

## Application Note Environment

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Many of the manufactured floor and base molding products that are produced today come with an adhesive backing. This would include items such as resilient/rubber backed flooring, linoleum tile, as well as milled molding and polymer based molding products. These adhesive backed products are a common source of volatile organic compounds (VOC'S) in an indoor air environment.

Common VOC's from adhesives and sealants include acetone, toluene, formaldehyde, butyl ether, vinyl cyclohexane, acrylic acid, as well as propylene glycol. Many other volatile compounds may find their way into the indoor air environment.

Thermal desorption involves the trapping of volatiles onto a suitable adsorbent matrix (Tenax, Carbosieve, Carbotrap etc). The trapped volatiles are thermally desorbed usually into a GC/MS system. A piece of adhesive backed floor tile (3"x 3") was placed in an 800ml sealed dynamic headspace vessel into which a helium flow was established. An exterior helium vent port containing a Tenax sampling tube collected tile volatiles for thirty minutes. The sampling tube was thermally desorbed using and autosampler interfaced to a Dynatherm 9300 containing a Tenax focussing trap. The trap was then desorbed to a GC/MS. This sampling protocol was repeated for a piece of polymer cove molding.

Mass Spectrum analysis of the tile self adhesive product shows a significant amount of the solvent toluene present. A large amount of acetone is noted in the molding adhesive. Other Aliphatic and Aromatic Hydrocarbons, as well as the phthlate precursor 2-Ethyl Hexanol were also observed.

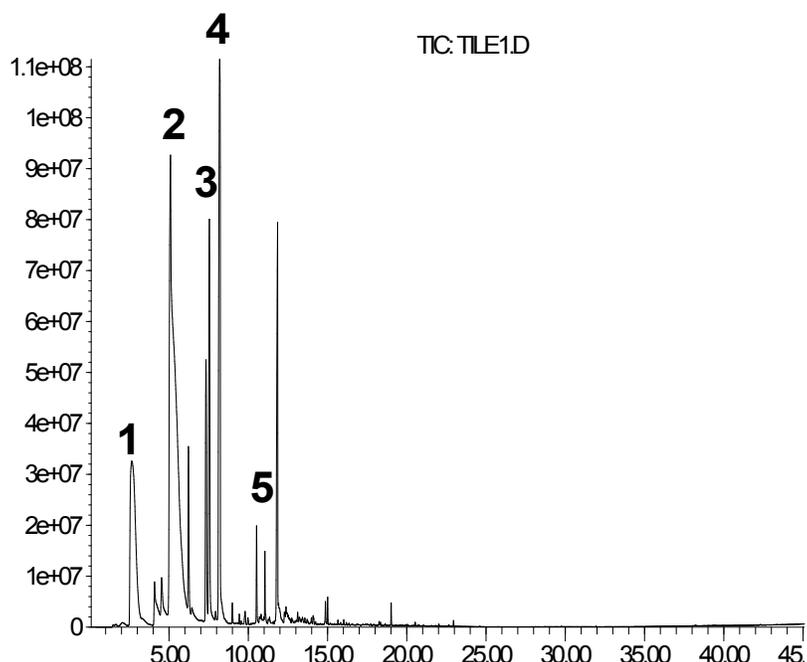


Figure 1. Self-Stick Tile Adhesive

## CDS 800mL DHS Vessel

Purge Flow: Helium, 50mL/min

Purge Time: 30 minutes

## CDS Autosampler Dynatherm 9300

Valve Oven: 300°C

Transfer Line: 260°C

Tube Heat: 350°C 10 minutes

Trap Heat: 300°C 10 minutes

## GC/MS

Column: HP-5MS  
(30m x 0.25mm x .25µm)

Carrier: Helium, 50:1 split

Injector: 300°C

Program: 40°C/2min, 15°C/min to 210°C

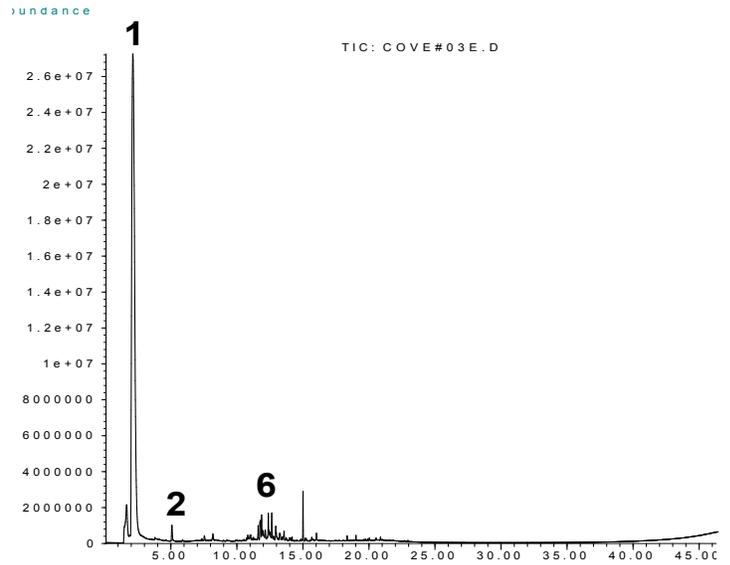


Figure 2. Self-Stick Cove Molding Adhesive

### Peak Identification

1. Acetone
2. Toluene
3. Butyl acetate
4. Xylene
5. 2-Ethyl hexanol
6. Aliphatic hydrocarbons