

# TECHNICAL DATA-SHEET



## Vacutop FLX

### Fluorinated vacuum pump fluid

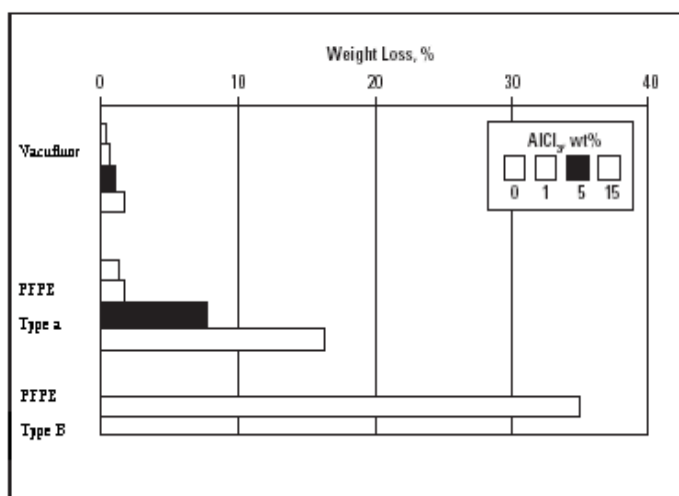
#### Description

Matrix Vacutop FLX fluids are provided with antirust protection. They have all of the same properties of the standard fluids listed in the table. Matrix Vacutop FLX fluids contain a soluble additive to prevent rust. This additive enhances the performance of Vacutop FLX fluids, giving them improved performance properties. The long-term antirust properties repel moisture, providing extra protection from corrosion of metal parts and bearing surfaces.

#### Compatibility

While Vacutop FLX fluids are inert and non reactive to all elastomers, plastics, and metals, the soluble additives in these products are new and have not been tested with all materials. It is possible that some reactivity and damage could occur to some materials. Initial testing has shown no problems with PTFE, Kalrex, Viton, nitrile, and silicone rubbers. There is some reactivity of the additive with copper, but it is less with brass. These additives could have degradation of performance at elevated temperatures over 175 °C over a long period of time.

Relative Weight Loss of PFPE Fluids in Presence of a Lewis Acid (90 min at 120°C [248°F] by ISOTGA)



| Initial temperature for depolymerisation |     |
|--|-----|
| Fluid type                               | °C  |
| Perfluoroalkyether                       | 142 |
| Type A                                   | 102 |
| Type B                                   | 72  |
| Hydrocarbon                              | 79  |
| Silicone                                 | 58  |
| Fluorsilicone                            | 82  |

#### Matrix Specialty Lubricants BV

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## Typical properties:

| Property                                      | Method     | 60                 | 140                | 260                | 175                | 2700                |
|---|------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Kinematic viscosity @, mm <sup>2</sup> /s cSt | ASTM D445  |                    |                    |                    |                    |                     |
| • 20 °C                                       |            | 62                 | 142                | 261                | 175                | 2717                |
| • 50 °C                                       |            | 16                 | 32                 | 53                 | 37                 | 444                 |
| • 100 °C                                      |            | 4,4                | 7,2                | 11                 | 8                  | 63                  |
| • 200 °C                                      |            | 1,2                | 1,7                | 2,2                | 1,8                | 8,4                 |
| Density @, g/cc                               |            |                    |                    |                    |                    |                     |
| • 20 °C                                       |            | 1,88               | 1,89               | 1,90               | 1,89               | 1,92                |
| • 50 °C                                       |            | 1,82               | 1,83               | 1,84               | 1,83               | 1,87                |
| • 100 °C                                      |            | 1,73               | 1,74               | 1,75               | 1,74               | 1,78                |
| • 200 °C                                      |            | 1,54               | 1,55               | 1,56               | 1,55               | 1,61                |
| Vapour pressure @, torr                       | Knudsen    |                    |                    |                    |                    |                     |
| • 20 °C                                       |            | 4x10 <sup>-7</sup> | 2x10 <sup>-7</sup> | 1x10 <sup>-7</sup> | 5x10 <sup>-9</sup> | 3x10 <sup>-14</sup> |
| • 50 °C                                       |            | 1x10 <sup>-5</sup> | 3x10 <sup>-6</sup> | 1x10 <sup>-6</sup> | 2x10 <sup>-7</sup> | 2x10 <sup>-12</sup> |
| • 100 °C                                      |            | 1x10 <sup>-3</sup> | 1x10 <sup>-4</sup> | 3x10 <sup>-5</sup> | 2x10 <sup>-5</sup> | 1x10 <sup>-9</sup>  |
| • 200 °C                                      |            | 5x10 <sup>-1</sup> | 1x10 <sup>-2</sup> | 2x10 <sup>-3</sup> | 1x10 <sup>-2</sup> | 2x10 <sup>-6</sup>  |
| Pour point, °C                                | ASTM D97   | -60                | -54                | -48                | -40                | -15                 |
| Av. molec. weight                             | NMR        | 2400               | 3500               | 4600               | 4300               | 11000               |
| Distillation range @ 0,4 torr, °C             | ASTM D1160 |                    |                    |                    |                    |                     |
| • 10%   |            | 160                | 200                | 200                | 210                | n/a                 |
| • 90%   |            | 220                | 280                | 300                | 280                | n/a                 |
| Heat of vaporization 150-250 °C, cal/g        | Knudsen    | 9                  | 7                  | 6                  | 7                  | n/a                 |
| Volatility @ 22 hr, 121 °C, %                 | ASTM D2595 | 7,3                | 1,9                | 1,0                | 0,5                | 0,2                 |
| Volatility @ 22 hr, 149 °C, %                 | ASTM D972  | 6                  | 1                  | 0,5                | 0,1                | n/a                 |
| Surface tension @ 25 °C, dyn/cm               |            | 17                 | 18                 | 19                 | 18                 | 19                  |

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