Technical Data Sheet

AeroShell **Turbine** *Oil 500*

AeroShell Turbine Oil 500 is a 5 mm²/s synthetic hindered ester oil incorporating a carefully selected and balanced combination of additives to improve thermal and oxidation stability and metal passivation.

DESIGNED TO MEET CHALLENGES

Main Applications

- AeroShell Turbine Oil 500 was developed essentially to meet the requirements of Pratt & Whitney 521 Type II and MIL-L-23699 specifications and is entirely suitable for most civil and military engines requiring this class of lubricant. AeroShell Turbine Oil 500 is approved for use in a wide range of turbine engines as well as the majority of accessories.

  With the advent of the new civil turbine oil specification, SAE AS5780, which has more stringent requirements than the military specification MIL-PRF-23699, AeroShell Turbine Oil 500 was approved as a SPC (Standard Performance Capability) oil.
- AeroShell Turbine Oil 500 contains a synthetic ester oil and should not be used in contact with incompatible seal materials and it also affects some paints and plastics.

Specifications, Approvals & Recommendations

- Approved MIL - PRF - 23699G Grade STD (US) Approved SAE AS5780B Grade SPC (US)
- Approved DEF STAN 91-101 Grade 0X-27 (British)
- Equivalent DCSEA 299/A (French)
- NATO Code O-156
- Joint Service Designation OX-27
- Pratt & Whitney : Approved 521C Type II
- General Electric : Approved D-50 TF 1
- Allison : Approved EMS - 53 (Obsolete)

AeroShell Turbine Oil 500 is approved for use in all models of the following engines:

- Honeywell : TFE 731, TPE 331, GTCP 30, 36, 85, 331, 660 and 700 series APUs. ALF 502, LF507, LTS101, LTP101, T53, T55, AL5512
- Allison (Rolls-Royce) : 250 Series, 501 D13, T56, GMA 2100, GMA 3007
- BMW- Rolls-Royce : BR710, BR715
- GE 90, CF6, CT58, CF700, CJ610, CJ805, CF34, CT7, CT64
- Pratt & Whitney : JT3, JT4, JT8, JT9, JT12, PW4000, PW6000
- Pratt & Whitney, Canada : JT15, PT6A, PT6T, ST6, PW100, PW200, PW300, PW500
- Rolls-Royce : Tay, Gnome, Spey, RB183, Adour, M45H, Viper (Series MK 301, 521, 522, 526, 535, 540, 601, 623 and 632)
- AeroShell Turbine Oil 500 is also approved for use in the industrial and marine versions of the Rolls Royce Trent, Avon, Allison 501K and 570K, Honeywell TF35, Pratt & Whitney GG3/FT3, GG4/FT4, GG12/FT12, all General Electric LM Series of units, Turbomeca industrial engines and certain Solar gas turbine engines.
- Full details of the approval status of AeroShell Turbine Oil 500 in APUs and other engines/accessories is available.

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

Typical Physical Characteristics

Properties			MIL-PRF-23699F Grade STD	Typical
Oil type			Synthetic ester	Synthetic ester
Kinematic viscosity	@100°C	mm²/s	4.90 to 5.40	5.17
Kinematic viscosity	@40°C	mm²/s	23.0 min	25.26

Properties			MIL-PRF-23699F Grade STD	Typical
Kinematic viscosity	@-40°C	mm^2/s	13000 max	8996
Flashpoint Cleveland Open Cup		°C	246 min	256
Pourpoint		°C	-54 max	<-54
Total Acidity		mgKOH/g	1 max	0.11
Evaporation loss 6.5 hrs	@204°C	% m	10.0 max	3.6
Foaming			Must pass	Passes
Swelling of Standard Synthetic Rubber - SAE-AMS 3217/4, 72 hrs	@204°C	swell %	5 to 25	Within limits 15%
Elastomer compatibility, % weight change after 24/120 hours Fluorocarbon		@200°C	10/15 max.	Passes
Elastomer compatibility, % weight change after 24/120 hours LCS Fluorocarbon		@200°C	10/20 max.	Passes
Elastomer compatibility, % weight change after 24/120 hours Nitrile		@130°C	Report	
Elastomer compatibility, % weight change after 24/120 hours Silicone		@175°C	Report	
Elastomer compatibility, % weight change after 24/120 hours Perfluoroelastomer		@200°C	N/A	
Thermal Stability / Corrosivity 96 hrs - metal weight change		mg/cm^2	4 max	0.5
Thermal Stability / Corrosivity 96 hrs - viscosity change		%	5 max	2.69
Thermal Stability / Corrosivity 96 hrs - Total Acid Number Change		mgKOH/g	6 max	2.03
Corrosion and Oxidation Stability 72 hrs	@175°C		Must pass	Passes
Corrosion and Oxidation Stability 72 hrs	@204°C		Must pass	Passes
Corrosion and Oxidation Stability 72 hrs	@218°C		Must pass	Passes
HLPS dynamic coking @ 20hrs	@375°C	Deposit mg	Report	1.34 average
Ryder Gear Test, Relative Rating Hercolube A		%	102	116
Bearing Test Rig Type 1 1/2 conditions - Overall deposit demerit rating			80.0 max	51
Bearing Test Rig Type 1 1/2 conditions - viscosity change	@40°C	%	-5 to +30	18.25
Bearing Test Rig Type 1 1/2 conditions - Total acid number change		mgKOH/g	2 max	0.63
Bearing Test Rig Type 1 1/2 conditions - filter deposits		g	3 max	0.70
Sonic shear stability - Viscosity change	@40°C	%	4 max	0.19
Trace metal content			Must pass	Passes
Sediment		mg/l	10 max	0.77
Ash		mg/l	1 max	0.4

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 Material 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

- AeroShell Turbine Oil 500 is also approved for use in the industrial and marine versions of the Rolls Royce Trent, Avon, Allison 501K and 570K, Honeywell TF35, Pratt and Whitney GG3/FT3, GG4/FT4, GG12/FT12, all General Electric LM Series of units, Turbomeca industrial engines and certain Solar gas turbine engines.

- **Advice**

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