TEST REPORT

Applicant: **GVG PRO**

Address: **2 route de l'ouest 94390 BONNEUIL SUR MARNE, FRANCE**

The following sample(s)and sample information was/were submitted and identified by/on the behalf of the client:

Sample Name	Blueberry Ice 20mg/ml
Trademark	Tornadoliq
Sample Received Date	July 10, 2024
Testing Period	July 11 – 16, 2024
Test Method & Test Result	Please refer to following pages.

Test Requested As specified by client, according to Tobacco Product Directive (2014/40/EU)Article 20, to test formaldehyde, acetaldehyde, acrolein, diethylene glycol , ethylene glycol, diacetyl , 2,3-Pentanedione, lead (Pb), cadmium (Cd), mercury (Hg), chromium (Cr), nickel (Ni), arsenic (As), antimony (Sb), aluminum(Al), iron(Fe), tin (Sn), nicotine consistency, total particulate matter, nicotine, Propylene glycol and Glycerol Content(s) in the submitted sample(s).

Tested by: Dimi Ding **Approved by:**

Reviewed by: Tony Gong **Date of issue:** July 17, 2024

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Test Condition:

1. **Test Item 1-7：** with reference to the CORESTA RECOMMENDED METHOD N^0 81:2015 method parameter and AFNOR standardization XP D90-300-3:2021, a simulate smoke machine was used to collect the vapor.
2. **Test Item 8：** with reference to the CORESTA RECOMMENDED METHOD N^0 81:2015 method parameter and CORESTA RECOMMENDED METHOD N^0 84:2021, a simulate 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	18.3mL/s±1.8mL/s
Loss of load without trapping	<1000Pa±50Pa
Group	5
Total number of Puff	100
Total duration of Vaporization	300s

Remark :

(1) The tests are performed in a room at (15~25)° C, with (40~70)% relative humidity, at an atmospheric pressure of more than 900 hPa.

(2) E- cigarette provided by the testing laboratory.

Test Result

1. Formaldehyde, Acetaldehyde, Acrolein 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.

Tested Item(s)	CAS No.	Result (ug/100 Puffs)	MDL (ug/100 Puffs)
Formaldehyde	50-00-0	N.D	2
Acetaldehyde	75-07-0	N.D	2
Acrolein	107-02-8	N.D	2

2. Diethylene glycol and Ethylene glycol Content(s)

Method: Vapor was collected by a bubbler trapping system and the absorbent solution were analyzed by GC-FID.

Tested Item(s)	CAS No.	Result(ug/100 Puffs)	MDL (ug/100 Puffs)
Diethylene glycol	111-46-6	N.D	40
Ethylene glycol	107-21-1	N.D	40

3. Diacetyl and 2,3-Pentanedione Content(s)

Method: Vapor was collected by a bubbler trapping system and the absorbent solution were analyzed by GC-FID.

Tested Item(s)	CAS No.	Result (ug/100 Puffs)	MDL (ug/100 Puffs)
Diacetyl	431-03-8	N.D	20
2,3-Pentanedione	600-14-6	N.D	20

4. Lead (Pb), Cadmium (Cd), Mercury (Hg), Chromium (Cr), Nickel (Ni), Arsenic (As), Antimony (Sb), Aluminum(Al), Iron(Fe) and Tin (Sn) Content(s)

Method: Vapor was collected by a bubbler trapping system and the absorbent solution were analyzed by ICP-OES.

Tested Item(s)	CAS. No.	Result (ug/100 Puffs)	MDL(ug/100 Puffs)
Lead (Pb)	7439-92-1	N.D	0.2
Cadmium (Cd)	7440-43-9	N.D	0.2
Mercury(Hg)	7439-97-6	N.D	0.2
Chromium (Cr)	7440-47-3	N.D	0.2
Nickel (Ni)	7440-02-0	N.D	0.2
Arsenic(As)	7440-38-2	N.D	0.2
Antimony(Sb)	7440-36-0	N.D	0.2
Aluminum(Al)	7429-90-5	N.D	0.2
Iron(Fe)	7439-89-6	N.D	0.2
Tin (Sn)	7440-31-5	N.D	0.2

5. Nicotine Consistency Test

Method(s):The constant emission of nicotine is checked by measuring the quantity of nicotine emitted during the first, third and fifth series of 20 puffs. Vapor was collected by cambridge filter and the extracts analyzed by GC-FID.

Tested Item(s)	CAS. No.	Result (mg/20 Puffs)			Average (mg/20 Puffs)	Related Deviation	MDL (mg/20 Puffs)
		1-20 Puffs	41-60 Puffs	81-100 Puffs			
Nicotine	54-11-5	3.61	3.95	3.68	3.75	---	0.10
Related Deviation	---	3.73%	5.33%	1.87%	---	＜30%	---

6. Total particulate matter

Method(s):Vapor was collected by cambridge filter and weigh the filter holders front and rear masses.

Tested Item(s)	Result (mg/100 Puffs)	MDL(mg/100 Puffs)
Total particulate matter	1140.7	0.1

7. Nicotine Content(s)

Method(s):Vapor was collected by cambridge filter. collect the filters from the traps and place them in the dry flasks. Add extraction solvent to each of the flasks. Insert a stopper in the flasks and shake for 30 min on a platform shaker. The extracts were analyzed by GC-FID.

Tested Item(s)	CAS. No.	Result (mg/100 Puffs)	MDL(mg/100 Puffs)
Nicotine	54-11-5	22.5	0.1

8. Propylene glycol and Glycerol Content(s)

Method(s):Vapor was collected by cambridge filter. collect the filters from the traps and place them in the dry flasks. Add extraction solvent to each of the flasks. Insert a stopper in the flasks and shake for 30 min on a platform shaker. The extracts were analyzed by GC-FID.

Tested Item(s)	CAS. No.	Result (mg/100 Puffs)	MDL(mg/100 Puffs)
Propylene glycol (PG)	57-55-6	297.7	0.2
Glycerol (VG)	56-81-5	496.6	0.2

Remark: MDL = Method Detection Limit
N.D = Not Detected (<MDL)
--- = No content

Tested sample photo(s)

--- End of report ---

Statement:

1. The sample(s) and sample Information was/were provided by the client who should be responsible for the authenticity which ALPHA hasn't verified.
2. The result(s) shown in this report refer(s) only to the sample(s) tested.
3. Without written approval of ALPHA, this report can't be reproduced except in full.
4. Decision rules for the conclusion of this test report: decision by actual test data without considering measurement uncertainty.