E-Cigarette Aerosol Analysis Report

Applicant: **Shenzhen Hellvape Technology Co., Ltd.**

Address: **Floor 4, Building B, GangHuaXing Fifth Industrial Park, 118 Yong Fu Rd, Bao'an District, Shenzhen,China**

The following sample was submitted and identified by/on behalf of the client as:

Sample Name:	MD RTA
Model No.:	MD RTA
Tank:	2ml SUS304
Power level in testing:	20W
Adjustable air inlet or not:	Yes
Trade Mark:	HELLVAPE
Sample Received Date:	2019.06.03
Testing Period:	2019.06.03—2019.06.11
Test Method:	Please refer to the following page(s).
Test Result(s):	Please refer to the following page(s).
Remark:	The report is to supersede test report TCT190603C056.

Test Items		Test Requested
1	Carbonyl Compounds: Formaldehyde, Acetaldehyde, Acrolein, Crotonaldehyde	Emission testing according to Article 20 of Tobacco Product Directive (2014/40/EU)
2	Metals: Aluminum, Chromium, Iron, Nickel, Tin, Lead, Cadmium, Arsenic, Antimony	
3	Nicotine consistency	

Checked by

Noel Yin

Noel Yin

Signed for and on behalf of TCT

Kim Zhang

Kim Zhang
Technical Manager

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Test Results:

Test Condition for test items except Nicotine consistency test:
With reference to the CORESTA RECOMMENDED METHOD Nº 81 method parameter, Afnor standardization XP D90-300-3,International Standard ISO 20768:2018 and PD CEN/TR 17236:2018, a smoke machine was used to collect the vapor.

Puff Duration	3.0s±0.1s
Puff Volume	55mL±0.3mL
Puff Frequency	30s±0.5s
Puff of Each Group	20
Group Interval Time	300s±120s
Maximum Flow	18.5mL/s±1.0mL/s
Pressure Drop	< 50hPa
Group	5
Total Number of Puff	100
Total Duration of Vaporization	300s

The temperature and relative humidity of the test atmosphere during machine preparation and testing were kept within the following limits: temperature ±2℃, relative humidity ±5%

Sample Description:
No.1 MD RTA

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1. Carbonyl Compounds Content(s)

Method: The volatile aldehydes are extracted from the aerosol by bubbling each puff through an impactor containing an acidified aqueous solution of 2,4-DNPH. The samples are analyzed by reverse phase high-performance liquid chromatography and determined using a UV detector.

Test Item	CAS No.	Unit	MDL	LOQ	Content(s)
					No.1
Formaldehyde	50-00-0	ug/100puffs	0.667	2	16.3
Acetaldehyde	75-07-0	ug/100puffs	0.667	2	9.73
Acrolein	107-02-8	ug/100puffs	0.667	2	ND
Crotonaldehyde	4170-30-3	ug/100puffs	0.667	2	ND

Note:
- ug = Microgram
- ND = Not Detected (lower than MDL)
- MDL = Method Detection Limit
- LOQ = Limit of Quantitation
- E-Liquid Used: E-liquid B (AFNOR XP D90-300-3)

2. Metals Content(s)

Method: The vapor was passed through a dry-ice cooled impinger containing glass packing beads and quartz wool. After smoking the impinger was extracted with 5% nitric acid and filtered through quartz wool. An aliquot of the resulting solution was submitted for analysis by ICP-OES.

Test Item	CAS No.	Unit	MDL	LOQ	Content(s)
					No.1
Aluminum(Al)	7429-90-5	ug/100puffs	0.025	0.25	ND
Chromium(Cr)	7440-47-3	ug/100puffs	0.005	0.05	ND
Iron(Fe)	7439-89-6	ug/100puffs	0.005	0.05	ND
Nickel(Ni)	7440-02-0	ug/100puffs	0.025	0.25	ND
Tin(Sn)	7440-31-5	ug/100puffs	0.25	2.5	ND
Lead(Pb)	7439-92-1	ug/100puffs	0.025	0.25	ND
Cadmium(Cd)	7440-43-9	ug/100puffs	0.005	0.05	ND
Arsenic(As)	7440-38-2	ug/100puffs	0.025	0.25	ND
Antimony(Sb)	7440-36-0	ug/100puffs	0.025	0.25	ND

Note:
- ug = Microgram
- ND = Not Detected (lower than MDL)
- MDL = Method Detection Limit
- LOQ = Limit of Quantitation
- E-Liquid Used: E-liquid B (AFNOR XP D90-300-3)

3. Nicotine Consistency Test

Test Condition: With reference to the CORESTA RECOMMENDED METHOD Nº 81 method parameter and Afnor standardization XP D90-300-3, a smoke machine was used to collect the vapor.

Puff Duration	3.0s±0.1s
Puff Volume	55mL±0.3mL
Puff of Each Group	20
Maximum Flow	18.5mL/s±1.0mL/s
Pressure Drop	< 50hPa

The temperature and relative humidity of the test atmosphere during machine preparation and testing were kept within the following limits: temperature ±2℃, relative humidity ±5%

Method: A reference liquid was prepared. A pharmaceutical nicotine inhaler was used as a comparator. Products were attached to a smoke machine, and the aerosol was collected in Cambridge filter pads. After trapping and solvent extraction, solution was analyzed by GC-MS and nicotine was dosed by comparing the areas obtained on the MS detector with those of standard solutions prepared in the laboratory under concentration conditions surrounding those of the samples.

Sample No.	Nicotine(CAS No.:54-11-5) Contents(mg/20Puffs)						Total (mg/100puffs)
	Group 1*	Group 2	Group 3*	Group 4	Group 5*	AVG	
No.1	2.28	2.24	2.37	2.24	2.34	2.29	11.5
Deviation(%)	0.5	-	3.3	-	2.0	-	-

Note:
- mg = milligram
- ND = Not Detected (lower than MDL)
- MDL = Method Detection Limit = 0.01mg/20Puffs
- LOQ = Limit of Quantitation = 0.1mg/20Puffs
- 1group = 20puffs
- * Values used for determination of consistency of nicotine emission
- E-Liquid Used: E-liquid A (AFNOR XP D90-300-3)
- Under the conditions of the test and with reference to AFNOR XP D90-300-3, the electronic cigarette delivers a dose of nicotine at consistent levels.

Photo(s) of the sample(s)

MD RTA

***** End of Report *****

Remark：This report is considered invalidated without the Special Seal for Inspection of the TCT. This report shall not be altered, increased or deleted. The results shown in this test report refer only to the sample(s) tested. Without written approval of TCT, this test report shall not be copied except in full and published as advertisement.