TECHNICAL DATA SHEET

LE HERBE™

I. PRODUCT DESCRIPTION

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

Product ID	H3010
Name	Humulene, ASD, NE, WS, FA
Application	Flavor / Flavour
Industry	Hemp
Lot / Batch	B24-0540-A
Grade *	99
Sample ID	S24-0540-1
Sample Size	3.35g

GRADE

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

II. FEATURES & BENEFITS

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

- 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

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.

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.

	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

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.

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

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*

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	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	*	*
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	30	< 0.3
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
Cyfluhrin	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

** µg/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

** µg/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

** µg/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

** µg/g*

ASD	Amorphous Solid Dispersion
API	Active Pharmaceutical Ingredient
CoA	Certificate of Analysis
cGMP	Current Good Manufacturing Practice
DLS	Dynamic Light Scattering
ELS	Electrophoretic Light Scattering
FFA	Free Fatty Acids
GC	Gas Chromatography
GC-FID	Gas Chromatography-Flame Ionization Detection
GC-MS	Gas Chromatography-Mass Spectrometry
GIT	Gastrointestinal Tract
HPLC	High-Performance Liquid Chromatography
HPLC-DAD	High-Performance Liquid Chromatography with Diode-Array Detection
HPLC-MS	High-Performance Liquid Chromatography-Mass Spectrometry
ICP	Inductively Coupled Plasma
ICP-MS	Inductively Coupled Plasma-Mass Spectrometry
LAL	Limulus Amebocyte Lysate
LC-MS	Liquid Chromatography-Mass Spectrometry
LCT	Long-Chain Triglyceride
LD	Laser Diffraction
LOD	Limit of Detection
LOQ	Limit of Quantification
MADLS	Multi-Angle Dynamic Light Scattering
MCT	Medium-Chain Triglyceride
MS	Multiple Scattering
NA	Not Available or Applicable
ND	Not Detectable
NT	Not Tested
NIBS	Non-Invasive Back Scattering
OBS	Obscuration
PCR	Polymerase Chain Reaction
PDI	Polydispersity Index
PK	Pharmacokinetic
PPB	Parts-Per-Billion
PPM	Parts-Per-Million
PSD	Particle Size Distribution
QC	Quality Control
qPCR	Quantitative Polymerase Chain Reaction (Real-Time)
RPM	Revolutions Per Minute
SC-C0$_2$	Supercritical Carbon Dioxide Extract
SEM	Scanning Electron Microscopy
SGF	Simulated Gastric Fluid
SIF	Simulated Intestinal Fluid
SOP	Standard Operating Procedures
SOR	Surfactant-to-Oil Ratio
SSF	Simulated Saliva Fluid

amp	ampere
aw	area ratio
bar	metric unit of pressure
cfu	colony forming unit
cm	centimeter
Dv	volume distribution
Dn	number distribution
g	gram
hp	horsepower
Hz	hertz
in	inch
Kg	kilogram
kW	kilowatt
L	liter
lb	pound
min	minute
mL	milliliter
mV	millivolt
nm	nanometer
ppm	parts per million
ppb	parts per billion
psi	pound-force per square inch
sec	second
µg	microgram
µL	microliter
µm	micrometer or micron
V	volt
ζ	zeta-potential
cfu/g	colony forming unit per gram
g/mL	grams per milliliter
kg/hr	kilograms per hour
mg/mL	milligrams per milliliter
mg/Kg	milligram per kilogram
mL/min	milliliter per minute
o/w	oil-in-water
o/w/o	oil-in-water-in-oil
r/s	rotor-stator
µg/g	microgram per gram
U/mL	units per milliliter
v/v	volume per volume
w/o	water-in-oil
w/o/w	water-in-oil-in-water
w/v	weight per volume
w/w	weight per weight

TECHNICAL INFORMATION

The technical information, guidance, and other statements contained in this document or otherwise provided by Le Herbe are based upon records, tests, or experience that Le Herbe believes to be reliable, but the accuracy completeness, and representative nature of such information is not guaranteed, Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information, No license under any Le Herbe or third party intellectual property rights is granted or implied with this information.

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REVISION DATE

May 11, 2024