

Farm to Vape, LLC

Bon Air, VA 23235

E-Cigarette Aerosol Analysis

Samples Received 7/31/2017

Analysis Report
(0717-527B-R1)

HPLC/UV Analysis (ENT305)

Acetaldehyde
Formaldehyde



Enthalpy Analytical

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I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 11 pages.



Summary of Results

Enthalpy Analytical

0717-527 carbonyls 1 Line: 1

Analyst: apennington

Farm to Vape



Limit of Quantitation (LOQ)	0.110	0.110
Minimum Detection Limit (MDL)	0.0320	0.0448

Summary

Sample Name	Sample Code	Run	Port	Cigs	Puffs	WtLoss	Acetaldehyde	Formaldehyde
					/Cig	mg/cig	ug/puff	ug/puff
50:50 PG:VG 2% nicotine TSCStds-1483-Stock	0717-527C-01-L1483-R1-1	1	2	1	10.0	82.2	6.84	22.8
	0717-527C-02-L1483-R1-1	1	3	1	10.0	126	8.57	22.1
	0717-527C-03-L1483-R1-1	1	4	1	10.0	136	5.04	14.6
	Average				10.0	114	6.82	19.8
	Std Dev				0.0	28	1.76	4.56
	RSD				0.0%	24.8%	25.9%	23.0%
	Farm to Vape Thinner	0717-527C-04-LFarm-R1-1	1	5	1	10.0	24.5	7.49
0717-527C-05-LFarm-R1-1		1	6	1	10.0	30.1	10.8	18.6
0717-527C-06-LFarm-R1-1		1	7	1	10.0	20.7	7.86	13.9
Average					10.0	25.1	8.70	15.7
Std Dev					0.0	4.7	1.79	2.53
RSD					0.0%	18.8%	20.6%	16.1%
Smoke Blank		0717-527C-BLNK-R1-1	1	1	1	10.0		<0.0320

Detailed Results

Enthalpy Analytical

0717-527 carbonyls 1 Line: 1

Analyst: apennington

Farm to Vape

Acetaldehyde

Client's Sample Name	Sequence	Time Analyzed	Curve Min	Curve Max	MDL	Ret Time (min)	Area	Raw Conc ug/mL	DF	Conc ug/mL	Units	Vol (mL)	Flag	Sample Amt ug/puff	Blank Avg	Samp -Blank ug/puff
0717-527C-BLNK-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 05:32	0.0300	15.0	0.00871			0.00	1.05	0.00	ug/mL	35	ND	0.00	0.00	0.00
0717-527C-01-L1483-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 07:21	0.0300	15.0	0.00871	8.22	365.43	1.86	1.05	1.95	ug/mL	35		6.84	0.00	6.84
0717-527C-02-L1483-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 07:57	0.0300	15.0	0.00871	8.22	456.85	2.33	1.05	2.45	ug/mL	35		8.57	0.00	8.57
0717-527C-03-L1483-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 08:33	0.0300	15.0	0.00871	8.18	270.47	1.37	1.05	1.44	ug/mL	35		5.04	0.00	5.04
0717-527C-04-LFarm-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 09:09	0.0300	15.0	0.00871	8.21	399.85	2.04	1.05	2.14	ug/mL	35		7.49	0.00	7.49
0717-527C-05-LFarm-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 09:45	0.0300	15.0	0.00871	8.16	572.26	2.93	1.05	3.07	ug/mL	35		10.8	0.00	10.8
0717-527C-06-LFarm-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 10:22	0.0300	15.0	0.00871	8.21	419.02	2.14	1.05	2.24	ug/mL	35		7.86	0.00	7.86

Enthalpy Analytical

0717-527 carbonyls 1 Line: 1

Analyst: apennington

Farm to Vape

Formaldehyde

Client's Sample Name	Sequence	Time Analyzed	Curve Min	Curve Max	MDL	Ret Time (min)	Area	Raw Conc ug/mL	DF	Conc ug/mL	Units	Vol (mL)	Flag	Sample Amt ug/puff	Blank Avg	Samp -Blank ug/puff
0717-527C-BLNK-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 05:32	0.0300	15.0	0.0122			0.00	1.05	0.00	ug/mL	35	ND	0.00	0.00	0.00
0717-527C-01-L1483-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 07:21	0.0300	15.0	0.0122	6.09	1550.78	6.19	1.05	6.50	ug/mL	35		22.8	0.00	22.8
0717-527C-02-L1483-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 07:57	0.0300	15.0	0.0122	6.09	1504.91	6.01	1.05	6.31	ug/mL	35		22.1	0.00	22.1
0717-527C-03-L1483-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 08:33	0.0300	15.0	0.0122	6.08	992.25	3.96	1.05	4.16	ug/mL	35		14.6	0.00	14.6
0717-527C-04-LFarm-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 09:09	0.0300	15.0	0.0122	6.09	997.44	3.98	1.05	4.18	ug/mL	35		14.6	0.00	14.6
0717-527C-05-LFarm-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 09:45	0.0300	15.0	0.0122	6.06	1267.28	5.06	1.05	5.31	ug/mL	35		18.6	0.00	18.6
0717-527C-06-LFarm-R1-1	Groucho592 2017-11-01 16-52-33.v2	20171102 10:22	0.0300	15.0	0.0122	6.09	947.60	3.78	1.05	3.97	ug/mL	35		13.9	0.00	13.9

Set Name	0717-527 carbonyls 1	Smoking Machine	otto
Sheet title	sheet 1	Humidity	
Run	1	Temperature	
Analyst	kpivko	Pressure mBar	
Date	10/20/17	Imp Vol	
		Time Finished	1:24 PM

0717-527

Job	Eliq	Dev	Anal	Port	Cigs	EcigPre Weight	EcigPost Weight	Net (mg)	FilterPre Weight	FilterPost Weight	Net (mg)	Puff Start	Puff Ct	Puff Type	Puff (mL)	Dur (s)	Pufs/cig
i0717-527C-BLNK-R1-1Pî	0717-527	BLNK	C	1	1			0.0			0.0	1	10	sq	55	3.0	10.0
i0717-527C-01-L1483-R1-1Tî	0717-527	1483	01	C	2	74.7985	74.7163	82.2			0.0	1	10	sq	55	3.0	10.0
i0717-527C-02-L1483-R1-1î	0717-527	1483	02	C	3	74.7163	74.5906	125.7			0.0	1	10	sq	55	3.0	10.0
i0717-527C-03-L1483-R1-1î	0717-527	1483	03	C	4	74.5906	74.4551	135.5			0.0	1	10	sq	55	3.0	10.0
i0717-527C-04-LFarm-R1-1_î	0717-527	Farm	04	C	5	74.4905	74.4660	24.5			0.0	1	10	sq	55	3.0	10.0
i0717-527C-05-LFarm-R1-1kî	0717-527	Farm	05	C	6	74.4660	74.4359	30.1			0.0	1	10	sq	55	3.0	10.0
i0717-527C-06-LFarm-R1-1wî	0717-527	Farm	06	C	7	74.4359	74.4152	20.7			0.0	1	10	sq	55	3.0	10.0

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	Farm to Vape, LLC
Analysts	ASCP
Parameters	ENT305

Client Proj	N/A
Job #	0717-527B-R1
# Samples	2

Sample Custody	Tiffany Stein received the devices and e-Liquids on 7/31/17 after being relinquished by Farm to Vape, LLC. The samples were received at ambient temperature in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.
Sample Handling	<p>To generate the samples for the aerosol testing study, the battery was fully charged then the DNA 200 tanks were filled with a solution of 50:50 PG:VG spiked with 2% nicotine and Farm to Vape Thinner. A nickel coil was used and the preheat setting was turned off for the vaping of the samples.</p> <p>The devices were then smoked on a linear analytical smoking machine, for 10 puffs using a 55 mL/3 second square-wave puff profile once every 30 seconds at 230 Celsius. Before and after the 10 puffs, the devices were weighed and samples recovered.</p>
Analysis	The aerosol samples were prepared and analyzed following the analytical procedures in Enthalpy SOP ENT305 for HPLC/UV analysis. After preparation, the samples were analyzed for acetaldehyde and formaldehyde via HPLC/UV at approximately 365nm with an appropriate column.
QC Notes	All QC samples were within acceptance limits unless otherwise noted.
Reporting Notes	<p>Calibration and sample chromatograms are available upon request.</p> <p>The results presented in this report are representative of the samples as provided to the laboratory.</p> <p>Report 0917-527B-R1 replaces report 0717-527B issued on 11/06/2017.</p>



**This Is The Last Page
Of This Report.**