

## FUTERRA™ SERIES

### High Performance, Ecolabel Certified Hydraulic Fluids

The FUTERRA™ Hydraulic Fluid (HF) Series is the first of its kind. These renewable hydrocarbon-based environmentally acceptable lubricants (EALs) are designed to withstand extreme conditions and corrosion while operating in severe outdoor environments. These lubricants are intended for severe service, extreme high temperature (250°F/121°C), low temperature (-40°F/-40°C) and high pressure (5000+psi/34,470 kPa) applications. Meets the technical requirements of ISO 15380.

Its excellent oxidative and hydrolytic stability and near zero foaming tendency ensure that the fluids will last much longer than other EALs and conventional oils. FUTERRA™ offers greater flexibility and the ultimate system compatibility – offering drop-in replacement and broad seal compatibility. The FUTERRA™ HF Series was specially designed for demanding applications where incidental environmental exposure of the lubricant is a cause for concern.

- 2013 EPA VGP Compliant
- Ecolabel Certified; HF 32, 46 Blue Angel listed
- Non-sheening<sup>1</sup>
- HF 32,46, 68 Swedish Standard Compliant

Typical Properties		FUTERRA™ HF Series							
FUTERRA™ Product Number		HF 10 <sup>2</sup>	HF15 <sup>2</sup>	HF22 <sup>2</sup>	HF32	HF 46	HF 68	HF 100	HF 150
ISO Viscosity Grade		10	15	22	32	46	68	100	150
Kinematic Viscosity, ASTM D445, cSt	@ 40°C	9.8	15.6	22.92	32	46	68	100	155.2
	@ 100°C	2.67	3.74	4.91	5.98	7.98	10.8	14.9	23.29
Viscosity Index, ASTM D2270		110	122	155	127	140	152	154	180
Specific Gravity 16.5°C, ASTM D1298		0.83	0.83	0.83	0.84	0.84	0.84	0.85	0.84
Pour Point, ASTM D97, °C		-39	-36	-36	-42	-39	-39	-39	-39
Flash Point (COC), ASTM D92, °C		182	198	226	248	226	244	256	261
Acid Number, mg KOH/g, ASTM D664		0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89

Performance Properties		FUTERRA™ HF Series							
FUTERRA™ Product Number		HF 10 <sup>2</sup>	HF15 <sup>2</sup>	HF22 <sup>2</sup>	HF32	HF 46	HF 68	HF 100	HF 150
Steel Pin Corrosion (3 hours, 100°C), ASTM D665	Deionized Water	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
	Synthetic Salt Water	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Foam Properties, ASTM D892	Sequence I	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
	Sequence II	10/0	10/0	10/0	10/0	10/0	10/0	10/0	10/0
	Sequence III	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Demulse Properties, ASTM D1401	Oil/Water/Emulsion	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0	40/40/0
	Minutes	10	10	10	10	10	10	10	10

<sup>1</sup>CFR40 Part 435B

<sup>2</sup>2013 VGP Compliant; Not EcoLabel Certified

Performance Properties (cont.)		FUTERRA™ HF Series							
FUTERRA™ Product Number		HF 10 <sup>2</sup>	HF15 <sup>2</sup>	HF22 <sup>2</sup>	HF32	HF 46	HF 68	HF 100	HF 150
Copper Corrosion, ASTM D130, 3hrs @ 100 °C		1a	1a	1a	1a	1a	1a	1a	1a
Dielectric Strength, ASTM D877, KV		NA	48.5	NA	25	NA	31	24.7	NA
Oxidation, ASTM D2272, Minutes		1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Oxidation, ASTM D943, Hours		> 1,000 hrs	> 1,000 hrs	> 1,000 hrs	> 1,000 hrs	> 1,000 hrs	> 1,000 hrs	> 1,000 hrs	> 1,000 hrs
Oxidation, ASTM D943M (Dry), Hours		> 9,000 hrs	> 9,000 hrs	> 9,000 hrs	> 9,000 hrs	> 9,000 hrs	> 9,000 hrs	> 9,000 hrs	> 9,000 hrs
Hydrolytic Stability, ASTM D2619	Copper Weight Loss, mg/cm3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Change in Water Acidity, mgKOH/g	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
	Appearance of Copper Panel	1b	1b	1b	1b	1b	1b	1b	1b
FZG, ASTM D5182, min 10 stage pass		11	12	12	14	12	12	12	12
Vickers 35VQ25 Vane Pump		NA	NA	NA	Pass	Pass	Pass	Pass	Pass
Vickers V104C Vane Pump		NA	NA	NA	Pass	Pass	Pass	Pass	Pass
Denison T6H20C Pump		NA	NA	NA	Pass	Pass	Pass	Pass	Pass
Elastomer Compatibility	NBR-1 (80°C, 1000 hours)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
	HNBR (100°C, 1000 hours)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
	FKM (100°C, 1000 hours)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
Biodegradability, OECD 301B, % in 28 Days		> 60	> 60	> 60	> 60	> 60	> 60	> 60	> 60
Ecotoxicity	Algae, OECD 201, 72h EC50, ppm	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000
	Daphnia magna, OECD 202, 48h EC50, ppm	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000	> 10,000
	Fathead minnow, OECD 203, 96h LC50, ppm	> 1,000	> 1,000	> 1,000	> 1,000	> 1,000	> 1,000	> 1,000	> 1,000
Not Bioaccumulative, OECD 107/117		Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

EWC / German waste code 13 01 12

## OEM Approvals

FUTERRA™ HF Series meets the requirements for an extensive list of original equipment manufacturers. Please contact customer service for a full list of OEM approvals.



**For more information about RSC Bio Solutions, visit us at [rscbio.com](http://rscbio.com) or call +1 704.684.6100.**