ExxonMobil

# Mobil Aero HF Series

ExxonMobil Aviation , Switzerland

Aviation Hydraulic Fluids

## Product Description

Mobil Aero HFA and HF 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.

## 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) | Ensures reliable performance of pumps, servo-valves and other hydraulic system components |

## Applications

Mobil Aero HFA is a premium quality fluid that meets the quality 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.

## Specifications and Approvals

| This product is recommended for use in applications requiring: | HF | HFA |
|---|---|---|
| Mil-H-5606A | | X |

| This product meets or exceeds the requirements of: | HF | HFA |
|---|---|---|
| MIL-PRF-5606J | X | |

| This product meets or exceeds the requirements of: | HF | HFA |
|---|---|---|
| NATO H-515 | X | |

Properties and Specifications

| Property | HF | HFA |
|---|---|---|
| API Gravity, °API, ASTM D287 | 29 | 30 |
| Acid Number, mgKOH/g, ASTM D664 | | 0.03 (0.2 max) |
| Barium, mg/kg, ASTM D5185 | <1 (10 max) | |
| Bulk Modulus, Isothermal secant at 40 C/4000 psi, psi, ASTM D6793 | 200,000 min | 200,000 min |
| Color, Visual | Red | Red |
| Copper Strip Corrosion, 72 hrs at 135 C, ASTM D130 | 1B (2E max) | 1B (2E max) |
| Corrosion and Oxidation Stability, 168 hours at 135 C, Rating, ASTM D4636 | PASS | PASS |
| Density @ 60 F, lb/gal, CALCULATED | 7.26 | 7.26 |
| Evapor. Loss, 6H at 71C, mass %, ASTM D972 | 12 (20 max) | |
| Flash Point, Cleveland Open Cup, °C, ASTM D92 | 107 | 107 (93 min) |
| Flash Point, Pensky-Martens Closed Cup, °C, ASTM D93 | 96 (82 min) | 92 |
| Foam, Sequence I, Stability, ml, ASTM D892 | | 0 |
| Foam, Sequence I, Tendency, ml, ASTM D892 | | 36 (65 max) |
| Four-Ball Wear Test, Scar Diameter, mm, ASTM D4172 | 0.6 (1.0 max) | |
| Four-Ball Wear Test, Scar Diameter, 40 kg, 1200 rpm, 1 h, 75 C, mm, ASTM D4172 | | 0.6 (1.0 max) |
| Kinematic Viscosity -40 F, cSt, ASTM D445 | | 450 (500 max) |
| Kinematic Viscosity 130 F, cSt, ASTM D445 | | 10.4 (10.0 min) |
| Kinematic Viscosity @ -40 C, mm2/s, ASTM D445 | 450 (600 max) | |
| Kinematic Viscosity @ -54 C, mm2/s, ASTM D445 | 2000 (2500 max) | 1900 |
| Kinematic Viscosity @ 100 C, mm2/s, ASTM D445 | 5.2 (4.9 min) | 5.2 |
| Kinematic Viscosity @ 40 C, mm2/s, ASTM D445 | 14.0 (13.2 min) | 14.0 |
| Low Temperature Stability, 72 hrs @ - 54 C, FTM 3459 | | PASS |
| Low Temperature Stability, 72 hrs @ - 54 C, FTM 791.3458 | PASS | |
| Particulate Contamination, mg/100ml, ASTM D4898 | 0.2 (0.3 max) | |
| Pour Point, °C, ASTM D97 | -62 (-60 max) | -64 (-60 max) |

| Property | HF | HFA |
|---|---|---|
| Shear Stability, %KV loss, ASTM D2603 | 15 max | |
| Specific Gravity 60 F / 60 F, ASTM D4052 | | 0.872 |
| Specific Gravity, 15.6 C/15.6 C, ASTM D4052 | 0.872 | |
| Viscosity Index, ASTM D2270 | 370 | 370 |
| Water Content, mg/kg, ASTM D6304 | 50 (100 max) | |
| Water, Karl-Fischer, ppm, ASTM D1744 | | 50 (100 max) |

## Health and Safety

Health and Safety recommendations for this product can be found on the Material Safety Data Sheet (MSDS) @ http://www.msds.exxonmobil.com/psims/psims.aspx

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02-2023
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Due to continual product research and development, the information contained herein is subject to change without notification. Typical Properties may vary slightly.

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