

STRAIGHT HEMP

CERTIFICATE OF ANALYSIS

PRODUCT: BSV - Broad Spectrum Vape Oil PRODUCTION DATE: 09/24/2019
BATCH/LOT: 9 BEST BY/EXP DATE: 09/2021

INGREDIENTS: Full Spectrum Hemp Extract, Terpene Blend (Hemp-derived)
ADDITIVES: none
EXCIPIENTS: none

TEST	METHOD	SPECIFICATION	RESULTS
Strength & Composition			
Total Cannabidiol (CBD) ⁱ	UPLC/UV	48 – 58 %	50.62%
Total Tetrahydrocannabinol (THC) ⁱⁱ	UPLC/UV	None Detected	None Detected
Terpene assay ⁱⁱⁱ	HS-GC/MS	n/e	12.56%
Microbiological^{iv}			
Total Plate Count	USP 42	NMT 1,000 cfu/g	PASS
Total Coliforms	USP 42	NMT 100 cfu/g	PASS
Total Yeast & Mold	USP 42	NMT 100 cfu/g	PASS
<i>E. coli</i>	USP 42	Absent	PASS
<i>Salmonella</i>	USP 42	Absent	PASS
Heavy Metals^v			
Arsenic (As)	ICP/MS	NMT 5 ppm	PASS
Cadmium (Cd)	ICP/MS	NMT 2 ppm	PASS
Lead (Pb)	ICP/MS	NMT 2 ppm	PASS
Mercury (Hg)	ICP/MS	NMT 1 ppm	PASS
Residual Solvents			
Multi-residue panel	GC-HS-MSD	Below MRL ^{vi}	PASS
Pesticides			
Multi-residue panel	UPLC-MS/MS	Below MRL	PASS


David Cole
Director of Quality

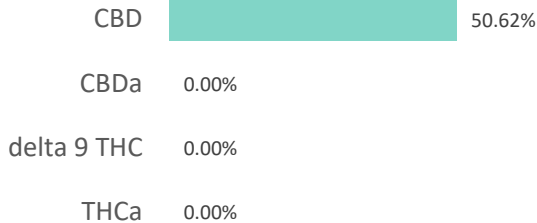
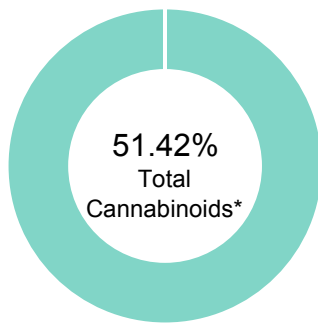

Date

ⁱ Total CBD = CBD + (0.877*CBDA) to account for loss of acid group during decarboxylation
ⁱⁱ Total THC = THC + (0.877*THCA) to account for loss of acid group during decarboxylation
ⁱⁱⁱ Sum of terpene assay (n=22)
^{iv} Microbiological limits based on USP, WHO, and/or NSF/ANSI.
^v Limits for As and Pb set below CA Prop 65 *no significant risk level*; Cd and Hg set below USP permitted daily exposure for 110lb body weight
^{vi} The 11 solvents tested for are not used in the production process: Propane, Butane, Pentane, Ethanol, Acetone, Isopropyl Alcohol, Hexane, Benzene, Heptanes, Toluene, Xylenes

NMT = Not More Than
MRL = Method Reporting Limit

BSV - VAPE OIL

Batch ID:	9	Test ID:	5261427.0019
Reported:	9-Jan-2020	Method:	TM14
Type:	Concentrate		
Test:	Potency		

CANNABINOID PROFILE


Compound	LOQ (%)	Result (%)	Result (mg/g)
Delta 9-Tetrahydrocannabinolic acid (THCA-A)	0.11	0.00	0.0
Delta 9-Tetrahydrocannabinol (Delta 9THC)	0.06	0.00	0.0
Cannabidiolic acid (CBDA)	0.17	0.00	0.0
Cannabidiol (CBD)	0.09	50.62	506.2
Delta 8-Tetrahydrocannabinol (Delta 8THC)	0.06	0.00	0.0
Cannabinolic Acid (CBNA)	0.15	0.00	0.0
Cannabinol (CBN)	0.07	0.00	0.0
Cannabigerolic acid (CBGA)	0.10	0.00	0.0
Cannabigerol (CBG)	0.05	0.00	0.0
Tetrahydrocannabivarinic Acid (THCVA)	0.10	0.00	0.0
Tetrahydrocannabivarin (THCV)	0.05	0.00	0.0
Cannabidivarinic Acid (CBDVA)	0.15	0.00	0.0
Cannabidivarin (CBDV)	0.08	0.80	8.0
Cannabichromenic Acid (CBCA)	0.08	0.00	0.0
Cannabichromene (CBC)	0.10	0.00	0.0
Total Cannabinoids		51.42	514.20
Total Potential THC**		0.00	0.00
Total Potential CBD**		50.62	506.20

 NOTES:
 N/A

% = % (w/w) = Percent (Weight of Analyte / Weight of Product)


* Total Cannabinoids result reflects the absolute sum of all cannabinoids detected.

** Total Potential THC/CBD is calculated using the following formulas to take into account the loss of a carboxyl group during decarboxylation step.

$$\text{Total THC} = \text{THC} + (\text{THCa} * (0.877)) \text{ and Total CBD} = \text{CBD} + (\text{CBDa} * (0.877))$$
FINAL APPROVAL


Karen Winternheimer
 9-Jan-2020
 2:20 PM

PREPARED BY / DATE



Greg Zimpfer
 9-Jan-2020
 7:32 PM

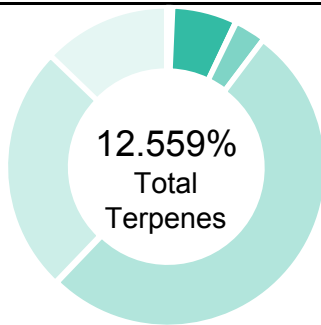
APPROVED BY / DATE

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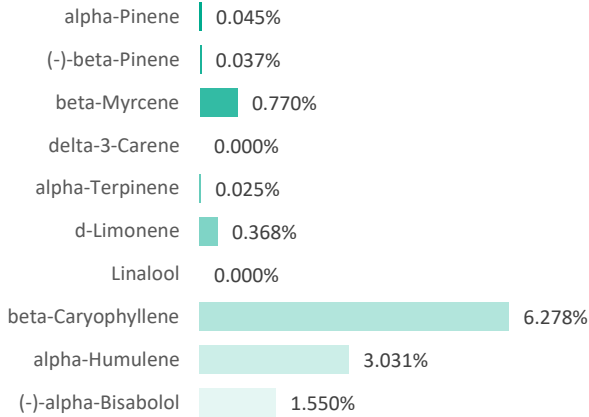


BSV - VAPE OIL

Batch ID:	9	Test ID:	8821546.001
Reported:	10-Jan-2020	Method:	TM10
Type:	Concentrate		
Test:	Terpenes		

TERPENE PROFILE


Compound	%(w/w)	mg/g
(-)-alpha-Bisabolol	1.550	15.5
Camphene	0.003	0.03
delta-3-Carene	0.000	0
beta-Caryophyllene	6.278	62.78
(-)-Caryophyllene Oxide	0.000	0
p-Cymene	0.000	0
Eucalyptol	0.197	1.97
Geraniol	0.000	0
alpha-Humulene	3.031	30.31
(-)-Isopulegol	0.000	0
d-Limonene	0.368	3.68
Linalool	0.000	0
beta-Myrcene	0.770	7.7
cis-Nerolidol	0.000	0
trans-Nerolidol	0.000	0
Ocimene	0.010	0.1
beta-Ocimene	0.136	1.36
alpha-Pinene	0.045	0.45
(-)-beta-Pinene	0.037	0.37
alpha-Terpinene	0.025	0.25
gamma-Terpinene	0.034	0.34
Terpinolene	0.075	0.75
	12.559%	125.59

PREDOMINANT TERPENES

 NOTES:
 0

FINAL APPROVAL

 Daniel Weidensaul 10-Jan-2020 11:55 AM	 David Green 10-Jan-2020 2:41 PM
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PREPARED BY / DATE

APPROVED BY / DATE

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Certificate #4329.02

BSV - VAPE OIL

Batch ID:	9	Test ID:	6567564.019
Reported:	9-Jan-2020	Method:	Concentrate - Test Methods: TM05, TM06
Type:	Concentrate		
Test:	Microbial Contaminants		

MICROBIAL CONTAMINANTS

Contaminant	Result (CFU/g)*
Total Aerobic Count**	None Detected
Total Coliforms**	None Detected
Total Yeast and Molds**	None Detected
E. coli	None Detected
Salmonella	None Detected

* CFU/g = Colony Forming Unit per Gram


** Values recorded in scientific notation, a common microbial practice of expressing numbers that are too large to be conveniently written in decimal form.

Examples: $10^2 = 100$ CFU
 $10^3 = 1,000$ CFU
 $10^4 = 10,000$ CFU
 $10^5 = 100,000$ CFU

NOTES:

Free from visual mold, mildew, and foreign matter
TYM: None Detected
Total Aerobic: None Detected
Coliforms: None Detected

FINAL APPROVAL


Sarah Henning
9-Jan-2020
12:18 PM
Greg Zimpfer
9-Jan-2020
1:07 PM

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Certificate #4329.03


BSV - VAPE OIL

Batch ID:	9	Test ID:	T000049549
Reported:	16-Jan-2020	Method:	Arsenic = Arsenic EPA 6020A (mod), Cadmium = Cadmium EPA 6020A (mod), Lead = Lead EPA 6020A (mod), Mercury = Mercury EPA 6020A (mod)
Type:	Other		
Test:	Metals		


HEAVY METALS

Compound	Reporting Limit (ppm)	Result (ppm)
Arsenic	0.05	<0.05
Cadmium	0.05	<0.05
Lead	0.05	<0.05
Mercury	0.05	<0.05

FINAL APPROVAL


Sam Smith
16-Jan-2020
12:29 PM

PREPARED BY / DATE


Greg Zimpfer
16-Jan-2020
2:02 PM

APPROVED BY / DATE

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BSV - VAPE OIL

Batch ID:	9	Test ID:	4606367.008
Reported:	9-Jan-2020	Method:	TM04
Type:	Concentrate		
Test:	Residual Solvents		

RESIDUAL SOLVENTS

Solvent	Reportable Range (ppm)	Result (ppm)
Propane	100 - 2000	0
Butanes (Isobutane, n-Butane)	100 - 2000	0
Pentane	100 - 2000	0
Ethanol	100 - 2000	0
Acetone	100 - 2000	0
Isopropyl Alcohol	100 - 2000	0
Hexane	6 - 120	0
Benzene	0.2 - 4	0.0
Heptanes	100 - 2000	0
Toluene	18 - 360	0
Xylenes (m,p,o-Xylenes)	43 - 860	0

NOTES:

Free from visual mold, mildew, and foreign matter.

FINAL APPROVAL

Tyler Wiese
9-Jan-2020
4:50 PMGreg Zimpfer
9-Jan-2020
8:18 PM

PREPARED BY / DATE

APPROVED BY / DATE

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Certificate #4329.02

BSV - VAPE OIL

Batch ID:	9	Test ID:	7968183.0011
Reported:	11-Jan-2020	Method:	TM17
Type:	Concentrate		
Test:	Pesticides		


PESTICIDE RESIDUE

Compound	Dynamic Range (ppb)	Result (ppb)	Compound	Dynamic Range (ppb)	Result (ppb)
Acephate	47 - 2189	ND*	Malathion	47 - 2189	ND*
Acetamiprid	47 - 2189	ND*	Metalaxyl	284 - 2189	ND*
Avermectin	284 - 2189	ND*	Methiocarb	47 - 2189	ND*
Azoxystrobin	47 - 2189	ND*	Methomyl	47 - 2189	ND*
Bifenazate	47 - 2189	ND*	MGK 264 1	47 - 2189	ND*
Boscalid	284 - 2189	ND*	MGK 264 2	284 - 2189	ND*
Carbaryl	47 - 2189	ND*	Myclobutanil	284 - 2189	ND*
Carbofuran	47 - 2189	ND*	Naled	284 - 2189	ND*
Chlorantraniliprole	47 - 2189	ND*	Oxamyl	47 - 2189	ND*
Chlorpyrifos	284 - 2189	ND*	Paclobutrazol	47 - 2189	ND*
Clofentezine	47 - 2189	ND*	Permethrin	284 - 2189	ND*
Diazinon	47 - 2189	ND*	Phosmet	47 - 2189	ND*
Dichlorvos	284 - 2189	ND*	Prophos	284 - 2189	ND*
Dimethoate	47 - 2189	ND*	Propoxur	284 - 2189	ND*
E-Fenpyroximate	284 - 2189	ND*	Pyridaben	284 - 2189	ND*
Etofenprox	284 - 2189	ND*	Spinosad A	47 - 2189	ND*
Etoxazole	284 - 2189	ND*	Spinosad D	284 - 2189	ND*
Fenoxycarb	47 - 2189	ND*	Spiromesifen	47 - 2189	ND*
Fipronil	284 - 2189	ND*	Spirotetramat	284 - 2189	ND*
Flonicamid	47 - 2189	ND*	Spiroxamine 1	47 - 2189	ND*
Fludioxonil	284 - 2189	ND*	Spiroxamine 2	47 - 2189	ND*
Hexythiazox	284 - 2189	ND*	Tebuconazole	47 - 2189	ND*
Imazalil	284 - 2189	ND*	Thiacloprid	47 - 2189	ND*
Imidacloprid	47 - 2189	ND*	Thiamethoxam	47 - 2189	ND*
Kresoxim-methyl	47 - 2189	ND*	Trifloxystrobin	284 - 2189	ND*

* ND = None Detected (Defined by Dynamic Range of the method)

N/A

FINAL APPROVAL


Sam Smith
 11-Jan-2020
 7:14 AM
 PREPARED BY / DATE


Chris Jungling
 11-Jan-2020
 9:19 AM
 APPROVED BY / DATE

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