eurofins | Food Integrity & Innovation

Report Number:	**3118163-0**
Report Date:	**31-Dec-2020**
Report Status:	**Final**

Certificate of Analysis

Workman Scientific

221 South 66th Street
Lincoln Nebraska 68510 United States

Sample Name:	**200005BSWS**	**Eurofins Sample:**	**10145602**
Project ID	WORKMAN_SC-20201222-0001	**Receipt Date**	19-Aug-2020
PO Number	CVD	**Receipt Condition**	Ambient temperature
Sample Serving Size		**Login Date**	22-Dec-2020
Description	CBD Water Soluble Powder 20	**Date Started**	22-Dec-2020
		Sampled	Sample results apply as received

Analysis	Result
Moisture (Karl Fischer method) *	
Karl Fischer Moisture	8.11 g/100g
Industrial Hemp Cannabinoid Profile	
CBDVA	0.0386 %
CBDV	0.0964 %
CBDA	<0.00250 %
CBGA	0.0184 %
CBG	0.147 %
CBD	18.9 %
THCV	0.0199 %
CBN	0.350 %
Delta 9-THC	<0.00250 %
Delta 8-THC	<0.00500 %
THCA	<0.00250 %
CBC	0.374 %
THCVA	<0.00250 %
CBNA	<0.00250 %
CBCA	<0.00250 %
CBL	0.0443 %
Total Cannabinoids	20.0 %
Total THC (THC + (THCA x 0.877))	<0.00250 %
Total CBD (CBD + (CBDA x 0.877))	18.9 %
CBDVA	<0.0250 %
CBDV	0.0952 %
CBDA	<0.0250 %
CBGA	<0.0250 %
CBG	0.130 %
CBD	20.1 %
THCV	<0.0250 %
CBN	0.346 %
Delta 9-THC	<0.0250 %
Delta 8-THC	<0.0500 %
THCA	<0.0250 %
CBC	0.373 %

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Analysis	Result
Industrial Hemp Cannabinoid Profile	
THCVA	<0.0250 %
CBNA	<0.0250 %
CBCA	<0.0250 %
CBL	0.0432 %
Total Cannabinoids	21.1 %
Total THC (THC + (THCA x 0.877))	<0.0250 %
Total CBD (CBD + (CBDA x 0.877))	20.1 %
CBDVA	<0.0250 %
CBDV	0.0945 %
CBDA	<0.0250 %
CBGA	<0.0250 %
CBG	0.136 %
CBD	20.4 %
THCV	<0.0250 %
CBN	0.343 %
Delta 9-THC	<0.0250 %
Delta 8-THC	<0.0500 %
THCA	<0.0250 %
CBC	0.375 %
THCVA	<0.0250 %
CBNA	<0.0250 %
CBCA	<0.0250 %
CBL	0.0417 %
Total Cannabinoids	21.4 %
Total THC (THC + (THCA x 0.877))	<0.0250 %
Total CBD (CBD + (CBDA x 0.877))	20.4 %
CBDVA	<0.0250 %
CBDV	0.0935 %
CBDA	<0.0250 %
CBGA	<0.0250 %
CBG	0.142 %
CBD	20.4 %
THCV	<0.0250 %

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Analysis	Result
Industrial Hemp Cannabinoid Profile	
CBN	0.345 %
Delta 9-THC	<0.0250 %
Delta 8-THC	<0.0500 %
THCA	<0.0250 %
CBC	0.375 %
THCVA	<0.0250 %
CBNA	<0.0250 %
CBCA	<0.0250 %
CBL	0.0420 %
Total Cannabinoids	21.4 %
Total THC (THC + (THCA x 0.877))	<0.0250 %
Total CBD (CBD + (CBDA x 0.877))	20.4 %
Aerobic Plate Count *	
Aerobic Plate Count	<100 CFU/g
E. coli *	
Escherichia Coli	Absent /10 g
Enterobacteriaceae (Bile-Tolerant Gram-Negative Bacteria) *	
Enterobacterial Count	<10 MPN/g
Yeast and Mold Count *	
Yeast Count	<100 CFU/g
Mold Count	<100 CFU/g
Preparatory Testing of Nutritional and Dietary Supplements *	
Aerobic Plate Suitability Result	Neutralization of the product is not applicable, due to the microbicidal activity of the product, it is not likely to contain specified microorganism .
E. coli Suitability Result	Pass**

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Analysis	Result
Preparatory Testing of Nutritional and Dietary Supplements *	
Yeast and Mold Suitability	Neutralization of the product is not applicable, due to the microbicidal activity of the product, it is not likely to contain specified microorganism .
Bile-Tolerant Gram-Neg Bacteria Suitability Result	Pass**
Elements by ICP Mass Spectrometry	
Arsenic	<10.0 ppb
Cadmium	<5.00 ppb
Lead	<5.00 ppb
Mercury	<5.00 ppb
Coliform Count *	
Coliform Plate Count	<10 CFU/g

Analysis	Limit	Result	Pass/Fail
BCC - Residual Solvent Analysis in Cannabis and Hemp Matrices			
Category I Residual Solvent or Processing Chemical			
1,2-Dichloroethane	1.0 ppm	<1.0 ppm	Pass
Benzene	1.0 ppm	<1.0 ppm	Pass
Chloroform	1.0 ppm	<1.0 ppm	Pass
Ethylene Oxide	25.0 ppm	<25.0 ppm	Pass
The BCC limit of 1 ppm for Ethylene Oxide is not achieved by this method. Reporting limit of 25 ppm is the limit recommended by the AOAC CASP.		-	
Methylene Chloride	1.0 ppm	<1.0 ppm	Pass
Trichloroethylene	1.0 ppm	<1.0 ppm	Pass
Category II Residual Solvent or Processing Chemical			
Isopropal Alcohol	5000 ppm	<500 ppm	Pass
Acetone	5000 ppm	<200 ppm	Pass
Acetonitrile	410 ppm	<200 ppm	Pass
Ethanol	5000 ppm	<1000 ppm	Pass

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Analysis	Limit	Result	Pass/Fail
BCC - Residual Solvent Analysis in Cannabis and Hemp Matrices			
Ethyl Acetate	5000 ppm	<500 ppm	Pass
Ethyl Ether	5000 ppm	<500 ppm	Pass
Methanol	3000 ppm	<500 ppm	Pass
Butane	5000 ppm	<500 ppm	Pass
Heptane	5000 ppm	<50.0 ppm	Pass
Hexane	290 ppm	<30.0 ppm	Pass
Pentane	5000 ppm	32.7 ppm	Pass
Propane	5000 ppm	<1000 ppm	Pass
Toluene	890 ppm	<90.0 ppm	Pass
Xylenes (ortho-, meta-, para-)	2170 ppm	<160 ppm	Pass
The Pass/Fail reporting designations are relative to the limits set forth by the Bureau of Cannabis Control, Title 16, Division 42.		-	
Multi-Residue Analysis for hemp products - BCC Pesticide List			
Abamectin	0.3 mg/kg	<0.30 mg/kg	Pass
Acephate	5 mg/kg	<0.10 mg/kg	Pass
Acequinocyl	4 mg/kg	<1.0 mg/kg	Pass
Acetamiprid	5 mg/kg	<0.10 mg/kg	Pass
Aldicarb	0.1 mg/kg	<0.10 mg/kg	Pass
Aldicarb sulfone (Aldoxycarb)	0.1 mg/kg	<0.10 mg/kg	Pass
Aldicarb sulfoxide	0.1 mg/kg	<0.10 mg/kg	Pass
Azoxystrobin	40 mg/kg	<0.10 mg/kg	Pass
Bifenazate	5 mg/kg	<0.10 mg/kg	Pass
Bifenthrin	0.5 mg/kg	<0.10 mg/kg	Pass
Boscalid	10 mg/kg	<0.10 mg/kg	Pass
Captan	5 mg/kg	<0.20 mg/kg	Pass
Carbaryl	0.5 mg/kg	<0.10 mg/kg	Pass
Carbofuran	0.1 mg/kg	<0.10 mg/kg	Pass
Carbofuran-3-hydroxy-	0.1 mg/kg	<0.10 mg/kg	Pass
Chlorantraniliprole	40 mg/kg	<0.10 mg/kg	Pass
Chlordane, cis-	0.1 mg/kg	<0.10 mg/kg	Pass

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Analysis	Limit	Result	Pass/Fail
Multi-Residue Analysis for hemp products - BCC Pesticide List			
Chlordane, trans-	0.1 mg/kg	<0.10 mg/kg	Pass
Chlorfenapyr	0.1 mg/kg	<0.10 mg/kg	Pass
Chlorpyrifos	0.1 mg/kg	<0.10 mg/kg	Pass
Clofentezine	0.5 mg/kg	<0.10 mg/kg	Pass
Coumaphos	0.1 mg/kg	<0.10 mg/kg	Pass
Cyfluthrin	1 mg/kg	<0.10 mg/kg	Pass
Cypermethrin	1 mg/kg	<0.10 mg/kg	Pass
Diazinon	0.2 mg/kg	<0.10 mg/kg	Pass
Dichlorvos	0.1 mg/kg	<0.10 mg/kg	Pass
Dimethoate	0.1 mg/kg	<0.10 mg/kg	Pass
Dimethomorph	20 mg/kg	<0.10 mg/kg	Pass
Ethoprophos	0.1 mg/kg	<0.10 mg/kg	Pass
Etofenprox	0.1 mg/kg	<0.10 mg/kg	Pass
Etoxazole	1.5 mg/kg	<0.10 mg/kg	Pass
Fenoxycarb	0.1 mg/kg	<0.10 mg/kg	Pass
Fenpyroximate	2 mg/kg	<0.10 mg/kg	Pass
Fipronil	0.1 mg/kg	<0.10 mg/kg	Pass
Fipronil desulfinyl	0.1 mg/kg	<0.10 mg/kg	Pass
Fipronil sulfone	0.1 mg/kg	<0.10 mg/kg	Pass
Flonicamid	2 mg/kg	<0.10 mg/kg	Pass
Fludioxonil	30 mg/kg	<0.10 mg/kg	Pass
Hexythiazox	2 mg/kg	<0.10 mg/kg	Pass
Imazalil	0.1 mg/kg	<0.10 mg/kg	Pass
Imidacloprid	3 mg/kg	<0.10 mg/kg	Pass
Kresoxim-methyl	1 mg/kg	<0.10 mg/kg	Pass
Malathion	5 mg/kg	<0.10 mg/kg	Pass
Metalaxyl	15 mg/kg	<0.10 mg/kg	Pass
Methiocarb	0.1 mg/kg	<0.10 mg/kg	Pass
Methiocarb sulfone	0.1 mg/kg	<0.10 mg/kg	Pass
Methiocarb sulfoxide	0.1 mg/kg	<0.10 mg/kg	Pass
Methomyl	0.1 mg/kg	<0.10 mg/kg	Pass

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Analysis	Limit	Result	Pass/Fail
Multi-Residue Analysis for hemp products - BCC Pesticide List			
Mevinphos	0.1 mg/kg	<0.10 mg/kg	Pass
Myclobutanil	9 mg/kg	<0.10 mg/kg	Pass
Naled	0.5 mg/kg	<0.10 mg/kg	Pass
Oxamyl	0.2 mg/kg	<0.10 mg/kg	Pass
Paclobutrazol	0.1 mg/kg	<0.10 mg/kg	Pass
Methyl parathion	0.1 mg/kg	<0.10 mg/kg	Pass
Pentachloroaniline	0.2 mg/kg	<0.10 mg/kg	Pass
Pentachlorobenzene	0.2 mg/kg	<0.10 mg/kg	Pass
Pentachlorobenzonitrile	0.2 mg/kg	<0.10 mg/kg	Pass
Pentachlorothioanisole	0.2 mg/kg	<0.10 mg/kg	Pass
Permethrin	20 mg/kg	<0.10 mg/kg	Pass
Phosmet	0.2 mg/kg	<0.10 mg/kg	Pass
Piperonylbutoxide	8 mg/kg	<0.10 mg/kg	Pass
Prallethrin	0.4 mg/kg	<1.0 mg/kg	Fail
Propiconazole (sum of isomers)	20 mg/kg	<0.10 mg/kg	Pass
Propoxur	0.1 mg/kg	<0.10 mg/kg	Pass
Pyrethrins	1 mg/kg	<1.0 mg/kg	Pass
Pyridaben	3 mg/kg	<0.10 mg/kg	Pass
Pentachloronitrobenzene	0.2 mg/kg	<0.10 mg/kg	Pass
Spinetoram	3 mg/kg	<0.10 mg/kg	Pass
Spinosad	3 mg/kg	<0.10 mg/kg	Pass
Spiromesifen	12 mg/kg	<0.10 mg/kg	Pass
Spirotetramat	13 mg/kg	<0.10 mg/kg	Pass
Spiroxamine	0.1 mg/kg	<0.10 mg/kg	Pass
Tebuconazole	2 mg/kg	<0.10 mg/kg	Pass
Thiacloprid	0.1 mg/kg	<0.10 mg/kg	Pass
Thiamethoxam	4.5 mg/kg	<0.10 mg/kg	Pass
Trifloxystrobin	30 mg/kg	<0.10 mg/kg	Pass
The Pass/Fail reporting designations are relative to the limits set forth by the Bureau of Cannabis Control, Title 16, Division 42.		-	

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Analysis	Limit	Result	Pass/Fail
Multi-Residue Analysis for hemp products - BCC Pesticide List			
Prallethrin reporting limit is higher than BCC action level, but EPA tolerance is 1 ppm.			
Multi-Residue Analysis for hemp products - BCC Pesticides Fenhexamid and Daminoside			
Daminozide	0.1 mg/kg	<0.10 mg/kg	Pass
Fenhexamid	10 mg/kg	<0.10 mg/kg	Pass
The Pass/Fail reporting designations are relative to the limits set forth by the Bureau of Cannabis Control, Title 16, Division 42.		-	

Method References	Testing Location
Aerobic Plate Count (USPC2021)	**Food Integ. Innovation-Madison NE** 2102 Wright Street Madison, WI 53704 USA

USP Current revision, Chapter 2021.
To satisfy the requirements of the USP, the Preparatory Test must be completed on each matrix.
**Based on the results of the preparatory test, the detection limit stipulated is adequate for the enumeration of the specified microorganisms.

BCC - Residual Solvent Analysis in Cannabis and Hemp Matrices (CANN_SOL_S)

Food Integrity Innovation-Madison
3301 Kinsman Blvd Madison, WI 53704 USA

Internally Developed Method

Coliform Count (COLIPC)

Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

Compendium of Methods for the Microbiological Examination of Foods: Enterobacteriaceae, Coliforms, and Escherichia coli as Quality and Safety Indicators, Chapter 8, 4th Edition, 2001.

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Method References	Testing Location

E. coli (USPE2022)

Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

USP Current revision, Chapter 2022.
To satisfy the requirements of the USP, the Preparatory Test must be completed on each matrix.
**Based on the results of the preparatory test, conditions stipulated are adequate for detecting the presence of the specified microorganism.

Elements by ICP Mass Spectrometry (ICP_MS_S)

Food Integrity Innovation-Madison
3301 Kinsman Blvd Madison, WI 53704 USA

Official Methods of Analysis, Method 2011.19 and 993.14, AOAC INTERNATIONAL, (Modified).
Paquette, L.H., Szabo, A., Thompson, J.J., "Simultaneous Determination of Chromium, Selenium, and Molybdenum in Nutritional Products by Inductively Coupled Plasma/Mass Spectrometry: Single-Laboratory Validation," Journal of AOAC International, 94(4): 1240 - 1252 (2011).

Enterobacteriaceae (Bile-Tolerant Gram-Negative Bacteria) (USPN2021)

Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

USP Current revision, Chapter 2021.
To satisfy the requirements of the USP, the Preparatory Test must be completed on each matrix.
**Based on the results of the preparatory test, the detection limit stipulated is adequate for the enumeration of the specified microorganisms.

Industrial Hemp Cannabinoid Profile (IHCBD_S)

Food Integrity Innovation-Madison
3301 Kinsman Blvd Madison, WI 53704 USA

Official Methods of Analysis, AOAC 2018.11, AOAC International, Gaithersburg, MD (Modified).

Moisture (Karl Fischer method) (KFMO_S)

Food Integrity Innovation-Madison
3301 Kinsman Blvd Madison, WI 53704 USA

The United States Pharmacopeia, Thirty Seventh Revision, <921>, Method 1a, The United States Pharmacopeial Convention, Rockville, MD (2014), (Modified).

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Method References	Testing Location

Multi-Residue Analysis for hemp products - BCC Pesticide List (PEST_HEMP)

Food Integrity Innovation-Madison
3301 Kinsman Blvd Madison, WI 53704 USA

Official Methods of Analysis, *AOAC Official Method 2007.01*, Pesticide Residues in Foods by Acetonitrile Extraction and Partitioning with Magnesium Sulfate, AOAC INTERNATIONAL (modified).

CEN Standard Method EN 15662: Food of plant origin - Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/partitioning and clean-up by dispersive SPE - QuEChERS method.

List of the tested pesticides and their limits of quantification (LOQs) are available upon request.

Multi-Residue Analysis for hemp products - BCC Pesticides Fenhexamid and Daminoside (PEST_HEMP)

Food Integrity Innovation-Madison
3301 Kinsman Blvd Madison, WI 53704 USA

Official Methods of Analysis, *AOAC Official Method 2007.01*, Pesticide Residues in Foods by Acetonitrile Extraction and Partitioning with Magnesium Sulfate, AOAC INTERNATIONAL (modified).

CEN Standard Method EN 15662: Food of plant origin - Determination of pesticide residues using GC-MS and/or LC-MS/MS following acetonitrile extraction/partitioning and clean-up by dispersive SPE - QuEChERS method.

List of the tested pesticides and their limits of quantification (LOQs) are available upon request.

Preparatory Testing of Nutritional and Dietary Supplements (USPC_PT)
Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

Preparatory Testing of Nutritional and Dietary Supplements (USPE_PT)
Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

Preparatory Testing of Nutritional and Dietary Supplements (USPM_PT)
Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

Preparatory Testing of Nutritional and Dietary Supplements (USPN_PT)
Food Integ. Innovation-Madison NE
2102 Wright Street Madison, WI 53704 USA

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Method References	Testing Location
Yeast and Mold Count (USPM2021)	**Food Integ. Innovation-Madison NE** 2102 Wright Street Madison, WI 53704 USA

USP Current revision, Chapter 2021.
To satisfy the requirements of the USP, the Preparatory Test must be completed on each matrix.
**Based on the results of the preparatory test, the detection limit stipulated is adequate for the enumeration of the specified microorganisms.

Testing Location(s)	Released on Behalf of Eurofins by
Food Integrity Innovation-Madison Eurofins Food Chemistry Testing Madison, Inc. 3301 Kinsman Blvd Madison WI 53704 800-675-8375	**Edward Ladwig - President Eurofins Food Chemistry Testing Madison** ilac-MRA A2LA ACCREDITED 2918.01
Food Integ. Innovation-Madison NE Eurofins Food Chemistry Testing US, Inc. 2102 Wright Street Madison WI 53704 800-675-8375	**Shannon Jacoby - Business Unit Manager**