



# 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, 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\*
- 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 <sup>2</sup> /s | ASTM D445  | 4.90 minimum   | 5.30        |
| Kinematic viscosity @40°C mm <sup>2</sup> /s  | ASTM D445  | 13.2 minimum   | 14.3        |
| Kinematic viscosity @-40°C mm <sup>2</sup> /s | ASTM D445  | 600 maximum    | 460         |
| Kinematic viscosity @-54°C mm <sup>2</sup> /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  |
| Relative density @15.6/15.6°C                 | ASTM D4052 | Report         | 0.873       |

| Properties                                                              |              | Method           | MIL-PRF-5606 J | Typical       |
|-------------------------------------------------------------------------|--------------|------------------|----------------|---------------|
| 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

This product is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from <https://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.