

Determination of trace Thiophene in refined Benzene by GC-SCD according to ASTM D7011

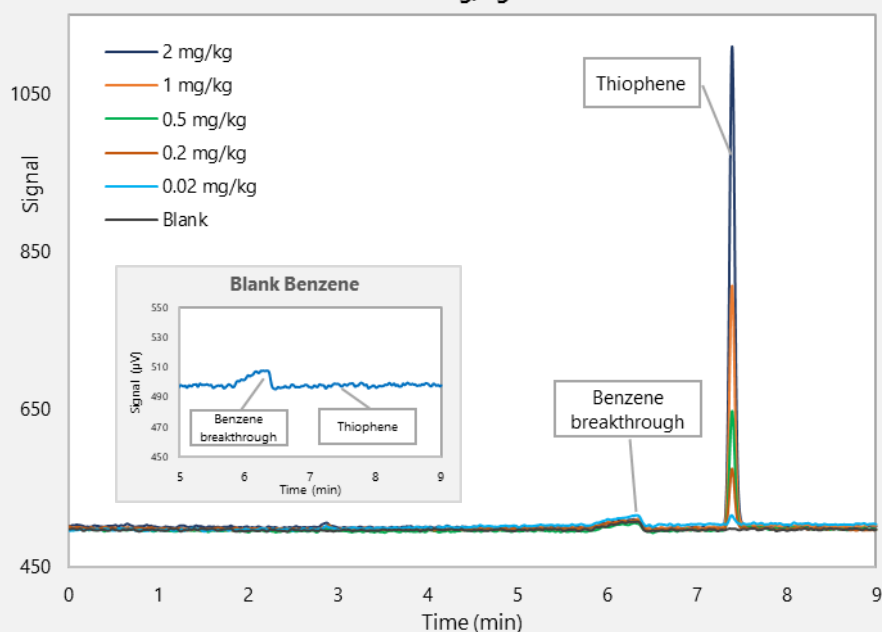
Test method ASTM D7011 covers the determination of thiophene in refined benzene using gas chromatography and sulfur selective detection. The test method is applicable to the determination of thiophene at levels of 0.03 to 2.11 mg/kg.

This application highlight shows the performance of the “**AC ASTM D7011 application**” using the SeNSe².

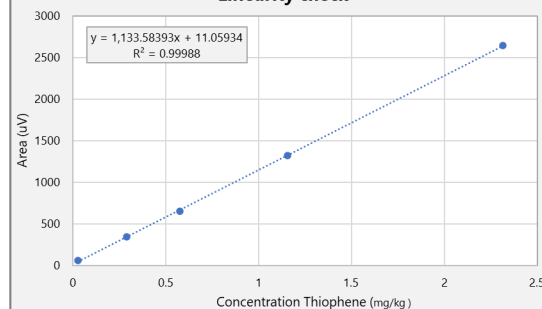
The analyzer is configured with a S/SL inlet and a polyethylene glycol (wax type) capillary column to separate the trace thiophene component from benzene.



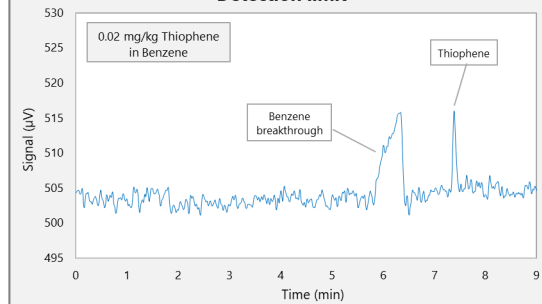
Thiophene in Benzene
0.02 - 2 mg/kg



Linearity check



Detection limit



Repeatability

run #	peak area (µV)	concentration (mg/kg)
1	1051	0.763
2	1046	0.760
3	1049	0.762
4	1083	0.787
5	1085	0.788
6	1045	0.760
7	1055	0.767
8	1061	0.771
9	1028	0.747
10	1025	0.745
Average		0.765
STDEV		0.0144
RSD		1.88%

Conclusion:

This analyzer has been thoroughly tested for compliance to ASTM D7011, and meets the method requirements, as shown in the table below:

ASTM D7011		
	method specification	analyzer specification
Range (mg/kg)	0.03 - 2.11	<0.03 - >2.3
Detection limit (mg/kg)	0.02	<0.02
Repeatability	0.05	0.04
Linearity	>10 ²	>10 ⁴

The SeNSe² chemiluminescence detector has an excellent sensitivity, long-term stability and equimolarity. Its great performance, and as part of AC by PAC factory tested and performance-guaranteed analyzers, makes it a highly reliable detector to determine the thiophene content in benzene. This is an essential parameter to analyze as benzene is a raw material for many other aromatic chemicals and therefore its purity is of great economic importance.