



Fragrance Analysis of a Hair Conditioner

Application Note

Fragrance- Environmental

Fragrances are added to many consumer products, especially cosmetics, soaps, shampoos and other grooming aids. This paper details the analysis of fragrances in an emulsion hair conditioning product, using dynamic headspace with thermal desorption. The method described is applicable to a wide variety of cosmetic product matrices ranging from nail polishes to topical creams, shampoo gels, and lipsticks.

A sample of the emulsion (~50mg) was placed at the bottom of a dynamic headspace vessel, and purged at 175°C for 15 minutes, and the resulting volatiles collected onto a Vocarb trap. After the collection step, the trap was desorbed at 200°C for 5 minutes to transfer the samples to the GC for analysis.

Figure 1 shows the total ion chromatogram of the hair conditioner sample. A total of 20 compounds were identified. Figures 2, 3, 4 and 5 are portions of the total ion chromatogram (Figure 1) to show more clearly the eluted compounds. These range from low molecular weight dipropylene glycol to a heavier molecule like hexyl cinnamic aldehyde.

Dynamic headspace is a very effective technique for the analysis of volatiles in a variety of matrices. Minimal sample size and rapidity of analysis makes this very applicable to a QA environment.

Instrument Conditions

CDS Sample Concentrator

Valve Oven:	300°C
Transfer Line:	275°C
Vessel Idle:	40°C
Vessel Heat:	175°C/15min
Trap Rest:	50°C (VoCarb)
Trap Heat:	200°C/5min

GC/MS

Column:	5% Phenyl methyl silicone 30m x 0.25 mm
Split:	50:1
Oven:	40°C for 2 minutes 8°C/minute to 295°C
Mass range:	35 to 600 AMU

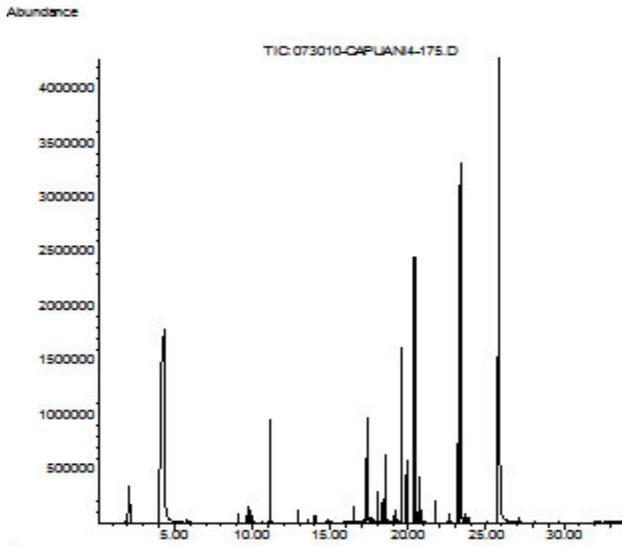


Figure 1. Hair conditioner at 175°C.

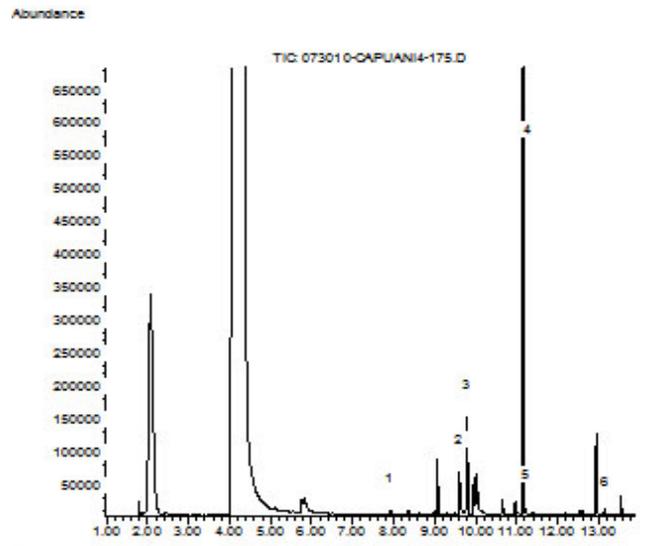


Figure 2. Peak # 1 Manzanate, 2 Dipropylene Glycol, 3 D-Limonene, 4 Linalol, 5 Rose Oxide, 6 Ethyl Maltol.

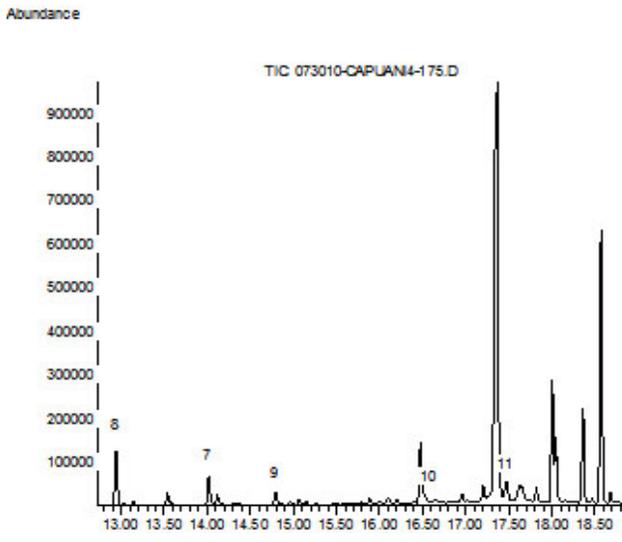


Figure 3. Peak #7 Geraniol, 8 Stirallyl Acetate, 9 Verdox, 10 Vanillin, 11 Gamma Decalactone.

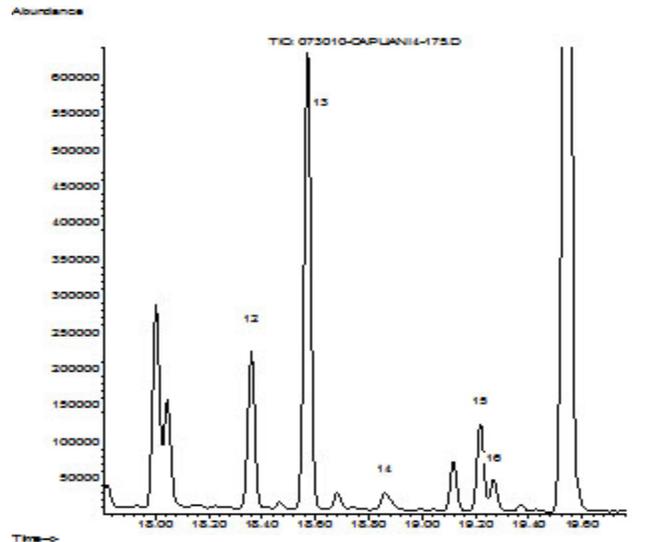


Figure 4. Peak # 12 BHT, 13 Lilal, 14 Oxyphenylon, 15 Undelactone, 16 Amyl Salicylate

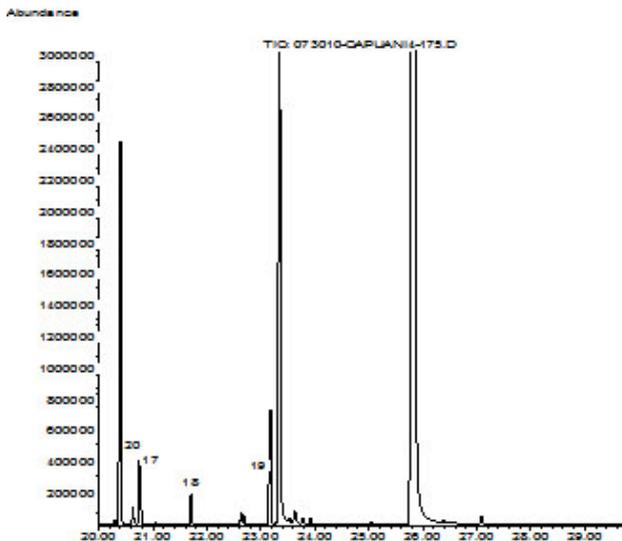


Figure 5. Peak # 17 Hexyl Salicylate, 18 Hexyl Cinnamic Aldehyde, 19 Galoxilide, 20 Hedione.