

## Quality specification RME biodiesel (Rapeseed oil Methyl Ester)

Biodiesel fully complies with EN 14214+A2:2019 quality specifications

| Property                                         | Unit               | Min     | Max        | Actual           | Test Method  |
|--------------------------------------------------|--------------------|---------|------------|------------------|--------------|
| Ester content                                    | % (m/m)            | 96,5    | -          | <b>97,3-98,8</b> | EN 14103     |
| Density at 15°C                                  | kg/m <sup>3</sup>  | 860     | 900        | <b>882,9</b>     | EN ISO 12185 |
| Viscosity at 40°C                                | mm <sup>2</sup> /s | 3,5     | 5,0        | <b>4,4-4,6</b>   | EN ISO 3104  |
| Flash point                                      | °C                 | 101     | -          | <b>160-180</b>   | EN ISO 3679  |
| Sulphur content                                  | mg/kg              | -       | 10         | <b>3,5-6,0</b>   | EN ISO 20884 |
| Cetane number                                    | -                  | 51,0    | -          | <b>51-52</b>     | EN ISO 5165  |
| Sulfated ash content                             | % (m/m)            | -       | 0,02       | <b>&lt;0,005</b> | ISO 3987     |
| Water content                                    | mg/kg              | -       | 300        | <b>40-190</b>    | EN ISO 12937 |
| Total contamination                              | mg/kg              | -       | 24         | <b>&lt;12</b>    | EN 12662     |
| Copper band corrosion (3 hours at 50 °C)         | rating             | Class 1 | -          | <b>Class1</b>    | EN ISO 2160  |
| Oxidation stability, 110°C                       | hours              | 8,0     | -          | <b>8,5 -14,3</b> | EN 14112     |
| Acid value                                       | mg KOH/g           | -       | 0,50       | <b>0,22-0,3</b>  | EN 14104     |
| Iodine value                                     | -                  | -       | 120        | <b>111-118</b>   | EN 14111     |
| Linolenic Acid Methyl ester                      | % (m/m)            | -       | 12,0       | <b>9,5-11,5</b>  | EN 14103     |
| Polyunsaturated (>= 4 Double bonds) Methyl ester | % (m/m)            | -       | 1,0        | <b>&lt;0,6</b>   | EN 15779     |
| Methanol content                                 | % (m/m)            | -       | 0,2        | <b>0,02-0,06</b> | EN 14110     |
| Cloud point                                      | °C                 | -       | -4         | <b>-4...-6</b>   | EN ISO 3015  |
| Cold filter plugging point *                     | °C                 | -       | -13...-26* | <b>-13...-26</b> | EN 116       |
| Monoglyceride content **                         | % (m/m)            | -       | 0,3-0,7**  | <b>0,25-0,7</b>  | EN 14105     |
| Diglyceride content                              | % (m/m)            | -       | 0,2        | <b>&lt;0,1</b>   | EN 14105     |
| Triglyceride content                             | % (m/m)            | -       | 0,2        | <b>&lt;0,1</b>   | EN 14105     |
| Free Glycerol                                    | % (m/m)            | -       | 0,02       | <b>0,013</b>     | EN 14105     |
| Total Glycerol                                   | % (m/m)            | -       | 0,25       | <b>0,11</b>      | EN 14105     |
| Group I metal (Na+K)                             | mg/kg              | -       | 5,0        | <b>&lt;2,0</b>   | EN 14538     |
| Group II metals (Ca+Mg)                          | mg/kg              | -       | 5,0        | <b>&lt;2,0</b>   | EN 14538     |
| Phosphorus content                               | mg/kg              | -       | 4,0        | <b>&lt;4,0</b>   | EN14107      |
| Filter blocking tendency                         | -                  | -       | 4,0        | <b>&lt;4,0</b>   | IP 368 (B)   |
| Palmitic Methyl Ester                            | % (m/m)            | -       | 6,0        | <b>&lt;5,0</b>   | EN 14103     |

\* according to summer/winter season and customer requirements.

\*\*monoglyceride content depends on customer requirements.