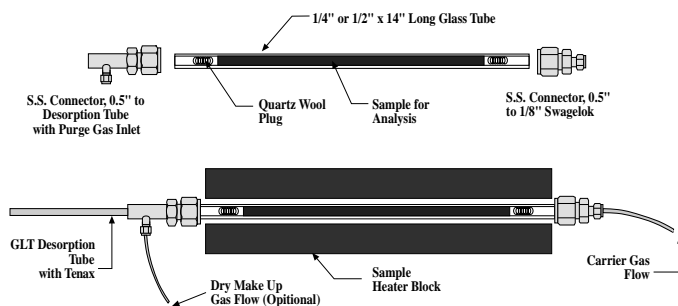


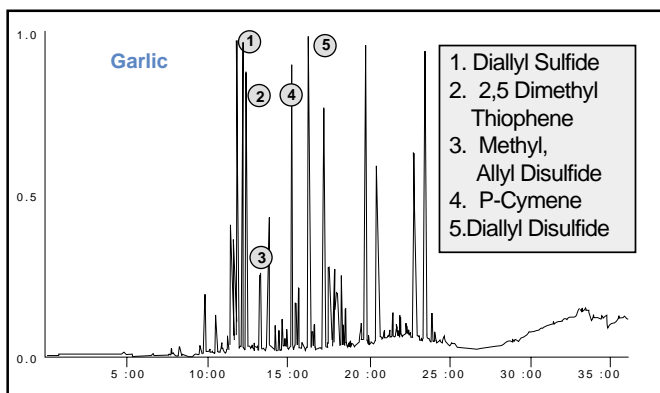
# C44 Applications - Thermal Desorption

## Sample Collection System

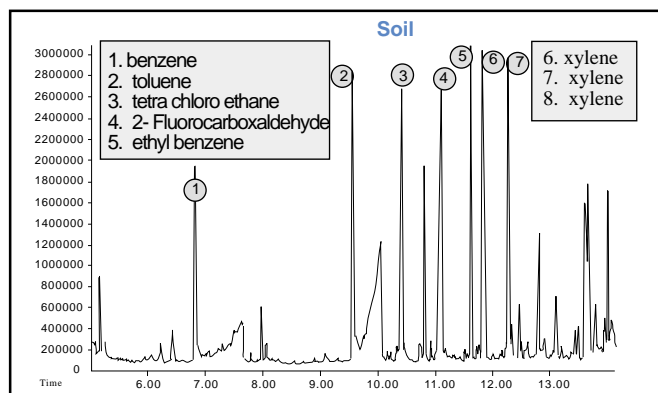
The Sample Collection System permits the analysis of solid samples which are too large to fit inside the GLT desorption tubes directly. For instance when analyzing for residual concentrations in the ppm and ppb range, and for the analysis of samples which contain appreciable concentrations of water which would form ice plugs if desorbed directly into the GC column. Samples from 0.5 to 50 grams in size are placed inside a long glass tube between two glass wool plugs. The tube is inserted into the Solid Sampler oven, which can be heated to any temperature up to 250°C, depending on the boiling point of the residual volatiles the analyst wishes to detect. Carrier gas is purged in one end of the heated tube and a desorption tube packed with Tenax or other suitable adsorbent resin is attached at the opposite end. The packed desorption tube has been previously cleaned and conditioned to remove any contaminants from the adsorbent resins. If the sample contains appreciable amounts of water, an optional dry purge or makeup gas may be added just before the desorption tube. This gas prevents the saturation of the adsorbent packing with water and helps purge the water from the adsorbent resin (Tenax has a low affinity for water). Samples are normally purged with high purity Nitrogen or Helium at flow rates of 10 to 60 ml/min



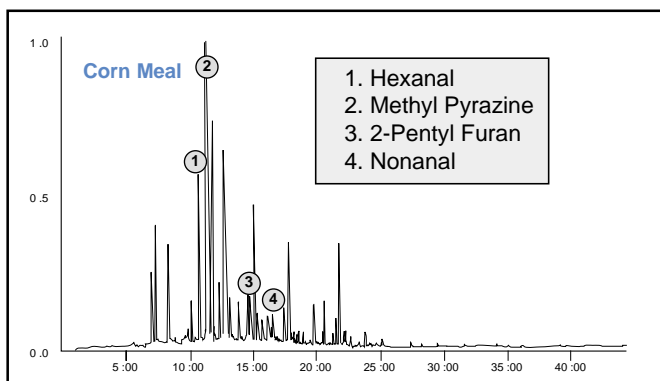
for 10 to 60 minutes. The oven temperature is normally maintained at 50 to 80°C for most volatiles such as benzene and toluene but can be raised to higher temperatures for higher molecular weight compounds.



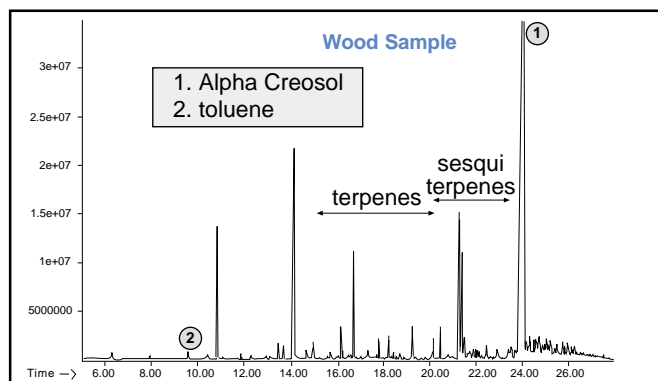
**Technique:** Sampler Oven for Larger Solid Samples  
**Sample:** 1.0 gram garlic was flushed with N<sub>2</sub> (50°C) in the sampler oven and the eluted compounds trapped on a Tenax trap. Data courtesy CAFT, Rutgers University.  
**Thermal Desorption:** Block temperature: 220°C, Purge flow: 10.0 ml/min He, Desorption time: 5.0 min. Initial column trap temperature: Injection Port Split: 10:1  
**Column:** 60 meter x 0.32 mm I.D. DB-1, 0.25µm film, -20°C to 280°C at 10°C/min.



**Technique:** Sampler Oven for Larger Solid Samples  
**Sample:** 2.0 gram soil was flushed with N<sub>2</sub> (70°C) in the sampler oven and the eluted compounds trapped on a Tenax trap.  
**Thermal Desorption:** Block temperature: 220°C, Purge flow: 2.0 ml/min He, Desorption time: 10.0 min. Initial column trap temperature: -40°C  
**Column:** DB-5, 25 meter x 0.25 mm I.D., 0.25 µm film, -40° to 280°C at 10°/min.



**Technique:** Sampler Oven for Larger Solid Samples  
**Sample:** 10.0 gram corn meal was flushed with N<sub>2</sub> (160°C) in the sampler oven and the eluted compounds trapped on a Tenax trap. Data courtesy CAFT, Rutgers University.  
**Thermal Desorption:** Block temperature: 220°C, Purge flow: 10.0 ml/min He, Desorption time: 5.0 min. Initial column trap temperature: Injection Port Split: 10:1  
**Column:** 60 meter x 0.32 mm I.D. DB-1, 0.25µm film, -20° to 40°C at 10°/min., then to 280° at 4°/min.



**Technique:** Sampler Oven for Larger Solid Samples  
**Sample:** 0.5 gram cherry wood was flushed with N<sub>2</sub> (70°C) in the sampler oven and the eluted compounds trapped on a Tenax trap.  
**Thermal Desorption:** Block temperature: 220°C, Purge flow: 10.0 ml/min He, Desorption time: 5.0 min. Initial column trap temperature: -40°C  
**Column:** DB-5, 25 meter x 0.25 mm I.D., 0.25 µm film, -40° to 280°C at 10°/min.,