

## *Supplementary Materials File S3*

### 1 Non-Intense and Intense Per Collection Analytical Stability Results

#### 1.1 Virginia Tobacco 18 mg/mL Non-Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
# of puffs	NA	150		134		141		132		114	
pH	NA	6.01	0.03	6.19	0.06	6.14	0.03	5.90	0.03	5.93	0.02
Primary Constituents		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nicotine	mg/collection	18.37	1.50	16.81	0.63	17.59	1.09	18.73	0.74	15.78	0.43
Glycerol	mg/collection	700.87	61.10	704.93	22.99	709.29	51.07	788.91	33.42	686.60	30.83
Propylene Glycol	mg/collection	438.43	36.56	420.23	16.52	430.05	27.37	457.94	18.08	390.86	9.29
Water	mg/collection	83.01	6.33	94.60	1.51	99.93	3.65	87.42	1.67	82.23	2.11
Menthol	mg/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOQ	NA
Diethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Ethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Carbonyls & Glycidol		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acetaldehyde	mcg/collection	3.54	0.42	2.83	0.47	3.19	0.59	4.05	0.42	4.32	0.36
Acrolein	mcg/collection	1.62	0.38	1.21	0.55	BLOQ	NA	BLOQ	NA	2.81	0.27
Diacetyl	mcg/collection	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOQ	NA
Formaldehyde	mcg/collection	15.47	2.36	16.00	1.96	15.29	3.40	19.55	1.53	17.87	0.33
Glycidol	mcg/collection	4.11	0.41	3.29	0.61	4.21	0.68	4.40	0.35	3.09	0.26
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Crotonaldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Furfural	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Nicotine Degradants & TSNAs		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD

## Supplementary Material

<b>β-Nicotyrine</b>	mcg/collection	1.55	0.06	1.16	0.08	1.33	0.19	2.53	0.10	1.75	0.10
<b>Cotinine</b>	mcg/collection	34.27	2.05	40.53	3.84	31.71	5.05	39.19	1.68	35.46	2.10
<b>Myosmine</b>	mcg/collection	31.51	1.77	33.50	3.02	28.04	4.32	30.22	1.18	26.10	1.41
<b>Nicotine N Oxide</b>	mcg/collection	BLOQ	NA	BLOQ	NA	1.36	0.86	BLOQ	NA	BLOQ	NA
<b>Nornicotine</b>	mcg/collection	6.10	0.45	9.21	0.76	9.85	1.61	12.40	0.57	12.49	0.91
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Iron</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	23.49	12.51	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	9.86	1.09	8.24	0.42	9.97	0.31	9.30	0.39	8.30	0.59
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>

<b>1,3-Butadiene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

## 1.2 Virginia Tobacco 18 mg/mL Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
<b># of puffs</b>	NA	85 (*86)		86		87		84		83	
<b>pH</b>	NA	6.17	0.02	6.46	0.04	5.96	0.04	6.17	0.12	5.96	0.08
<b>*Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Nicotine</b>	mg/collection	17.55	1.18	18.35	0.82	18.07	1.11	17.82	2.62	16.82	2.66
<b>Glycerol</b>	mg/collection	662.20	41.85	756.14	32.64	743.65	40.63	722.64	90.53	698.73	98.83
<b>Propylene Glycol</b>	mg/collection	420.44	27.99	463.43	20.45	445.13	28.01	445.16	64.40	415.85	66.08
<b>Water</b>	mg/collection	69.63	1.85	84.55	2.02	82.28	3.34	89.10	4.98	81.48	6.26
<b>Menthol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Diethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Ethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA

Carbonyls & Glycidol		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acetaldehyde	mcg/collection	4.49	0.39	3.85	0.47	4.16	0.10	4.44	0.55	6.66	0.51
Acrolein	mcg/collection	3.17	0.42	2.32	0.43	2.06	0.19	2.20	1.31	6.82	0.58
Diacetyl	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOQ	NA
Formaldehyde	mcg/collection	22.81	1.07	21.66	2.51	22.93	0.88	23.06	5.93	24.95	1.13
Glycidol	mcg/collection	5.91	2.22	3.88	0.81	5.33	0.78	3.75	0.66	4.45	0.36
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
Crotonaldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Furfural	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
Nicotine Degradants & TSNAs		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
β-Nicotyrine	mcg/collection	2.40	0.35	2.13	0.10	2.87	0.18	3.09	0.86	2.39	0.19
Cotinine	mcg/collection	35.45	3.73	36.39	2.88	41.42	2.15	34.43	9.22	42.75	2.24
Myosmine	mcg/collection	33.03	3.54	29.96	2.29	35.74	1.53	26.35	6.61	32.27	1.89
Nicotine N Oxide	mcg/collection	BLOQ	NA	BLOQ	NA	1.14	0.07	BLOQ	NA	BLOQ	NA
Nornicotine	mcg/collection	6.59	0.66	8.04	0.86	11.98	0.89	10.82	3.18	14.64	0.83
Anabasine	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Anatabine	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
NNK	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
NNN	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Metals		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Arsenic	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Beryllium	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Cadmium	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Chromium	ng/collection	72.07	50.94	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Cobalt	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Copper	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Gold	ng/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

<b>Iron</b>	ng/collection	596.74	475.36	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	9.31	1.17	11.47	0.74	14.17	1.77	11.52	0.82	9.86	2.22
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOQ	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-Butadiene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

### 1.3 Crisp Menthol 18 mg/mL Non-Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
# of puffs	NA	125		112		121		120		115	
pH	NA	6.26	0.03	6.36	0.02	6.33	0.02	6.30	0.06	6.11	0.06
Primary Constituents		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nicotine	mg/collection	17.52	0.72	16.57	1.37	16.72	0.68	17.07	2.66	16.22	0.43
Glycerol	mg/collection	447.80	20.89	444.82	36.58	430.90	19.42	450.65	69.80	429.32	10.68
Propylene Glycol	mg/collection	609.23	27.86	624.50	52.74	635.13	41.91	641.90	100.91	594.88	16.17
Water	mg/collection	78.21	3.71	62.73	3.29	73.73	4.35	69.39	5.58	75.50	6.89
Menthol	mg/collection	12.57	0.65	12.05	1.04	11.98	0.47	12.61	2.07	11.41	0.31
Diethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Ethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Carbonyls & Glycidol		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acetaldehyde	mcg/collection	2.40	0.32	2.65	0.65	2.67	0.33	2.50	0.21	2.70	0.48
Acrolein	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	1.72	0.70
Diacetyl	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOQ	NA
Formaldehyde	mcg/collection	8.96	1.68	11.56	2.58	10.34	0.65	11.34	1.01	11.63	1.78
Glycidol	mcg/collection	2.90	0.19	2.09	0.14	2.33	0.39	2.69	0.65	2.67	0.70
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Crotonaldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Furfural	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Nicotine Degradants & TSNAs		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
β-Nicotyrine	mcg/collection	1.88	0.11	2.40	0.33	2.83	0.15	4.20	0.42	3.65	0.50
Cotinine	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
Myosmine	mcg/collection	1.53	0.10	1.74	0.22	2.20	0.22	2.46	0.27	2.69	0.33
Nicotine N Oxide	mcg/collection	BLOQ	NA	1.64	0.70	1.35	0.49	1.76	0.32	0.98	0.28
Nornicotine	mcg/collection	7.21	0.38	8.93	1.64	12.83	0.69	12.39	1.28	14.35	2.19
Anabasine	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA

<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Iron</b>	ng/collection	214.12	203.93	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	10.86	3.49	8.55	2.14	9.80	0.54	9.19	0.39	8.44	0.79
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOQ	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-Butadiene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>

<b>1-Butanol</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	110.62	6.75	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

#### 1.4 Crisp Menthol 18 mg/mL Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
<b># of puffs</b>	NA	81		88		82		87		81	
<b>pH</b>	NA	6.24	0.02	6.53	0.05	6.27	0.03	6.20	0.06	6.17	0.10
<b>Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Nicotine</b>	mg/collection	17.99	1.08	18.02	0.45	17.86	0.54	19.66	0.14	18.26	0.57
<b>Glycerol</b>	mg/collection	452.86	25.80	483.47	11.68	465.17	13.98	520.53	5.74	488.44	13.95
<b>Propylene Glycol</b>	mg/collection	620.15	43.76	678.08	15.45	664.71	20.56	737.84	1.76	678.13	21.65
<b>Water</b>	mg/collection	68.93	0.80	70.12	1.81	76.48	2.74	74.65	1.88	78.37	2.65
<b>Menthol</b>	mg/collection	12.98	0.74	12.77	0.28	12.27	0.42	14.11	0.08	12.73	0.41
<b>Diethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Ethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Acetaldehyde</b>	mcg/collection	2.78	0.24	2.35	0.40	2.63	0.17	4.28	0.73	4.07	0.48
<b>Acrolein</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	1.66	0.84	4.02	0.29
<b>Diacetyl</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Formaldehyde</b>	mcg/collection	13.96	2.12	14.26	1.43	12.91	1.10	20.48	7.12	14.14	0.84
<b>Glycidol</b>	mcg/collection	2.94	1.08	3.02	0.30	4.99	0.71	2.71	0.56	2.68	0.89



<b>Acetyl Propionyl</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Butyraldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Crotonaldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Furfural</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>β-Nicotyrine</b>	mcg/collection	2.27	0.09	2.73	0.19	3.47	0.15	4.10	0.41	3.70	0.27
<b>Cotinine</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	1.20	0.36	BLOQ	NA
<b>Myosmine</b>	mcg/collection	1.87	0.10	2.27	0.17	2.58	0.12	3.10	0.23	2.66	0.18
<b>Nicotine N Oxide</b>	mcg/collection	1.14	0.10	BLOQ	NA	BLOQ	NA	1.18	0.35	1.08	0.30
<b>Nornicotine</b>	mcg/collection	8.06	0.60	10.79	0.45	13.41	0.42	15.09	1.70	13.00	1.22
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Iron</b>	ng/collection	221.24	106.93	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA

Organic Acids		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Benzoic Acid	mcg/collection	13.20	1.19	12.29	1.59	9.56	3.13	12.03	1.41	11.49	1.49
Propionic Acid	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOQ	NA
VOCs		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1,3-Butadiene	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Acrylonitrile	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Benzene	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Isoprene	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Propylene Oxide	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Toluene	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
Esters & Alcohols		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1-Butanol	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Benzyl Acetate	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Ethyl Acetate	mcg/collection	118.72	3.37	NT	NT	NT	NT	NT	NT	NT	NT
Ethyl Acetoacetate	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Isoamyl Acetate	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Isobutyl Acetate	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
Methyl Acetate	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

### 1.5 Polar Menthol 18 mg/mL Non-Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
# of puffs	NA	100		132		115		122		106	
pH	NA	6.31	0.05	6.55	0.02	6.32	0.03	6.38	0.05	6.54	0.03
Primary Constituents		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nicotine	mg/collection	16.02	0.68	17.72	0.71	16.56	0.88	19.31	0.33	15.21	1.79
Glycerol	mg/collection	410.15	19.55	482.42	18.92	440.06	22.96	515.48	9.40	412.34	48.16

<b>Propylene Glycol</b>	mg/collection	566.40	28.43	679.43	25.88	744.50	69.18	729.91	13.55	566.07	54.97
<b>Water</b>	mg/collection	58.69	2.00	84.49	2.49	73.28	2.64	74.13	1.71	74.80	6.20
<b>Menthol</b>	mg/collection	12.36	0.57	13.54	0.68	12.70	0.78	15.22	0.30	11.51	1.41
<b>Diethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Ethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Acetaldehyde</b>	mcg/collection	BLOQ	NA	3.11	0.43	2.58	0.44	3.66	0.39	4.41	0.52
<b>Acrolein</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	1.95	0.10
<b>Diacetyl</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Formaldehyde</b>	mcg/collection	5.09	0.70	11.93	1.69	8.99	1.55	12.36	1.14	13.34	0.97
<b>Glycidol</b>	mcg/collection	1.83	0.17	2.31	0.14	2.39	0.33	2.72	0.50	2.50	0.46
<b>Acetyl Propionyl</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Butyraldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Crotonaldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Furfural</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>β-Nicotryne</b>	mcg/collection	BLOQ	NA	2.50	0.41	2.39	0.35	5.31	0.62	4.69	0.90
<b>Cotinine</b>	mcg/collection	BLOQ	NA	1.55	0.25	1.43	0.17	1.30	0.12	2.39	0.35
<b>Myosmine</b>	mcg/collection	1.37	0.18	3.75	0.59	3.83	0.57	5.34	0.43	6.08	0.70
<b>Nicotine N Oxide</b>	mcg/collection	BLOQ	NA	1.30	0.50	1.94	1.03	1.87	0.18	0.95	0.28
<b>Nornicotine</b>	mcg/collection	2.14	0.30	7.49	1.33	8.57	1.37	12.17	1.30	14.24	1.79
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA

<b>Chromium</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOQ	NA
<b>Gold</b>	ng/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Iron</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	20.06	12.11	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	8.14	0.53	10.19	0.61	9.62	0.27	10.06	0.57	8.30	1.01
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-Butadiene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
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## 1.6 Polar Menthol 18 mg/mL Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
# of puffs	NA	81		81		81		81		80	
pH	NA	6.24	0.04	6.57	0.04	6.36	0.03	6.22	0.06	6.42	0.05
<b>Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
Nicotine	mg/collection	17.82	1.18	17.71	1.65	17.56	0.59	19.55	0.25	18.02	0.32
Glycerol	mg/collection	455.73	28.72	483.23	43.54	467.18	12.42	524.99	6.87	492.91	7.25
Propylene Glycol	mg/collection	629.21	38.52	715.07	103.73	660.56	21.54	740.35	10.85	676.06	12.86
Water	mg/collection	72.38	1.80	70.84	7.44	71.58	4.22	70.62	1.60	75.86	3.85
Menthol	mg/collection	13.67	0.93	13.42	1.22	12.77	0.45	15.05	0.23	13.29	0.17
Diethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Ethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
Acetaldehyde	mcg/collection	1.99	0.11	2.68	0.33	3.20	0.47	4.65	0.33	5.66	1.12
Acrolein	mcg/collection	1.64	0.13	1.61	0.52	BLOQ	NA	1.44	0.42	5.03	2.20
Diacetyl	mcg/collection	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOQ	NA
Formaldehyde	mcg/collection	11.88	0.85	13.48	0.73	13.29	1.52	16.90	2.08	15.60	3.38
Glycidol	mcg/collection	3.67	0.38	3.11	0.38	3.36	0.83	2.28	0.53	3.57	0.61
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Crotonaldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Furfural	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
β-Nicotyrine	mcg/collection	BLOQ	NA	2.47	0.29	3.14	1.11	6.61	0.63	4.60	1.09
Cotinine	mcg/collection	BLOQ	NA	1.05	0.28	1.36	0.11	1.97	0.16	2.08	0.36

<b>Myosmine</b>	mcg/collection	2.18	0.17	3.81	0.43	4.94	0.46	5.71	0.41	5.91	1.24
<b>Nicotine N Oxide</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Nornicotine</b>	mcg/collection	2.63	0.20	6.72	0.97	8.40	2.72	12.64	1.09	12.75	2.56
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Iron</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	24.53	12.14	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	12.87	3.98	12.65	0.95	11.16	1.17	12.41	0.74	10.82	1.07
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-Butadiene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

<b>Benzene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOQ	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	NT	NT	NT	NT	NT	NT	NT	NT

### 1.7 Autumn Tobacco 18 mg/mL Non-Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
<b># of puffs</b>	NA	128		128		119		122		124	
<b>pH</b>	NA	6.36	0.06	6.16	0.07	6.37	0.05	6.41	0.13	6.14	0.03
<b>Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Nicotine</b>	mg/collection	16.46	1.65	16.54	0.81	16.69	1.20	17.66	0.57	17.99	0.29
<b>Glycerol</b>	mg/collection	427.06	41.69	427.12	22.52	414.24	29.35	430.50	12.54	440.29	5.03
<b>Propylene Glycol</b>	mg/collection	559.89	57.30	548.60	28.83	527.77	42.27	560.23	15.11	596.62	10.41
<b>Water</b>	mg/collection	53.15	4.83	74.07	1.95	69.81	4.32	78.37	2.07	112.33	15.49
<b>Menthol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Diethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Ethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Acetaldehyde</b>	mcg/collection	1.69	0.21	2.27	0.22	2.68	0.26	2.75	0.16	2.58	0.48

<b>Acrolein</b>	mcg/collection	1.16	0.37	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Diacetyl</b>	mcg/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOQ	NA	BLOQ	NA
<b>Formaldehyde</b>	mcg/collection	9.16	0.33	7.28	0.20	7.81	0.43	8.77	0.59	9.69	1.20
<b>Glycidol</b>	mcg/collection	1.89	0.61	2.16	0.47	2.06	0.34	1.51	0.28	2.90	0.51
<b>Acetyl Propionyl</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Butyraldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
<b>Crotonaldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Furfural</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>β-Nicotyrine</b>	mcg/collection	0.93	0.22	BLOQ	NA	1.96	0.21	1.21	0.34	1.83	0.27
<b>Cotinine</b>	mcg/collection	1.36	0.21	BLOQ	NA	1.25	0.17	3.33	1.88	1.76	0.21
<b>Myosmine</b>	mcg/collection	1.91	0.11	2.52	0.14	2.87	0.34	3.21	0.35	3.39	0.24
<b>Nicotine N Oxide</b>	mcg/collection	1.40	0.35	BLOQ	NA	1.40	0.17	4.43	2.98	1.34	0.69
<b>Nornicotine</b>	mcg/collection	3.52	0.22	4.41	0.67	7.84	0.81	10.43	2.97	9.95	0.63
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Iron</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA



<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	9.31	1.66	9.38	1.12	10.49	0.63	12.50	0.38	9.03	1.07
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-butadiene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT

## 1.8 Autumn Tobacco 18 mg/mL Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0	T3	T6	T9	T12
# of puffs	NA	80	76	68	72	68

pH	NA	6.43	0.06	6.27	0.03	6.35	0.06	6.06	0.05	6.12	0.03
Primary Constituents		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nicotine	mg/collection	15.58	1.83	14.86	1.36	15.76	0.94	15.22	1.87	15.75	1.62
Glycerol	mg/collection	408.86	45.77	385.12	33.34	396.62	23.63	379.80	45.48	389.05	40.50
Propylene Glycol	mg/collection	530.42	64.90	502.73	47.25	499.31	32.39	487.07	56.68	523.30	53.66
Water	mg/collection	48.86	3.47	68.44	2.46	63.13	2.16	69.53	4.55	85.29	16.13
Menthol	mg/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
Diethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Ethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Carbonyls & Glycidol		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acetaldehyde	mcg/collection	1.97	0.13	2.52	0.24	2.53	0.20	2.92	0.37	2.19	0.11
Acrolein	mcg/collection	1.98	0.46	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
Diacetyl	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
Formaldehyde	mcg/collection	10.41	2.40	10.38	0.47	8.23	0.53	10.51	0.67	10.29	1.12
Glycidol	mcg/collection	3.87	0.82	3.26	0.47	2.80	0.53	2.19	0.36	4.25	0.45
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Crotonaldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Furfural	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Nicotine Degradants & TSNAs		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
β-Nicotyrine	mcg/collection	BLOQ	NA	BLOQ	NA	1.85	0.20	1.30	0.36	1.69	0.35
Cotinine	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	4.18	3.81	1.69	0.26
Myosmine	mcg/collection	1.70	0.61	2.74	0.24	2.70	0.21	3.23	0.35	3.18	0.49
Nicotine N Oxide	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	4.44	3.65	BLOQ	NA
Nornicotine	mcg/collection	3.20	0.78	5.52	0.75	6.77	0.89	11.01	3.21	6.72	3.15
Anabasine	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Anatabine	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
NNK	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT

<b>NNN</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Iron</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	11.63	1.17	11.39	0.82	9.19	1.25	12.69	1.02	9.81	0.87
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-butadiene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT

<b>Ethyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT

### 1.9 Ruby Menthol 18 mg/mL Non-Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
# of puffs	NA	130		127		135		124		124	
pH	NA	5.90	0.08	5.60	0.03	5.90	0.04	5.70	0.05	5.62	0.06
<b>Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
Nicotine	mg/collection	16.55	0.62	15.88	0.55	17.95	1.17	17.94	0.95	16.39	0.70
Glycerol	mg/collection	428.33	15.40	412.38	16.18	436.34	19.79	436.41	14.14	402.59	16.93
Propylene Glycol	mg/collection	578.80	22.62	552.64	19.36	587.70	40.37	582.89	30.95	558.46	22.81
Water	mg/collection	36.69	2.03	66.21	2.19	68.56	6.73	68.45	2.24	134.36	6.11
Menthol	mg/collection	9.49	0.38	8.75	0.32	9.57	0.64	9.63	0.53	8.58	0.34
Diethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Ethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
Acetaldehyde	mcg/collection	3.49	0.33	3.52	0.66	5.27	0.95	5.09	0.61	4.67	0.97
Acrolein	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
Diacetyl	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
Formaldehyde	mcg/collection	9.73	0.66	8.48	1.10	11.48	1.52	12.42	1.32	13.40	1.63
Glycidol	mcg/collection	2.05	0.56	2.55	0.20	2.53	0.23	2.38	0.16	3.02	0.29
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA

<b>Crotonaldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Furfural</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>β-Nicotyrine</b>	mcg/collection	1.50	0.12	1.49	0.77	3.72	1.63	3.00	1.20	2.65	1.54
<b>Cotinine</b>	mcg/collection	1.04	0.14	BLOQ	NA	2.21	0.44	4.35	1.02	2.56	0.55
<b>Myosmine</b>	mcg/collection	2.01	0.15	3.12	0.61	4.67	0.77	5.21	0.70	4.94	0.81
<b>Nicotine N Oxide</b>	mcg/collection	0.98	0.41	1.07	1.40	0.91	0.33	4.60	2.41	BLOQ	NA
<b>Nornicotine</b>	mcg/collection	2.99	0.36	6.00	2.80	8.00	3.59	11.99	5.34	10.48	6.22
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	0.01	0.0005	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Iron</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	8.33	0.89	11.42	0.78	11.53	0.81	11.98	0.92	9.37	0.69

<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-butadiene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT

### 1.10 Ruby Menthol 18 mg/mL Intense Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
<b># of puffs</b>	NA	80		76		79		85		73	
<b>pH</b>	NA	6.09	0.14	5.96	0.09	5.89	0.13	5.61	0.05	5.68	0.08
<b>Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Nicotine</b>	mg/collection	14.61	1.42	15.00	1.25	16.77	1.44	18.70	1.11	15.87	1.34
<b>Glycerol</b>	mg/collection	382.94	37.90	387.76	32.23	416.76	27.33	444.51	13.76	393.29	32.54
<b>Propylene Glycol</b>	mg/collection	511.76	52.76	522.18	44.49	540.31	47.07	602.83	33.68	545.58	47.37
<b>Water</b>	mg/collection	43.34	2.67	57.91	1.74	67.49	4.84	72.39	2.59	98.16	3.31

<b>Menthol</b>	mg/collection	8.15	0.87	8.21	0.65	8.89	0.83	9.67	0.59	8.25	0.79
<b>Diethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Ethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Acetaldehyde</b>	mcg/collection	3.81	0.44	4.45	0.62	5.42	0.73	6.76	0.77	4.72	0.84
<b>Acrolein</b>	mcg/collection	1.82	0.55	BLOQ	NA	1.14	0.36	BLOQ	NA	BLOQ	NA
<b>Diacetyl</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Formaldehyde</b>	mcg/collection	10.34	1.13	11.16	0.97	11.64	1.08	15.57	1.22	14.77	1.72
<b>Glycidol</b>	mcg/collection	4.69	1.20	3.01	0.88	3.73	0.84	3.15	0.39	4.82	0.78
<b>Acetyl Propionyl</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Butyraldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Crotonaldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Furfural</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>β-Nicotyrine</b>	mcg/collection	BLOQ	NA	1.95	0.65	4.08	1.35	5.50	1.92	4.53	1.22
<b>Cotinine</b>	mcg/collection	1.08	0.36	BLOQ	NA	2.08	0.26	4.95	1.46	2.67	0.32
<b>Myosmine</b>	mcg/collection	1.77	0.25	3.47	0.59	4.55	0.73	6.01	0.40	4.81	0.51
<b>Nicotine N Oxide</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	4.40	2.59	BLOQ	NA
<b>Nornicotine</b>	mcg/collection	2.81	0.47	5.10	1.69	8.14	2.94	16.57	2.60	11.66	3.38
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	0.01	0.0005	0.004	0.0003	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA

<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Iron</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	11.72	1.61	11.91	0.69	10.47	1.41	13.93	1.98	8.83	0.88
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-butadiene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT



### 1.11 Summer Menthol 18 mg/mL Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
# of puffs	NA	126		127		138		127		117	
pH	NA	6.42	0.03	6.31	0.02	6.46	0.06	6.29	0.03	6.28	0.03
Primary Constituents		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nicotine	mg/collection	16.77	0.67	16.14	0.93	18.64	1.23	18.95	0.40	15.84	0.89
Glycerol	mg/collection	431.72	16.21	414.91	26.39	441.48	22.38	441.26	4.57	383.93	20.92
Propylene Glycol	mg/collection	560.18	22.80	535.87	30.67	582.59	40.60	583.44	11.70	514.03	29.23
Water	mg/collection	41.89	2.28	69.54	3.28	80.53	14.76	79.41	2.22	132.76	6.10
Menthol	mg/collection	9.48	0.39	8.76	0.50	9.77	0.69	9.97	0.30	8.28	0.49
Diethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Ethylene Glycol	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Carbonyls & Glycidol		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acetaldehyde	mcg/collection	1.28	0.09	1.53	0.11	1.77	0.11	1.73	0.23	1.78	0.65
Acrolein	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
Diacetyl	mcg/collection	BLOD	NA	BLOQ	NA	BLOD	NA	BLOQ	NA	BLOQ	NA
Formaldehyde	mcg/collection	8.22	0.42	6.45	0.28	7.94	0.34	7.72	0.32	8.53	1.28
Glycidol	mcg/collection	1.83	0.20	1.88	0.45	1.87	0.44	1.77	0.33	1.77	0.22
Acetyl Propionyl	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA
Butyraldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Crotonaldehyde	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Furfural	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
Nicotine Degradants & TSNAs		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
β-Nicotyrine	mcg/collection	BLOQ	NA	BLOQ	NA	1.47	0.10	1.03	0.15	BLOQ	NA
Cotinine	mcg/collection	BLOQ	NA	BLOD	NA	BLOQ	NA	2.23	0.92	BLOQ	NA
Myosmine	mcg/collection	BLOQ	NA	1.44	0.05	1.58	0.13	1.81	0.20	1.80	0.65
Nicotine N Oxide	mcg/collection	1.62	0.82	BLOQ	NA	0.94	0.20	3.52	1.40	BLOQ	NA

<b>Nornicotine</b>	mcg/collection	2.35	0.14	4.12	0.38	5.74	0.36	8.60	1.34	6.56	0.97
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Iron</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOQ	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mg/collection	8.41	1.01	11.09	0.75	10.87	0.79	12.89	1.36	9.13	1.08
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-butadiene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT

<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	170.84	18.00	130.88	12.86	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT

### 1.12 Summer Menthol 18 mg/mL Intense Per Collection Per Collection Analytical Stability Results

Parameter/ Constituent	Units	T0		T3		T6		T9		T12	
<b># of puffs</b>	NA	86		80		74		86		69	
<b>pH</b>	NA	6.40	0.06	6.51	0.05	6.40	0.11	6.25	0.07	6.29	0.04
<b>Primary Constituents</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Nicotine</b>	mg/collection	16.74	1.45	16.85	0.85	17.44	1.61	18.56	0.78	15.15	1.66
<b>Glycerol</b>	mg/collection	432.87	36.94	432.90	23.99	425.10	25.37	437.62	12.04	371.89	38.35
<b>Propylene Glycol</b>	mg/collection	562.00	51.65	561.75	27.39	539.18	47.62	572.17	23.49	495.34	57.27
<b>Water</b>	mg/collection	53.05	2.22	68.72	0.92	72.22	3.79	81.61	1.78	98.02	5.69
<b>Menthol</b>	mg/collection	9.37	0.87	9.20	0.41	9.21	0.89	9.53	0.37	7.77	0.91
<b>Diethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Ethylene Glycol</b>	mg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Carbonyls &amp; Glycidol</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Acetaldehyde</b>	mcg/collection	1.95	0.21	1.88	0.21	1.56	0.12	2.23	0.30	BLOQ	NA
<b>Acrolein</b>	mcg/collection	2.07	0.29	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA
<b>Diacetyl</b>	mcg/collection	BLOD	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA

<b>Formaldehyde</b>	mcg/collection	10.98	1.01	9.86	0.85	7.74	0.70	9.84	0.70	8.21	0.48
<b>Glycidol</b>	mcg/collection	3.57	0.86	3.07	0.49	2.87	0.45	2.35	1.00	3.96	0.53
<b>Acetyl Propionyl</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Butyraldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Crotonaldehyde</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Furfural</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nicotine Degradants &amp; TSNAs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>β-Nicotyrine</b>	mcg/collection	BLOQ	NA	BLOQ	NA	1.36	0.12	1.20	0.33	1.14	0.27
<b>Cotinine</b>	mcg/collection	BLOQ	NA	BLOD	NA	BLOQ	NA	2.29	1.23	BLOQ	NA
<b>Myosmine</b>	mcg/collection	BLOQ	NA	1.69	0.22	1.46	0.10	2.00	0.18	1.33	0.16
<b>Nicotine N Oxide</b>	mcg/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	3.19	1.93	BLOQ	NA
<b>Nornicotine</b>	mcg/collection	2.67	0.33	4.44	0.55	4.52	0.28	8.33	1.86	5.10	0.70
<b>Anabasine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Anatabine</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>NNK</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>NNN</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Metals</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Arsenic</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Beryllium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cadmium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Chromium</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Cobalt</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Copper</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Gold</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Iron</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Lead</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Nickel</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Selenium</b>	ng/collection	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA	BLOQ	NA

<b>Silver</b>	ng/collection	BLOD	NA	BLOD	NA	BLOQ	NA	BLOD	NA	BLOD	NA
<b>Tin</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Zinc</b>	ng/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>Organic Acids</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>Benzoic Acid</b>	mcg/collection	13.13	0.84	11.50	1.28	10.04	0.95	14.25	1.25	8.76	0.67
<b>Propionic Acid</b>	mcg/collection	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA	BLOD	NA
<b>VOCs</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1,3-butadiene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Acrylonitrile</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Isoprene</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Propylene Oxide</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Toluene</b>	mcg/collection	BLOQ	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT
<b>Esters &amp; Alcohols</b>		<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>	<b>Mean</b>	<b>SD</b>
<b>1-Butanol</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Benzyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetate</b>	mcg/collection	178.52	9.38	144.40	3.17	NT	NT	NT	NT	NT	NT
<b>Ethyl Acetoacetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isoamyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Isobutyl Acetate</b>	mcg/collection	BLOD	NA	BLOD	NA	NT	NT	NT	NT	NT	NT
<b>Methyl Acetate</b>	mcg/collection	BLOD	NA	BLOQ	NA	NT	NT	NT	NT	NT	NT