ExxonMobil
Aviation Lubricants

Mobilgrease 33

Synthetic Aviation Grease

Product Description

Mobilgrease 33 is a high-performance lithium-complex grease designed for general-purpose aircraft use. Its consistency is between the NLGI grades 1 and 2. Mobilgrease 33 utilizes a 100% polyalphaolefin base oil and premium additives which ensure outstanding lubrication performance over a wide temperature range and operating conditions.

Features and Benefits

The lithium complex thickener system provides excellent structural stability and resistance to water wash-out. Polyalphaolefin base oil is used in Mobilgrease 33 because of its exceptional thermal/oxidative resistance potential, low volatility, and superb low-temperature capability, without the potential vulnerability of an ester base oil to degradation from reaction with water. The synthetic polyalphaolefin base oil offers excellent low-temperature mobility/pumpability and very low starting and running torque values. In addition, the state-of-the art additive system in Mobilgrease 33 provides superior rust and wear protection and load-carrying capacity compared to aviation greases that meet the minimum requirements of the MIL-PRF-23827 specification.

Mobilgrease 33, with its unique features, provides the following advantages and potential benefits:

Features	Advantages and Potential Benefits
High viscosity index polyalphaolefin basestock	Very wide operating temperature range - outstanding high and low temperature performance. Excellent lubricant film protection at high temperatures
Good storage stability	Grease structure integrity maintained - low oil separation
Exceptional resistance to thermal and oxidative degradation	Long grease and lubricated part service life
Resistance to degradation by water (hydrolysis)	No risk of corrosion induced by acidic base oil degradation products
Low volatility	Little vulnerability to significant base oil loss by evaporation in service
Excellent protection against wear, corrosion, and rusting	Excellent bearing and component protection
Extreme-pressure characteristics	Prevention of excessive wear, even under shock load
High resistance to water washout	Excellent grease performance in adverse weather and other water-exposure conditions

Applications

Mobilgrease 33 is a true multipurpose aviation grease intended for use in highly loaded anti-friction bearings, gears, and actuators as well as instruments, high speed bearings (though not recommended for wheel bearings), and general airframe lubrication, over operating temperatures from –100ºF to 250ºF (–73ºC to 121ºC). It can be used in all applications for which the aircraft manufacturer specifies U.S. Military Specification MIL-PRF-23827, Type I (Grease, Aircraft and Instrument, Gear and Actuator Screw, Grease thickened with metallic soap), Boeing

BMS 3-33B (Grease, Aircraft, General Purpose), and Airbus AIMS09-06-002/SAE AMS3052 (Grease, General Purpose, Airframe, Low Temperature Range, Lithium Thickened). Mobilgrease 33 is listed in the Qualified Products List of Airbus, Boeing, and the U.S. Military for these specifications. The NATO Code Number for Mobilgrease 33 is G-354. The Joint Service Designation is XG-287.

Specifications and Approvals

Mobilgrease 33	Is Approved Against	Meets
Airbus AIMS09-06-002	X	
Boeing BMS 3-33B Type 1	X	
MIL-PRF-23827 Type I	X	
NATO G-354 / JSD XG-287	X	
SAE AMS3052		X

Typical Properties

	Test Methods	Boeing BMS 3-33B Requirements	MIL-PRF-23827 Type I Requirements	Airbus AIMS09-06-002/ SAE AMS3052 Requirements	Mobilgrease 33 (1)
NLGI Grade					1 1/2
Thickener Type		Lithium Complex	Metallic Soap	Lithium Complex	Lithium Complex
Color	Visual	Green to Blue		Blue Green	Blue Green
Structure/Consistency	Visual	Smooth, free from visible air bubbles	Smooth, free from lumps and visual impurities	Smooth, free from lumps and visual impurities	Pass
Odor	Olfactory	No rancid, perfume, or alcohol odor	No rancid, perfume, or alcohol odor		Pass
Viscosity of Base Oil, cSt	ASTM D 445				
at 40 ºC					12.5
at 100 ºC					3.2
Dropping Point, ºC (ºF)	ASTM D 2265	205 (401) min	165 (329) min	200 (392) min	240 (464)
Low Temp. Torque at -73ºC (-100ºF), Nm	DEF STAN 05-50 Part 62, ASTM D 1478				
Starting		0.75 max	1.00 max	0.75 max	0.55
Running, after 1 Hr		0.10 max	0.10 max	0.10 max	0.06

	Test Methods	Boeing BMS 3-33B Requirements	MIL-PRF-23827 Type I Requirements	Airbus AIMS09-06-002/ SAE AMS3052 Requirements	Mobilgrease 33 (1)
Low Temp. Torque with 10% water at -73ºC (-100ºF), Nm	DEF STAN 05-50 Part 62 ASTM D 1478				
Starting				1.00 max	0.67
Running, after 1 Hr				0.20 max	0.09
Penetration at 25ºC (77ºF), mm/10	DEF STAN 05-50 Part 63, ASTM D 217				
Unworked			200 min		285
60 Strokes Worked		265-315	270-310	265-315	295
100,000 Strokes Worked	FTM 313	265-385	270-375	Report	330
Penetration, 100,000 Strokes Worked with 10% water, mm/10	DEF STAN 05-50 Part 63 ASTM D 217			Report	330
Oil Separation, 30 Hrs at 100ºC, wt %	ASTM D 6184	8 max	5 max	6 max	4.5
Evaporation Loss, 22 Hrs at 100ºC, wt %	ASTM D 2595		2 max		0.7
Evaporation Loss, 500 Hrs at 121ºC, wt %	ASTM D 2595	10 max		10 max	8.5
Copper Strip Corrosion, 24 Hrs at 100ºC	ASTM D 4048	1b max	1b max	1b max	1b
AMS4640 Al/Ni Bronze Corrosion, 24 Hrs at 100ºC	ASTM D 4048	No appearance change		No appearance change	Pass
Four Ball Wear, scar dia., 1200rpm/40kg/1hr/75ºC, mm	ASTM D 2266	0.9 max		0.90 max	0.4
Load Wear Index, kgf	ASTM D 2596	60 min	30 min	60 min	100+
Weld Load, kgf	ASTM D 2596			280 min	800+
Timken OK Load, lbf	ASTM D 2509	50 min			55
Rust Protection, 48 Hrs at 125ºF, ›1mm dia Spots	ASTM D 1743		0 in 2 out of 3 bearings		0,0,0
SKF EMCOR Rust, 3% NaCl, rating	ASTM D 6138	0, 0		0, 0	0,0
Water Washout, 1 Hr at 38ºC (100 ºF), wt %	ASTM D 1264		20 max		1

	Test Methods	Boeing BMS 3-33B Requirements	MIL-PRF-23827 Type I Requirements	Airbus AIMS09-06-002/ SAE AMS3052 Requirements	Mobilgrease 33 (1)
Water Washout, 1 Hr at 79ºC (174 ºF), wt %	ASTM D 1264	7.5 max		10 max	5.5
High Temperature Performance, Hrs at 121ºC	ASTM D 3336	1,000 min	1,000 min	1,000 min	2,200+
Oxidation Stability, pressure drop in kPa	ASTM D 942				
100 Hrs at 99ºC		70 max	70 max	50 max	3
500 Hrs at 99ºC		105 max	105 max	105 max	25
Fretting Wear, mg loss	ASTM D 4170	0.9 max		Report	0.5
Dynamic Bearing Life, No of cycles	BMS 3-33-8.2	30,000 min			Pass
Navy Gear Wear Test, mg loss/1000 cycles	FTM 335				
2.3 kg load			2.5 max		1.1
4.5 kg load			3.5 max		1.6
Dirt Count, Particles/mL	FTM 3005				
25-74 Micron Size		1000 max	1000 max		0
75 Micron or Larger		0	0		0
Storage Stability, 6 months at 40ºC, Penetration, mm/10	FTM 3467				
Unworked	ASTM D 217	200 min	200 min		289
60x worked	ASTM D 217				288
60x worked, Difference from Unworked	ASTM D 217	±30			-1
Difference from Original	ASTM D 217		±30	±30	+2
Elastomer Compatibility, 168 Hrs at 70ºC, % vol change	FTM 3603				
Nitrile (NBR-L, AMS3217/2)		-2.0 to +25.0		-2.0 to +25.0	+12.6
Thermoplastic Compatibility, 70 Hrs at 100ºC, % vol change	ASTM D 4289				
Hytrel 6356 + 0.5% carbon black		± 5.0			+3.4
Delrin 100 AF (ASTM D 4181)		± 2.0			+0.1
PTFE (Teflon) (AMS 3652)		± 2.0			+0.1
Nylatron GS		± 1.0			-0.5
(1) Values may vary within modest ranges					

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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