Hemp Quality Assurance Testing

CERTIFICATE OF ANALYSIS

DATE ISSUED 10/05/2020

SAMPLE NAME: Purple Hippo Tincture 1000mg

Infused, Non-Inhalable

CULTIVATOR / MANUFACTURER

Business Name:
License Number:
Address:

DISTRIBUTOR

Business Name: Purple Hippo CBD
License Number:
Address:

SAMPLE DETAIL

Batch Number: 25025
Sample ID: 200609V004

Date Collected: 06/09/2020
Date Received: 06/09/2020
Batch Size:
Sample Size: 30.0 Unit(s)
Unit Mass: 30 Milliliters per Unit
Serving Size:

Scan QR code to verify authenticity of results.

CANNABINOID ANALYSIS - SUMMARY

Total THC: 20.550 mg/unit

Total CBD: 932.670 mg/unit

Sum of Cannabinoids: 1001.760 mg/unit

Total Cannabinoids: 1001.760 mg/unit

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: 0.9187 g/mL

Viscosity: NT

SAFETY ANALYSIS - SUMMARY

Δ9THC per Unit: PASS

Foreign Material: **NT**

Water Activity: **NT**

Vitamin E Acetate: **NT**

Pesticides: PASS

Mycotoxins: **NT**

Residual Solvents: PASS

Heavy Metals: PASS

Microbial Impurities (PCR): PASS

Microbial Impurities (Plating): **NT**

TERPENOID ANALYSIS - SUMMARY

35 TESTED, TOP 3 HIGHLIGHTED

- **Limonene 72.65 mg/g**
- **Myrcene 1.85 mg/g**
- **Sabinene 0.48 mg/g**

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: Mackenzie Whitman
Date: 10/05/2020

Approved by: Josh Wurzer, President
Date: 10/05/2020

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: 20.550 mg/unit
Total THC (Δ9THC+0.877*THCa)

TOTAL CBD: 932.670 mg/unit
Total CBD (CBD+0.877*CBDa)

TOTAL CANNABINOIDS: 1001.760 mg/unit
Total Cannabinoids (Total THC) + (Total CBD) + (Total CBG) + (Total THCV) + (Total CBC) + (Total CBDV) + Δ8THC + CBL + CBN

TOTAL CBG: 21.900 mg/unit
Total CBG (CBG+0.877*CBGa)

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

TOTAL CBC: 21.480 mg/unit
Total CBC (CBC+0.877*CBCa)

TOTAL CBDV: 4.320 mg/unit
Total CBDV (CBDV+0.877*CBDVa)

CANNABINOID TEST RESULTS - 06/12/2020

COMPOUND	LOD/LOQ (mg/mL)	MEASUREMENT UNCERTAINTY (mg/mL)	RESULT (mg/mL)	RESULT (%)
CBD	*0.004 / 0.011*	*±1.4892*	31.089	3.3840
CBG	*0.002 / 0.005*	*±0.0454*	0.730	0.0795
CBC	*0.003 / 0.010*	*±0.0296*	0.716	0.0779
Δ9THC	*0.002 / 0.005*	*±0.0483*	0.685	0.0746
CBDV	*0.002 / 0.007*	*±0.0075*	0.144	0.0157
CBL	*0.003 / 0.008*	*±0.0013*	0.028	0.0030
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
CBGa	*0.002 / 0.006*	*N/A*	ND	ND
CBN	*0.001 / 0.004*	*N/A*	ND	ND
CBCa	*0.001 / 0.004*	*N/A*	ND	ND
SUM OF CANNABINOIDS			33.392 mg/mL	3.6347%

Unit Mass: 30 Milliliters per Unit

Δ9THC per Unit	*1100 per-package limit*	20.550 mg/unit	PASS
Total THC per Unit		20.550 mg/unit	
CBD per Unit		932.670 mg/unit	
Total CBD per Unit		932.670 mg/unit	
Sum of Cannabinoids per Unit		1001.760 mg/unit	
Total Cannabinoids per Unit		1001.760 mg/unit	

MOISTURE TEST RESULT

Not Tested

DENSITY TEST RESULT

0.9187 g/mL

Tested 06/12/2020

Method: QSP - (7870) Sample Preparation

VISCOSITY TEST RESULT

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 Myrcene
A monoterpene with a fragrance that can be described as peppery, spicy, herbal, floral and woody. Although it has a pleasant odor, it is typically used by the perfume industry as precursor for developing other fragrances. Found in hops, houttuynia, bay, thyme, lemon grass, mango, verbena, cardamom, citrus...etc.

3 Sabinene
A monoterpene with a fragrance that can be described as woody, citrusy, piney and spicy. Found in Norway spruce, holm oak, black pepper, carrot seed, nutmeg, bay laurel, horsewood...etc.

TERPENOID TEST RESULTS - 06/15/2020

COMPOUND	LOD/LOQ (mg/g)	MEASUREMENT UNCERTAINTY (mg/g)	RESULT (mg/g)	RESULT (%)
Limonene	*0.02 / 0.05*	*±2.666*	72.65	7.265
Myrcene	*0.04 / 0.11*	*±0.149*	1.85	0.185
Sabinene	*0.04 / 0.11*	*±0.038*	0.48	0.048
α Pinene	*0.03 / 0.09*	*±0.027*	0.42	0.042
3 Carene	*0.04 / 0.1*	*±0.03*	0.3	0.03
Linalool	*0.03 / 0.08*	*±0.012*	0.23	0.023
α Bisabolol	*0.02 / 0.07*	*±0.007*	0.15	0.015
Valencene	*0.01 / 0.03*	*±0.001*	0.06	0.006
Terpinolene	*0.03 / 0.09*	*N/A*	<LOQ	<LOQ
Guaiol	*0.03 / 0.09*	*N/A*	<LOQ	<LOQ
Camphene	*0.04 / 0.11*	*N/A*	ND	ND
β Pinene	*0.04 / 0.11*	*N/A*	ND	ND
α Phellandrene	*0.05 / 0.1*	*N/A*	ND	ND
α Terpinene	*0.04 / 0.1*	*N/A*	ND	ND
Eucalyptol	*0.03 / 0.08*	*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
Fenchol	*0.03 / 0.09*	*N/A*	ND	ND
(-)-Isopulegol	*0.02 / 0.05*	*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
Terpineol	*0.02 / 0.07*	*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
β Caryophyllene	*0.02 / 0.07*	*N/A*	ND	ND
α Humulene	*0.02 / 0.05*	*N/A*	ND	ND
Nerolidol	*0.3 / 0.8*	*N/A*	ND	ND
Caryophyllene Oxide	*0.04 / 0.11*	*N/A*	ND	ND
Cedrol	*0.04 / 0.11*	*N/A*	ND	ND
TOTAL TERPENOIDS			76.14 mg/g	7.614%

Pesticide Analysis

CATEGORY 1 AND 2 PESTICIDES

Pesticide and plant growth regulator analysis utilizing high-performance liquid chromatography-mass spectrometry (HPLC-MS) or gas chromatography-mass spectrometry (GC-MS). *GC-MS utilized where indicated.

Method: QSP - (1212) Analysis of Pesticides and Mycotoxins by LC-MS or QSP - (1213) Analysis of Pesticides by GC-MS

CATEGORY 1 PESTICIDE TEST RESULTS - 06/11/2020 PASS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Aldicarb	*0.03 / 0.09*	*≥ LOD*	*N/A*	ND	PASS
Carbofuran	*0.01 / 0.04*	*≥ LOD*	*N/A*	ND	PASS
Chlordane*	*0.03 / 0.08*	*≥ LOD*	*N/A*	ND	PASS
Chlorfenapyr*	*0.03 / 0.10*	*≥ LOD*	*N/A*	ND	PASS
Chlorpyrifos	*0.02 / 0.06*		*N/A*	<LOQ	
Coumaphos	*0.02 / 0.06*	*≥ LOD*	*N/A*	ND	PASS
Daminozide	*0.03 / 0.10*	*≥ LOD*	*N/A*	ND	PASS
DDVP (Dichlorvos)	*0.02 / 0.07*	*≥ LOD*	*N/A*	ND	PASS
Dimethoate	*0.02 / 0.07*	*≥ LOD*	*N/A*	ND	PASS
Ethoprop(hos)	*0.03 / 0.08*	*≥ LOD*	*N/A*	ND	PASS
Etofenprox	*0.02 / 0.05*	*≥ LOD*	*N/A*	ND	PASS
Fenoxycarb	*0.02 / 0.06*	*≥ LOD*	*N/A*	ND	PASS
Fipronil	*0.02 / 0.06*	*≥ LOD*	*N/A*	ND	PASS
Imazalil	*0.02 / 0.06*		*±0.048*	1.47	
Methiocarb	*0.02 / 0.06*	*≥ LOD*	*N/A*	ND	PASS
Methyl parathion	*0.03 / 0.10*	*≥ LOD*	*N/A*	ND	PASS
Mevinphos	*0.03 / 0.09*	*≥ LOD*	*N/A*	ND	PASS
Paclobutrazol	*0.02 / 0.05*	*≥ LOD*	*N/A*	ND	PASS
Propoxur	*0.02 / 0.06*	*≥ LOD*	*N/A*	ND	PASS
Spiroxamine	*0.02 / 0.05*	*≥ LOD*	*N/A*	ND	PASS
Thiacloprid	*0.03 / 0.07*	*≥ LOD*	*N/A*	ND	PASS

CATEGORY 2 PESTICIDE TEST RESULTS - 06/11/2020 PASS

Abamectin	*0.03 / 0.10*	*0.3*	*N/A*	ND	PASS
Acephate	*0.01 / 0.04*	*5*	*N/A*	ND	PASS
Acequinocyl	*0.02 / 0.05*	*4*	*N/A*	ND	PASS
Acetamiprid	*0.02 / 0.05*	*5*	*N/A*	ND	PASS
Azoxystrobin	*0.01 / 0.04*	*40*	*±0.002*	0.05	PASS
Bifenazate	*0.01 / 0.02*	*5*	*N/A*	ND	PASS
Bifenthrin	*0.01 / 0.02*	*0.5*	*N/A*	ND	PASS
Boscalid	*0.02 / 0.06*	*10*	*N/A*	ND	PASS
Captan	*0.2 / 0.5*	*5*	*N/A*	ND	PASS
Carbaryl	*0.01 / 0.02*	*0.5*	*±0.000*	0.02	PASS
Chlorantraniliprole	*0.01 / 0.03*	*40*	*N/A*	ND	PASS

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Pesticide Analysis *Continued*

CATEGORY 1 AND 2 PESTICIDES

Pesticide and plant growth regulator analysis utilizing high-performance liquid chromatography-mass spectrometry (HPLC-MS) or gas chromatography-mass spectrometry (GC-MS). *GC-MS utilized where indicated.

Method: QSP - (1212) Analysis of Pesticides and Mycotoxins by LC-MS or QSP - (1213) Analysis of Pesticides by GC-MS

CATEGORY 2 PESTICIDE TEST RESULTS - 06/11/2020 *continued* PASS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Clofentezine	0.02 / 0.06	0.5	N/A	ND	PASS
Cyfluthrin	0.1 / 0.4	1	N/A	ND	PASS
Cypermethrin	0.1 / 0.3	1	N/A	ND	PASS
Diazinon	0.01 / 0.04	0.2	N/A	ND	PASS
Dimethomorph	0.01 / 0.03	20	N/A	ND	PASS
Etoxazole	0.010 / 0.028	1.5	N/A	ND	PASS
Fenhexamid	0.02 / 0.1	10	N/A	ND	PASS
Fenpyroximate	0.03 / 0.08	2	N/A	ND	PASS
Flonicamid	0.01 / 0.04	2	N/A	ND	PASS
Fludioxonil	0.03 / 0.08	30	N/A	<LOQ	PASS
Hexythiazox	0.01 / 0.04	2	N/A	ND	PASS
Imidacloprid	0.01 / 0.04	3	N/A	ND	PASS
Kresoxim-methyl	0.02 / 0.07	1	N/A	ND	PASS
Malathion	0.02 / 0.05	5	N/A	ND	PASS
Metalaxyl	0.02 / 0.06	15	N/A	ND	PASS
Methomyl	0.03 / 0.1	0.1	N/A	ND	PASS
Myclobutanil	0.03 / 0.1	9	N/A	ND	PASS
Naled	0.03 / 0.1	0.5	N/A	ND	PASS
Oxamyl	0.02 / 0.06	0.2	N/A	ND	PASS
Pentachloronitrobenzene*	0.03 / 0.09	0.2	N/A	ND	PASS
Permethrin	0.03 / 0.09	20	N/A	ND	PASS
Phosmet	0.03 / 0.10	0.2	N/A	ND	PASS
Piperonylbutoxide	0.003 / 0.009	8	N/A	<LOQ	PASS
Prallethrin	0.03 / 0.08	0.4	N/A	ND	PASS
Propiconazole	0.01 / 0.03	20	N/A	ND	PASS
Pyrethrins	0.03 / 0.08	1	N/A	ND	PASS
Pyridaben	0.006 / 0.019	3	N/A	ND	PASS
Spinetoram	0.02 / 0.07	3	N/A	ND	PASS
Spinosad	0.02 / 0.06	3	N/A	ND	PASS
Spiromesifen	0.02 / 0.05	12	N/A	ND	PASS
Spirotetramat	0.01 / 0.02	13	N/A	ND	PASS
Tebuconazole	0.02 / 0.07	2	N/A	ND	PASS
Thiamethoxam	0.03 / 0.08	4.5	N/A	ND	PASS
Trifloxystrobin	0.01 / 0.03	30	N/A	ND	PASS

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 - 06/11/2020 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 - 06/11/2020 PASS

Acetone	20 / 50	5000	N/A	ND	PASS
Acetonitrile	2 / 7	410	N/A	ND	PASS
Butane	10 / 50	5000	N/A	ND	PASS
Ethanol	20 / 50	5000	N/A	<LOQ	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 - 06/11/2020 PASS

COMPOUND	LOD/LOQ (µg/g)	ACTION LIMIT (µg/g)	MEASUREMENT UNCERTAINTY (µg/g)	RESULT (µg/g)	RESULT
Cadmium	0.02 / 0.05	0.5	N/A	ND	PASS
Lead	0.04 / 0.1	0.5	N/A	ND	PASS
Arsenic	0.02 / 0.1	1.5	N/A	ND	PASS
Mercury	0.002 / 0.01	3	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) - 06/12/2020 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

NOTES
BCC action limits not applied to hemp products. CoA amended, update to order detail information.