



AeroShell Fluid 41 (EU)

AeroShell Fluid 41 is a mineral hydraulic oil manufactured to a very high level of cleanliness, and possesses improved fluid properties. AeroShell Fluid 41 contains additives which provide excellent low temperature fluidity as well as exceptional anti-wear, oxidation - corrosion inhibition and shear stability. In addition metal de-activators and foam inhibitors are included in this high viscosity index fluid to enhance performance in hydraulic applications. AeroShell Fluid 41 is capable of wide temperature range operation.

AeroShell Fluid 41 is dyed red.

DESIGNED TO MEET CHALLENGES

Main Applications

AeroShell Fluid 41 is intended as an hydraulic fluid in all modern aircraft applications requiring a mineral hydraulic fluid. AeroShell Fluid 41 is particularly recommended where use of a "superclean" fluid can contribute to improvements in component reliability, and can be used in aircraft systems operating unpressurised between -54°C to 90°C and pressurised between -54°C to 135°C .

AeroShell Fluid 41 should be used in systems with synthetic rubber components and must not be used in systems incorporating natural rubber.

AeroShell Fluid 41 is compatible with AeroShell Fluids 4, 31, 51, 61 and 71 and SSF/LGF.

Chlorinated solvents should not be used for cleaning hydraulic components which use AeroShell Fluid 41. The residual solvent contaminates the hydraulic fluid and may lead to corrosion.

Due to its properties, it is also used in several industrial applications.

Specifications, Approvals & Recommendations

- MIL-PRF-5606J
- DEF STAN 91-48 Grade Superclean
- COMAC QPL-CMS-OL-104
- DCSEA 415/A (French)
Meets DEF STAN 91-48 Grade Normal*
- Analogue to AMG-10 (Russian)
- NATO Code H-515 (equivalent H-520 normal grade)
- Joint Service Designation OM-15* (equivalent OM-18)

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk.

Typical Physical Characteristics

Properties	Method	MIL-PRF-5606 J	Typical	
Oil Type		Mineral	Mineral	
Kinematic viscosity @100°C	mm ² /s	ASTM D445	4.90 minimum	5.30
Kinematic viscosity @40°C	mm ² /s	ASTM D445	13.2 minimum	14.3
Kinematic viscosity @-40°C	mm ² /s	ASTM D445	600 maximum	460
Kinematic viscosity @-54°C	mm ² /s	ASTM D445	2 500 maximum	2 200
Flashpoint	°C	ASTM D93	82 minimum	95
Pour point	°C	ASTM D97	-60 maximum	-60 maximum
Total acid number	mgKOH/g	ASTM D664	0.2 maximum	0.02
Evaporation loss 6 hrs @71°C	%m	ASTM D972	20 maximum	15.4
Water content	mg/kg	ASTM D6304	100 maximum	75 maximum

Properties		Method	MIL-PRF-5606 J	Typical
Relative density	@15.6/15.6°C	ASTM D4052	Report	0.873
Colour		ASTM D1500	Red	Red
Particulate contamination, number of particles per 100 ml in size range	5 to 15 µm	FED-STD-791-3012	8 000 maximum	1 000
Particulate contamination, number of particles per 100 ml in size range	16 to 25 µm	FED-STD-791-3012	1425 maximum	1 000 maximum
Particulate contamination, number of particles per 100 ml in size range	26 to 50 µm	FED-STD-791-3012	253 maximum	150 maximum
Particulate contamination, number of particles per 100 ml in size range	51 to 100 µm	FED-STD-791-3012	45 maximum	20 maximum
Particulate contamination, number of particles per 100 ml in size range	over 100 µm	FED-STD-791-3012	8 maximum	5 maximum
Particle Count	Number	SAE AS4059	5	5 maximum
Copper corrosion		ASTM D130	2e maximum	2b
Steel on steel wear, scar diam	mm	ASTM D4172	1.0 maximum	0.6
Rubber swell, L rubber 168hrs	%	ASTM D4289	19.0 to 30.0	Passes
Low temperature stability 72 hrs	@-54°C	FED-STD-791-3458	Must Pass	Passes
Gravimetric analysis	mg/100mL	ASTM D4898	1.0 maximum	0.2
Foaming tendency		ASTM D892	Must Pass	Passes
Barium content	mg/kg	ASTM D5185	10 maximum	Nil

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, variations in these characteristics may occur.

Health, Safety & Environment

- **Health and Safety**

Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from <http://www.epc.shell.com>

- **Protect the Environment**

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

- **Advice**

Advice on applications not covered here may be obtained from your Shell representative.

- ***Superclean grades**

The British specification DEF STAN 91-48 covers two grades (normal and superclean) of mineral hydraulic fluid which differ only in their cleanliness limits. AeroShell Fluid 41 is manufactured to meet the superclean requirements and thus it also meets the requirements of the normal grade.