

# HIGH PERFORMANCE, READILY BIODEGRADABLE HYDRAULIC FLUID

## Description:

EnviroLogic® 3100 hydraulic fluid is a high performance, readily biodegradable, synthetic ISO 100 grade hydraulic fluid. It is intended for severe service, extreme high temperature (250°F / 121°C), low temperature (-40°F / -40°C) and high pressure (5000+ psi) applications. It exhibits enhanced wear protection, cleanliness and longer life than conventional petroleum hydraulic oils. EnviroLogic® 3100 can directly replace petroleum oil based hydraulic fluids of the same viscosity, yet has reduced environmental impact in the event of a leak or spill.

EnviroLogic® 3100 series is self certified as an Environmentally Acceptable Lubricant (EAL) compliant with 2013 US EPA Vessel General Permit (VGP).

Meets the ISO classification Hydraulic Environmental Polyalphaolefin and related hydrocarbon products (HEPR) per ISO 6743-4.

It meets or exceeds the following performance levels:

- Hatlapa
- Aegir
- Blohm + Voss
- NOV
- Sauer-Danfoss
- Cargotec/MacGregor
- IHC Merwede
- Komatsu
- Kemel
- Gates
- Parker Hannifin/Denison
- Linde
- Thrustmaster
- Eaton/Vickers
- Rolls Royce
- LinkBelt
- Wartsila

| Property                             | Method | Requirements | Result |
|--------------------------------------|--------|--------------|--------|
| Kinematic Viscosity                  |        |              |        |
| At 40°C, cSt                         | D445   | 90-110       | 100    |
| At 100°C, cSt                        | D445   |              | 20     |
| Viscosity Index                      | D2270  | 90 min       | >210   |
| Density(60°F), kg/m <sup>3</sup>     | D4052  | report       | 860    |
| Pour Point, °C                       | D97    | -15 max      | -42    |
| Flash Point (COC), °C                | D92    | 185 min      | 193    |
| Acid Number, mgKOH/g                 | D664   | Report       | 0.30   |
| Steel Pin Corrosion (4 hours, 100°C) | D665   | Pass         |        |
| Deionized Water                      |        |              | Pass   |
| Synthetic Salt Water                 |        |              | Pass   |

| Property                                   | Method             | Requirements | Result  |
|--|--------------------|--------------|---------|
| Foam Properties (after 10 minutes)         | D892               |              |         |
| Sequence I, mL                             | Tendency/Stability | 50-0 max     | 10-0    |
| Sequence II, mL                            | Tendency/Stability | 50-0 max     | 50-0    |
| Sequence III, mL                           | Tendency/Stability | 50-0 max     | 10-0    |
| Demulse Properties (54°C)                  | D1401              |              |         |
| Oil / Water / Emulsion                     |                    | 40/40/0      | 40/40/0 |
| Minutes                                    |                    | 30           | 15      |
| Copper Corrosion                           | D130               |              |         |
| 3hrs @ 100 °C                              |                    | 2            | 1a      |
| Oxidation                                  | D2272              |              |         |
| Mins to 25 psi loss                        |                    |              | 400-500 |
| FZG  |                    | 10 min.      | 12 Pass |
| Hydrolytic Stability                       | D2619              |              |         |
| Copper Weight Loss, mg/cm <sup>3</sup>     |                    |              | 0.00    |
| Change in Acid Number, mgKOH/g             |                    |              | 0.00    |
| Appearance of Copper Panel                 |                    |              | 1b      |
| Vickers 35VQ25 Vane Pump*                  | 35VQ25             |              | Pass    |
| Vickers V104C Vane Pump*                   |                    |              |         |
| Total loss of ring and vane, mg            |                    |              | Pass    |
| Biodegradability, % in 28 Days             | D7373              |              | >60     |
| Ecotoxicity                                |                    |              |         |
| Fathead minnow, 96h LC50, ppm              | OECD 201           | >100         | >1,000  |
| Daphnia magna, 48h EC50, ppm               | OECD 202           | >100         | >120    |
| Algae, 72h EC50, ppm                       | OECD 203           | >100         | >110    |
| Elastomer Compatibility**                  |                    |              |         |
| SRE-NBR-1 (100°C 168 hours)                | D471               |              | Pass    |
| HNBR (100°C 168 hours)                     | D471               |              | Pass    |
| PU (100°C 168 hours)                       | DIN 1817           |              | Pass    |
| FKM (100°C 168 hours)                      | DIN 1817           |              | Pass    |
| Compatibility with Select Hydraulic Fluids |                    |              |         |
| Biodegradable Competitor stored @ 100°F    |                    | Pass         | Pass    |
| Biodegradable Competitor stored @ -5°F     |                    | Pass         | Pass    |
| Petroleum Hydraulic Fluid stored @ 100°F   |                    | Pass         | Pass    |
| Petroleum Hydraulic Fluid stored @ -5°F    |                    | Pass         | Pass    |

\*based on read across from EL 146 \*\*based on read across from EL 3046

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