

I. PRODUCT DESCRIPTION

This artisan powder is powerful, versatile, and made from scratch.

GRADE

<https://leherbe.com/grading-system/nanoemulsion>

Product ID	H3007
Name	Caryophyllene, ASD, NE, WS, FA
Application	Flavor / Flavour
Industry	Hemp
Lot / Batch	B24-0543-A
Grade *	99
Sample ID	S24-0543-1
Sample Size	3.35g

II. FEATURES & BENEFITS

This food science innovation offers numerous advantages for consumer packaged goods (CPG).

FUN FACT

Le Herbe pioneered modern cannabis beverages with fast-acting effects in 2015. Le Herbe created terpene powder in 2018 because they wanted to extend the shelf-life of cannabis beverages, reduce storage requirements and transportation costs, and offer better formulations with less ingredients.

- No Alcohol
- No Dairy
- No Soy
- No Gluten
- No GMO
- No Added Sugar
- No Vitamin E Acetate
- No Vegetable Glycerin
- No Propylene Glycol
- No Artificial Preservatives
- No Artificial Sweeteners
- No Artificial Flavor
- No Artificial Color
- Safe & Effective
- Artisan Powder
- Water-Soluble (WS)
- Fast-Acting (FA)
- World's Most Bioavailable
- Nanoemulsion (NE)
- Lab Tested
- Psychoactive
- Shelf-Stable: 3 Years
- All-Natural
- Vegan-Friendly
- Sun Grown Citrus
- Functional Terpenes

III. NUTRITIONAL DATA

Consumers can enjoy low calories, no-added sugar and all-natural ingredients. We care about what you put in your body and we're proud to offer you a healthy nutritional label.

INGREDIENTS

Maltodextrin, Citrus Extract, Natural Flavors, Sea Salt, Citric Acid

ALLERGIES

This product, its raw materials and the processing line on which it was produced do not contain allergens, which include: milk, eggs, fish, crustacean shellfish, tree nuts, wheat, peanuts, soybeans, and sesame.

	Typical	Batch
Energy, kcal	1.00	NA
Total Fat, g	0.00	NA
Saturated Fat, g	0.00	NA
Trans Fat, g	0.00	NA
Sodium, mg	25.00	NA
Total Carbohydrate, g	2.00	NA
Dietary Fiber, g	0.00	NA
Total Sugars, g	1.00	NA
Added Sugars, g	0.00	NA
Protein, g	0.00	NA
Calcium, mg	0.00	NA
Iron, mg	0.00	NA
Magnesium, mg	0.00	NA
Potassium, mg	0.00	NA
Vitamin C, mg	0.00	NA
Vitamin D, mcg	0.00	NA
Citrus Extract, mg	100.00	NA

IV. PHYSICOCHEMICAL - liquid

The physical and chemical attributes of our nanoemulsion. We may convert a liquid nanoemulsion to powder in specific applications.

FUN FACT

Le Herbe makes very small particles to increase bioavailability and optimize performance like fast-acting effects. Each serving contains over one million particles.

ANALYSIS

MADLS, DLS, INFOGEST, Meter(s), Sensory

V. PHYSICOCHEMICAL - powder

The physical and chemical attributes of our microparticle. This particle encapsulates a powerful nanoemulsion and is non-crystalline. We may mix amorphous and crystalline particles in specific applications.

PERFORMANCE

Complete dispersion or dissolution of our powder should be accomplished within a few seconds in warm water and in about 30–60 seconds in cold water. The powder sinks to the bottom of a container, does not float on top of water, and does not require physical mixing if time is not a factor.

FUN FACT

Le Herbe's powder protects terpenoids from degradation. It has a wall material or particle shell that blocks light, heat, humidity and prevents oxidation. This wall material is made from corn and is called maltodextrin.

ANALYSIS

LD, Meter(s), Sensory

Manufacturing	High Pressure Homogenization
EE, %	90–95
Particle	Nanoemulsion (NE)
PSD, nm	20–100
D10 *	NA
D50 *	NA
D90 *	NA
PDI	0.1–0.2
Appearance	Liquid
Clarity	Translucent
Color	White to off white
Taste	No detectable flavor
Smell	No detectable flavor
pH	NA
Zeta Potential, mV	± 30–50
Bioavailability Potential, %	65–85
Onset Effect, min	5–15
Offset Effect, hrs	1–2

* Available upon request

Manufacturing	Spray Drying
Yield, %	85–95
Particle	Microparticle (ASD)
PSD, µm	50–500
X10 *	NA
X50 *	NA
X90 *	NA
Appearance	Powder
Clarity	Opaque
Color	White to off white
Taste	NA
Smell	No detectable odor
pH	3.50–4.50
Moisture, %	< 2.0
Water Activity, aw	< 0.2

* Available upon request

VI. CANNABINOID DATA

QC tests performed on raw and processed materials.

ANALYSIS

HPLC-DAD

LEGAL

Le Herbe is withholding the exact percentage of cannabinoids as a trade secret.

	Dilution	LOD / LOQ	mg/g	%
CBC	100.000	0.000018 / 0.001	*	*
CBCa	100.000	0.00001 / 0.001	*	*
CBD	100.000	0.000054 / 0.001	*	*
CBDa	100.000	0.00001 / 0.001	*	*
CBDV	100.000	0.000065 / 0.001	*	*
CBDVa	100.000	0.00001 / 0.001	*	*
CBG	100.000	0.000248 / 0.001	*	*
CBGa	100.000	0.00008 / 0.001	*	*
CBL	100.000	0.00001 / 0.001	*	*
CBN	100.000	0.000014 / 0.001	*	*
Δ-8 THC	100.000	0.000026 / 0.001	*	*
Δ-9 THC	100.000	0.000013 / 0.001	*	*
Δ-10 THC	1000.000	0.000003 / 0.001	*	*
THCa	100.000	0.000032 / 0.001	*	*
THCV	100.000	0.000007 / 0.001	*	*
THCVa	100.000	0.00001 / 0.001	*	*

TOTAL CANNABINOIDS

NA

NA

** Trade Secret*

VII. FLAVONOID DATA

QC tests performed on raw and processed materials.

ANALYSIS

LC-MS

LEGAL

Le Herbe is withholding the exact percentage of flavonoids as a trade secret.

	Dilution	LOQ	µg/g	%
Apigenin	1.000	4	*	*
Baicalin	1.000	8	*	*
Beta Sitosterol	1.000	5	*	*
Cannflavin a	1.000	3.91	*	*
Cannflavin b	1.000	4.84	*	*
Cannflavin c	1.000	2.36	*	*
Chrysin	1.000	2.5	*	*
Fisetin	1.000	5	*	*
Kaempferol	1.000	1	*	*
Luteolin	1.000	2.5	*	*
Orientin	1.000	5	*	*
Quercetin	1.000	11.56	*	*
Pelargonidin	1.000	2.23	*	*
Rutin	1.000	7.81	*	*
Vitexin	1.000	4	*	*
Wogonin	1.000	0.5	*	*

TOTAL FLAVONOIDS

NA

NA

** Trade Secret*

VIII. TERPENOID DATA

QC tests performed on raw and processed materials.

ANALYSIS

GC, GC-MS

LEGAL

Le Herbe is withholding the exact percentage of terpenoids as a trade secret.

	LOD / LOQ	mg/g	%
α -Bisabolol	0.008 / 0.026	*	*
Borneol	0.005 / 0.016	*	*
Camphene	0.005 / 0.015	*	*
Camphor	0.006 / 0.019	*	*
β -Caryophyllene	0.004 / 0.012	30	< 0.3
Caryophyllene Oxide	0.010 / 0.033	*	*
α -Cedrene	0.005 / 0.016	*	*
Cedrol	0.008 / 0.027	*	*
Citronellol	0.003 / 0.010	*	*
p-Cymene	0.003 / 0.010	*	*
Eucalyptol	0.006 / 0.018	*	*
Fenchol	0.010 / 0.034	*	*
Fenchone	0.009 / 0.028	*	*
Geraniol	0.002 / 0.007	*	*
Geranyl Acetate	0.004 / 0.014	*	*
Guaiol	0.009 / 0.030	*	*
α -Humulene	0.009 / 0.029	*	*
Isoborneol	0.004 / 0.012	*	*
Isopulegol	0.005 / 0.016	*	*
Limonene	0.005 / 0.016	*	*
Linalool	0.009 / 0.032	*	*
Myrcene	0.008 / 0.025	*	*
Nerol	0.003 / 0.011	*	*
Nerolidol	0.009 / 0.019	*	*
β -Ocimene	0.006 / 0.020	*	*
α -Phellandrene	0.006 / 0.020	*	*
α -Pinene	0.005 / 0.017	*	*
β -Pinene	0.004 / 0.014	*	*
Sabinene	0.004 / 0.014	*	*
Sabinene Hydrate	0.006 / 0.022	*	*
α -Terpineol	0.016 / 0.055	*	*
α -Terpinene	0.005 / 0.017	*	*
γ -Terpinene	0.006 / 0.018	*	*
Terpinolene	0.008 / 0.026	*	*
Valencene	0.009 / 0.030	*	*
TOTAL TERPENOIDS		NA	NA

* Trade Secret

IX. PESTICIDE DATA

QC tests performed on raw and processed materials.

ANALYSIS

GC-MS

	LOD / LOQ	Action Level	Result
Avamectin B1a	0.03 / 0.10	0.1	ND
Avamectin B1b	0.03 / 0.10	0.1	ND
Acephate	0.02 / 0.07	0.1	ND
Acequinocyl	0.02 / 0.07	0.1	ND
Acetamiprid	0.02 / 0.05	0.1	ND
Aldicarb	0.03 / 0.08	> LOD	ND
Azoxystrobin	0.02 / 0.07	0.1	ND
Bifenazate	0.01 / 0.04	0.1	ND
Bifenthrin	0.02 / 0.05	0.1	ND
Boscalid	0.03 / 0.09	0.1	ND
Captan	0.19 / 0.57	0.7	ND
Carbaryl	0.02 / 0.06	0.5	ND
Carbofuran	0.02 / 0.05	> LOD	ND
Chlorantraniliprole	0.04 / 0.12	10	ND
Chlordane	0.03 / 0.08	> LOD	ND
Chlorfenapyr	0.03 / 0.10	> LOD	ND
Chlorpyrifos	0.03 / 0.07	> LOD	ND
Clofentezine	0.03 / 0.09	0.1	ND
Coumaphos	0.02 / 0.07	> LOD	ND
Cyfluthrin	0.12 / 0.38	1	ND
Cypermethrin	0.11 / 0.32	1	ND
Daminozide	0.02 / 0.07	> LOD	ND
Diazinon	0.02 / 0.05	0.2	ND
Dichlorvos (DDVP)	0.03 / 0.09	> LOD	ND
Dimethoate	0.03 / 0.08	> LOD	ND
Dimethomorph	0.03 / 0.09	20	ND
Ethoprophos (Ethoprop)	0.03 / 0.10	> LOD	ND
Etofenprox	0.02 / 0.06	> LOD	ND
Etoxazole	0.02 / 0.06	0.1	ND
Fenhexamid	0.03 / 0.09	0.1	ND
Fenoxycarb	0.03 / 0.08	> LOD	ND
Fenpyroximate	0.02 / 0.06	0.1	ND
Fipronil	0.03 / 0.08	> LOD	ND
Flonicamid	0.03 / 0.10	0.1	ND
Fludioxonil	0.03 / 0.10	0.1	ND
Hexythiazox	0.02 / 0.07	0.1	ND
Imazalil	0.02 / 0.06	> LOD	ND
Imidacloprid	0.04 / 0.11	3	ND

* µg/g

IX. PESTICIDE DATA - continued

QC tests performed on raw and processed materials.

ANALYSIS

GC-MS

	LOD / LOQ	Action Level	Result
Kresoxim-methyl	0.02 / 0.07	0.1	ND
Malathion	0.03 / 0.09	0.5	ND
Metalaxyl	0.02 / 0.07	0.1	ND
Methiocarb	0.02 / 0.07	> LOD	ND
Methomyl	0.03 / 0.10	1	ND
Methyl parathion	0.02 / 0.07	> LOD	ND
Mevinphos	0.03 / 0.09	> LOD	ND
MGK-264	0.03 / 0.09	0.2	ND
Myclobutanil	0.03 / 0.09	0.1	ND
Naled	0.02 / 0.07	0.1	ND
Oxamyl	0.04 / 0.11	0.5	ND
Paclobutrazol	0.02 / 0.05	> LOD	ND
Parathion-methyl	0.03 / 0.20	> LOD	ND
Pentachloronitrobenzene	0.03 / 0.09	0.1	ND
Permethrin	0.04 / 0.12	0.5	ND
Phosmet	0.03 / 0.10	0.1	ND
Piperonyl Butoxide	0.02 / 0.07	3	ND
Prallethrin	0.03 / 0.08	0.1	ND
Propiconazole	0.02 / 0.07	0.1	ND
Propoxur	0.03 / 0.09	> LOD	ND
Pyrethrin I	0.04 / 0.12	0.5	ND
Pyrethrin II	0.04 / 0.12	0.5	ND
Pyridaben	0.02 / 0.07	0.1	ND
Spinetoram J	0.02 / 0.07	0.1	ND
Spinetoram L	0.02 / 0.07	0.1	ND
Spinosin A	0.02 / 0.07	0.1	ND
Spinosin D	0.02 / 0.07	0.1	ND
Spiromesifen	0.02 / 0.05	0.1	ND
Spirotetramat	0.02 / 0.06	0.1	ND
Spiroxamine	0.03 / 0.08	> LOD	ND
Tebuconazole	0.02 / 0.07	0.1	ND
Thiacloprid	0.03 / 0.10	> LOD	ND
Thiamethoxam	0.03 / 0.10	5	ND
Trifloxystrobin	0.03 / 0.08	0.1	ND

* µg/g

X. RESIDUAL SOLVENTS

QC tests performed on raw and processed materials.

ANALYSIS

GC-MS

	LOQ	Action Level	Result
1,1-Dichloroethane	0.16	8	ND
1,2-Dichloroethane	0.04	5	ND
Acetone	2.08	5000	ND
Acetonitrile	1.17	410	ND
Benzene	0.02	2	ND
n-Butane	2.5	2000	ND
Chloroform	0.04	60	ND
Ethanol	2.78	5000	ND
Ethyl Acetate	1.11	5000	ND
Ethyl Ether	1.39	5000	ND
Ethylene Oxide	0.1	5	ND
n-Heptane	1.39	5000	ND
n-Hexane	1.17	290	ND
Isopropyl alcohol	1.39	500	ND
Methanol	0.69	3000	ND
Methylene Chloride	2.43	600	ND
n-Pentane	2.08	5000	ND
Propane	5.83	2100	ND
Toluene	2.92	890	ND
Total Xylenes	2.92	2170	ND
Trichloroethylene	0.49	80	ND

* $\mu\text{g/g}$

XI. MICROBIOLOGY

QC tests performed on raw and processed materials.

ANALYSIS

qPCR

	Action Level	Result
Candida albicans		Absent
Escherichia coli		Absent
Listeria monocytogenes	1	Absent
Salmonella		Absent
Staphylococcus aureus		Absent
Pseudomonas aeruginosa		Absent
Total Aerobic Microbial Count	10	ND
Total Combined Molds & Yeasts Count	10	ND

* cfu/g

XII. HEAVY METALS

QC tests performed on raw and processed materials.

ANALYSIS

ICP-MS

	LOD / LOQ	Action Level	Result
Arsenic	0.02 / 0.10	0.2	ND
Cadmium	0.02 / 0.05	0.2	ND
Lead	0.04 / 0.10	0.5	ND
Mercury	0.002 / 0.01	0.1	ND

* $\mu\text{g/g}$

XIII. MYCOTOXINS

Natural compounds produced by mold or fungi. QC tests performed on raw and processed materials.

ANALYSIS

LC-MS

	LOD / LOQ	Action Level	Result
Aflatoxin B1	0.002 / 0.006	0.02	ND
Aflatoxin B2	0.0018 / 0.0056	0.02	ND
Aflatoxin G1	0.001 / 0.0031	0.02	ND
Aflatoxin G2	0.0012 / 0.0035	0.02	ND
Ochratoxin A	0.0063 / 0.0192	0.02	ND

* $\mu\text{g/g}$

XIV. ENDOTOXINS

Natural compounds found in the outer cell membrane of Gram-negative bacteria. QC tests performed on raw and processed materials.

ANALYSIS

LAL

	LOD / LOQ	Action Level	Result
Endotoxins	0.02 / 0.1	0.3	ND

* $\mu\text{g/g}$

ASD	Amorphous Solid Dispersion	amp	ampere
API	Active Pharmaceutical Ingredient	aw	area ratio
CoA	Certificate of Analysis	bar	metric unit of pressure
cGMP	Current Good Manufacturing Practice	cfu	colony forming unit
DLS	Dynamic Light Scattering	cm	centimeter
EELS	Electrophoretic Light Scattering	Dv	volume distribution
FFA	Free Fatty Acids	Dn	number distribution
GC	Gas Chromatography	g	gram
GC-FID	Gas Chromatography-Flame Ionization Detection	hp	horsepower
GC-MS	Gas Chromatography-Mass Spectrometry	Hz	hertz
GIT	Gastrointestinal Tract	in	inch
HPLC	High-Performance Liquid Chromatography	Kg	kilogram
HPLC-DAD	High-Performance Liquid Chromatography with Diode-Array Detection	kW	kilowatt
HPLC-MS	High-Performance Liquid Chromatography-Mass Spectrometry	L	liter
ICP	Inductively Coupled Plasma	lb	pound
ICP-MS	Inductively Coupled Plasma-Mass Spectrometry	min	minute
LAL	Limulus Amebocyte Lysate	mL	milliliter
LC-MS	Liquid Chromatography-Mass Spectrometry	mV	millivolt
LCT	Long-Chain Triglyceride	nm	nanometer
LD	Laser Diffraction	ppm	parts per million
LOD	Limit of Detection	ppb	parts per billion
LOQ	Limit of Quantification	psi	pound-force per square inch
MADLS	Multi-Angle Dynamic Light Scattering	sec	second
MCT	Medium-Chain Triglyceride	µg	microgram
MS	Multiple Scattering	µL	microliter
NA	Not Available or Applicable	µm	micrometer or micron
ND	Not Detectable	V	volt
NT	Not Tested	ζ	zeta-potential
NIBS	Non-Invasive Back Scattering	cfu/g	colony forming unit per gram
OBS	Obscuration	g/mL	grams per milliliter
PCR	Polymerase Chain Reaction	kg/hr	kilograms per hour
PDI	Polydispersity Index	mg/mL	milligrams per milliliter
PK	Pharmacokinetic	mg/Kg	milligram per kilogram
PPB	Parts-Per-Billion	mL/min	milliliter per minute
PPM	Parts-Per-Million	o/w	oil-in-water
PSD	Particle Size Distribution	o/w/o	oil-in-water-in-oil
QC	Quality Control	r/s	rotor-stator
qPCR	Quantitative Polymerase Chain Reaction (Real-Time)	µg/g	microgram per gram
RPM	Revolutions Per Minute	U/mL	units per milliliter
SC-CO₂	Supercritical Carbon Dioxide Extract	v/v	volume per volume
SEM	Scanning Electron Microscopy	w/o	water-in-oil
SGF	Simulated Gastric Fluid	w/o/w	water-in-oil-in-water
SIF	Simulated Intestinal Fluid	w/v	weight per volume
SOP	Standard Operating Procedures	w/w	weight per weight
SOR	Surfactant-to-Oil Ratio		
SSF	Simulated Saliva Fluid		

TECHNICAL INFORMATION

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REVISION DATE

May 11, 2024



LE HERBE