

## EFIX 51 DIESEL 3, 4, 8, 9

### USE: AS FUEL FOR DIESEL ENGINES

| PROPERTY   | UM                    | LIMITS                      |                             | TEST METHOD   |
|--|-----------------------|-----------------------------|-----------------------------|---|
|  |                       | Min.                        | Max.                        |   |
| Cetane number                                    |                       | 51,0                        | -                           | ASTM D 613-17b <sup>2</sup> / SR EN ISO 5165:01 <sup>2</sup><br>EN ISO 5165:98 <sup>2</sup> / ISO 5165:98 <sup>2</sup>  |
| Cetane index                                     |                       | 46,0                        | -                           | SR EN ISO 4264-08 <sup>2</sup> / SR EN ISO 4264-08/A1:13 <sup>2</sup> / EN ISO 4264-07 <sup>2</sup> / EN ISO 4264-08/A1:13 <sup>2</sup> / ISO 4264-07 <sup>2</sup> / ISO 4264-08/A1:13 <sup>2</sup> / ASTM D 4737-10(16) <sup>2</sup>                   |
| Density at 15 °C                                 | kg/m <sup>3</sup>     | 820,0<br>800,0 <sup>5</sup> | 845,0<br>845,0 <sup>5</sup> | ASTM D 4052-16 <sup>2</sup> / ASTM D 1298-12b / SR EN ISO 3675:02 / SR EN ISO 3675:02 / C91:05 / EN ISO 3675:98 ISO 3675:98 / SR EN ISO 12185:03 <sup>2</sup> / EN ISO 12185:96 <sup>2</sup> ISO 12185-96 <sup>2</sup>                                  |
| Polycyclic aromatic hydrocarbons <sup>7</sup>    | % (m/m)               | -                           | 8,0                         | SR EN 12916:16 <sup>2</sup> / EN 12916-16 <sup>2</sup>  |
| Sulfur content                                   | mg/kg                 | -                           | 10,0                        | SR EN ISO 20846-12 <sup>2</sup> / EN ISO 20846-11 <sup>2</sup> / ISO 20846-11 <sup>2</sup><br>SR EN ISO 20884-11 <sup>2</sup> / EN ISO 20844-11 <sup>2</sup> / ISO 20884-11 <sup>2</sup><br>ASTM D 2622-16 <sup>2</sup> / ASTM D 5453-16e1 <sup>2</sup> |
| Manganese content <sup>7</sup>                   | mg/l                  | -                           | 2,0                         | IP 592-11 <sup>2</sup>  |
| Flash point                                      | °C                    | Above<br>55.0               | -                           | SR EN ISO 2719:16 <sup>2</sup> / EN ISO 2719:16 <sup>2</sup> / ISO 2719:16 <sup>2</sup><br>ASTM D 93-16a <sup>2</sup>   |
| Carbon residue (in 10% distillation residue)     | % (m/m)               | -                           | 0,30                        | SR EN ISO 10370-15 <sup>2</sup> / EN ISO 10370-14 <sup>2</sup> / ISO 10370-14 <sup>2</sup><br>ASTM D 4530-15 <sup>2</sup>   |
| Ash content                                      | % (m/m)               | -                           | 0,010                       | SR EN ISO 6245:03 <sup>2</sup> / EN ISO 6245-02 <sup>2</sup> / ISO 6245-01 <sup>2</sup><br>ASTM D 482-13 <sup>2</sup>   |
| Water content                                    | % (m/m)               | -                           | 0,020                       | SR EN ISO 12937:01 <sup>2</sup> / SR EN ISO 12937:01 <sup>2</sup> / C91-2014 <sup>2</sup><br>EN ISO 12937:00 <sup>2</sup> / ISO 12937:00 <sup>2</sup>   |
| Total contamination                              | mg/kg                 | -                           | 24                          | SR EN 12662:14 <sup>2</sup> / EN 12662:14 <sup>2</sup>  |
| Copper strip corrosion (3 h at 50°C)             | rating                |                             | class 1                     | ASTM D 130-12 <sup>2</sup> / SR EN ISO 2160:03 <sup>2</sup><br>EN ISO 2160:98 <sup>2</sup> / ISO 2160:98 <sup>2</sup>   |
| Fatty acid-methyl ester (FAME) content           | % (v/v)               | <sup>6)</sup>               | 7                           | SR EN 14078-14 <sup>2</sup> / EN 12662:14 <sup>2</sup>  |
| Oxidation stability                              | g/m <sup>3</sup><br>h | -<br>20 <sup>7</sup>        | 25 <sup>7</sup><br>-        | SR EN ISO 12205:99 <sup>2</sup> / EN ISO 12205:96 <sup>2</sup> / ISO 12205:95 <sup>2</sup><br>SR EN 15751-14 <sup>2</sup> / EN 15751-14 <sup>2</sup>  |
| Lubricity, wear scar diameter (wsd 1,4) at 60 °C | µm                    | -                           | 460                         | SR EN ISO 12156-1:16 <sup>2</sup> / EN ISO 12156-1:16 <sup>2</sup><br>ISO 12156-1:16 <sup>2</sup> / ASTM D 6079-11(16) <sup>2</sup>   |
| Viscosity at 40°C                                | mm <sup>2</sup> /s    | 2,000<br>1,500 <sup>5</sup> | 4,500<br>4,000 <sup>5</sup> | ASTM D 445-17a <sup>2</sup> / SR EN ISO 3104:02 <sup>2</sup> / SR EN ISO 3104:02 / AC:02 <sup>2</sup> / EN ISO 3104-96 <sup>2</sup> / ISO 3104-94 <sup>2</sup>  |
| Distillation:                                    |                       |                             |                             |   |
| % (v/v) recovered at 180 °C <sup>5</sup>         | % (v/v)               | -                           | 10                          | ASTM D 86-17 <sup>2</sup>   |
| % (v/v) recovered at 250 °C                      | % (v/v)               | -                           | <65                         | SR EN ISO 3405:11 <sup>2</sup>  |
| % (v/v) recovered at 340 °C <sup>5</sup>         | % (v/v)               | 95                          | -                           | EN ISO 3405:11 <sup>2</sup>   |
| % (v/v) recovered at 350 °C                      | % (v/v)               | 85                          | -                           | ISO 3405:11 <sup>2</sup>  |
| 95 % (v/v) recovered at                          | °C                    | -                           | 360                         |   |

| Cold filter plugging point (CFPP), maxim: | Clasa, | All CFPP grades |   |     |  |     |     |                              |
|---|--------|-----------------|---|-----|--|-----|-----|------------------------------|
|   |        | A               | B | C   | D  | E   | F   |                              |
| - Summer <sup>1</sup>                     | °C     | +5              | 0 | -5  | -10  | -15 | -20 | ASTM D 6371-17a <sup>2</sup> |
| - Intermediate <sup>1</sup>               | Clasa, | D               |   |     | E  |     |     | SR EN 116:16 <sup>2</sup>    |
|   | °C     | -               |   | -10 |  | -15 |     | EN 116:15 <sup>2</sup>       |
| - Winter <sup>1</sup>                     | Clasa, | E               |   | F   | 0 <sup>1</sup>   |     |     |                              |
|   | °C     | -               |   | -15 | -20  | -20 |     |                              |
| Cloud point <sup>5</sup> :                |        |                 |   |     |  |     |     |                              |
| Class 0                                   | ° C    | -               |   | -10 | ASTM D 2500-17a <sup>2</sup> / SR EN 23015-97 <sup>2</sup> |     |     |                              |
|   |        |                 |   |     | EN 23015-94 <sup>2</sup> / ISO 3015-92 <sup>2</sup>        |     |     |                              |

**NOTES:** 1) Summer: May, 1st – September, 30th; Intermediate October, 1st – November 15th and March, 15th – April 30th; Winter: November 16th – March, 14th; Class 0: November, 16th – March, 14th; 2) Accredited test by RENAR 3) During the Winter time, the product will supplementary contain additive against wax deposition 4) Certified product by RAR 5) Specific for 0 class (according to EN 590 +A1 - tabel 3 – arctic climates or with severe winters) 6) According with in force legislation for Romanian market; according to contract requirements for external market; 7) This condition is guaranteed by the manufacturing technology and it is checked weekly; 8) Efix Diesel grade contains a set of multipurpose additives which prevent deposits on valves and injection nozzles, having favourable effects upon the fuel consumption and emissions. 9) Trade name: Efix 51 Diesel, SR EN 590 and, for Winter period, Efix 51 Winter Diesel, EN 590.

**Quality control:** control is done on lot/batch.

Each batch will be tank size (max. 7,500 tones). The lot (batch) will have product of same type.

During testing, the product must comply with all parameters depicted in standard specification for corresponding product/type. If not, the batch is rejected.

In case of litigious, the quality control will be done using the samples kept for these cases, sampling being done in accordance with the sampling procedure.

**Sampling procedure:** SR EN ISO 3170:2004/C91:05 / ASTM D 4057-12

Information about handling, transportation and storage: according to Safety Data Sheet 2.6 T.

The integrated Quality-Environment-Occupational Health and Safety Management System is certified by DNV-GL according to the following standards:

- ISO 9001
- ISO 14001
- BS OHSAS 18001

The test lab is accredited by RENAR, in compliance with SR EN ISO/CEI 17025.

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