Hemp Quality Assurance Testing

CERTIFICATE OF ANALYSIS

DATE ISSUED 09/17/2020

SAMPLE NAME: vape juice

E-Juice, Product Inhalable

CULTIVATOR / MANUFACTURER

Business Name:
License Number:
Address:

DISTRIBUTOR

Business Name: Tonic CBD
License Number:
Address: 2466 Pennsylvania Ave
Sayre PA 18840

SAMPLE DETAIL

Batch Number: Z116
Sample ID: 200915N003

Date Collected: 09/15/2020
Date Received: 09/15/2020
Batch Size:
Sample Size: 10.0 Unit(s)
Unit Mass:
Serving Size:

Scan QR code to verify authenticity of results.

CANNABINOID ANALYSIS - SUMMARY

Total THC: 2 mg/g

Total CBD: 524.850 mg/g

Sum of Cannabinoids: 533.033 mg/g

Total Cannabinoids: 533.459 mg/g

Total THC/CBD is calculated using the following formulas to take into account the loss of a carboxyl group during the decarboxylation step:
Total THC = Δ9THC + (THCa (0.877))
Total CBD = CBD + (CBDa (0.877))
Sum of Cannabinoids = Δ9THC + THCa + CBD + CBDa + CBG + CBGa + THCV + THCVa + CBC + CBCa + CBDV + CBDVa + Δ8THC + CBL + CBN
Total Cannabinoids = (Δ9THC+0.877*THCa) + (CBD+0.877*CBDa) + (CBG+0.877*CBGa) + (THCV+0.877*THCVa) + (CBC+0.877*CBCa) + (CBDV+0.877*CBDVa) + Δ8THC + CBL + CBN

Moisture: NT

Density: NT

Viscosity: NT

SAFETY ANALYSIS - SUMMARY

Pesticides: NT

Mycotoxins: NT

Residual Solvents: PASS

Heavy Metals: PASS

Microbial Impurities (PCR): PASS

Microbial Impurities (Plating): NT

Foreign Material: NT

Water Activity: NT

Vitamin E Acetate: NT

TERPENOID ANALYSIS - SUMMARY

35 TESTED, TOP 3 HIGHLIGHTED

Limonene 16.41 mg/g

α Pinene 8.56 mg/g

β Pinene 7.26 mg/g

For quality assurance purposes. Not a Pre-Harvest Hemp Lab Test Report. These results relate only to the sample included on this report. This report shall not be reproduced, except in full, without written approval of the laboratory.

Sample Certification: California Code of Regulations Title 16 Effect Date January 16, 2019. Authority: Section 26013, Business and Professions Code. Reference: Sections 26100, 26104 and 26110, Business and Professions Code.

Decision Rule: Statements of conformity (e.g. Pass/Fail) to specifications are made in this report without taking measurement uncertainty into account. Where statements of conformity are made in this report, the following decision rules are applied: PASS – Results within limits/specifications, FAIL – Results exceed limits/specifications.

References: limit of detection (LOD), limit of quantification (LOQ), not detected (ND), not tested (NT)

LQC verified by: Michael Pham
Date: 09/17/2020

Approved by: Josh Wurzer, President
Date: 09/17/2020

Cannabinoid Analysis

Tested by high-performance liquid chromatography with diode-array detection (HPLC-DAD).

Method: QSP - (1157) Analysis of Cannabinoids by HPLC-DAD

TOTAL THC: 2 mg/g
Total THC (Δ9THC+0.877*THCa)

TOTAL CBD: 524.850 mg/g
Total CBD (CBD+0.877*CBDa)

TOTAL CANNABINOIDS: 533.459 mg/g
Total Cannabinoids (Total THC) + (Total CBD) + (Total CBG) + (Total THCV) + (Total CBC) + (Total CBDV) + Δ8THC + CBL + CBN

TOTAL CBG: ND
Total CBG (CBG+0.877*CBGa)

TOTAL THCV: ND
Total THCV (THCV+0.877*THCVa)

TOTAL CBC: 2.291 mg/g
Total CBC (CBC+0.877*CBCa)

TOTAL CBDV: 3.786 mg/g
Total CBDV (CBDV+0.877*CBDVa)

CANNABINOID TEST RESULTS - 09/17/2020

COMPOUND	LOD/LOQ (mg/g)	MEASUREMENT UNCERTAINTY (mg/g)	RESULT (mg/g)	RESULT (%)
CBD	*0.004 / 0.011*	*±25.1403*	524.850	52.4850
CBDV	*0.002 / 0.007*	*±0.1984*	3.786	0.3786
CBC	*0.003 / 0.010*	*±0.0948*	2.291	0.2291
Δ9THC	*0.002 / 0.005*	*±0.1110*	1.574	0.1574
CBL	*0.003 / 0.008*	*±0.0193*	0.409	0.0409
CBN	*0.001 / 0.004*	*±0.0045*	0.123	0.0123
Δ8THC	*0.01 / 0.02*	*N/A*	ND	ND
THCa	*0.001 / 0.002*	*N/A*	ND	ND
THCV	*0.002 / 0.008*	*N/A*	ND	ND
THCVa	*0.002 / 0.005*	*N/A*	ND	ND
CBDa	*0.001 / 0.003*	*N/A*	ND	ND
CBDVa	*0.001 / 0.003*	*N/A*	ND	ND
CBG	*0.002 / 0.005*	*N/A*	ND	ND
CBGa	*0.002 / 0.006*	*N/A*	ND	ND
CBCa	*0.001 / 0.004*	*N/A*	ND	ND
SUM OF CANNABINOIDS			533.033 mg/g	53.3033%

MOISTURE TEST RESULT	DENSITY TEST RESULT	VISCOSITY TEST RESULT
Not Tested	Not Tested	Not Tested

Terpenoid Analysis

Terpene analysis utilizing gas chromatography-flame ionization detection (GC-FID). Terpenes are the aromatic compounds that endow cannabis with their unique scent and effect. Following are the primary terpenes detected.

Method: QSP - (1192) Analysis of Terpenoids by GC-FID

1 Limonene
A monoterpene with a fragrance that can be described as orangey, citrusy, sweet and tart. It is most commonly found in nature as D-Limonene and is a primary contributor to the distinct scent of orange peels, from which it is commonly derived. Found in numerous pines, red maple, silver maple, aspens, cottonwoods, hemlocks, sumac, cedar, junipers...etc.

2 α Pinene
One of two isomers of the monoterpene Pinene, the most abundant terpene in the natural world. It is responsible for the distinct aroma of many coniferous trees, particularly pines, from which it derives its name. It is a primary constituent of turpentine. Found in pines, rose gun, parsley, frankincense, guava, juniper, rosemary, nutmeg, blue gum, valerian...etc.

3 β Pinene
One of two isomers of the monoterpene Pinene, the most abundant terpene in the natural world. It is responsible for the distinct aroma of many coniferous trees, particularly pines, from which it derives its name. It is a primary constituent of turpentine. Found in pines, parsley, celery, nutmeg, hyssop, black currant, rosemary, black pepper, spearmint...etc.

TERPENOID TEST RESULTS - 09/17/2020

COMPOUND	LOD/LOQ (mg/g)	MEASUREMENT UNCERTAINTY (mg/g)	RESULT (mg/g)	RESULT (%)
Limonene	*0.02 / 0.05*	*±0.602*	16.41	1.641
α Pinene	*0.03 / 0.09*	*±0.560*	8.56	0.856
β Pinene	*0.04 / 0.11*	*±0.555*	7.26	0.726
α Bisabolol	*0.02 / 0.07*	*±0.174*	3.91	0.391
Guaiol	*0.03 / 0.09*	*±0.124*	2.10	0.210
β Caryophyllene	*0.02 / 0.07*	*±0.061*	1.28	0.128
Myrcene	*0.04 / 0.11*	*±0.051*	0.63	0.063
Linalool	*0.03 / 0.08*	*±0.030*	0.58	0.058
α Humulene	*0.02 / 0.05*	*±0.015*	0.47	0.047
Fenchol	*0.03 / 0.09*	*±0.017*	0.30	0.030
Terpineol	*0.02 / 0.07*	*±0.031*	0.29	0.029
Cedrol	*0.04 / 0.11*	*±0.016*	0.23	0.023
Camphene	*0.04 / 0.11*	*±0.011*	0.14	0.014
Valencene	*0.01 / 0.03*	*±0.002*	0.10	0.010
Eucalyptol	*0.03 / 0.08*	*N/A*	<LOQ	<LOQ
Terpinolene	*0.03 / 0.09*	*N/A*	<LOQ	<LOQ
(-)-Isopulegol	*0.02 / 0.05*	*N/A*	<LOQ	<LOQ
Caryophyllene Oxide	*0.04 / 0.11*	*N/A*	<LOQ	<LOQ
Sabinene	*0.04 / 0.11*	*N/A*	ND	ND
α Phellandrene	*0.05 / 0.1*	*N/A*	ND	ND
3 Carene	*0.04 / 0.1*	*N/A*	ND	ND
α Terpinene	*0.04 / 0.1*	*N/A*	ND	ND
Ocimene	*0.03 / 0.09*	*N/A*	ND	ND
γ Terpinene	*0.04 / 0.1*	*N/A*	ND	ND
Sabinene Hydrate	*0.02 / 0.07*	*N/A*	ND	ND
Fenchone	*0.04 / 0.12*	*N/A*	ND	ND
Camphor	*0.1 / 0.2*	*N/A*	ND	ND
Isoborneol	*0.04 / 0.1*	*N/A*	ND	ND
Borneol	*0.1 / 0.2*	*N/A*	ND	ND
Menthol	*0.03 / 0.09*	*N/A*	ND	ND
Nerol	*0.03 / 0.09*	*N/A*	ND	ND
R-(+)-Pulegone	*0.03 / 0.09*	*N/A*	ND	ND
Geraniol	*0.02 / 0.07*	*N/A*	ND	ND
Geranyl Acetate	*0.02 / 0.06*	*N/A*	ND	ND
α Cedrene	*0.02 / 0.07*	*N/A*	ND	ND
Nerolidol	*0.3 / 0.8*	*N/A*	ND	ND
TOTAL TERPENOIDS			42.26 mg/g	4.226%

Residual Solvents Analysis

CATEGORY 1 AND 2 RESIDUAL SOLVENTS
Residual Solvent analysis utilizing gas chromatography-mass spectrometry (GC-MS).

Method: QSP - (1204) Analysis of Residual Solvents by GC-MS

CATEGORY 1 RESIDUAL SOLVENTS TEST RESULTS - 09/17/2020 PASS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
1,2-Dichloroethane	0.05 / 0.1	1	N/A	ND	PASS
Benzene	0.03 / 0.09	1	N/A	ND	PASS
Chloroform	0.1 / 0.2	1	N/A	ND	PASS
Ethylene Oxide	0.1 / 0.4	1	N/A	ND	PASS
Methylene chloride	0.3 / 0.9	1	N/A	ND	PASS
Trichloroethylene	0.1 / 0.3	1	N/A	ND	PASS

CATEGORY 2 RESIDUAL SOLVENTS TEST RESULTS - 09/17/2020 PASS

Acetone	20 / 50	5000	N/A	<LOQ	PASS
Acetonitrile	2 / 7	410	N/A	ND	PASS
Butane	10 / 50	5000	N/A	ND	PASS
Ethanol	20 / 50	5000	N/A	ND	PASS
Ethyl acetate	20 / 60	5000	N/A	ND	PASS
Ethyl ether	20 / 50	5000	N/A	ND	PASS
Heptane	20 / 60	5000	N/A	ND	PASS
Hexane	2 / 5	290	N/A	ND	PASS
Isopropyl Alcohol	10 / 40	5000	N/A	ND	PASS
Methanol	50 / 200	3000	N/A	ND	PASS
Pentane	20 / 50	5000	N/A	ND	PASS
Propane	10 / 20	5000	N/A	ND	PASS
Toluene	7 / 21	890	N/A	ND	PASS
Total Xylenes	50 / 160	2170	N/A	ND	PASS

Heavy Metals Analysis

Heavy metal analysis utilizing inductively coupled plasma-mass spectrometry (ICP-MS).

Method: QSP - (1160) Analysis of Heavy Metals by ICP-MS

HEAVY METALS TEST RESULTS - 09/16/2020 PASS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Cadmium	0.02 / 0.05	0.2	N/A	ND	PASS
Lead	0.04 / 0.1	0.5	N/A	ND	PASS
Arsenic	0.02 / 0.1	0.2	N/A	ND	PASS
Mercury	0.002 / 0.01	0.1	N/A	ND	PASS

Microbial Impurities Analysis

PCR AND PLATING

Analysis conducted by polymerase chain reaction (PCR) and fluorescence detection of microbial impurities.

Method: QSP - (1221) Analysis of Microbial Impurities

MICROBIAL IMPURITIES TEST RESULTS (PCR) - 09/17/2020 PASS

COMPOUND	ACTION LIMIT	RESULT	RESULT
Shiga toxin-producing *Escherichia coli*	*Detect*	**ND**	**PASS**
***Salmonella* spp.**	*Detect*	**ND**	**PASS**
Aspergillus fumigatus		NT	
Aspergillus flavus		NT	
Aspergillus niger		NT	
Aspergillus terreus		NT	

Analysis conducted by 3M™ Petrifilm™ and plate counts of microbial impurities.

Method: QSP - (6794) Plating with 3M™ Petrifilm™

MICROBIAL IMPURITIES TEST RESULTS (PLATING)

COMPOUND	RESULT (cfu/g)
Aerobic Plate Count	NT
Total Yeast and Mold	NT