

AEROSHELL FLUID 31

AeroShell Fluid 31 is a synthetic hydrocarbon based aircraft hydraulic fluid with greatly improved fire resistance characteristics when compared with conventional petroleum products.

AeroShell Fluid 31 has a specially designed base stock which imparts a relatively high flash point, excellent low temperature properties and good oxidation and thermal stability. In addition, AeroShell Fluid 31 is formulated with high technology additives to provide oxidation and corrosion resistance, antiwear, and anti-foaming protection.

AeroShell Fluid 31 is superclean filtered to ensure optimum performance in particulate monitored systems.

AeroShell Fluid 31 is dyed red.

The useful operating temperature range is -40 to $+205^{\circ}\text{C}$.

APPLICATIONS

AeroShell Fluid 31 is recommended for use in aircraft, ordnance, and missile systems operating from -40°C to $+205^{\circ}\text{C}$. This fluid should be considered for use in auto pilots, shock absorbers, brakes, flight control systems, hydraulic servo-controlled systems and other systems using synthetic elastomer seals.

An increasing number of aircraft manufacturers now recommend use of this type of fluid in aircraft hydraulic systems in preference to mineral hydraulic oils. This move has been prompted by need to use fluids with better fire resistant properties.

AeroShell Fluid 31 is also approved for use in the Honeywell (formerly Garrett) cooling turbine (cabin air compressors).

Increasingly this type of hydraulic fluid is being adopted for use in hydraulic systems of military aircraft in place of mineral hydraulic fluids.

AeroShell Fluid 31 is a synthetic hydrocarbon oil and should not be used in contact with incompatible seal materials. Refer to the General Notes at the front of this section for further information.

AeroShell Fluid 31 is compatible with AeroShell Fluids 4, 41, 51, 61 and 71 and can be used in systems designed to operate with MIL-PRF-5606, MIL-PRF-6083, MIL-PRF-87257 and MIL-PRF-46170 fluids.

Chlorinated solvents should not be used for cleaning hydraulic components which use AeroShell Fluid 31. The residual solvent contaminates the hydraulic fluid and may lead to corrosion.

SPECIFICATIONS

U.S.	Approved MIL-PRF-83282D
British	(MIL-PRF-83282D)
French	Equivalent to DCSEA 437/A
Russian	-
NATO Code	H-537
Joint Service Designation	OX-19

PROPERTIES	MIL-PRF-83282D	TYPICAL
Oil type	Synthetic Hydrocarbon	Synthetic Hydrocarbon
Kinematic viscosity mm^2/s @ 205°C @ 100°C @ 40°C @ -40°C	1.0 min 3.45 min 14.0 min 2200 max	1.07 3.53 14.33 2098
Flashpoint Cleveland Open Cup $^{\circ}\text{C}$	205 min	237
Fire Point $^{\circ}\text{C}$	245 min	251
Total Acidity mgKOH/g	0.10 max	0.01
Evaporation loss 6.5 hrs @ 150°C % m	20 max	10
Relative density @ $15.6/15.6^{\circ}\text{C}$	Report	0.850
Pourpoint $^{\circ}\text{C}$	-55 max	Below -55

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PROPERTIES	MIL-PRF-83282D	TYPICAL
Low temperature stability 72 hrs @ -40°C	Must pass	Passes
High temperature stability 100 hrs @ 205°C	Must pass	Passes
Gravimetric Filtration, mg/100ml Filtration time minutes	0.3 max 15 max	0.2 Less than 15
Particle Count, Automatic, per Lt 5 to 15 µm 16 to 25 µm 26 to 50 µm 51 to 100 µm >100 µm	10000 max 1000 max 150 max 20 max 5 max	1331 190 55 4 0
Water content ppm	100 max	82
Foam resistance ASTM Seq 1	Must pass	Passes
Flame propagation cm/s	Must pass	Passes
Rubber swell, NBR-L %	18 to 30	Passes
4-Ball Wear, 1 hr @ 75°C scar dia, mm 1 kg load/1200 rpm 10 kg load/1200 rpm 40 kg load/1200 rpm	0.21 max 0.30 max 0.65 max	0.18 0.24 0.50
Oxidation & corrosion stability 168 hrs @ 121°C – metal weight change – viscosity change @ 40°C % – change in acidity mgKOH/g	Must pass 10 max 0.2 max	Passes Less than 10 Less than 0.02
Flammability	Must pass	Passes

A viscosity/temperature curve is shown at the end of this section.