



**AeroShell**

# **PRODUCT CATALOGUE**

AVIATION

2020

 **Univar**Solutions





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Univar Nordic is a leading distributor of lubricants that offers a comprehensive range of lubricants as well as commercial, technical and logistical expertise to the Nordic markets.

As a partner with one of the largest manufacturers of lubricants, Univar offers high quality products that live up to the latest technology demands in the market.

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## SHELL AVIATION

Shell Aviation produces high quality aviation lubricants. The AeroShell range earns the loyalty of its customers by creating

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Shell lubricants product and safety data sheets: **www.epc.shell.com**

Shell recommended lubricants: **www.shell.com/lubematch**

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PACK	
<b>I</b>	IBC (+/-1000Ltr/KG)
<b>D</b>	Drum (202 L - 55 UGL)
<b>P</b>	Pail (17KG / 5 UGL/ 20 L)
<b>UGL</b>	Pail 3,785 L
<b>C</b>	Cartridge (0,38-0,4 kg)
<b>L/KG</b>	Small Packs
<b>QT</b>	Can/bottle 0,946 L



Shell Lubricants Distributor



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# TURBINE ENGINE OILS



**AeroShell Turbine Engine Oils are known for outstanding quality and product performance. Shell continues to provide not only high-quality lubricants but also associated services to the aviation community.**

## WORKING WITH THE ENGINE MANUFACTURERS

For over a century, since helping Sir Frank Whittle developing the first jet engine, Shell has been involved in jet-powered flight and supporting aviation's pioneers. The Shell team remains committed to work with turbine engine manufacturers and airlines to create innovative high-performance oils for increasingly demanding engines.

Approval needs to be sought from each engine manufacturer for individual engines types. This is done either by including the oil in the engine development programme, or by working with the engine manufacturer to do sufficient testing to enter a controlled service introduction phase.

## KEEP THE ENGINE COOL

Turbine engine oil is used to lubricate the engine: the main shafts, the accessory gearbox, the integrated drive generators, etc., but another fundamental function is to act as an internal coolant for the engine. Those shafts and bearings in the center of the engine, surrounded by gas at temperatures of 1000°C or more, have no means of being cooled other than using the oil as a heat transfer fluid.

## SWITCH TO AEROSHELL TURBINE ENGINE OIL

Converting to AeroShell Turbine Oil is normally relatively straightforward. Rather than needing to drain, flush and refill an engine, the recommended method preferred by most engine manufacturers is to change by top off during routine servicing of the engines. Field experience and laboratory testing have demonstrated that this method has the least impact on the engine and helps to maintain the equilibrium of the oil system. Simply start using the new AeroShell Turbine Engine Oil as the old oil's level drops.



# TURBINE ENGINE OILS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity mgKOH/g	Density kg/m <sup>3</sup> 15°C	Pour- point °C	Flashpoint COC °C	Oil type	Pack size
	40°C	-40°C						
<b>AeroShell Turbine Oil 2</b> A 2 mm <sup>2</sup> /s mineral turbine oil blended from mineral base stocks to which a pour-point depressant and an antioxidant has been added.  <i>U.S. Approved MIL-PRF-6081D Grade 1010, British – French Equivalent to AIR 3516/A, Russian Analogue to MK-8, NATO Code O-133, Joint Service Designation OM-10 (Obsolete)</i>	10,5 @ 37,8°C	2700	0,02	875	< -57	154	Mineral	I D P
<b>AeroShell Turbine Oil 3</b> A 3 mm <sup>2</sup> /s mineral turbine oil blended from mineral base stocks to which an anti-corrosion additive has been added.  <i>British Approved DEF STAN 91-99, French Equivalent to AIR 3515/B, Russian Analogue to MK-8, NATO Code O-135, Joint Service Designation OM-11</i>	12,28 @ 40°C	1112	0,15	875	< -45	146	Mineral	D
<b>AeroShell Turbine Oil 308</b> This 3 mm <sup>2</sup> /s synthetic ester oil incorporates additives to improve resistance to oxidation and corrosion and to minimize wear. Suitable for turbo-prop and turbo-jet engines where a MIL-PRF-7808 is required.  <i>U.S. Approved MIL-PRF-7808L Grade 3, NATO Code O-148, Joint Service Designation OX-9</i>	12	2400	0,15	956	< -62	235	Synthetic Ester	1 QT
<b>AeroShell Turbine Oil 390</b> This 3 mm <sup>2</sup> /s synthetic diester oil incorporates a carefully selected and balanced combination of additives to improve thermal and oxidation stability and increase the load carrying ability of the base oil.  <i>British Approved DEF STAN 91-94, Russian Analogue to IPM-10 / VNII NP 50-1 4f and 4u and 36Ku-A, Joint Service Designation OX-7</i>  <i>Approvals: Honeywell GTCP 30,36,70,85,331 &amp; 660 APUs Starters, Turbo compressors, Pratt&amp;Whitney Canada PW901A APU, Rolls Royce Conway/Spey/Tay/M45H, Turbomeca Astazou/Artouste/Bastan VII/Marbore 6/Makila/Turmo, Hamilton-Sundstrans APS 500/1000/2000/3000</i>	12.9	<130005 @ -54°C		924	-68	225	Synthetic Ester	1 QT
<b>AeroShell Turbine Oil 500</b> A 5 mm <sup>2</sup> /s synthetic hindered ester oil incorporating a carefully selected and balanced combination of additives to improve thermal and oxidation stability and metal passivation. Suitable for most civil and military engines using this class of lubricant.  <i>U.S. Approved MIL-PRF-23699F Grade STD, British Approved DEF STAN 91-101 Grade OX-27, French Equivalent DCSEA 299/A, NATO Code O-156, Joint Service Designation OX-27, Pratt &amp; Whitney Approved 521C Type II, General Electric Approved D-50 TF 1, Allison Approved EMS-53 (Obsolete)</i>	25,26	8996	0,11	1004	< -54	256	Synthetic Ester	D 1 QT

# TURBINE ENGINE OILS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity mgKOH/g	Density kg/m <sup>3</sup> 15°C	Pour- point °C	Flashpoint COC °C	Oil type	Pack size
	40°C	-40°C						
<b>AeroShell Turbine Oil 555</b> An advanced 5 mm <sup>2</sup> /s synthetic hindered ester oil incorporating a finely balanced blend of additives to improve thermal and oxidation stability and to increase the load carrying ability of the base oil.  <i>U.S. Approved Approved DOD-PRF-85734A, British Approved Equivalent DEF STAN 91-100 – NATO Code O-160, Joint Service Designation OX-26, Pratt &amp; Whitney Approved 521C Type I, General Electric Approved D-50 TF 1, Allison Approved EMS - 53 (Obsolete)</i>	29 @ 37,8°C	11000	0,3	993,5	< -54	>246	Synthetic Ester	D 1 QT
<b>AeroShell Turbine Oil 560</b> The third generation, high performance, low coking 5 mm <sup>2</sup> /s synthetic hindered ester oil incorporating a carefully selected and finely balanced combination of additives to improve thermal and oxidation stability. Especially developed for high powered, high compression engines.  <i>U.S. Approved MIL-PRF-23699F Grade HTS, British Equivalent DEF STAN 91-101, French Equivalent DCSEA 299/A, Russian Analogue to VNII NP 50-1-4F, B3V, LZ-240, VNII NP 50-1-4U and 36/ Ku-A, NATO Code O-154, Joint Service Designation Equivalent OX-27, Pratt &amp; Whitney Approved 521C Type II, General Electric Approved D-50 TF1, Allison Approved EMS-53 (Obsolete)</i>	26,71	11000	0,14	995	-60	268	Synthetic Ester	D 1 QT
<b>AeroShell Turbine Oil 750</b> A 7½ mm <sup>2</sup> /s synthetic mixed ester oil containing a thickener and additives which provide excellent load carrying, thermal and oxidation stability.  <i>British Approved DEF STAN 91- 98 (replaces DERD 2487), French Equivalent AIR 3517, Russian Analogue to TU 38.1011722- 85 Grade MN-7.5u, NATO Code O-149 (equivalent O -159), Joint Service Designation OX-38</i>	32	10140	0,03	947	< -54	242	Synthetic Ester	1 QT

# PISTON ENGINE OILS



**You can rely on the AeroShell range of piston engine oils (PEO) to help protect your engine, reduce its maintenance costs and improve its efficiency.**

Whether you keep a vintage aircraft flying, takeoff in subzero temperatures or run a compression-ignition (diesel) engine on jet fuel, there is an AeroShell oil designed specifically to help lift your performance.

Most pilots want to minimize the risk of excessive maintenance costs. AeroShells proven protection helps you do just that. But the AeroShell range can also help you cut operation costs. In tests, AeroShell Oil W 15W-50 showed a measurable reduction in fuel consumption compared with single-grade oils. As a multigrade oil, you also remove the cost of changing oil with the seasons. The bottom line is that AeroShell increases engine efficiency and keeps your aircraft in the air for longer. That is great value.

## INNOVATION WITH ENGINE MANUFACTURERS

Engine and oil technologies are constantly being reinvented. AeroShell has always been a pioneer. For example, the recently developed diesel (compression-ignition) aircraft engines are becoming popular as they are both fuel efficient and run on widely available, relatively low cost jet fuel. AeroShell created an oil for these engines with the engine development teams from SMA and Thielert. This work involved more than 40,000 hours of aircraft engine tests. The formula was launched as AeroShell Oil Diesel Ultra.

## DEDICATED LIGHT SPORT AIRCRAFT OIL

Some people use motorcycle oils in light-sport aircraft engines, but these formulations can change without notification and are unsuitable for use with avgas. Motorcycle oil additive packages are not optimized for the rapid temperature changes and fluctuating oxygen levels associated with flying. If a motorcycle engine fails, you can roll to the roadside – an option you do not have in an aircraft.

AeroShell Oil Sport Plus 4 is the first oil specifically developed for light-sport, very-light and ultralight aircraft with four-stroke engines. It is manufactured to aviation quality standards and was developed with ROTAX.

Generations of pilots and engineers have trusted AeroShell in their aircraft. It is no surprise that AeroShell is one of the bestselling PEO ranges. We understand your need to have confidence in your engine oil.

If you are looking for peace of mind, we recommend our high-quality AeroShell oils.



# PISTON ENGINE OILS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity	Density	Pour- point	Flashpoint	SAE viscosity grade	Oil Type	Pack size
	40°C	100°C	mgKOH/g	kg/m <sup>3</sup> 15°C	°C	COC °C			
<b>AeroShell Oil 80</b> A straight mineral oil, blended from selected high viscosity index base stocks. These oils do not contain additives except for a small quantity of pourpoint depressant (which is added when improved fluidity at very low temperature is required) and an antioxidant.  <i>Approved for four-stroke reciprocating piston engines and other aircraft radial engines using a SAE J-1966 lubricant (MIL-L-6082). U.S. Approved J-1966 SAE Grade 40, British Approved J-1966 SAE Grade 40, French (AIR 3560/D Grade SAE 40), Russian MS-14, Joint Service Designation OM-170</i>	140	14,6	<0,1	880	< -17	>240	40	Mineral	1 QT
<b>AeroShell Oil 100</b> A straight mineral oil, are blended from selected high viscosity index base stocks. These oils do not contain additives except for a small quantity of pourpoint depressant (which is added when improved fluidity at very low temperature is required) and an antioxidant.  <i>Approved for four-stroke reciprocating piston engines and other aircraft radial engines using a SAE J-1966 lubricant (MIL-L-6082). U.S. Approved J-1966 SAE Grade 50, British Approved J-1966 SAE Grade 50, French (AIR 3560/D Grade SAE 50), Russian MS-20, NATO Code O-117 (Obsolete), Joint Service Designation OM-270</i>	230	19,7	<0,1	886	< -17	>250	50	Mineral	D P 1 QT
<b>AeroShell Oil Diesel Ultra</b> A fully synthetic, multigrade engine oil designed for use in the new generation of compression ignition (Diesel) Aviation Piston Engines. The formulation has been selected to be suitable in piston engines fuelled by Jet A or Jet A-1 and is designed for use in the latest highly rated turbo-charged diesel engines under all operating conditions. AeroShell Oil Diesel Ultra MUST NOT be used in spark ignition, or Avgas powered aircraft engines.  <i>MB-Approval 229.5, AeroShell Oil Diesel Ultra is approved for use in the following engines: Thielert/Centurion Engines 1.7 &amp; 2.0 Centurion, ACEA A3/B4, API SL/CF, SAE 5W-30</i>	68,2	12,2	-	840	-39	215	5W-30	Fully Synthetic Hydro- carbon	D 1 L
<b>AeroShell Oil Sport Plus 4</b> The first oil specifically developed for light sport aviation piston engines such as the ROTAX® 912 & 914 series. A mixture of low cylinder head temperature (compared to air cooled engines), low oil consumption and the engine internals requires a blend of high quality hydrocarbon base stocks, incorporating synthetic technology which allows full performance with different fuel types. This oil can be used in all climates.  <i>API SL, JASO MA, VW 502 00, Fully approved – all ROTAX® 912 &amp; 914 series engines, ROTAX® Service Instruction SI-912-016/SI-914-019, Selection of suitable operating fluids for ROTAX® engine type 912 &amp; 914 (series)</i>	94,2	14,46	-	871	-33	228	10W-40	Semi- Synthetic	P 1 L



# PISTON ENGINE OILS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity	Density	Pour- point	Flashpoint	SAE viscosity grade	Oil Type	Pack size
	40°C	100°C	mgKOH/g	kg/m <sup>3</sup> 15°C	°C	COC °C			
<b>AeroShell Oil W80</b> AeroShell W Oils were the first non-ash dispersant oils to be used in aircraft piston engines. They combine non-metallic additives with selected high viscosity index base stocks to give exceptional stability, dispersancy, and anti-foaming performance. These additives leave no metallic ash residues that can lead to deposit formation in combustion chambers and on spark plugs, which can cause pre-ignition and possible engine failure.  <i>U.S. Approved J-1899 Grade 40, British Approved J-1899 SAE Grade 40, French (AIR 3570 Grade SAE 40), Russian MS-14 NATO Code O-123 (Obsolete), Joint Service Designation OMD-160</i>	118	14,5	<0,1	880	< -22	>240	40	Mineral	D 1 QT
<b>AeroShell Oil W80 Plus</b> A single grade oil that combines proven AeroShell ashless dispersant technology with advanced antiwear additives. It's the oil for pilots who want a single grade that delivers extra protection and performance. AeroShell Oil W80 Plus brings together the best qualities of two of the world's best-selling four-cycle aviation oils. It is a single grade, ashless dispersant performance found in AeroShell Oil W 80 and the anti-wear/anti-corrosion additives of AeroShell Oil W 15W-50 Multigrade. This product contains anti-wear pack equivalent to Lycoming Additive LW 16702. Operators DO NOT need to add Lycoming Additive to this lubricant.  <i>Fully approved to SAE J-1899 SAE Grade 40 (previously MIL-L-22851D), Fully meets FAA Airworthiness Directive 80-04-03 and Textron Lycoming Service Bulletins/Instructions</i>	113	14,0	0,02	883	-30	260	40	Mineral	D 1 QT
<b>AeroShell Oil W100</b> AeroShell W Oils were the first non-ash dispersant oils to be used in aircraft piston engines. They combine non-metallic additives with selected high viscosity index base stocks to give exceptional stability, dispersancy, and anti-foaming performance. These additives leave no metallic ash residues that can lead to deposit formation in combustion chambers and on spark plugs, which can cause pre-ignition and possible engine failure.  <i>U.S. Approved J-1899 SAE Grade 50, British Approved J-1899 SAE Grade 50, French (AIR 3570 Grade SAE 50), Russian MS-20 NATO Code O-125 (Obsolete), Joint Service Designation OMD-250</i>	20,2	200	<0,1	884	<-18	>260	50	Mineral	D P 1 QT

# PISTON ENGINE OILS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity	Density	Pour- point	Flashpoint	SAE viscosity grade	Oil Type	Pack size
	40°C	100°C	mgKOH/g	kg/m <sup>3</sup> 15°C	°C	COC °C			
<p><b>AeroShell Oil W100 Plus</b></p> <p>A single grade oil that combines proven AeroShell ashless dispersant technology with advanced antiwear additives. It's the oil for pilots who want a single grade that delivers extra protection and performance. AeroShell Oil W100 Plus brings together the best qualities of two of the world's best-selling four-cycle aviation oils. It is a single grade, ashless dispersant performance found in AeroShell Oil W100 and the anti-wear/anti-corrosion additives of AeroShell Oil W 15W-50 Multigrade. This product contains anti-wear pack equivalent to Lycoming Additive LW 16702. Operators DO NOT need to add Lycoming Additive to this lubricant.</p> <p><i>Fully approved to SAE J-1899 SAE Grade 50 (previously MIL-L-22851D), Fully meets FAA Airworthiness Directive 80-04-03 and Textron Lycoming Service Bulletins/Instructions</i></p>	190	19,50	0,02	887	-21	288	50	Mineral	D 1 QT
<p><b>AeroShell Oil W120</b></p> <p>AeroShell W Oils were the first non-ash dispersant oils to be used in aircraft piston engines. They combine non-metallic additives with selected high viscosity index base stocks to give exceptional stability, dispersancy, and anti-foaming performance. These additives leave no metallic ash residues that can lead to deposit formation in combustion chambers and on spark plugs, which can cause pre-ignition and possible engine failure.</p> <p><i>U.S. Approved J-1899 SAE Grade 60, British Approved J-1899 SAE Grade 60, French (AIR 3570 Grade SAE 60), NATO Code O-128 (Obsolete), Joint Service Designation OMD-370</i></p>	270	24,8	<0,1	887	< -18	>240	60	Mineral	D
<p><b>AeroShell Oil W 15W-50</b></p> <p>A piston engine oil intended for use in certified four-stroke cycle aircraft piston engines. AeroShell Oil W 15W-50 is superior to single grade oils in almost every application. It offers easier starting, better lubrication after start-up, reduced wear, reduced corrosion and rusting, and improved cleanliness, with oil pressures and temperatures equal to that of single grade SAE 50 oils at fully warmed up conditions.</p> <p><i>U.S. Approved SAE J-1899 Grade Multigrade, British Approved SAE J-1899 Grade Multigrade, NATO Code O-162 (Obsolete), Joint Service Designation OMD-162</i></p>	140	19,6	0,01	860	-39	238	15W-50	Semi-Synthetic	D 1 QT

# GREASE



**AeroShell greases are designed to give you peace of mind. They are widely approved by manufacturers, meet or exceed industry standards, and have provided many decades of trouble-free performance.**

As a result the AeroShell portfolio of greases is one of the most trusted and extensive in the industry. The AeroShell greases will meet your demand, whether it being specialist greases with high-load carrying, extreme temperature and corrosion-inhibition properties or advanced multipurpose grease. The multipurpose greases offer a wide range of performance specifications for simpler maintenance procedures, smaller inventories and reduced risk of product misapplication.

## **GIVING YOU PEACE OF MIND**

AeroShell greases are designed to give you peace of mind. They are widely approved by manufacturers, meet or exceed industry standards, and have provided many decades of trouble-free performance. For example, in June 2015, AeroShell Grease 33 celebrated two decades of service and has more in-service time than any other grease in its class. It is also approved by leading airframe manufacturers and is a factory-fill product for equipment manufacturers, including Boeing.



# GREASE

Type	Viscosity mm <sup>2</sup> /s		Working temperature °C	Drop Point °C	Colour	Thickener type	Oil type	Pack size
	40°C	100°C						
<b>Aviation Grease</b>								
<b>AeroShell Grease 5</b> A high temperature grease composed of a mineral oil thickened with Microgel®, possessing good load-carrying ability. It is inhibited against oxidation and corrosion and has excellent resistance to water.  <i>U.S. Meets MIL-G-3545C (Obsolete), British Meets DTD.878A (Obsolete), French Equivalent DCSEA 359/A, NATO Code G-359 (Obsolete), Joint Service Designation XG-277 (Obsolete)</i>	500 to 525	32	-23 to +177	260+	Amber	Microgel®	Mineral	C
<b>AeroShell Grease 6</b> A general purpose grease composed of a mineral oil thickened with Microgel®, possessing good all-round properties within a limited range. It is inhibited against oxidation and corrosion and has good water resistance and low noise capability.  <i>U.S. Approved MIL-PRF-24139A Meets MIL-G-7711A (Obsolete), British Approved DEF STAN 91-12, French Equivalent DCSEA 382/A, NATO Code G-382, Joint Service Designation XG-271</i>	35	5,5	-40 to +121	260+	Brown	Microgel®	Mineral	3 KG C
<b>AeroShell Grease 7</b> An advanced multi-purpose grease, composed of a synthetic ester oil thickened with Microgel®, possessing good load carrying ability over a wide temperature range. It is inhibited against corrosion and has excellent resistance to water.  <i>U.S. Approved MIL-PRF-23827C Type II, French Equivalent DCSEA 354/A, NATO Code G-354</i>	10,3	3,1	-73 to +149	260+	Buff	Microgel®	Synthetic Ester (Diester)	P 3 KG C
<b>AeroShell Grease 14</b> A helicopter multi-purpose grease composed of a mineral oil thickened with a calcium soap, possessing outstanding anti-fret and anti-moisture corrosion properties. It is oxidation and corrosion inhibited.  <i>U.S. Approved MIL-G-25537C, British Approved DEF STAN 91-51, NATO Code G-366, Joint Service Designation XG-284</i>	12,5	3,1	-54 to +93	148	Tan	Calcium Soap	Mineral	3 KG C
<b>AeroShell Grease 22</b> A versatile advanced general purpose grease composed of a synthetic hydrocarbon oil thickened with Microgel®, with outstanding performance characteristics. Appropriate additives are included to achieve the necessary oxidation and corrosion resistance, anti-wear properties and load carrying properties.  <i>U.S. Approved MIL-PRF-81322F, NLGI Grade 2, Approved DOD-G-24508A, British Approved DEF STAN 91-52, French Approved DCSEA 395/A, NATO Code G-395, Joint Service Designation XG-293</i>	30,5	5,7	-65 to +204	260+	Amber	Microgel®	Synthetic hydrocarbon (PAO)	P 3 KG C
<b>AeroShell Grease 33</b> A synthetic universal airframe grease composed of a lithium complex thickened synthetic base oil with corrosion and oxidation inhibitors and load carrying additives.  <i>U.S. Approved MIL-PRF-23827C (Type I), British Approved DEF STAN 91-53, French Approved DCSEA 354/A, Russian Equivalent ERA, OKB-122-7, NATO Code G-354, Joint Service Designation XG-287, Boeing Approved BMS 3-33A</i>	14,2	3,4	-73 to +121	216	Green	Lithium Complex	Synthetic hydrocarbon/Ester	P 3 KG C

# GREASE

Type	Viscosity mm <sup>2</sup> /s		Working temperature	Drop Point	Colour	Thickener type	Oil type	Pack size
	40°C	100°C	°C	°C				
<b>Aviation Grease</b>								
<b>AeroShell Grease 58</b> An advanced general purpose and wheel bearing grease composed of a synthetic base fluid and a lithium complex thickener. This product has a wide range of applications including aircraft wheel bearings, servos, electric engines, pins & joints. <i>SAE Aerospace Approved AMS3058, Airbus Approved AMS 09-06-003</i>	100	12	-54 to +175	265	Yellow	Lithium Complex	Synthetic Hydrocarbon	3 KG
<b>AeroShell Grease 64</b> A grease comprised of AeroShell Grease 33 fortified with 5% molybdenum disulphide. It possesses enhanced anti-wear and anti-corrosion properties and is particularly suitable for lubricating heavily loaded sliding steel surfaces, e.g. bogie pivot pins on aircraft landing gear assemblies. (Former name: AeroShell Grease 33MS) <i>US Approved MIL-G-21164D, British Approved DEF STAN 91-57, French Approved DCSEA 353/A, NATO Code G-353, Joint Service Designation XG-276, Boeing Approved BMS 3-33B, Airbus Approved AIMS 09-06-002</i>	14,2	3,4	-73 to +121	234	Dark grey	Lithium Complex	Synthetic hydrocarbon/Ester	P, 3 KG C



# FLUIDS



## AEROSHELL HYDRAILIC FLUIDS

**Shell offers a wide range of hydraulic fluids designed to protect aircraft hydraulic systems.**

These products include fire-resistant and super-clean fluids for enhanced reliability, extreme-pressure fluids designed to protect landing gear shock struts from wear, and specialist preserving fluids for hydraulic system components in storage.

Particulates in hydraulic fluids can cause system failures through valve sticking, wear and blockages in nozzles and tubes. Particulates are especially challenging for modern hydraulic systems that operate at high pressures and have components with tight tolerances.

AeroShell Fluids 31 and 41 are formulated to protect hydraulic systems against failure by meeting super-clean standards. Their particulate contents are tightly controlled through special manufacturing processes, including multistage filtration, container cleaning just before filling and clean-room packaging conditions.

## AEROSHELL SPECIALITY FLUIDS

**AeroShell speciality fluids offerings include high-quality preservative, calibration, de-icing and avionic cooling fluids as well as lubricating and gearbox oils.**

With AeroShell turbine and piston engine oils, greases and hydraulic fluids, these fluids fulfil a wide spectrum of aviation fluid and lubricant needs.

Protecting aircraft engines from corrosion is an integral part of preparations for hangaring aircraft over the winter season. When an engine is idle for long periods, the oil absorbs water from the atmosphere and this, combined with condensation on the internal engine components, causes rust to form. Once the rust has formed, it acts as a grinding paste that causes increased wear, shorter engine life and potentially higher maintenance bills. If your aircraft is flown less than biweekly, you should consider using a preservative oil.



# HYDRAULIC FLUIDS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity	Density	Pour- point	Flash- point	Oil type	Pack size
	40°C	-40°C	mgKOH/g	kg/m <sup>3</sup> 15,6°C	°C	COC °C		
<b>Hydraulic Fluids</b>  <b>AeroShell Fluid 31</b> 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°C.  <i>U.S. Approved MIL-PRF-83282D, British (MIL-PRF-83282D), French Equivalent to DCSEA 437/A, NATO Code H-537, Joint Service Designation OX-19</i>	14,33	2098	0,01	850	< -55	237	Synthetic Hydrocarbon	P 1 UGL
<b>AeroShell Fluid 41</b> 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.  <i>U.S. Approved MIL-PRF-5606H, British Approved DEF STAN 91-48 Grade Superclean * (European production only). Meets DEF STAN 91-48 Grade Normal (European production only). Equivalent to DEF STAN 91-48 Grades. Superclean * &amp; Normal (U.S. production only), French Approved DCSEA 415/A, Russian Analogue to AMG-10 NATO Code H-515* (equivalent H-520) Joint Service Designation OM15* (equivalent OM-18)</i>  <i>* 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.</i>	14,1	491	-	870	<-60	105 (PPMC)	Mineral	D P 5 L 1 QT
<b>AeroShell Fluid 61</b> A synthetic hydrocarbon base hydraulic fluid specifically inhibited to provide excellent oxidation stability for the oil and good corrosion preventive protection to the hydraulic system. Especially designed for use where a fire resistant grade hydraulic fluid is required. Operating temperature -40°C to +204°C.  <i>U.S. Approved MIL-PRF-46170C Type I (un-dyed), NATO Code H-544</i>	15,43	2488	-	859	<-54	233	Synthetic Hydrocarbon	D, P

## HYDRAULIC FLUIDS

Type	Viscosity mm <sup>2</sup> /s		Total Acidity mgKOH/g	Density kg/m <sup>3</sup> 15,6°C	Pour- point °C	Flash- point COC °C	Oil type	Pack size
	40°C	-40°C						
<b>Hydraulic Fluids</b>								
<b>AeroShell LGF</b> AeroShell Landing Gear Fluid (LGF) is a mineral hydraulic fluid (MIL-PRF-5606) to which additional additives have been added to improve the extreme pressure characteristics and the fluid's natural lubricity. The lubricity agent provides a stable thin film layer to the metal surfaces at mild operating conditions. When severe conditions exist (landing/ touchdown), the extreme pressure additive supplies the load carrying needed at the metal-to-metal surfaces to prevent the occurrence of such phenomena as "ladder cracking" and "slip stiction" of the piston component of the landing gear. AeroShell LGF is straw yellow in colour. AeroShell LGF is AeroShell Fluid 41 plus additives.  <i>Boeing Approved BMS 3-32A (Type II), McDonnell Douglas Approved DPM- 6177, AeroShell SSF and LGF are not covered by any military specification</i>	14,5	423	-	874	< -68	110 (PPMC)	Mineral	P

## CALIBRATING FLUIDS

Type	Viscosity	Density	Flashpoint	Oil type	Pack size
Calibrating Fluids	mm <sup>2</sup> /s	kg/m <sup>3</sup> 15,6°C	°C by TAG method		
<b>AeroShell Calibrating Fluid 2</b> AeroShell Calibrating Fluid 2 is composed of Specially Run Stoddard Solvent and intended for the calibration of fuel system components of aircraft turbine engines.  <i>U.S. Approved MIL-PRF-7024E Type II</i>	1,46 @ 10°C 1,15 @ 25°C 0,95 @ 40°C	770	43	Mineral	D

## LUBRICATING OILS

Type	Viscosity mm <sup>2</sup> /s		Density kg/m <sup>3</sup> 15,6°C	Pour- point °C	Flash- point COC °C	Oil type	Pack size
	40°C	-40°C					
<b>Lubricating Oils</b>							
<b>AeroShell Fluid 3</b> AeroShell Fluid 3 is a general purpose mineral lubricating oil recommended for general lubrication of aircraft parts that require a light oil with good low temperature characteristics and a low freezing point. It is inhibited against oxidation and corrosion. AeroShell Fluid 3 is a relatively low viscosity product with good resistance to evaporation.  <i>U.S. Approved MIL-PRF-7870D, British Approved DEF STAN 91-47, NATO Code O-142, Joint Service Designation OM-12</i>	10 @ 38°C	<4000	890	< -57	155	Mineral	1 UGL
<b>AeroShell Fluid 12</b> AeroShell Fluid 12 is a low volatility synthetic ester oil used in aircraft instruments and also for the general lubrication of aircraft. It is oxidation and corrosion inhibited and possesses good high and low temperature characteristics.  <i>U.S. Approved MIL-PRF-6085D, British Equivalent DEF STAN 91-49, French Approved AIR 3511/A, NATO Code O-147, Joint Service Designation Equivalent OX-14</i>	8,2 @ 54,4°C	11000 @ -53,9°C	925	< -60	220	Synthetic Ester	1 UGL



## DE-ICING FLUIDS

Type	Viscosity	Density	Flashpoint	Pack size
De-icing Fluids	mm <sup>2</sup> /s 20°C	kg/m <sup>3</sup> 15°C	COC °C	
<p><b>AeroShell Compound 07</b></p> <p>An in-flight de-icing of windscreens, propellers, wings, tailplanes, etc. on suitably equipped aircraft. AeroShell Compound 07 is also recommended for removing hoar frost and light snow/ice from parked aircraft. AeroShell Compound 07 can be sprayed undiluted or mixed with up to 50% volume of water, depending upon the severity of the icing conditions, the efficiency of the spraying technique and whether it is applied hot or cold.</p> <p><i>British Approved DTD.406B, NATO Code S-745, Joint Service Designation AL-5</i></p>	11,4	1094	54,4	P
<p><b>Isopropyl Alcohol TT-I-735A</b></p> <p>Isopropyl Alcohol TT-I-735A is used as a de-icing fluid for windscreens, carburetors and propellers. (Replacing: AeroShell Compound 06A)</p> <p><i>US Equivalent TT-I-735a Grade B</i></p>	2,43 mP a s	780	12 (Abel method)	1 L

## GEARBOX OILS

Type	Viscosity mm <sup>2</sup> /s		Density kg/m <sup>3</sup> 15°C	Pour-point °C	Flash-point COC °C	Oil type	Pack size
	40°C	100°C					
<p><b>AeroShell Fluid 5M-A</b></p> <p>A highly refined, medium viscosity mineral oil containing an extreme pressure additive as well as additives to provide good oxidation and corrosion protection.</p> <p><i>U.S. Approved MIL-PRF-6086F Medium Grade, British Approved DEF STAN 91-112 Grade M, NATO Code O-155, Joint Service Designation OEP-70</i></p>	68 @ 37,8°C	68	920@ 15,6 °C	< -29	204	Mineral	P
<p><b>AeroShell Fluid S.8350</b></p> <p>Used for helicopter rotor gears, drive-shafts and pitch control mechanisms and wherever high loads and slow speeds in gears require the use of a 90 EP gear oil. AeroShell Fluid S 8350 is approved for use in various Westland helicopter gear-boxes. AeroShell Fluid S.8350 must not be used in engines.</p> <p><i>British Approved DTD.900/4981A, Joint Service Designation OEP-215</i></p>	182	17	895	-21	228	Mineral	P


## SPECIALITY FLUIDS

Type	Viscosity	Density	Pour-point	Flash-point	Oil type	Pack size
Speciality Fluids	mm <sup>2</sup> /s 40°C	kg/m <sup>3</sup> 15,6°C	°C	COC °C		
<b>Aeroshell Smoke Oil</b> A highly refined, high viscosity index mineral oil used in the aviation industry as a smoke oil in aerobatic airshow flights.	9,8	806	-45	200	Hydrocarbon	D

Type	Viscosity mm <sup>2</sup> /s		Total Acidity	Density	Pour- point	Flash- point	Oil type	Pack size
Speciality Fluids	40°C	-40°C	mgKOH/g	kg/m <sup>3</sup> 15,6°C	°C	COC °C		
<b>AEROSHELL FLUID 602</b> AeroShell Fluid 602 synthetic base fluid is composed of highly branched, compact and very stable molecules known as polyalphaolefins (PAO), blended with additives to provide long term storage stability. AeroShell Fluid 602 offers exceptional performance over a wide temperature range and does not react with water, resulting in clean systems and long fluid and component life. <i>Approved MIL-PRF-87252C. Nato code S-1748</i>	5,29	280	< 0,01	0,799	-73	160	Polyal-phaolefins (PAO)	P

## PRESERVATIVES

Type	Viscosity mm <sup>2</sup> /s		Density	Pour- point	Flash- point	Oil type	Pack size
Preservatives	40°C	100°C	kg/m <sup>3</sup> 15,6°C	°C	COC °C		
<b>Aeroshell Fluid 2XN</b> AeroShell Fluid 2XN is a corrosion preventative concentrate. It can be blended with Aeroshell Oil 100 (1 part 2XN + 3 parts ASO 100) to form AeroShell Fluid 2F, but can also be used undiluted to provide additional protection for piston engines by spraying exhaust ports, rocker arms and accessories. <i>US Approved MIL-C-6529C Type 1, British Approved DT-D900/4913A (Obsolete), French Equivalent AIR 1503/B Type B Concentrate, NATO Code C-608, Joint Service Designation ZX-21</i>	254@ 37,8 °C	20 @ 98,9 °C	900	-17	254	Mineral	P



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