

# CERTIFICATE OF ANALYSIS (COA)

|                   |                        |
|-------------------|------------------------|
| Product Name      | ANNATTO OIL            |
| Botanical Name    | Bixa orellana          |
| CAS #             | 89957-43-7             |
| INCI Name         | Bixa Orellana Seed Oil |
| Part Used         | Seeds                  |
| Extraction Method | Cold Pressed           |
| Quality           | 100% Pure and Natural  |

| <u>PROPERTIES</u>         | <u>SPECIFICATIONS</u>   | <u>RESULT</u> |
|---------------------------|---|---------------|
| Appearance                | Reddish orange colored liquid                                 | CONFORMS      |
| Odour                     | Characteristic mild odour                                     | CONFORMS      |
| acid value                | 2.0 MAX   | 0.52          |
| Specific Gravity (g / mL) | 0.924 - 0.931 @ 20°   | 0.925         |
| iodine value              | 165 – 195   | 175           |
| peroxide value            | 5.0 – 15.0  | 6.83          |
| saponification value      | 175-195   | 186           |
| unsaponifiable matter     | <1.50%  | 0.30          |
| Solubility                | Soluble in cosmetic esters and fixed oils; Insoluble in water | CONFORMS      |

## FATTY ACID COMPOSITION:

| <u>FATTY ACID</u>    | <u>C-CHAIN</u>     | <u>SPECIFICATIONS (%)</u> | <u>RESULTS</u> |
|----------------------|--------------------|---------------------------|----------------|
| Palmitic Acid        | <u>C16:0</u>       | <u>3.00 – 5.00</u>        | <u>3.6</u>     |
| Stearic Acid         | <u>C18:0</u>       | <u>1.0 – 3.00</u>         | <u>1.8</u>     |
| Oleic Acid           | <u>C18:1 (n-9)</u> | <u>13.00 – 18.00</u>      | <u>15.3</u>    |
| Linoleic Acid        | <u>C18:2 (n-6)</u> | <u>35.00 – 50.00</u>      | <u>43.8</u>    |
| Alpha-Linolenic Acid | <u>C18:3 (n-3)</u> | <u>22.00 – 38.00</u>      | <u>29.3</u>    |

| <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              | n                | CONFORMS       |
| Arsenic: As (mg / kg or ppm) | < 2 ppm               | n                | CONFORMS       |
| Mercury: Hg (mg / kg or ppm) | < 1 ppm               | n                | CONFORMS       |

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