

# CDSolutions

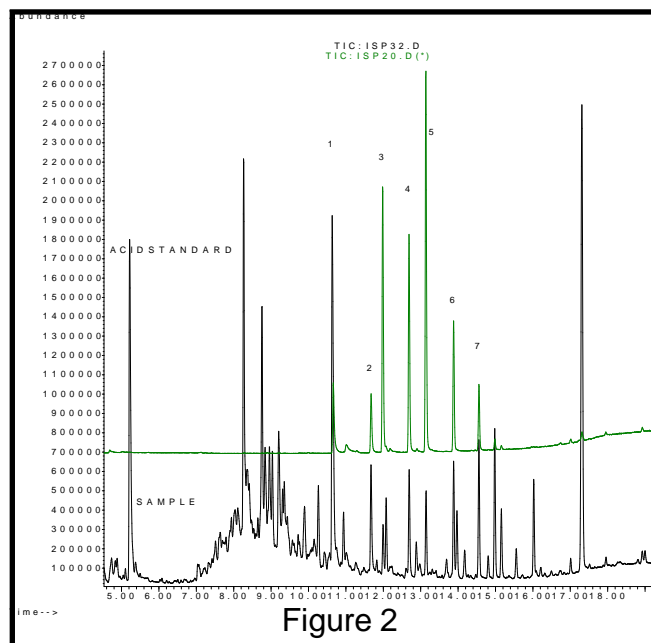
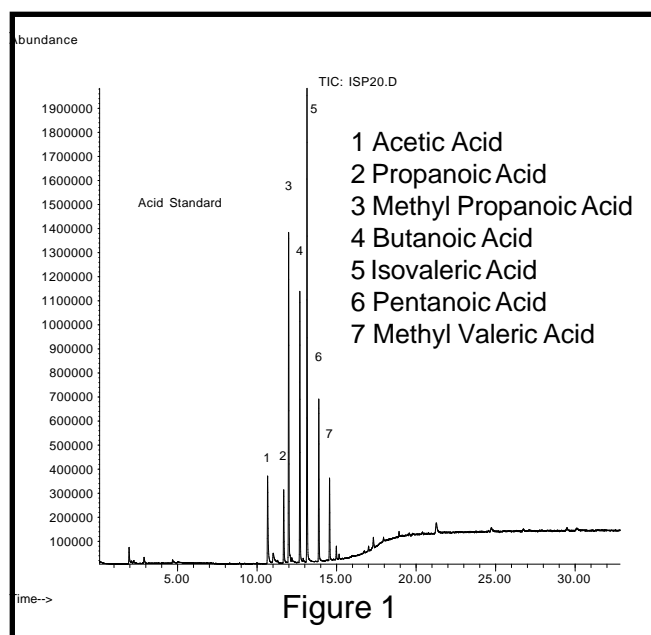
APPLICATIONS INFORMATION USING ADVANCED SAMPLE HANDLING TECHNOLOGY

## Polycarbonate Analysis Using Dynamic Headspace With The CDS 9300 Autosampler

Solid materials, such as synthetic polymers, may be sampled for residual organic compounds using thermal techniques to volatilize the analytes without the need for solvent extraction. In this example, polycarbonates are assayed for the presence of organic acid impurities using the dynamic headspace option of the 9300 Autosampler. After purging the acids to a trap, they were desorbed and transferred to the GC/MS for identification.

An acid standard was run at 50°C for 20 minutes to establish retention times and peak identification (see Figure 1), and blanks were run to establish a clear baseline. Polycarbonate samples (~100mg) were added to the headspace vessel, placed into the autosampler station and sampled at 100°C for 20 minutes. Different headspace desorption temperatures were tried and it was found that the trace acids in the polymer matrix were released efficiently at 100°C for 20 minutes. Figure 2 shows a portion of the standard chromatogram (peak numbers keyed to the Figure 1 Chromatogram) overlaid with the compounds desorbed from a polymer sample. All of the acids present in the standard acid mix were observed in the polymer sample.

Headspace analysis using the CDS 9300 Autosampler demonstrates the versatility of this instrument. Dynamic headspace and thermal desorption applications can be run alone as well as simultaneously.



## Equipment

These samples were analyzed using the CDS 9300 Autosampler, interfaced to an Agilent 6890 Gas Chromatograph and Agilent 5975 MSD detector.

### CDS 9300 Autosampler Conditions

Valve Oven:	200°C
Transfer Line:	200°C
Tube Heat: 50°C	20.00 Minutes
Trap Heat: 300°C	5.00 Minutes
Interconnect Line:	200°C

### GC Conditions

Carrier:	Helium
Column:	Stabilwax (30m x 0.25mm, 0.5µm film)
Split:	20:1
Detector:	MSD
GC Program:	
Initial:	60°C for 2 minutes
Ramp:	12°C/min
Final:	250°C

Additional literature on this and related applications may be obtained by contacting your local CDS Analytical representative, or directly from CDS at the address below.

CDS Analytical, Inc. has been a leader in the design and manufacture of laboratory instruments for sample preparation and analysis since 1969. We are dedicated to providing the best possible instruments for both research and routine analysis. Well known in the field of pyrolysis, CDS manufactures the Pyroprobe® 5000, 5150, 5200 and 5250 autosampler for the introduction and analysis of solid materials by GC, MS and FT-IR. CDS offers a complete line of dynamic headspace instruments for the analysis of volatile organic compounds in environmental, pharmaceutical and food applications, including the model 8400 four-position autosampler. CDS also manufactures the Dynatherm line of thermal desorption instruments including the 9000 series for air monitoring and the 9300 TDA. Our customers, their requirements and applications are important to us. To help meet your needs, we offer a wide range of analytical information and the services of our applications laboratory. If you would like additional information, please contact us at the address below, call us at 1 800 541 6593, or log onto [www. cdsanalytical.com](http://www.cdsanalytical.com).