



VERTEC TPE OUTGASSING STATIC HEADSPACE

Technical Datasheet

METHOD SUMMARY

Static Headspace Analysis (outgassing) is performed by subjecting the Vertec sample in a sealed container to a controlled temperature for a fixed period of time. This procedure drives volatile compounds from the sample matrix into the atmosphere above the sample, called the headspace. This procedure is commonly referred to as outgassing. The volatile components are then injected onto the Gas Chromatograph (GC), where they are separated until subsequent analysis by Mass Spectrometry (MS).

TEST STANDARD

IDEMA Microcontamination Standard M8-98

Determination of Volatile Organic Compounds (VOC) by Static Headspace GC/MS

TEST METHOD AND RESULTS

Thermal desorption was carried out for 10 minutes and 40 C, 60 C and 100 C. Chromatograms obtained from Vertec shown in Figure 1. Peak integration and MS library search data is shown in Tables 1-3 for samples measured at each temperature. Table 4 summarizes the total head space for each condition along with cumulative ion count.

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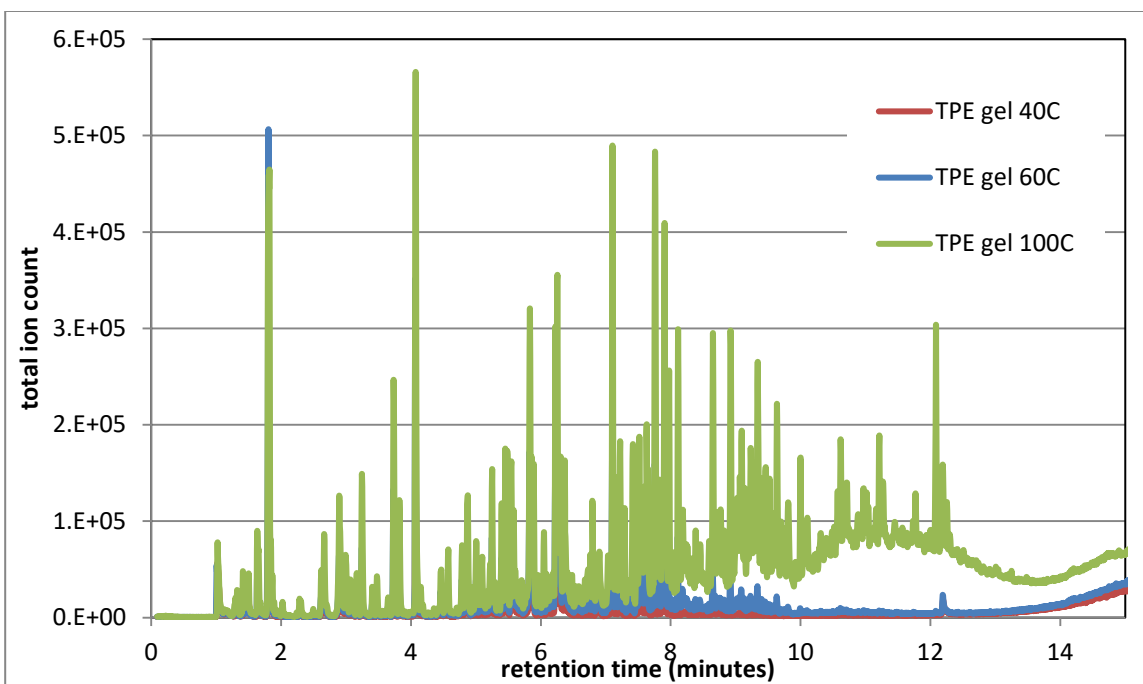


Figure 1. Vertec TPE: GC-MS Chromatograms.

Table 1. Chromatogram Integration and Library data, Desorption at 40 C

Peak	R.T.	Height	Area	Area Pct	Library/ID	CAS	Qual
1	1.022	56825	134531	11.4972	Allene	000463-49-0	2
2	1.643	38553	56638	4.8403	Furan, tetrahydro-	000109-99-9	91
3	1.807	139386	273402	23.3652	Cyclohexane	000110-82-7	95
4	2.9	44521	62673	5.3561	cis-1-Butyl-2-methylcyclopropane	038851-69-3	91
5	3.247	47836	60988	5.2121	Heptane, 2,4-dimethyl-	002213-23-2	72
6	3.733	80649	99341	8.4898	Octane, 4-methyl-	002216-34-4	76
7	3.824	38889	51475	4.3991	Benzene, 1,3-dimethyl-	000108-38-3	97
8	4.075	176448	225314	19.2556	Styrene	000100-42-5	97
9	5.828	77831	131888	11.2713	Undecane, 5,7-dimethyl-	017312-83-3	86
10	6.251	69818	73873	6.3133	Undecane, 5-methyl-	001632-70-8	60

Table 2. Chromatogram Integration and Library data, Desorption at 60 C

Peak	R.T.	Height	Area	Area Pct	Library/ID	CAS	Qual
1	1.022	54495	140214	5.8933	Ethylene oxide	000075-21-8	2
2	1.807	505458	632889	26.6006	Cyclohexane	000110-82-7	95
3	2.895	65767	153321	6.4441	cis-1-Butyl-2-methylcyclopropane	038851-69-3	91
4	3.733	131906	169544	7.126	Octane, 4-methyl-	002216-34-4	95
5	4.07	349425	427429	17.965	Styrene	000100-42-5	97
6	5.827	162337	201316	8.4614	Undecane, 5,7-dimethyl-	017312-83-3	80
7	6.222	143322	143106	6.0148	Undecane	001120-21-4	94
8	6.251	135062	132946	5.5878	Decane, 3,7-dimethyl-	017312-54-8	64
9	7.099	180677	193518	8.1336	Dodecane	000112-40-3	94
10	7.754	149305	184945	7.7733	3-Hexanol, 2,5-dimethyl-	019550-07-3	53

Table 3. Chromatogram Integration and Library data, Desorption at 100 C

Peak	R.T.	Height	Area	Area Pct	Library/ID	CAS	Qual
1	1.821	462038	969297	20.2283	Cyclohexane	000110-82-7	95
2	3.733	244462	309620	6.4615	Octane, 4-methyl-	002216-34-4	76
3	4.075	561619	699527	14.5985	Styrene	000100-42-5	97
4	5.832	297939	381152	7.9543	Undecane, 4,7-dimethyl-	017301-32-5	78
5	6.256	324521	327113	6.8265	Decane, 3,7-dimethyl-	017312-54-8	64
6	7.104	464909	457810	9.5541	Dodecane	000112-40-3	95
7	7.758	456959	606742	12.6621	-Octanone, 5-hydroxy-2,7-dimethyl	006838-51-3	50
8	7.908	373203	374902	7.8238	Tridecane	000629-50-5	96
9	8.924	263968	304448	6.3535	Heptacosane	000593-49-7	83
10	9.343	226114	361175	7.5374	Tetratetracontane	007098-22-8	90

TPE gel, total ion count	40C	60C	100C
cyclic hydrocarbons, %	29.0	25	14.6
linear hydrocarbons, %	42.8	35.2	52.5
oxidized hydrocarbons, %	0.0	13.8	12.7
Solvent, %	28.2	26	20.2
Total ion count	0.117	0.238	0.479

Table 4. Total Ion Count, Detector Response

SUMMARY

Vertec TPE material shows very low volatiles up to 60° C of desorption temperature. At every temperature the head-space off gas consisted of only hydrocarbons.