

VOA Analysis: EPA 8260B

Introduction

The Environmental Protection Agency method 8260 is designed for the detection and quantitation of volatile organic compounds in a variety of solid waste matrices regardless of water content. Analytes range in polarity and functionality. The method requires a low polarity phase such as a 6%-cyanopropylphenyl-methylpolysiloxane phase for the separation of the many diverse compounds. This application note will show the expected elution times and resolutions to be expected for the supplied chromatographic conditions when using a Zebron model ZB-624 chromatography column.

Experimental

Chromatographic Conditions:

A Tekmar 2000 Purge and Trap (Tekmar-Dohrmann, Mason, OH, USA) was utilized for sample introduction with the following settings. Purge time was 11.0 minutes with a dry purge time of 2.0 minutes. Desorb preheat was 245°C and desorb conditions for 2.0 minutes at 250°C. A bake time of 8.0 minutes was used at 260°C with valve and lines at 120°C and a mount at 40°C.

An HP 6890 Gas Chromatograph equipped with a 5973 MSD (Agilent Technologies, Palo Alto, California, USA) was used for analysis. The oven program was initialized at 40°C for 2.0 minutes then programmed to a temperature of 225°C at a rate of 10°C/min with a final time of 3.50 minutes. Inlet settings were split at a ratio of 30:1 at a temperature of 250°C and a column flow of 1.1mL/min.

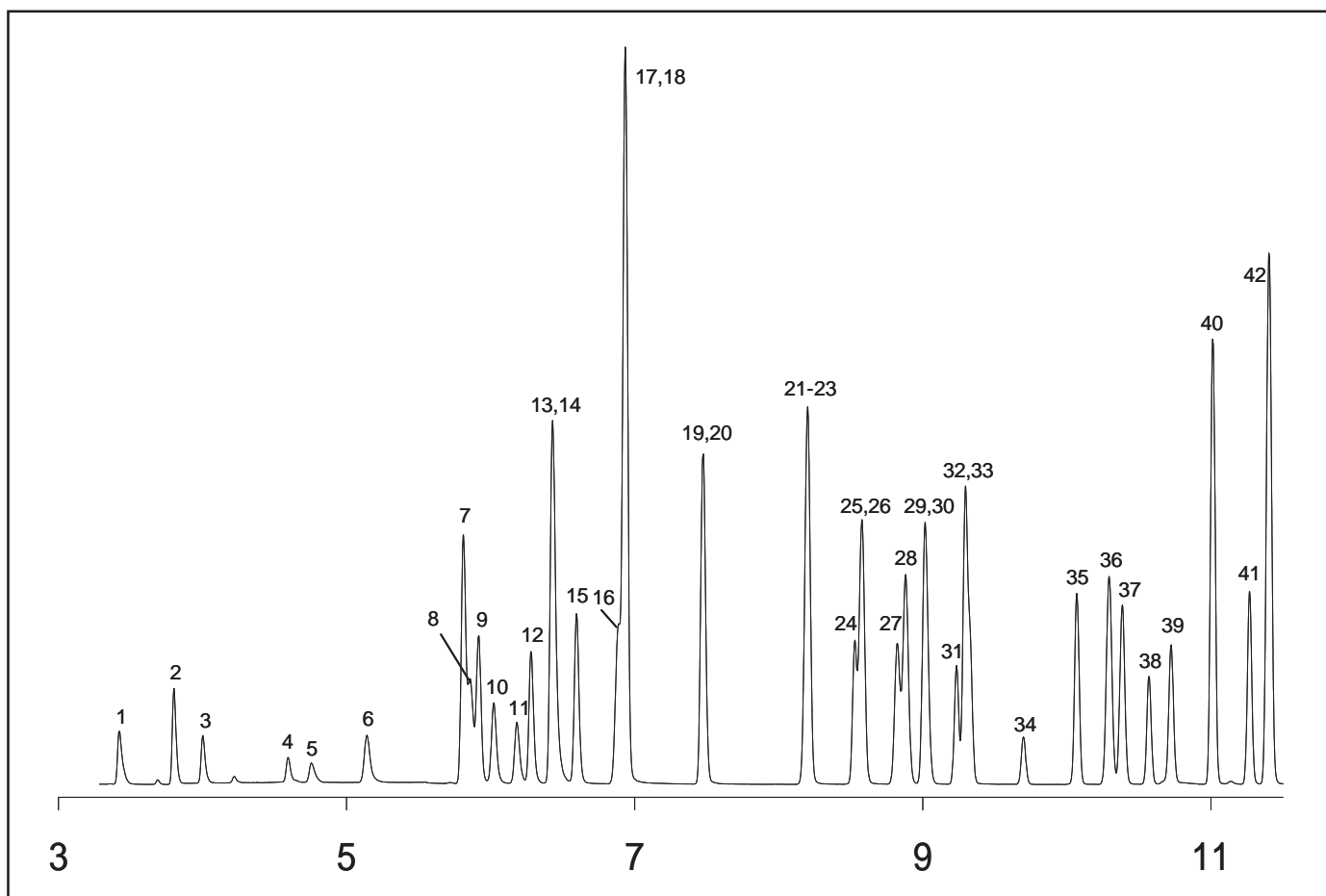


Figure 1. EPA 8260B chromatogram segment 1 from 3 to 11.5 minutes. Peaks are numbered with compounds that constitute peak.



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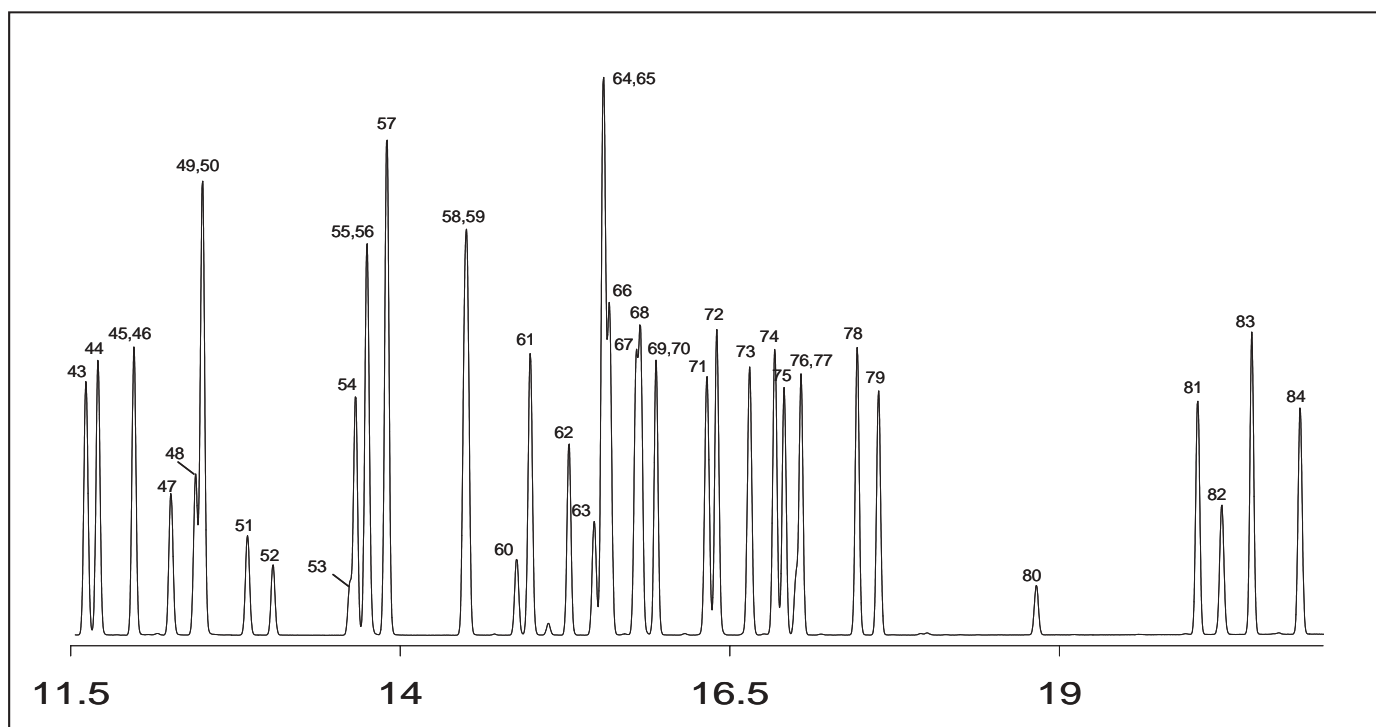


Figure 2. EPA 8260B chromatogram segment 2 from 11.5 to 21 minutes. Peaks are numbered with compounds that constitute peaks.

Table 1. Compound list of chemicals included in this analysis.

Peak #	Compound Name	tr	Peak #	Compound Name	tr	Peak #	Compound Name	tr
1	Dichlorodifluoromethane	3.43	29	Carbon tetrachloride	9.02	57	m,p-Xylene	13.90
2	Chloromethane	3.80	30	1,1-Dichloropropene	9.02	58	o-Xylene	14.49
3	Vinyl chloride	4.00	31	1,2-Dichloroethane-D4 (surr)	9.23	59	Styrene	14.51
4	Bromomethane	4.61	32	Benzene	9.30	60	Bromoform	14.88
5	Chloroethane	4.77	33	1,2-Dichloroethane	9.33	61	Isopropylbenzene	14.98
6	Trichlorofluoromethane	5.15	34	1,4-Difluorobenzene (IS)	9.70	62	p-Bromofluorobenzene (surr)	15.28
7	Acrolein	5.81	35	Trichloroethene	10.07	63	1,1,2,2-Tetrachloroethane	15.47
8	1,1,2 Trichloro-1,2,2 Trifluorome	5.86	36	Methylcyclohexane	10.30	64	Bromobenzene	15.54
9	1,1-Dichloroethene	5.92	37	1,2-Dichloropropane	10.38	65	t-1,4-Dichloro-2-Butene	15.54
10	Acetone	6.02	38	Dibromomethane	10.57	66	1,2,3-Trichloropropane	15.57
11	Iodomethane	6.19	39	Bromodichloromethane	10.73	67	n-Propylbenzene	15.79
12	Carbon disulfide	6.28	40	2-Chloroethylvinyl Ether	11.01	68	1,3,5-Trimethylbenzene	15.85
13	Methyl Acetate	6.42	41	cis-1,3-Dichloropropene	11.27	69	2-Chlorotoluene	15.94
14	Acetonitrile	6.43	42	4-Methyl-2-pentanone	11.41	70	4-Chlorotoluene	15.94
15	Methylene chloride	6.59	43	Toluene-D8 (surr)	11.61	71	tert-Butylbenzene	16.32
16	t-Butyl Methyl Ether	6.89	44	Toluene	11.70	72	1,2,4-Trimethylbenzene	16.40
17	trans-1,2-Dichloroethene	6.93	45	trans-1,3-Dichloropropene	11.98	73	sec-Butylbenzene	16.65
18	Acrylonitrile	6.94	46	Ethyl Methacrylate	11.98	74	4-Isopropyltoluene	16.84
19	1,1-Dichloroethane	7.48	47	1,1,2-Trichloroethane	12.26	75	1,3-Dichlorobenzene	16.91
20	Vinyl Acetate	7.48	48	Tetrachloroethene	12.45	76	1,4-Dichlorobenzene-D4 (IS)	17.00
21	2,2 Dichloropropane	8.19	49	1,3-Dichloropropane	12.50	77	1,4-Dichlorobenzene	17.04
22	2-Butanone	8.20	50	2-Hexanone	12.50	78	n-Butylbenzene	17.47
23	cis-1,2-Dichloroethene	8.21	51	Dibromochloromethane	12.84	79	1,2-Dichlorobenzene	17.62
24	Bromochloromethane	8.53	52	1,2-Dibromoethane	13.04	80	1,2-Dibromo-3-Chloropropane	18.83
25	Tetrahydrofuran	8.58	53	Chlorobenzene-D5 (IS)	13.62	81	1,2,4-Trichlorobenzene	20.05
26	Chloroform	8.58	54	Chlorobenzene	13.66	82	Hexachlorobutadiene	20.23
27	1,1,1-Trichloroethane	8.82	55	Ethylbenzene	13.74	83	Napthalene	20.46
28	Cyclohexane	8.88	56	1,1,1,2-Tetrachloroethane	13.76	84	1,2,3-Trichlorobenzene	20.82

Ordering Information

Order Number Description
7KG-G005-27 ZB-624 60m x 0.25mm x 1.4µm

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