

## Certificate of Analysis

|                         |                          |
|-------------------------|--------------------------|
| <b>Product</b>          | FIR NEEDLE ESSENTIAL OIL |
| <b>Lot #</b>            | 2148742                  |
| <b>Manufacture Date</b> | 08/2021                  |
| <b>Shelf Life</b>       | 3 years                  |

| Properties                   | Specifications | Results |
|------------------------------|----------------|---------|
| Appearance                   | Limpid Liquid  | Conform |
| Color                        | Colorless      | Conform |
| Odor                         | Characteristic | Conform |
| Specific Gravity 20°C        | 0.895 – 0.912  | 0.903   |
| Refractive Index 20°C        | 1.468 – 1.473  | 1.469   |
| Optical Rotation             | -40 to -25     | -33.9   |
| Alcohol Solubility 90°       | ≤ 10           | 5       |
| Acetate Bornyle              | 20 – 35        | 23.2    |
| Acetate Isobornyle           | 0.01 – 0.1     | 0.6     |
| Alpha Humulene               | 0.3 – 0.9      | 0.6     |
| Alpha Pinene                 | 10 – 22        | 13.4    |
| Beta Pinene                  | 1 – 3.5        | 2.3     |
| Borneol                      | 1 – 3          | 1.3     |
| Camphene                     | 15 – 26        | 22.2    |
| Delta 3 Carene               | 9 – 15         | 12.7    |
| Santene                      | 1.5 – 3.5      | 2.6     |
| Tricyclene                   | 1.5 – 3.5      | 2.2     |
| Limonene + Beta Phellandrene | 5.5 – 15       | 8.6     |
| Peroxide Value               | ≤ 20           | 7       |

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## Certificate of Analysis

|                    |                          |
|--------------------|--------------------------|
| <b>Product</b>     | FIR NEEDLE ESSENTIAL OIL |
| <b>Lot #</b>       | MD97781                  |
| <b>Date of MFG</b> | 21-SEP-21                |
| <b>Shelf Life</b>  | 2 years                  |

| Properties             | Specifications            | Results             |
|------------------------|---------------------------|---------------------|
| Optical Rotation       | $\geq -45 \leq -33$       | -35.52              |
| Refractive Index @20C  | $\geq 1.4680 \leq 1.4730$ | 1.4700              |
| Specific Gravity @20 C | $\geq 0.9010 \leq 0.9150$ | 0.9047              |
| Specific Gravity @25 C | $\geq 0.8980 \leq 0.9120$ | 0.9017              |
| Total Esters           | $\geq 44 \leq 32$         | 32                  |
| Appearance             |                           | Conform             |
| Odor                   |                           | Conform to standard |
| Taste                  |                           | Conform             |
| Flash Point            |                           | 105/41              |

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## Certificate of Analysis

**Product** FIR NEEDLE ESSENTIAL OIL  
**Lot #** R-107770  
**Shelf Life** 2 years

| Properties          | Specifications                    | Results             |
|---------------------|-----------------------------------|---------------------|
| Color               | Colorless liquid                  | Conform             |
| Analysis by GC      |                                   | Conform to standard |
| Odor Description    | Characteristic of pine needle oil | Conform             |
| Refractive Index 20 |                                   | 1.4690              |
| Specific Gravity 25 |                                   | 0.9000              |

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## Certificate of Analysis

**Product** FIR NEEDLE ESSENTIAL OIL  
**Lot #** 01004482  
**Shelf Life** 2 years

| Properties                              | Specifications  | Results              |
|---|-----------------|----------------------|
| Appearance                              | Liquid          | Conforms             |
| Odor                                    | Characteristic  | Conforms to Standard |
| Color                                   | Colorless       | Conforms             |
| Refractive Index 20 <sup>o</sup> C      | 1.4680 – 1.4740 | 1.4694               |
| Specific Gravity 20/20 <sup>o</sup> C   | 0.900 – 0.9200  | 0.9043               |
| Flash Point <sup>o</sup> F (Closed Cup) | 109 Minimum     | Conforms             |

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## Certificate of Analysis

|                   |                          |
|-------------------|--------------------------|
| <b>Product</b>    | FIR NEEDLE ESSENTIAL OIL |
| <b>Lot #</b>      | 11835719                 |
| <b>Shelf Life</b> | 1.5 years                |

| Properties                              | Specifications  | Results              |
|---|-----------------|----------------------|
| Appearance                              | Liquid          | Conforms             |
| Odor                                    | Characteristic  | Conforms to Standard |
| Color                                   | Colorless       | Conforms             |
| Refractive Index 20 <sup>o</sup> C      | 1.4680 – 1.4740 | 1.4697               |
| Specific Gravity 20/20 <sup>o</sup> C   | 0.900 – 0.9200  | 0.9027               |
| Flash Point <sup>o</sup> F (Closed Cup) | 109 Minimum     | Conforms             |

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