

E-Cigarette Aerosol Analysis Report

Report No. : TCT181115C014

Date : Nov. 23, 2018

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Applicant: Vandy Vape**Address:** 415, huafeng Internet + creative park, no.107 republic industrial road,
xixiang, baoan district, shenzhen**The following sample was submitted and identified by/on behalf of the client as:**

Sample Name: PULSE V2 RDA

Model No.: PULSE V2 RDA

Tank: 2ml

Power level in testing: 70W

Adjustable air inlet or not: Yes

Trade Mark: Vandy Vape

Sample Received Date: 2018.11.15

Testing Period: 2018.11.15—2018.11.23

Test Method: Please refer to the following page(s).

Test Result(s): Please refer to the following page(s).

Remark: Test data of this report was extracted from report No. TCT181115C012.


| 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

Signed for and on behalf of TCT

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 N° 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 $\pm 2^{\circ}\text{C}$, relative humidity $\pm 5\%$

Sample Description:

No.1 PULSE V2 RDA

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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 | 23.4 |
| Acetaldehyde | 75-07-0 | ug/100puffs | 0.667 | 2 | 14.8 |
| 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)

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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)

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3. Nicotine Consistency Test

Test Condition: With reference to the CORESTA RECOMMENDED METHOD N° 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°C, 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 | 1.68 | 1.70 | 1.66 | 1.70 | 1.64 | 1.68 | 8.38 |
| Deviation(%) | 0.1 | - | 0.8 | - | 2.1 | - | - |

- 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.

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Photo(s) of the sample(s)



PULSE V2 RDA

***** 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.