

# AEROSHELL FLUID 51

AeroShell Fluid 51 is a synthetic hydrocarbon and ester based fluid for use in hydraulic systems which require reliable operation in extreme low and high temperatures as well as performance outside the capability of traditional MIL-PRF-5606 mineral based fluids.

AeroShell Fluid 51 is formulated with high technology additives to provide oxidation and corrosion resistance, anti-wear, and anti-foaming protection.

AeroShell Fluid 51 is superclean filtered to ensure optimum performance in particulate monitored systems.

AeroShell Fluid 51 is dyed red.

The useful operating temperature range is  $-54^{\circ}\text{C}$  to  $+135^{\circ}\text{C}$ .

## APPLICATIONS

AeroShell Fluid 51 is recommended for use in aircraft, ordnance and missile systems operating from  $-54^{\circ}\text{C}$  to  $+135^{\circ}\text{C}$ . This fluid should be considered for use in auto pilots, shock absorbers, brakes, flight control systems, hydraulic servo-control systems and other systems using synthetic elastomer seals. This fluid is especially recommended for use in high altitude aircraft that normally operate with extended loiter times and high endurance levels such as UAVs and ELINT systems.

AeroShell Fluid 51 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 51 is compatible with AeroShell Fluids 4, 31, 41, 61 and 71 and can be used in systems designed to operate with MIL-PRF-5606, MIL-PRF-6083, MIL-PRF-83282 and MIL-PRF-46170 fluids.

Chlorinated solvents should not be used for cleaning hydraulic components which use AeroShell Fluid 51. The residual solvent contaminates the hydraulic fluid and may lead to corrosion.

## SPECIFICATIONS

<b>U.S.</b>	Approved MIL-PRF-87257A
<b>British</b>	(MIL-PRF-87257A)
<b>French</b>	–
<b>Russian</b>	–
<b>NATO Code</b>	H-538
<b>Joint Service Designation</b>	OX-538

PROPERTIES	MIL-PRF-87257A	TYPICAL
Oil Type	–	Synthetic Hydrocarbon
Kinematic viscosity $\text{mm}^2/\text{s}$ @ $100^{\circ}\text{C}$ @ $40^{\circ}\text{C}$ @ $-40^{\circ}\text{C}$ @ $-54^{\circ}\text{C}$	2.0 min 6.7 min 550 max 2500 max	2.12 6.80 440 1945
Flashpoint $^{\circ}\text{C}$	160 min	175
Fire Point $^{\circ}\text{C}$	170 min	185
Total Acidity $\text{mgKOH/g}$	0.20 max	0.00
Evaporation loss 6.5 hrs @ $150^{\circ}\text{C}$ % m	20 max	13.5
Relative density @ $15.6/15.6^{\circ}\text{C}$	Report	0.838
Pourpoint $^{\circ}\text{C}$	$-60$ max	$-65$
Low temperature stability 72 hrs @ $-54^{\circ}\text{C}$	Must pass	Passes
High temperature stability – change in viscosity @ $40^{\circ}\text{C}$ % – change in acidity	5 max 0.1 max	Less than 5 Less than 0.1
Gravimetric Filtration, $\text{mg}/100\text{ml}$ Filtration time minutes	0.3 max 15 max	0.12 12
Particle Count, Automatic, per Lt 5 to $15\ \mu\text{m}$ $16$ to $25\ \mu\text{m}$ $26$ to $50\ \mu\text{m}$ $51$ to $100\ \mu\text{m}$ Over $100\ \mu\text{m}$	10000 max 1000 max 150 max 20 max 5 max	2400 250 90 5 0

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PROPERTIES		MIL-PRF-87257A	TYPICAL
Water content	ppm	100 max	65
Foam resistance	ASTM Seq 1	65 ml max	20
Flame propagation	cm/s	0.40 max	Conforms
Rubber swell, NBR-L	%	19 to 30	23
4-Ball Wear, 75°C - scar dia, mm			
1 kg load		0.21 max	0.17
10 kg load		0.30 max	0.22
40 kg load		0.65 max	0.52
Chlorine content	ppm	50 max	Less than 50
Flammability		Must pass	Passes
Oxidation & corrosion stability			
- metal weight change		Must pass	Passes
- viscosity change	%	10 max	Less than 10
- change in acidity	mgKOH/g	0.2 max	Less than 0.02