

Mobil Aero HF Series - Aviation Hydraulic Fluids

Aviation Hydraulic Fluids

Product Description

Mobil Aero HFA, HF, and HFS are formulated for aircraft systems where use of hydrocarbon-based hydraulic fluids is required. They are low viscosity products, high VI (viscosity index) fluid with excellent low temperature properties, good anti-wear performance, and good chemical stability. Mobil Aero HFA and HF are composed of mineral base oil stock and contain shear-stable VI improvers; Mobil Aero HFS is a synthetic polyalphaolefin-based fluid.

Features and Benefits

Mobil Aero HF Series aviation hydraulic fluids are designed to meet the demanding requirements of commercial and military aircraft applications. These high quality formulations have a long history of excellent performance and provide long, trouble-free service over a wide range of operating conditions. Product features and potential benefits include:

Features	Advantages and 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 ambient conditions
Good chemical and oxidation stability	Resists the formation of acidic constituents, varnishes, and deposits
Meets "super clean" requirements of U.S. Spec. Mil-PRF-5606 (Aero HF) or MIL-PRF-83282 (Aero HFS)	Ensures reliable performance of pumps, servo-valves and other hydraulic system components

Applications

Mobil Aero HFA is a premium quality fluid that meets the requirements of the U.S. Military specification MIL-H-5606A (now obsolete). It has a very high VI and is suitable for use at temperatures down to -54 °C (-65 °F). While this quality fluid is no longer used by the U.S. Military, it is still used in some older, small private, and commercial aircraft. It is also used in industrial and commercial equipment requiring good fluidity at very low temperatures, where Mobil Aero HFA provides long, trouble-free service over a wide range of operating conditions.

Mobil Aero HF is a premium quality fluid that is approved against the most current version of U.S. Military specification MIL-PRF-5606. It has physical properties very similar to Mobil Aero HFA, and also meets "super-clean" requirements required by modern aircraft hydraulic systems. It is intended primarily for military aircraft, but it is also used as a hydraulic fluid for small private and commercial aircraft, and as a strut fluid in landing gear of large commercial aircraft. It is a NATO Code Number H-515 fluid.

Mobil Aero HFS is a synthetic polyalphaolefin lubricant that is approved against the most current version of U.S. Military specification MIL-PRF-83282. It does not contain a viscosity index (VI) improver. It is designed for use at temperatures down to -40°C (-40°F). It provides lower flammability and volatility and improved stability, but has a higher viscosity at low temperature than Mobil Aero HF. It meets the "super-clean" requirements. It is intended primarily for U.S. military aircraft. It is a NATO Code Number H-537 fluid.

Specifications and Approvals

Mobil Aero Grade	HFA	HF	HFS
MIL-H-5606A (obsolete) quality level	X		
MIL-PRF-5606 approved		X	
MIL-PRF-83282 approved			X
NATO Code H-515		X	
NATO Code H-537			X

Typical Properties

Mobil Aero Grade(1)	Test Method	HFA	HF	HFS
Color	Visual	Red	Red	Red
API Gravity		29	28.5	34.8
Specific Gravity, 60°F/60°F	ASTM D 4052	0.882	0.881	0.851
Pour Point, °C	ASTM D 97	-66 (-60 max)	-66 (-60 max)	-60 (-55 max)
Flash Point, COC, °C	ASTM D 92	108 (93 min)	-	224 (205 min)
Flash Point, PMCC, °C	ASTM D 93	-	90 (82 min)	-
Acid Number, mg KOH/g	ASTM D 664	0.04 (0.2 max)	0.03 (0.2 max)	0.03 (0.2 max)
Barium Content, ppm	ASTM D 5185	-	1 (10 max)(2)	1 (10 max)
Kinematic Viscosity, cSt	ASTM D 445			
at 205°C		-	-	1.1 (1.0 min)
at 100°C		5.1	5.1 (4.9 min)	3.5 (3.45 min)
at 40°C		13.9	13.8 (13.2 min)	14.2 (14.0 min)
at -40°C		450 (500 max)	450 (600 max)	2000 (2200 max)
at -54°C		1950	1950 (2500 max)	-
at 130°F		10.4 (10.0 min)	-	-
Viscosity Index	ASTM D 2270	370	370	128
Low Temperature Stability	FTM 791.3458			
72 hours at -54°C		Pass	Pass	-
72 hours at -40°C		-	-	Pass
Copper Corrosion, 72 hours at 135°C	ASTM D 130	2e max	2e max	-
Oxidation Corrosion Stability, 168 hours at 135°C	ASTM D 4636	Pass	Pass	Pass
Water Content, Karl Fischer, ppm	ASTM D 6304	40 (100 max)	40 (100 max)	70 (100 max)

Mobil Aero Grade(1)	Test Method	HFA	HF	HFS
4-Ball Wear Scar, 1 hour, 1200 rpm, 75°C, 40 kg, mm	ASTM D 4172	0.8 (1.0 max)	0.8 (1.0 max)	0.53 (0.65 max)
Evaporation Loss, wt %	ASTM D 972			
6 hours at 71°C		15 (20 max)	15 (20 max)	-
6.5 hours at 205°C		-	-	11 (20 max)
Particle Count	Auto Counter			
5-15 microns			10000 max	10000 max
15-25 microns			1000 max	1000 max
25-50 microns			150 max	150 max
50-100 microns			20 max	20 max
100+ microns			5 max	5 max
Particulate Contamination, mg/100 mL	ASTM D 4898		0.1 (0.3 max)	0.2 (0.3 max)
Filtration Time, minutes/100 mL	FTM 791.3009		3 (15 max)	4 (15 max)
Foam, Seq I, mL/mL	ASTM D 892	30/0 (65/0 max)	30/0 (65/0 max)	10/0 (65/0 max)
Nitrile Rubber L Swell, 168 hours at 70°C, %	FTM 791.3603	19.0 to 30.0	19.0 to 30.0	18.0 to 30.0
Shear Stability, Option B, Loss in KV at 40°C, %	ASTM D 2603	15 max	15 max	-
Bulk Modulus, Isothermal Secant at 40°C, 4,000 psig, psi		200,000 min	200,000 min	-
Bulk Modulus, Isothermal Secant at 40 °C, 10,000 psig, psi		-	-	200,000 min
(1) Values not identified as min/max are typical and may vary within modest ranges				
(2) Applies to product approved against MIL-PRF-5606H				

Health and Safety

Based on available toxicological information, this product is not expected to produce adverse effects on health when used and handled properly. Information on use and handling, as well as health and safety information, can be found in the Material Safety Data Sheet (MSDS) which can be obtained from your local distributor or via the Internet on <http://www.exxonmobil.com/lubes>

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