

CERTIFICATE OF ANALYSIS

Product Name	BORAGE SEED OIL
Botanical Name	Borago officinalis
Product Code	PCO4047
CAS #	84012-16-8 ; 225234-12-8
EINECS #	281-661-4
INCI Name	Borago Officinalis (Borage) Seed Oil

Batch #	40472212
Manufacturing Date	DECEMBER 2022
Best Before Date	NOVEMBER 2024

Part Used	Seeds
Extraction Method	Cold Pressed
Quality	100% Pure and Natural

<u>PROPERTIES</u>	<u>SPECIFICATIONS</u>	<u>RESULTS</u>
Appearance	Pale yellow to greenish yellow colored liquid	CONFORMS
Odour	Characteristic mild, pleasant odour	CONFORMS
Refractive Index	1.473 - 1.479 @ 20°C	1.475
Specific Gravity (g/mL)	0.910 - 0.935 @ 20°C	0.921
Saponification Value (mgKOH/g)	185 - 195	192
Free Fatty Acids (% oleic)	Less than 2.0	CONFORMS
Moisture (%)	Less than 0.25	CONFORMS
Melting Point (°C)	25° - 38°	CONFORMS
Peroxide Value (meq O₂/kg)	Less than 8.0	CONFORMS
Iodine Value (g I₂/100g)	125 - 160	143
Acid Value (mgKOH/g)	Less than 4.0	CONFORMS
Solubility	Soluble in cosmetic esters and fixed oils; Insoluble in water	CONFORMS

Shelf life is guaranteed for three years from the date of production if the product is stored in the unopened original container between 15°C - 30°C, protected from light. Because this material is sensitive to oxidation, it is saturated with nitrogen and sealed with nitrogen atmosphere for protection. If containers are opened for sampling, be sure to refill atmosphere with nitrogen. Containers that have been opened should be tested at least yearly to ensure potency. Although we believe the above information to be accurate based on the information available to Avena Lab, it is the responsibility of the customer and user of the material to perform its own investigation and due diligence prior to use to verify that the product purchased from Avena Lab meets their quality requirements and is appropriate for the use to which the product is to be put. The information provided above shall be considered effective only for the lot with which the information is being provided. Use and purchase of this material is subject to Avena Lab standard terms and conditions, which supersede any conflicting terms contained on Buyer's purchase order or any document or instrument supplied by Buyer.

FATTY ACID COMPOSITION:

<u>FATTY ACID</u>	<u>C-CHAIN</u>	<u>SPECIFICATIONS (%)</u>	<u>RESULTS (%)</u>
Palmitic Acid	C16:0	8.00 – 13.00	9.30
Stearic Acid	C18:0	2.00 – 6.00	3.60
Oleic Acid	C18:1 (n-9)	14.00 – 20.00	18.4
Linoleic Acid	C18:2 (n-6)	34.00 – 45.00	39.8
Alpha-Linolenic Acid	C18:3 (n-3)	Maximum 0.50	0.30
Gamma-Linolenic Acid	C18:3 (n-6)	20.00 – 25.00	20.1
11-Eicosenoic Acid	C20:1 (n-9)	3.00 – 5.00	3.80
Nervonic Acid	C24:1 (n-9)	1.00 – 2.50	1.30

<u>MICROBIAL ANALYSIS</u>	<u>SPECIFICATIONS</u>	<u>STANDARDS</u>	<u>RESULTS</u>
Aerobic Mesophilic Bacterial Count	< 100 CFU/g	ISO 21149	CONFORMS
Yeast and Mould	< 10 CFU/g	ISO 16212	CONFORMS
Candida albicans	ABSENT / 1g	ISO 18416	CONFORMS
Escherichia coli	ABSENT / 1g	ISO 21150	CONFORMS
Pseudomonas aeruginosa	ABSENT / 1g	ISO 22717	CONFORMS
Staphylococcus aureus	ABSENT / 1g	ISO 22718	CONFORMS

<u>HEAVY METAL TESTS</u>	<u>SPECIFICATIONS</u>	<u>STANDARDS</u>	<u>RESULTS</u>
Lead: Pb (mg/kg or ppm)	< 10 ppm	na	CONFORMS
Arsenic: As (mg/kg or ppm)	< 2 ppm	na	CONFORMS
Mercury: Hg (mg/kg or ppm)	< 1 ppm	na	CONFORMS

STABILITY AND STORAGE:

Keep in tightly closed container in a cool and dry place, protected from sunlight. When stored for more than 24 months, quality should be checked before use.

As it is electronically generated document, hence no signature required.

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