

AERO HYDRO HF, HFS (Synthetic Hydraulic Fluid for Aerospace & Aviation)

(Hydraulic Fluid, Aeroplane, Military Aircraft, Missile, & Ordnance Petroleum Base)

DESCRIPTION

AERO HYDRO HF is a red-dyed, mineral oil based hydraulic fluid developed for the severe duty demands of military aircraft systems, aerospace and other industrial service systems where use of hydrocarbon hydraulic fluids is required to meet requirements as per the U.S. Military specification MIL-PRF-5606. It contains low viscosity, high VI (viscosity index) improver and special additives that provide excellent low temperature properties fluidity as well as exceptional anti-wear, oxidation / corrosion inhibition, shear stability & good chemical stability performance. In addition, metal deactivators and foam inhibitors are provided in this high viscosity index fluid to enhance performance. Its physical properties meet “super-clean” requirements required in many general purpose modern aircraft hydraulic systems.

AERO HYDRO HFS is a synthetic PolyAlphaOlefin quality fluid developed to meet requirements as per the U.S. Military specification MIL-PRF-83282 for the severe duty demands of military aircraft systems, aerospace and industrial service. It does not contain a VI (viscosity index) improver & it is designed for use at temperatures down to -43°C (-45°F). It has special additives that provide excellent low temperature fluidity as well as exceptional anti-wear, oxidation / corrosion inhibition, metal deactivators, foam inhibitors, shear stability & good chemical stability to enhance performance in many general purpose hydraulic applications. It provides better flammability and volatility, improved stability, but has a higher viscosity at low temperature. It meets the “super-clean” requirements. It is intended primarily. **AERO HYDRO HFS** may be used in systems not requiring a “super clean” fluid ID and where the convenience of a re-sealable container can provide cost savings.

FEATURES	ADVANTAGES & POTENTIAL BENEFITS
High Viscosity Index (VI)	Allows equipment operation over a wide range of temperatures
Excellent low temperature properties	Provides high performance operation in low temperature fluidity at ambient conditions
Excellent anti-wear performance, corrosion inhibition, chemical & oxidation stability	Resists the formation of acidic constituents, varnishes, & deposits
"Super clean" fluid to improve equipment life as per requirements of U.S. specifications.	Ensures reliable performance of pumps, servo-valves and other hydraulic systems
Wide operating temperature range	It is designed for use at temperatures down to -54 to 135°C (-65 to 275°F)

APPLICATION:

- **AERO HYDRO HF, HFS** is designed for use in aircraft, hydraulic fluid for small private and small commercial aircraft, and as a strut fluid in landing gear of large commercial aircraft, missiles, autopilots, shock absorbers, cherry pickers, boom trucks, robotics, and auto wreckers requiring all-weather performance.
- **AERO HYDRO HF, HFS** can be used in unpressurized systems operating at temperature ranges from -54 to 90°C (-65 to 195°F) and in pressurized systems from -54 to 135°C (-65 to 275°F) at pressures up to 3000 psi.

PERFORMANCE STANDARD MEETS:

- **AERO HYDRO HF** meets all technical requirements as per MIL-SPEC: MIL-PRF-5606 MIL-PRF-5606H (3) that supersedes Mil-H-5606G, Mil-O-5606, AN-O-336, AN-VV-O-336, & AAF-3580 specifications.
- **AERO HYDRO HFS** meets all technical requirements and qualified under MIL-SPEC: MIL-PRF-83282 & MIL-H-5606A specifications.

PROPERTIES OF AERO HYDRO HF, HFS

TYPICAL PROPERTIES	HF	HFS
Color & Appearance	Transparent clear, red fluid	
Specific Gravity, 60 °F/60 °F	0.882	0.852
API Gravity ASTM D4052	29	34.5
Pour Point, °C ASTM D97	-60 max	-55 max
Flash Point, COC, °F ASTM D92	231	235
Acid Number, mg KOH/g	0.03 (0.2 max)	0.03 (0.1 max)
Barium Content, ppm	10 max	10 max
Kinematic Viscosity, Cst ASTM D445		
@ 100°C	5.1	3.5
@ 40°C	13.9	14.1
@ -40°C	460	2000
@ -54°C	1950	-
Viscosity Index	370	128
Low Temperature Stability,		
-54°C, 72 hours	pass	-
-40°C, 72 hours	-	pass
Copper Corrosion, 135°C, 72 hours ASTM D130	1b	1b
Acid Number, mq KOH/g ASTM D664	0.03	0.03
Oxidation Corrosion Stability 168 hours at 135 °C	pass	pass
Water Content, ppm ASTM D6304	44.9	43
4-Ball Wear Scar mm, 1hour, 1200 rpm, 75 °C, 40 kg	0.8 (1.0 max)	0.56 (0.6 max)
Evaporation Loss, wt.%		
6 hours at 71 °C ASTM D972A	15	-
6.5 hours at 205 °C ASTM D972A	-	13
Micron Size, count / mL		
5-15 microns	10000 max	10000 max
16-25 microns	1000 max	1000 max
26-50 microns	150 max	150 max
51-100 microns	20 max	20 max
100+ microns	5 max	5 max
Particulate Contamination, mg/100 mL	0.3 max	0.3 max
Filtration Time, minutes/100 mL	6 (15 max)	6 (15 max)
Foam, ASTM D892 Seq I, mL/mL	30/0 (65/0 max)	10/0 (65/0 max)
foam stability	none	none
Nitrile Rubber L Swell, % 168 hours at 70 °C	19.0 to 30.0	18.0 to 30.0
Shear Stability, ASTM D 2603 Option B% Loss in KV at 40°C		15 max
Bulk Modulus, psi		
Isothermal Secant at 40 °C, 4000 psig	200,000 min	-
Isothermal Secant at 40 °C, 10,000 psig	-	200,000 min

Additional Information: When converting to new oil kindly flush previous oil before filling, all previous lubricant should be removed as much as possible prior to operation. During initial operation, lubrication intervals should be monitored closely to ensure all previous lubricant is purged.

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