ExxonMobil Aviation Lubricants

Mobil Jet Oil 291

Aircraft-Type Gas Turbine Lubricant

Product Description

DISCONTINUED. Mobil Jet Oil 291 is a supreme performance, synthetic aircraft-type gas turbine lubricant which meets the performance requirements of the gas turbine engines used in commercial and military aircraft. This product is formulated from a specially prepared, hindered-ester base stock and fortified with a unique chemical additive package. The resulting lubricant has superior thermal and oxidation stability that resists deterioration and deposit formation as well as has excellent resistance to foaming. The physical properties of Mobil Jet Oil 291, which are similar to those currently available, earlier-generation gas turbine lubricants, conform to required builder and military specifications. The effective operating range of Mobil Jet Oil 291 is between -40ºC (-40ºF) and 218ºC (425ºF).

Features and Benefits

Mobil Jet Oil 291 is formulated to meet the demanding requirements of latest technology aircraft-type gas turbines operating over a wide range of severe operating conditions. When compared to both Type II and Third Generation lubricants, Mobil Jet Oil 291 shows significant improvements in controlling deposits typically experienced in both the liquid and vapor phases in bearing compartments and breather/scavenger lines. Its shear stable additive system contains a unique component that increases the load-carrying ability of Mobil Jet Oil 291. These properties have been confirmed in various laboratory tests including; the Corrosion-Oxidation Stability Test, Alcor Deposition Test, Vapor Phase Coker, Erdco High-Temperature Bearing Test, Ryder Gear and the Mobil Thin Film Oxidation Test. The closely controlled low-temperature viscosity of Mobil Jet Oil 291, along with its low pour point (below -54 ºC), ensure good low-temperature fluidity to permit starting and lubrication at temperatures as low as -40 ºC. In extensive laboratory testing and in-flight experience, Mobil Jet Oil 291 also exhibits excellent bulk oil stability at temperatures up to 232 ºC (450 ºF) for extended periods. The evaporation rate at these temperatures is low enough to prevent excessive loss of volume. The load-carrying ability of Mobil Jet Oil 291 comes from its synthetic base stock viscosity and, therefore, is not subject to loss from viscosity index additive shear. The lubricant has excellent resistance to foaming. Key features and benefits include: Approved against U.S. Military Specification Mil-PRF-23699 High Thermal Stability (HTS) classification Approved against U.S. Military Specification Mil-PRF-23699 High Thermal Stability (HTS) classification

Features	Advantages and Potential Benefits
Outstanding thermal and oxidation stability	Reduces the formation of carbon and sludge deposits under high-temperature jet operation
Very low vapor/mist deposition	Maintains engine efficiency and extends engine life
Excellent wear and corrosion protection	Extends gear and bearing lifeReduces engine maintenance
Enhanced load-carrying ability	Provides effective lubrication especially at high operating temperatures
High bulk oil stability	Reduces evaporation losses and lowers oil consumption
Excellent resistance to foaming	Maintains film strength under rigorous operating conditions

Features	Advantages and Potential Benefits
Good low temperature fluidity	Permits start-up and ensures effective lubrication of critical components at temperatures as low as -40 ºF
Toxicologically safe additive system	User friendly
Excellent compatibility with elastomers	Maintains good seal performance and minimizes leakage

Applications

Mobil Jet Oil 291 is recommended for aircraft gas turbine engines, including turbo-jet, turbo-fan, turbo-prop, and turbo-shaft (helicopter) types used in commercial and military service. It is also suitable for aircraft-type gas turbine engines used in industrial or marine applications. Mobil Jet Oil 291 is approved against the High Thermal Stability (HTS) classification of U.S. Military Specification MIL-PRF-23699. It is also compatible with other synthetic gas turbine lubricants meeting MIL-PRF-23699. However, mixing with other products is not recommended because the blend would result in some loss of the superior performance characteristics of Mobil Jet Oil 291. Mobil Jet Oil 291 is completely compatible with all metals used in gas turbine construction, as well as with F Rubber (Viton A), H Rubber (Buna N), and other commonly used seal materials.

Specifications and Approvals

Mobil Jet Oil 291 has the following builder approvals	
Engines	
Rolls-Royce/Allison Engine Company	X
CFM International	X
General Electric Company	X
International Aero Engines	X
Pratt and Whitney Group	X
Rolls-Royce Limited	X
Honeywell/Lycoming	X
Honeywell/Garrett	X
Accessories	X
Honeywell-Auxiliary power units and air cycle machines	X
Hamilton Sundstrand Corp.-APUs, constant-speed drives and integrated-drive generators	
Controlled Service Introduction	
Presently being evaluated or will soon be evaluated by:	
General electric in GE90, CF34 and CT7	
Pratt and Whitney Canada	

Mobil Jet Oil 291	
Approved against U.S. Military Specification Mil-PRF-23699 High Thermal Stability (HTS)	X

Typical Properties

Viscosity	
cSt @ 40ºC (102 ºF)	26.9
cSt @ 100ºC (212 ºF)	5.2
cSt @ -40 C (-40 ºF) % change @ -40 C after 72 hours	11,400-0.9
Pour Point, ºC (ºF), ASTM D 97	-60 (-76)
Flash Point, ºC (ºF), ASTM D 92	260 (500)
Fire Point, ºC (ºF)	292 (558)
Autogenous Ignition Temp, ºC (ºF)	405 (761)
TAN (mg KOH/g sample)	0.14
Specific Gravity	0.9990
Evaporation Loss, % 6.5 hr @ 204 ºC, 29.5" Hg 6.5 hr @ 232 ºC, 29.5"Hg 6.5 hr @ 232 ºC, 5.5" Hg (Equals pressure @ 40,000 Ft. altitude)	3.0 ,7.2 ,26.7
Foam, ml Sequence I, 24 ºC Sequence II, 93.5 ºC Sequence III, 75 ºC (after 200 F test)	5 ,10, 5
Foam Stability, after 1 min settling, ml	0
Rubber Swell F Rubber, 72 hr @ 204 ºC, % H Rubber, 72 hr @ 70 ºC, %	16 ,16
Sonic Shear Stability, KV @ 40 ºC, change, %	0.1
Ryder Gear, average lb/in % Hercolube A	3245 ,132

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.

PDSAV-10A