DVLS Benzene in Air Analyzer:

GC Solution for the Automated Analysis of Benzene in Air

To reduce exposure to air pollution several limits and target values for air quality have been set. The maximum value for benzene exposure is currently set at 0.7 mg/m^3 (0.2 ppm). To determine Benzene in air Da Vinci Laboratory Solutions developed an automated GC solution equipped with a special gas sampling unit that allows the sampling up to 8 gaseous samples. This proven sampling technique has been used for the analysis of VOC in air.

Dedicated Configuration

The Benzene in Air application is based on:

- an Agilent Technologies 7890B GC configured with a FID or TCD
- a custom programmed temperature vaporization (PTV) injector
- an analytical column and pre-column to backflush the hydrocarbon matrix
- a sampling unit including a sampling pump, a mass flow controller and a multi -positioning valve.

Figure One: Gas Sampling Unit

The multi positioning valve allows to collect samples from e.g. a Tedlar bag or taking sample directly from outside air. Up to 8 samples or standards can be automatically selected and sampled.

Figure One: DVLS Benzene in Air Analyzer

Automated Analysis

Collect the samples in Tedlar bags and use the stream selection valve to select either standards, samples and/or multiple samples for an automated analysis.

The system's PTV injection port is modified to contain a sorbent tube as injection port liner which ensures a rapid absorption and desorption of Benzene.

Alternatively collect the sample on a sorbent trap using a programmable sampling pump. The sorbent trap is placed in the PTV inlet and automatically purged prior to thermal desorption and subsequent analysis.
The gas sampling unit automates the process of sampling, absorbing and desorbing.
After benzene has eluted from the precolumn to the polar column, the remainder of the matrix is backflushed to vent.

Boosting laboratory efficiency

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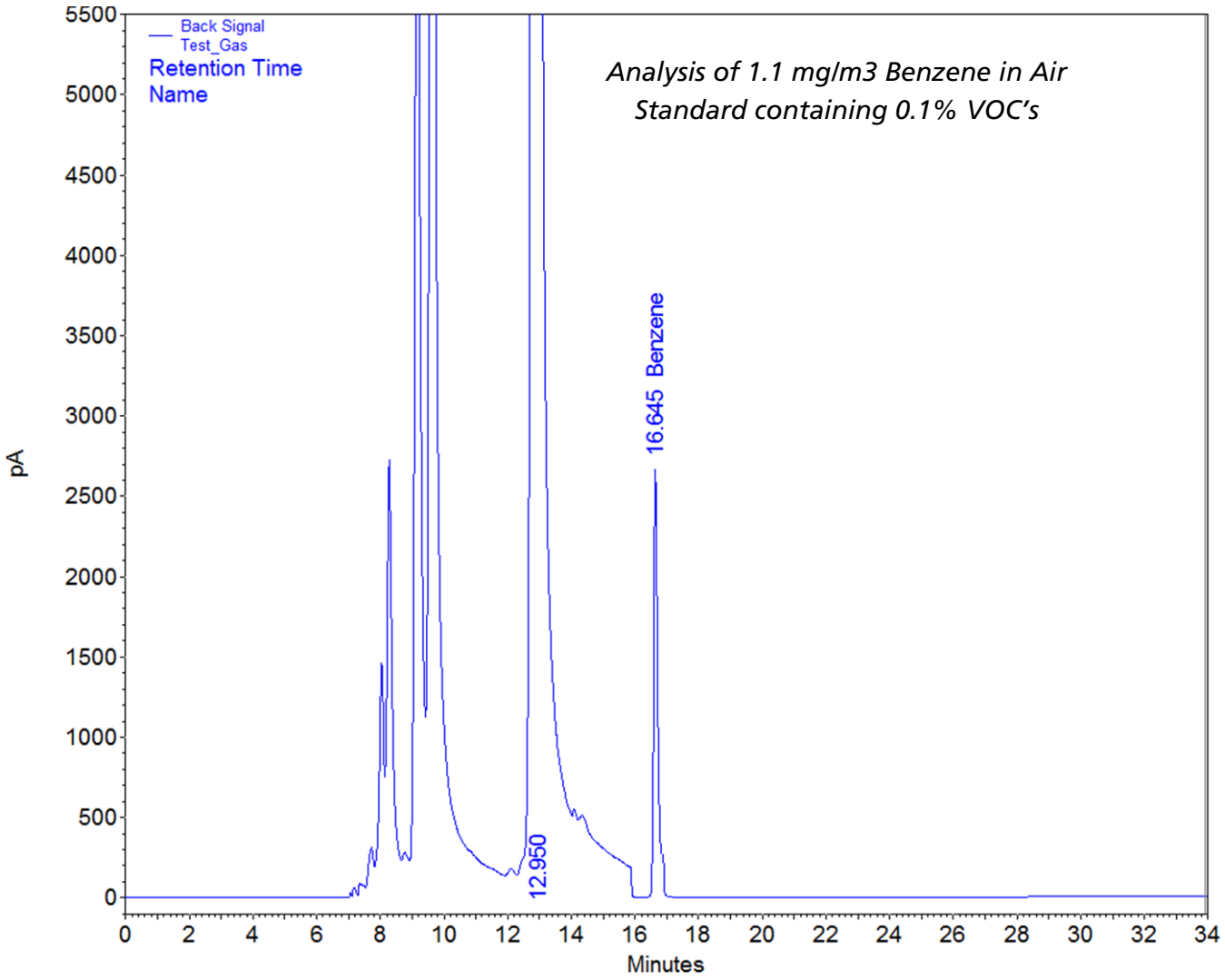

The Benzene in Air analysis requires 25 minutes.
To extend the analysis to C6-C8 aromatic compounds (BTEX Analysis) just switch the backflush after elution of o-Xylene.

Excellent performance

The Benzene in Air application shows an excellent performance as demonstrated in the tables using a custom calibration standard containing 0.1% VOC's .

Component	LOD (µg/m3)	LOQ (µg/m3)	Maximum Value (µg g/m3)
Benzene	0.0026	0.0085	700

Component	Average (µg/m3)	Standard Deviation	% RSD
Benzene	1083.84	17.00	1.6

Key Benefits of Benzene in Air Analyzer

- Automated gas sampling, absorbing and desorbing
- Based on proven sampling technique for VOC in Air
- Various options for sample collection possible
- Up to 8 samples or standards can be selected and sampled
- Analysis can be extended to BTEX in Air
- Excellent performance specifications

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