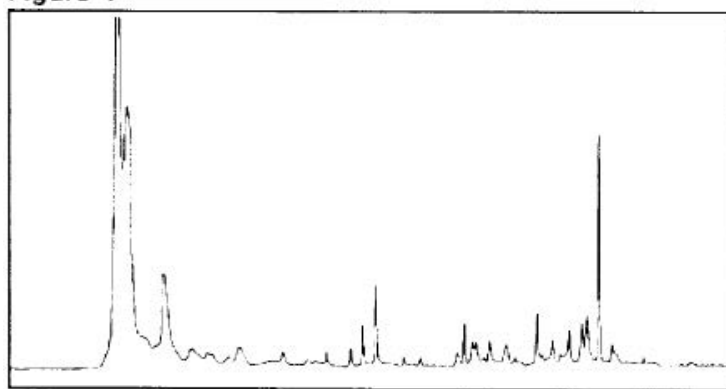


Figure 2

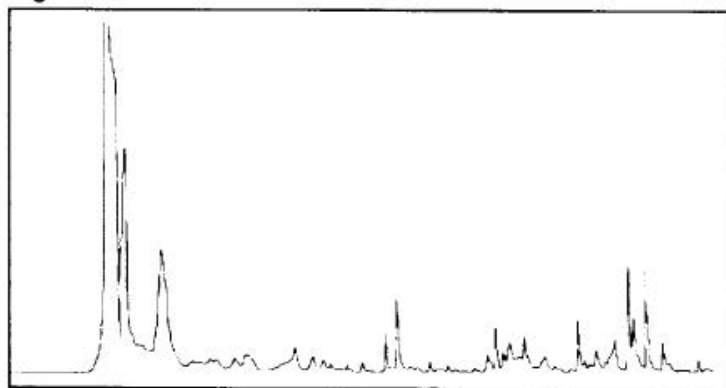
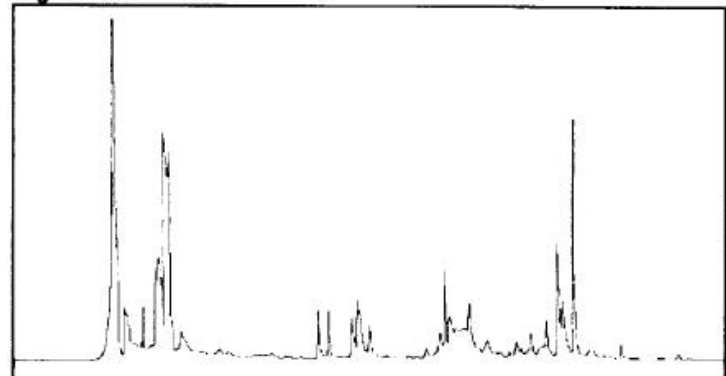


Figure 3



one minute after wetting, Figure 2 is the sample collected 30 minutes after wetting, and Figure 3 is the sample one hour after wetting. It is obvious that the maximum concentrations of the components of the fragrance mixture peak at different sampling times.

ORBO tubes are frequently used for environmental analysis, workplace air monitoring, and related applications. The *PeakMaster* ORBO tube interface is a convenient option that can decrease sample handling and enhance laboratory performance.

Experimental Conditions

PeakMaster

Desorber Interface: 200 C
Purge Flow: 30 ml/min, 10 minutes
Purge Gas: Helium
Trap Rest: 30 C
Trap Desorb: 280 C, 3 minutes
Trap Insert: Tenax
Dry Time: 2 minutes
Trap Bake: 250 C, 5 minutes

Gas Chromatography

Chromatograph: HP 5890
Column: 30 m, SE 54, 0.52 mm i.d.
Carrier Flow: 10 ml/min, helium
Oven Temperature Program: Start 30 C, hold 3 minutes; 6 C/min to 250 C, hold 5 minutes.

FOR MORE INFORMATION
CONCERNING THIS APPLICATION,
WE RECOMMEND THE FOLLOWING
READING:

EPA Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. April, 1984, and updates.

EPA Compendium for the Determination of Air Pollutants in Indoor Air. March, 1989, and updates.

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