



Healing Body, Mind, and Spirit
with Pure Essential Oils Since 1995

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Certificate of Analysis: Borage Seed, *Borago officinalis*, organic seeds from China, CO₂ extracted in Germany.

Batch No: GE-241305

Lab No: 17203

Type No: 070.002

Production: August 2014

Date of Analysis: 8/8/2014

D/E - ratio: 3.1 – 3.5 kg raw material yield 1 kg product.

Sensory Check:

| Feature | Reference | Result |
|-------------|-------------------|--------|
| Appearance: | clear, yellow oil | meets |

Analytical Check:

| Feature | Method | Limits | Value | Unit |
|--------------------------|---------------------------|---------------|------------------------|-------------------|
| Fatty acid composition: | | | | |
| Palmitic Acid | C16:0 21.156.02, GCFID | 10 - 15 | 11,0 | % |
| Palmitoleic Acid | C16:1 w7 21.156.02, GCFID | n.s. | 0,15 | % |
| Stearic Acid | C18:0 21.156.02, GCFID | n.s. | 5,2 | % |
| Oleic Acid | C18:1 w9 21.156.02, GCFID | n.s. | 20,5 | % |
| Vaccenic Acid | C18:1 w7 21.156.02, GCFID | n.s. | 0,40 | % |
| Linoleic Acid | C18:2 w6 21.156.02, GCFID | 35 - 45 | 37,8 | % |
| gamma Linolenic Acid | C18:3 w6 21.156.02, GCFID | 20 - 26 | 20,1 | % |
| alpha Linolenic acid | C18:3 w3 21.156.02, GCFID | n.s. | 0,21 | % |
| Arachidic Acid | C20:0 21.156.02, GCFID | n.s. | 0,34 | % |
| Gadoleic Acid | C20:1 w9 21.156.02, GCFID | n.s. | 4,0 | % |
| Behenic Acid | C22:0 21.156.02, GCFID | n.s. | n.d. | % |
| Erucic Acid | C22:1 w9 21.156.02, GCFID | < 5 | 0,12 | % |
| Nervonic Acid | C24:1 w9 21.156.02, GCFID | n.s. | 0,22 | % |
| Fat numbers: | | | | |
| Unsaponifiables | 21.020.02, DGF | < 4 | 3,4 | % |
| Peroxide Value | 21.015.02, DGF, Wheeler | < 15 3,9 | meq O ₂ /kg | |
| Acid value | 21.016.02, DGF | 5 - 10 7,6 | mg KOH/g | |
| Saponification value | 21.017.01, DGF | 160 - 210 | 198 | mg KOH/g |
| Ester value | = SV - AV | 150 - 200 | 192 | mg KOH/g |
| Pyrrrolizidin alkaloides | external analysis | < 50 | 32 | ppb |
| Content of water | Karl Fischer Titr. | < 0,5 | 0,22 | % |
| Refractive index (20°C) | Abbe-Refractometer | 1,473 - 1,479 | 1,4768 | |
| Density (20°C) | 21.024.02, Pycnometer | 0,915 - 0,925 | 0,9182 | g/cm ³ |

n.s. = not specified n.d. = not detected

Storage conditions: Store in a cool, dry place. Recommendation: Storage under inert gas.

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