



**EMEA Industrial Product Catalogue**

# **PETRONAS** **Industrial Solutions**

**Future Focused**



**PETRONAS**

Find out more at [www.pli-petronas.com](http://www.pli-petronas.com)

# PETRONAS is ready for the world of tomorrow, today

PETRONAS Lubricants International (PLI) is part of the PETRONAS Group. With 10 blending plants, over 30 sales offices and products distributed in more than 90 countries worldwide, PLI's global network of over 240 scientists, technical professionals and engineers anticipate future mobility and mechanical challenges and opportunities. We research and develop advanced fluid technology solutions to meet tomorrow's challenges, today.

We strive to deliver maximum value to our consumers, customers

and the markets in which they operate – while minimising our environmental impact and pioneering high-performance fluids that are manufactured in increasingly low CO2 environments.

We are quietly confident, ambitious, self-assured, thoughtful and enterprising, yet always responsible and dependable.

We are always moving forward.  
We are PETRONAS.

Global Research & Technology Centre,  
Turin, Italy





# Strengthening progressive businesses from within

As the world comes together to tackle the climate crisis, businesses need strong partners to help them develop the resilience they need to progress and grow in sustainable ways. Through PETRONAS Industrial Solutions, we work as one with our customers to strengthen your operation from within, developing a deep understanding of your needs and delivering against them with innovative services and energy-efficient solutions that set a clear path to a carbon neutral future. Together, we drive industrial resilience and deliver sustainable performance.



## Formula 1® and PETRONAS

# Challenging environment. High performance requirements. Tough competition.

Sound familiar? The fact is, the issues you face every day are similar to the ones we help solve with the Mercedes-AMG PETRONAS Formula One (F1) Team. In other words, PETRONAS isn't just a title sponsor. We work together with Mercedes-AMG, providing the Fluid Technology expertise that creates tailor-made solutions for the

technical challenges of the F1 and delivers a clear PETRONAS advantage on the track. Eight consecutive Constructor's Championship wins show how the partnership continues to thrive. For us, being the best is all about translating the solutions we create for race days into solutions that help your business every day.





## OEM Partnerships

**Always testing.  
Always refining.  
Always improving.**

We strive to continuously improve our products in order to provide you with the best lubricant or grease available. Our efforts have resulted in an extensive list of Original Equipment Manufacturer (OEM) approvals. The approvals mean that our products have been tested and approved by both global and regional OEMs, ensuring optimal system-product compatibility.



Mercedes-Benz

- Supplier of first fill for all high performance Mercedes-Benz AMG engines
- Co-branded Mercedes genuine oil "Powered by PETRONAS"



**CNH IVECO**

- Supplier of first fill and service fill for CNHi agriculture machinery and Iveco Industrial fleet
- Dedicated brands for CNHi (Ambra and Akcela) and PETRONAS Urania Next (Iveco)

# Automotive

## Vehicles



## Engines



## Transmissions



## Cooling Systems

**DENSO**



# Industrial

## Equipment Manufacturers



## Partners







ENGINE OIL



TRANSMISSION FLUID /  
UTTO



GEAR OIL



AIRTOOL OIL



GREASE



ANTIFREEZE



COMPRESSOR OIL



HYDRAULIC FLUID



CIRCULATION OIL



BRAKE FLUID

# Our Products

Hydraulic Oils	8
Gear Oils	10
Compressor Oils	12
Frigor	14
Circulating Oils	16
Gas Engine Oils	18
Metalworking Fluids	20
Turbine Oils	24
Greases	26
White Oils & Process Oils	28
Spray oils	29
Other Oils	30
Tutela	32
Urania	33
Arbor	34
Expert Solutions	36

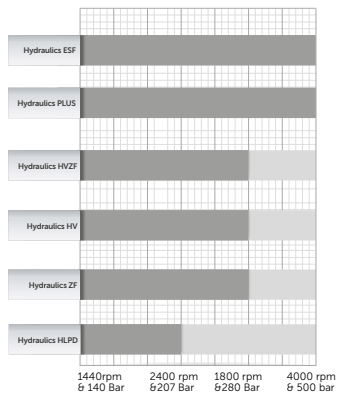
# Hydraulic Oils

Hydraulic equipment is now faster and more powerful than ever, placing greater demands on hydraulic oils. Manufacturers today make incredibly compact systems with higher pressures and tighter tolerances to increase system performance. This has led equipment owners to seek longer-lasting solutions to stay competitive in an increasingly competitive market.

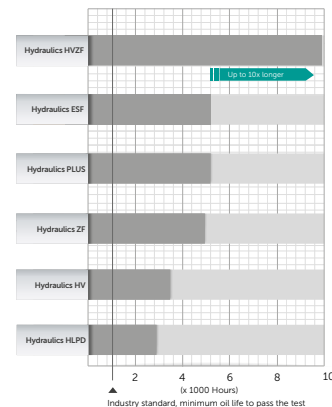
PETRONAS thrives on the challenge of meeting these demands. PETRONAS Industrial Solutions products for your hydraulic equipment are designed to meet, if not exceed, today's key industrial and OEM specifications. We have engineered hydraulic oils for all extreme industrial conditions; ranging from situations where water presence can cause filter blockage to applications that require fire resistance such as hydraulic forging presses or robot welding machines.



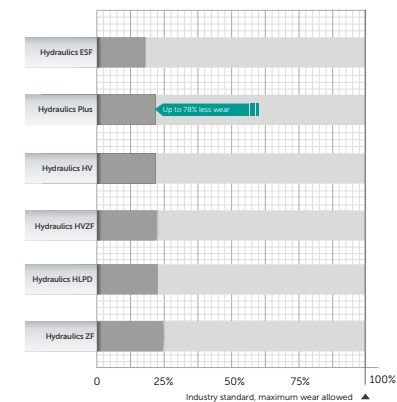
**Product Performance Level**  
(pump speed and pressure)



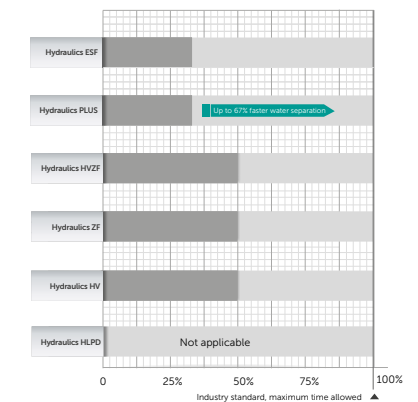
**Oxidation Stability Test Results**  
(test method TOST ASTM D943)



**Hydraulics Pump Wear Test Results**  
(test method EATON 35VQ25)



**Water Separability Test Results**  
(test method ASTM D1401)





# Hydraulic Oils

Increasing performance and protection  
Improving uptime and lowering maintenance costs

	Modern, anti-wear hydraulic fluids for multipurpose applications	Zinc-free, anti-wear hydraulic fluids for multipurpose applications	Detergent-enhanced hydraulic fluids for high water contamination control	Fire-resistant hydraulic fluids for fire hazard applications	Hydraulic fluids for food, pharmaceutical, and cosmetic applications
<b>Supreme</b>	<b>PETRONAS Hydraulic ESF</b> <ul style="list-style-type: none"> <li>Energy/Fuel-saving up to 10%/6%**</li> <li>Excellent anti-wear protection</li> <li>Over 5x longer oil life*</li> <li>Excellent and highly stable performance over wide temperature range</li> </ul>				
<b>Premium</b>	<b>PETRONAS Hydraulic HVZF</b> <ul style="list-style-type: none"> <li>Excellent anti-wear protection</li> <li>Up to 10x longer oil life*</li> <li>High and stable performance over wide temperature range</li> </ul>				
	<b>PETRONAS Hydraulic PLUS</b> <ul style="list-style-type: none"> <li>Excellent anti-wear protection</li> <li>Over 5x longer oil life*</li> <li>Excellent performance</li> </ul>	<b>PETRONAS Hydraulic ZF</b> <ul style="list-style-type: none"> <li>Excellent anti-wear protection</li> <li>Up to 5x longer oil life*</li> <li>High performance</li> </ul>	<b>PETRONAS Hydraulic HLPD</b> <ul style="list-style-type: none"> <li>High water tolerance (up to 3%)</li> <li>Excellent anti-wear protection</li> <li>Up to 3x longer oil life*</li> <li>Excellent performance</li> </ul>		
<b>Standard</b>	<b>PETRONAS Hydraulic E</b> <ul style="list-style-type: none"> <li>Very good anti-wear protection</li> <li>High performance</li> </ul>			<b>PETRONAS Hydraulic HFDU</b> <ul style="list-style-type: none"> <li>Excellent fire resistance</li> <li>High temperature applications</li> <li>Highly biodegradable</li> <li>High wear-resistant protection</li> </ul>	
	<b>PETRONAS Hydraulic HV</b> <ul style="list-style-type: none"> <li>Excellent anti-wear protection</li> <li>Over 3x longer oil life*</li> <li>High and stable performance over wide temperature range</li> </ul>			<b>PETRONAS Hidrobak HFC</b> <ul style="list-style-type: none"> <li>Fire-resistant with a non-flammable formula</li> <li>High-temperature performance for demanding applications</li> <li>Protects components with anti wear and antioxidant additives</li> </ul>	
	<b>PETRONAS Hidrobak</b> <ul style="list-style-type: none"> <li>Wear protection with anti-wear additives</li> <li>Boosts efficiency by reducing friction</li> <li>High-speed ready for reliable lubrication</li> </ul>			<b>PETRONAS Hidrobak NT</b> <ul style="list-style-type: none"> <li>Excellent corrosion protection</li> <li>Excellent oxidation resistance and thermal stability</li> <li>Excellent anti-foam characteristics</li> <li>Excellent anti-wear properties</li> </ul>	
	<b>PETRONAS Hydraulic E HV</b> <ul style="list-style-type: none"> <li>Stable in all temperatures</li> <li>Strong wear protection for longer equipment life</li> <li>Excellent water separation</li> </ul>				
	<b>PETRONAS Gate</b> <ul style="list-style-type: none"> <li>Works in very low temperatures</li> <li>Protects against wear</li> <li>Resists heat and oxidation</li> </ul>				

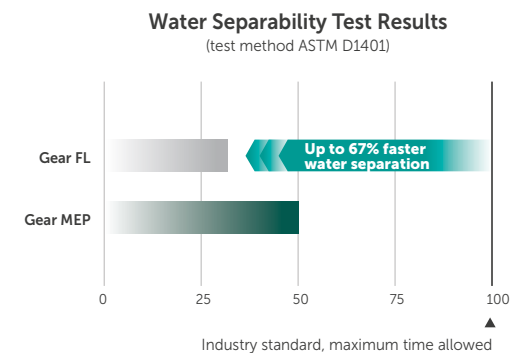
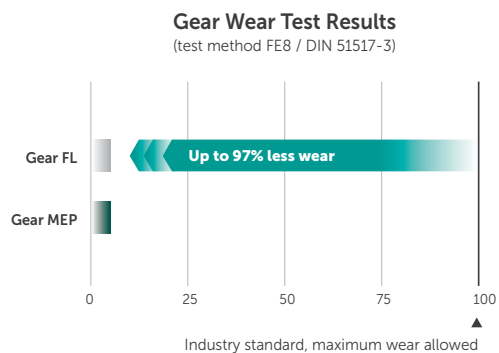
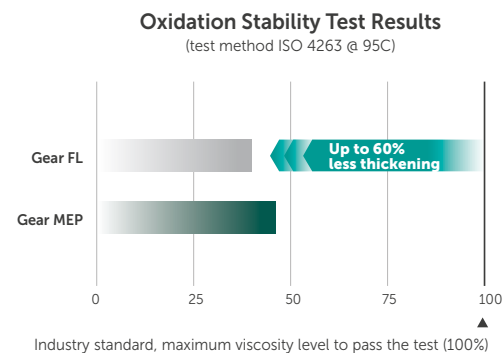
\* vs. minimum requirements of ISO 11158 HM for anti-wear hydraulic fluids based on TOST (ASTM D943).

\*\* vs. conventional, standard viscosity hydraulic fluids. Actual results may vary depending on different application conditions, type & condition of equipment, current oil used. Viscosity index / Pour point: Typical values for VG 46

# Gear Oils

In today's world, everything is getting smaller and faster. OEMs are offering higher output gear drives in increasingly compact forms. Not only are they expected to perform at faster speeds under greater loads, they're also constructed from cutting-edge materials.

PETRONAS Industrial Solutions provides equipment owners with reliable and durable solutions for their gear drives. Our gear oils work efficiently in everything from worm gear drives to wind turbines. They also work efficiently in standard fully enclosed gear boxes to large heavily-loaded open gears like those used in mining, sugar refineries, power and steel processing plants.





Increasing performance and protection  
Improving uptime and lowering maintenance costs

	Industrial enclosed spur / helical / bevel / planetary gears / worm gears	Industrial open gears	Food-grade enclosed gear oils
Premium	<b>PETRONAS Gear Syn PAO</b> <ul style="list-style-type: none"> <li>Excellent extreme pressure and anti-wear protection Up to 3x longer oil life**</li> <li>High Viscosity Index</li> <li>Excellent performance including energy saving</li> </ul>		
	<b>PETRONAS Gear Synt</b> <ul style="list-style-type: none"> <li>Protects against wear and extreme pressure</li> <li>Works across a wide temperature range</li> <li>Reduces friction and oil temperature</li> </ul>		
	<b>PETRONAS Gear FL</b> <ul style="list-style-type: none"> <li>Excellent micropitting, extreme pressure and anti-wear protection Up to 1.6x longer oil life*</li> <li>Excellent performance</li> </ul>		
Standard	<b>PETRONAS Gear MEP</b> <ul style="list-style-type: none"> <li>Excellent extreme pressure and anti-wear protection</li> <li>Up to 1.5x longer oil life* High performance</li> </ul>		<b>PETRONAS Gear NT</b> <ul style="list-style-type: none"> <li>Safe for food industry</li> <li>Protects against wear and pressure</li> <li>Resists heat and oxidation</li> </ul>

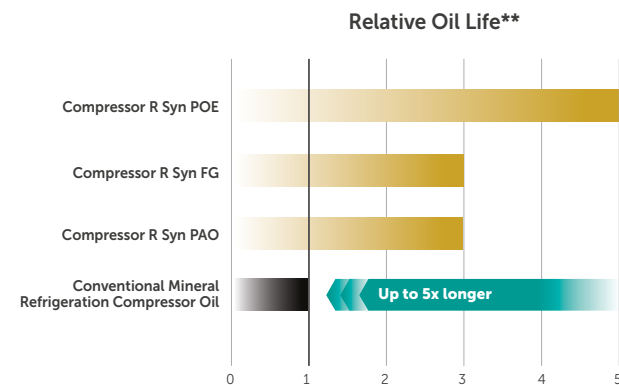
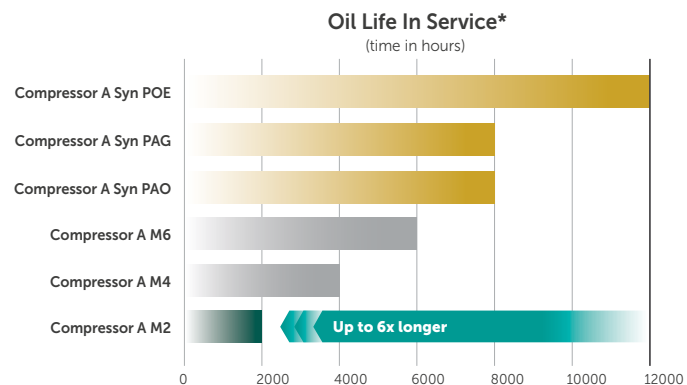
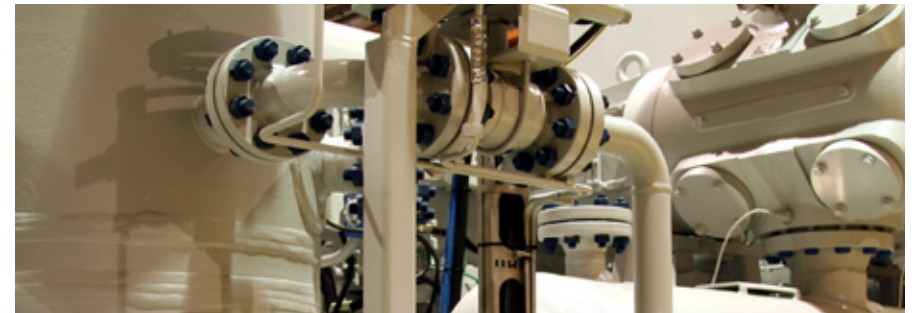
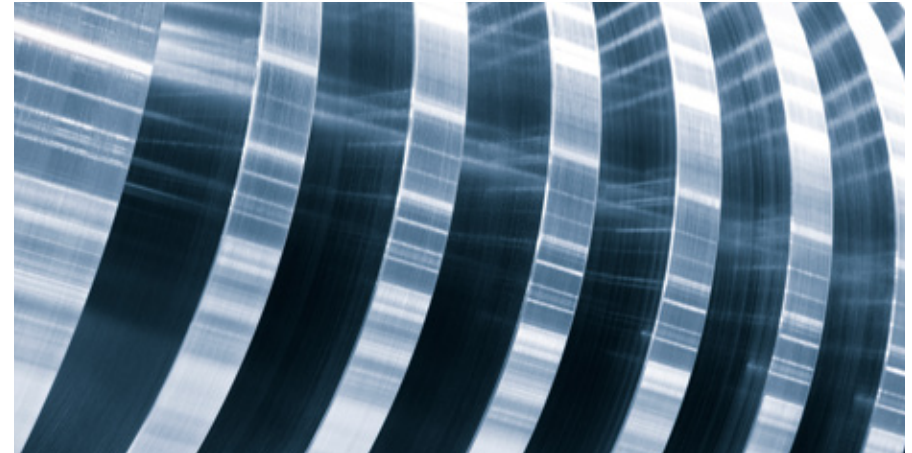
\* vs. minimum requirements of industrial gear oils to pass the viscosity increase test (ISO 4263-4 @95°C)

\*\* vs. conventional mineral gear oils

# Compressor Oils

Compressors today work at ultra-high temperatures for long periods of time, literally putting them under pressure. With the advent of new, more demanding equipment specifications, and with potential contaminants intermingling with oil, protecting the equipment presents a number of challenges.

PETRONAS Industrial Solutions offers a range of compressor oils with a service life of up to 12,000 hours - even at maximum discharge temperatures of 120°C. From air compressor oils to those formulated specifically for refrigeration and air conditioning, they protect against varnish and deposit formation. Whether in Standard form or Supreme high performance, all our compressor oils are enhanced with advanced anti-oxidant, anti-wear (zinc-free), anti-rust and anti-foam additives.



# Compressor Oils

	Air compressors (all types)	Food-grade compressor and vacuum pump oil
Supreme	<b>PETRONAS Compressor A Syn EST</b> ⬆ Up to 12,000 hours oil life in service* ⬆ Excellent system protection against varnish and deposit formation ⬆ Excellent performance	
	<b>PETRONAS Compressor A Syn PAO</b> ⬆ Up to 8,000 hours oil life in service* ⬆ Excellent system protection against varnish and deposit formation ⬆ Excellent performance	
Premium	<b>PETRONAS Compressor A M4</b> ⬆ Up to 4,000 hours oil life in service* ⬆ High system protection against varnish and deposit formation ⬆ High performance	<b>PETRONAS Olicom</b> ⬆ Safe for food industry ⬆ Long oil life at high temperatures ⬆ Protects against wear and corrosion
Standard		<b>PETRONAS Vacuum Pump Oil</b> ⬆ High Purity Mineral Oil ⬆ Excellent Corrosion Protection ⬆ Optimized for High Vacuum System

Increasing performance and protection  
Improving uptime and lowering maintenance costs

\* Maximum values for each product. Individual oil condition strongly depends on the type of compressor and operating conditions. Oil condition monitoring should be carried out during the service to secure optimum oil performance.

\*\* vs. conventional mineral refrigeration compressor oils.



# PETRONAS Frigor

## Refrigeration compressor oils

Designed for modern compressors, PETRONAS Frigor offers superior thermal and chemical stability, ensuring long-lasting performance. Its broad compatibility includes HFC, HFO, HCFC, CFC, ammonia (R-717), and hydrocarbon (R600a, R290) refrigerants, making it a versatile choice for various applications.

With PETRONAS Frigor, we expand our product offering to continue supporting your business with innovative and sustainable lubrication solutions.



	Property	ASTM Method	S 22	S 32	S 46	S 68	S 100	S 170	S 220
Premium	Density @ 20°C, Kg/L	D4052	0.99	0.98	0.97	0.97	0.96	0.96	0.97
	Viscosity @ 40°C, CST	D445	19.3	32.5	46.8	68.3	98.5	170	219
	Viscosity @ 100°C, CST	D445	4.2	5.8	7.3	9.5	11.4	17	19.2
	Pour Point °C/°F	D97	-57 / - 71	-55 / - 67	-48 / - 54	-39 / - 38	-31 / - 24	-25 / - 13	-25 / - 13

	Property	ASTM Method	Frigor M3	Frigor M4	Frigor M5
Standard	Density @ 15°C, Kg/L	D4052	0.90	0.90	0.920
	Viscosity @ 40°C, CST	D445	32.5	56	100
	Viscosity @ 100°C, CST	D445	4.5	6,3	8.4
	Floc Point °C/°F	ASHRAE 86	-54 / - 65	-48 / - 54	-45 / - 49

	Property	ASTM Method	Frigor M 68 A	Vacuum Pump Oil
Standard	Density @ 15°C	D4052	0.89	0.86
	Viscosity @ 40°C/CST	D445	53.4	67
	Viscosity @ 100°C/CST	D445	6.80	9.1
	Viscosity Index	D2270	73.2	113
	Flash Point °C	D92	220	234/453
	Pour Point °C/°F	D97	-36.8	-30/-22

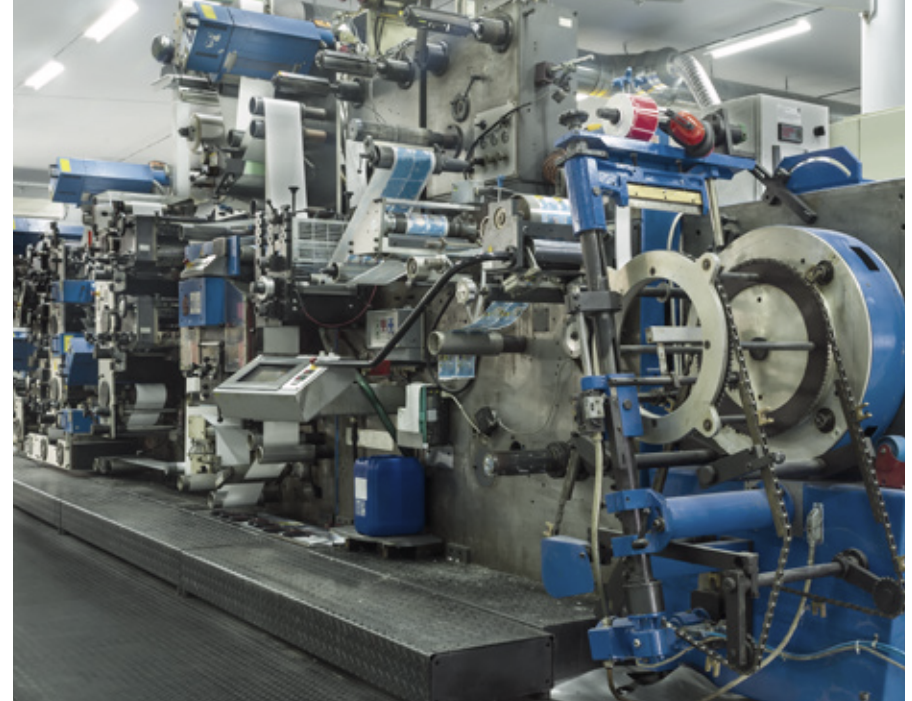
All Frigor products are active in EMEA

**Frigor S** = POE Polyolester premium synthetic oil.  
**Frigor M** = MINERAL Hydrotreated naphthetinc oil.

# Circulating Oils

Circulating oil systems must provide smooth, continuous lubricant flow to bearings and gears and this is where PETRONAS Industrial Solutions can help.

PETRONAS circulating oils are optimized for efficiency so that maintenance costs are reduced, even as equipment is pushed to its limits. High thermal stability, excellent water separation, and resistance to sludge formation are just some of the properties you can expect from our lubricants. The PETRONAS Circula range is recommended for use in various heavy duty circulating systems, including plain or rolling element bearings and hydraulics.





# Circulating Oils

Increasing performance and protection  
Improving uptime and lowering maintenance costs

	Heavy duty oil circulating systems	Steel mill oil circulating systems
Supreme	<p><b>PETRONAS Circula SYN</b></p> <ul style="list-style-type: none"> <li>Excellent water separability</li> <li>Over 4x longer oil life*</li> <li>Excellent anti-wear protection</li> <li>Excellent resistance to sludge formation</li> </ul>	
Premium	<p><b>PETRONAS Circula PM (Paper Machine)</b></p> <ul style="list-style-type: none"> <li>Excellent water separability</li> <li>Over 3x longer oil life*</li> <li>Excellent anti-wear protection</li> <li>Excellent resistance to sludge formation</li> </ul>	<p><b>PETRONAS Circula Mill NT</b></p> <ul style="list-style-type: none"> <li>High water separability</li> <li>Long oil life</li> <li>Excellent anti-wear &amp; EP protection</li> </ul>
Standard	<p><b>PETRONAS Circula</b></p> <ul style="list-style-type: none"> <li>Very good water separability</li> <li>Very good anti-wear protection</li> <li>Over 2x longer oil life*</li> </ul>	

\* vs. minimum requirements of ISO 11158 HM fluids based on TOST (ASTM D943)

# Gas Engine Oils

The global demand for reliable energy continues to grow for the foreseeable future. So does the need for effective solutions to anticipate and meet future demands as dependably and efficiently as possible.

PETRONAS Industrial Solutions products for your gas engines meet the most severe industry and OEM specifications to deliver the performance you can rely on. Our solutions deliver excellent TBN retention, minimum levels of engine wear and excellent engine cleanliness leading to long oil life and lower overall maintenance costs.



Increasing performance and protection  
Improving uptime and lowering maintenance costs

	Heavy duty oil circulating systems	Steel mill oil circulating systems
Supreme	<p><b>PETRONAS GEO SYN</b></p> <ul style="list-style-type: none"> <li>Excellent TBN retention</li> <li>Excellent engine cleanliness</li> <li>Excellent oxidation and nitration stability</li> <li>High anti-wear and rust-protection specially developed for the lubrication of a wide range of spark-ignited gas-fuelled</li> <li>Specially developed for the lubrication of a wide range of spark-ignited gas-fuelled</li> <li>Able to support Engines using Steel &amp; Aluminum pistons</li> </ul>	
Premium	<p><b>PETRONAS GEO NG</b></p> <ul style="list-style-type: none"> <li>Excellent TBN retention</li> <li>Excellent engine cleanliness</li> <li>Excellent oxidation and nitration stability</li> <li>High anti-wear and rust-protection</li> <li>Specially developed for the lubrication of a wide range of spark-ignited gas-fuelled engines in order to improve fuel-efficiency and reduce emissions</li> </ul>	<p><b>PETRONAS GEO BLG</b></p> <ul style="list-style-type: none"> <li>Excellent TBN retention</li> <li>Excellent engine cleanliness</li> <li>Premium performance bio and landfill gas engine oil specially developed for bio and landfill applications</li> <li>Excellent anti-wear and anti-scuff protection</li> <li>High oxidation and nitration stability</li> <li>High rust &amp; corrosion protection</li> </ul>

\* vs. minimum requirements of ISO 11158 HM fluids based on TOST (ASTM D943)



# Metalworking Fluids

When you're trying to drive improvements in production while lowering costs, you'll need a partner with technical expertise in the metalworking industry.

PETRONAS Industrial Solutions offers a range of chlorine, phenol and nitrite free water-soluble and neat metalworking fluids for improved productivity, flexibility and safety. We've formulated the PETRONAS Mecafluid Series to include the latest Boron and Biocide-free (formaldehyde-free) formulation technology for machining with a wide range of metals. Their stable emulsions make them bacteria and fungal-resistant, extending tool and sump life and reducing maintenance costs.

By partnering with you to solve the problems you face today and tomorrow, we can help you move ahead and develop your business. Together with our insight-driven services, we'll help you improve reliability, reduce your operating costs and free up your potential – all because we share your goals and priorities.



# Metalworking Fluids

Increasing performance and protection  
Improving uptime and lowering maintenance costs

	Cold Forming	Quenching	Corrosion Preventive	Cleaner
Standard	<b>PETRONAS Mecafluid D 128 E</b> <ul style="list-style-type: none"> <li>Excellent yields</li> <li>Printing operations</li> <li>Multiple metal machine</li> <li>Excellent resistance to oxidation</li> </ul>	<b>PETRONAS Mecafluid Q 20</b> <ul style="list-style-type: none"> <li>Excellent oxidation and thermal stability: resists formation of sludge and breakdown of oil in use to ensure maximum oil life</li> <li>Easily washable</li> </ul>	<b>PETRONAS Mecafluid P 5</b> <ul style="list-style-type: none"> <li>Good dewatering properties ensures removal of moisture</li> <li>Solvent free</li> <li>Excellent penetrative action ensures the lubricant can perform as required</li> </ul>	<b>PETRONAS Mecaclean Exp Eco</b> <ul style="list-style-type: none"> <li>Cleaning and degreasing of iron and steel surfaces, removing oil, grease, and contaminants</li> <li>Industrial maintenance, ideal for mechanical workshops and production environments</li> <li>Surface preparation before treatments such as painting or protective coatings</li> </ul>
	<b>PETRONAS Mecafluid D 128 Plus</b> <ul style="list-style-type: none"> <li>High lubricating power with excellent performance in stamping operations</li> <li>Resistant to polymerization</li> <li>Excellent resistance to oxidation</li> </ul>	<b>PETRONAS Mecafluid Q 40</b> <ul style="list-style-type: none"> <li>Excellent oxidation and thermal stability: resists formation of sludge and breakdown of oil in use to ensure</li> <li>Maximum oil life</li> <li>Easily washable</li> </ul>	<b>PETRONAS Mecafluid P 100</b> <ul style="list-style-type: none"> <li>Easily cleanable</li> <li>Prevents interference with subsequent operations</li> <li>Good mechanical film strength and finger print suppressing properties - highly finished work not damaged by handling improves product quality</li> </ul>	<b>PETRONAS Mecaclean AL Eco</b> <ul style="list-style-type: none"> <li>Material Compatibility: specially formulated to be safe on aluminum and steel surfaces, preventing corrosion or damage</li> <li>Eco-Friendly Composition: developed with environmentally friendly components to minimize ecological impact</li> <li>Optimized Performance: provides high cleaning efficiency while maintaining the integrity of the treated materials</li> </ul>
	<b>PETRONAS Mecafluid D 3210 CR</b> <ul style="list-style-type: none"> <li>Extraordinary frictional characteristics</li> <li>Significantly extended roll oil life</li> <li>Improved finished product quality</li> <li>Reduced reject and waste production material</li> </ul>	<b>PETRONAS Mecafluid Q 500 WB</b> <ul style="list-style-type: none"> <li>Minimize fire hazard in comparison to mineral based fluids</li> <li>Eliminates the need for sump-side additions of antimicrobial agents to the quench tank</li> <li>It contains a non-nitrite corrosion inhibitor system to protect inductors, quench tanks, pipes and fittings</li> </ul>	<b>PETRONAS Mecafluid P 26</b> <ul style="list-style-type: none"> <li>Allow to weld sheet metal without prewashing</li> <li>Easily removable with hot alkaline solutions</li> </ul>	<b>PETRONAS Mecaclean AL</b> <ul style="list-style-type: none"> <li>High cleaning power</li> <li>High protective power</li> <li>High microbial resistance</li> </ul>
	<b>PETRONAS Mecafluid/D 50 WB</b> <ul style="list-style-type: none"> <li>Fully compatible with a wide range of elastomers, like with EPDM</li> <li>Completely soluble in water</li> <li>Formulation properly designed to give an unlabelled product</li> </ul>	<b>PETRONAS Mecafluid Q 30 HW</b> <ul style="list-style-type: none"> <li>Excellent emulsion stability</li> <li>Machining of multiple metals, including aluminum alloys</li> <li>High resistance to foam formation</li> </ul>	<b>PETRONAS Mecafluid P E</b> <ul style="list-style-type: none"> <li>Biodegradable up to 97%.</li> <li>Thanks to its non-toxic feature can be used in industrial plants without any risk to personnel</li> <li>Miscible with various coolants and antifreeze</li> <li>Inhibits corrosion of all metals including: cast iron, steel, copper, brass, solder, and aluminum</li> </ul>	<b>PETRONAS Mecaclean M</b> <ul style="list-style-type: none"> <li>Provides short-term (few weeks) corrosion protection depending on the use concentration</li> <li>On aluminium and aluminium alloys it is recommended to use soft water with low content of chlorides</li> </ul>
				<b>PETRONAS Mecafluid/P 118 V</b> <ul style="list-style-type: none"> <li>Particular suited for the protection of automotive components and whole engines</li> <li>Compatibility with plastic and rubber parts</li> </ul>

Kindly consult PETRONAS sales and technical services for recommendations.

# Metalworking Fluids - Machining & Grinding

Increasing performance and protection  
Improving uptime and lowering maintenance costs

	Soluble			Service
Supreme	<b>PETRONAS Mecafluid SS 4001 Eco</b> ⬇ Boron and Biocide free ⬇ EP additive ⬇ Excellent hard water tolerance ⬇ Excellent stability in use	<b>PETRONAS Mecafluid SS 3001 Eco</b> ⬇ Boron and Biocide free ⬇ Medium oil content ⬇ EP additive ⬇ Excellent hard water tolerance ⬇ Excellent stability in use	<b>PETRONAS Mecafluid SS 1001 Eco</b> ⬇ Boron and Biocide free ⬇ Low oil content ⬇ Excellent hard water tolerance ⬇ Excellent stability in use	
	<b>PETRONAS Mecafluid SYN 1002 Eco</b> ⬇ Boron and Biocide free ⬇ Oil free ⬇ Excellent stability in use ⬇ Excellent rust and corrosion protection			
Premium	<b>PETRONAS Mecafluid SS 3001 FF</b> ⬇ Biocide free ⬇ Medium oil content ⬇ Excellent hard water tolerance ⬇ High stability in use			
Standard	<b>PETRONAS Mecafluid SM 5001 Eco</b> ⬇ Boron and Biocide free ⬇ High oil content ⬇ EP additive ⬇ Excellent hard water tolerance ⬇ Excellent stability in use	<b>PETRONAS Mecafluid S 2 LC Plus</b> ⬇ Low foam formation ⬇ Excellent corrosion protection ⬇ Low mist formation	<b>PETRONAS Mecafluid S 10 FFB</b> ⬇ Excellent stability in use ⬇ Excellent rust & corrosion protection ⬇ Low foam formation	<b>PETRONAS Mecaservice DET MX</b> ⬇ Good re-emulsifying capacity ⬇ Odourless ⬇ Good detergent capacity
	<b>PETRONAS Mecafluid/S 3 FFB</b> ⬇ High rust resistance ⬇ High foam stability ⬇ Low nebulization	<b>PETRONAS Mecafluid/S 8 Eco</b> ⬇ Excellent emulsion stability ⬇ Machining of several metals, including aluminium alloys ⬇ High foam stability	<b>PETRONAS Mecafluid/S 10 FF</b> ⬇ Excellent biostability, lubricity and detergency characteristics ⬇ Chlorine, boron, formaldehyde and secondary amines free ⬇ Very low environmental impact	<b>PETRONAS Mecaservice PH</b> ⬇ Powerful rust inhibitor ⬇ Good alkalising properties ⬇ Safe working environment
	<b>PETRONAS Mecafluid/S 2 FF</b> ⬇ High foam stability ⬇ Low nebulisation ⬇ Excellent performances under extreme pressures	<b>PETRONAS Mecafluid S 2006</b> ⬇ Products not labelled as dangerous: particularly suitable for environments that require a low ecotoxicological impact ⬇ Water-based: the work environment is cleaner and safer for operators ⬇ Reduction in fire risk compared to mineral-based fluids	<b>PETRONAS Mecafluid S 2020 Green</b> ⬇ Excellent emulsion stability ⬇ Machining of multiple metals, including aluminum alloys ⬇ High resistance to foam formation	<b>PETRONAS Mecaservice LIE 202</b> ⬇ Good detergent capacity ⬇ Ease of use ⬇ Odourless
	<b>PETRONAS Mecafluid S 8 FF</b> ⬇ Grinding operations ⬇ Cutting operations ⬇ Heavy cutting operations ⬇ Workshops where metals of various types are machine worked			<b>PETRONAS Mecaservice SC</b> ⬇ Good detergent capacity ⬇ Safe working environment ⬇ Odourless

Kindly consult PETRONAS sales and technical services for recommendations.



## Neat

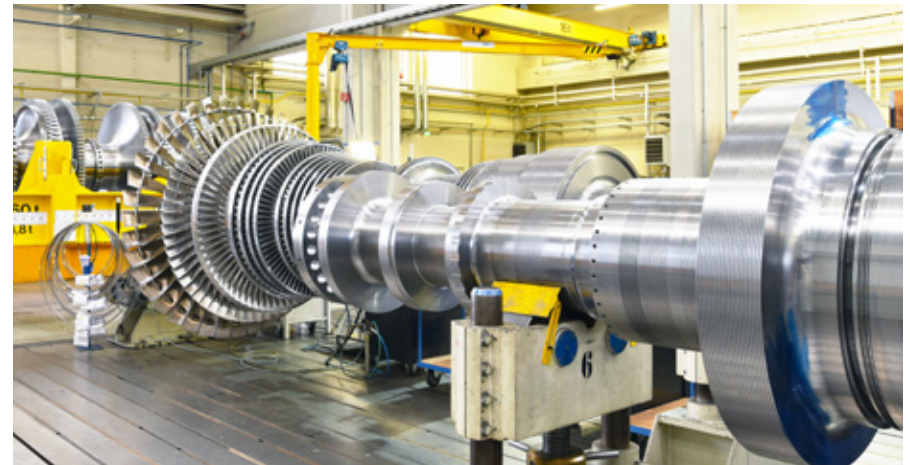
Supreme	<p><b>PETRONAS Mecafluid NE 8 SYN</b></p> <ul style="list-style-type: none"> <li>◊ Synthetic neat oil</li> <li>◊ Excellent coolant and lubrication</li> <li>◊ Excellent resistance to oxidation</li> </ul>	<p><b>PETRONAS Mecafluid N 10 SYN</b></p> <ul style="list-style-type: none"> <li>◊ Excellent fluidity is indicated for high-precision parts' cutting</li> </ul>		
	Premium	<p><b>PETRONAS Mecafluid Cut Bio 32</b></p> <ul style="list-style-type: none"> <li>◊ Good resistance to oxidation and rust</li> <li>◊ Excellent anti welding power cut</li> <li>◊ High flash point</li> </ul>	<p><b>PETRONAS Mecafluid Cut Bio 22</b></p> <ul style="list-style-type: none"> <li>◊ Absence of fumes and vapors during metalworking</li> <li>◊ Good anti-wear properties</li> <li>◊ Good resistance to oxidation and rust</li> <li>◊ Excellent anti welding power cut</li> </ul>	<p><b>PETRONAS Mecafluid Cut Bio 10</b></p> <ul style="list-style-type: none"> <li>◊ Absence of fumes and vapors during processing</li> <li>◊ Good anti-wear properties</li> <li>◊ Good resistance to oxidation and rust</li> </ul>
		<p><b>PETRONAS Mecafluid N 16</b></p> <ul style="list-style-type: none"> <li>◊ Good detergency</li> <li>◊ Adequate corrosion protection of machined parts and machinery</li> <li>◊ Very low oil mist propagation in the environment</li> </ul>	<p><b>PETRONAS Mecafluid N 32</b></p> <ul style="list-style-type: none"> <li>◊ Good detergency</li> <li>◊ Adequate corrosion protection of machined parts and machinery</li> <li>◊ Doesn't cause formation of smoke, odor, or foam since nebulization is minimal</li> <li>◊ Don't contain staining compounds like chlorine-based additives</li> <li>◊ Very low oil mist propagation in the environment</li> </ul>	
Standard	<p><b>PETRONAS Mecafluid NO 23 EP</b></p> <ul style="list-style-type: none"> <li>◊ Neat cutting fluid with EP additives</li> <li>◊ Yellow metals compatibility</li> <li>◊ Very good extreme pressure performance</li> </ul>	<p><b>PETRONAS Mecafluid N 22</b></p> <ul style="list-style-type: none"> <li>◊ Very good foam stability</li> <li>◊ Yellow metal compatibility</li> <li>◊ High rust &amp; corrosion protection</li> </ul>	<p><b>PETRONAS Mecafluid DB</b></p> <ul style="list-style-type: none"> <li>◊ Turning, heavy duty reaming, gear cutting, shaving, broaching and deep-hole drilling operations on alloyed steels</li> <li>◊ Very high cutting speed with excellent surface finishing</li> </ul>	<p><b>PETRONAS Mecafluid 149 MB</b></p> <ul style="list-style-type: none"> <li>◊ Very good fluidity and it is designed for grinding ferrous materials</li> <li>◊ Especially formulated for grinding and threading steel</li> <li>◊ Recommended for machining where high precision is necessary</li> </ul>

Kindly consult PETRONAS sales and technical services for recommendations.

# Turbine Oils

The demand for power has become a challenge not only for energy suppliers, but also for turbine manufacturers. Lengthy periods of time in service, extreme operating conditions (high temperatures, elevated operating pressures, potential water contamination) all take their toll on modern steam and gas turbines – and the turbine oil inside them. There is also a risk of costly breakdowns when peak load requirements involve frequent powering up and shutting down.

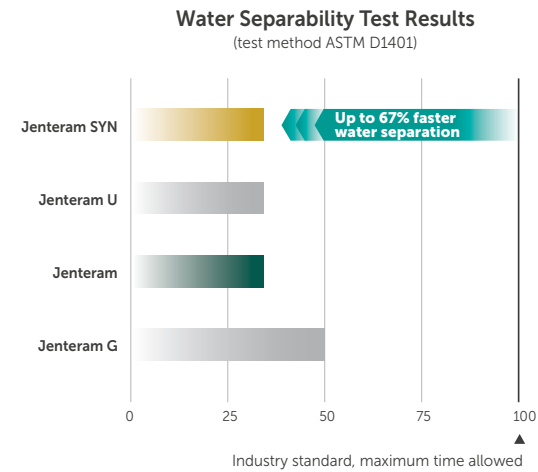
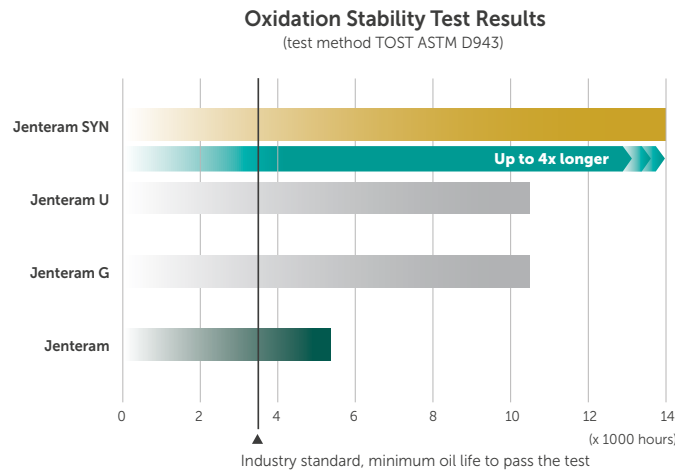
PETRONAS Industrial Solutions offers oils for steam, light or heavy-duty gas turbines that meet or exceed key industrial specifications and OEM requirements. Each one is formulated with high quality, selected base oils enhanced with anti-wear, anti-oxidant, anti-rust and anti-foam additives. From Standard to Premium and Supreme levels of protection, PETRONAS Jenteram Series delivers class-leading performance.



# Turbine Oils

	Product	Key Benefits	Key Applications	Fluid Technology	Performance Levels
Premium	<b>PETRONAS Jenteram G</b>	<ul style="list-style-type: none"> <li>Very good varnish control</li> <li>High anti-wear protection</li> <li>Up to 3x longer oil life*</li> <li>High performance</li> </ul>	<ul style="list-style-type: none"> <li>Modern steam, light and heavy-duty gas turbines, combined cycle turbines with or without associated gear drives. It may also be used on auxiliary turbine equipment such as generators, compressors etc.</li> <li>Plain and rolling element bearings, slides, journals and lightly loaded gear drives where circulation oil is required</li> <li>Turbine systems that require varnish control performance</li> </ul>	Mineral, Ashless	Alstom HTGD 90117 ASTM D-4304 Type I, II and III British Standard BS 489 DIN 51515 Part I and II DIN 51524 Part I Fives Cincinnati P-38 GB 11120-2011 L-TSA and L-TGA General Electric GEK-101941A General Electric GEK-32568K ISO 8068 L-TSA & L-TGA ISO 8068 L-TSE & L-TGE ISO 11158 HH and HL Siemens AG TLV 9013 05 Siemens AG TLV 9013 04 Siemens Std 65/0027 Issue 7 (2016) Siemens Finspong, Siemens Industrial Turbo – Machinery MAT812108 Siemens Finspong, Siemens Industrial Turbo – Machinery MAT812109 Solar ES 9224 Class II

\* vs. minimum requirements of DIN 51515 Part II for industrial turbine oils based on TOST results (ASTM D943)



# Greases

Efficacious lubrication is only as good as the people, equipment, and products involved. This certainly holds true for greases used in industrial applications. Understanding the root causes of problems, deciding on solutions, then recommending the optimal products that deliver cost-effective outcomes is critical when it comes to grease applications.

PETRONAS Industrial Solutions offers a comprehensive grease range. We give you fewer but better options that enable you to deliver effective lubrication, regardless of the conditions. The experts behind our greases have decades of experience and understand your challenges. Whatever your needs may be, our team of experts will help you find the right product.





Greases	Industrial open gears	NLGI Grade
<b>Aluminium Complex</b>		
PETRONAS Grease FG	PETRONAS Grease FG is an Aluminium complex grease specially developed for lubrication of machinery used in food processing and packaging industries.	3
<b>Anhydrous calcium</b>		
PETRONAS Grease CA EP2	PETRONAS Grease CA EP2 is an anhydrous calcium thickened lubricating grease based on a mineral oil. The grease contains antioxidants, corrosion inhibitors and EP/AW additives.	2
<b>Calcium Sulfonate</b>		
PETRONAS Grease CaSx	PETRONAS Grease CaSx is a Calcium Sulphonate complex grease specially developed for industrial, marine and off-road applications.	2
PETRONAS Grease CaSx 1.5/460	PETRONAS Grease CaSx 1.5/460 is a Calcium Sulphonate complex grease specially developed for industrial, steel mills, paper machine, marine and off-road applications.	1/2
<b>Lithium</b>		
PETRONAS Grease Li 2	PETRONAS Grease Li 2 is a non-EP Lithium grease specially developed for industrial general purpose applications.	2
PETRONAS Grease Li EP3	PETRONAS Grease Li EP 3 is recommended for the lubrication of both plain and anti-friction bearings even where severe or shock loads are experienced.	1
PETRONAS Grease Li EP 00	PETRONAS Grease Li EP 00 is a lithium thickened lubricating grease based on mineral oil. The grease contains antioxidants, corrosion inhibitors and EP/AW additives.	0
PETRONAS Grease Li EP 0	PETRONAS Grease Li EP 0 is an extreme pressure Lithium grease specially developed for multipurpose applications, lubrication of both plain and anti-friction bearings even where severe or shock loads are experienced.	0
PETRONAS Grease Li EP 1	PETRONAS Grease Li EP 1 is an extreme pressure Lithium grease specially developed for multipurpose applications, lubrication of both plain and anti-friction bearings even where severe or shock loads are experienced.	1
PETRONAS Grease Li 3	PETRONAS Grease Li 3 is a non-EP Lithium grease specially developed for industrial general-purpose applications.	3
PETRONAS Grease Li EP 2	PETRONAS Grease Li EP 2 is an extreme pressure Lithium grease specially developed for multipurpose applications, lubrication of both plain and anti-friction bearings even where severe or shock loads are experienced.	2
PETRONAS Grease Tutela SP	PETRONAS Grease Tutela SP is an extreme pressure Lithium grease specially developed for automotive applications.	2

Greases	Industrial open gears	NLGI Grade
<b>Lithium Calcium</b>		
PETRONAS Grease LiCa MG XHL	PETRONAS Grease LiCa MG XHL is an extreme pressure Lithium Calcium grease with dual solid friction-reducing additives specially developed for applications requiring heavy duty grease for long-term use.	3
<b>Lithium Complex</b>		
PETRONAS Grease LiX EP 2/380	PETRONAS Grease LiX EP 2/380 is an extreme pressure Lithium complex grease specifically developed for high temperature general purpose industrial applications.	2
PETRONAS Grease LiX MEP	PETRONAS Grease LiX MEP is an extreme pressure Lithium complex grease with solid additives specially developed for lubrication of heavy duty applications where good adhesive properties are required.	2
<b>Lithium Calcium</b>		
PETRONAS Grease LiCa MG XHL	PETRONAS Grease LiCa MG XHL is an extreme pressure Lithium Calcium grease with dual solid friction-reducing additives specially developed for applications requiring heavy duty grease for long-term use.	3
<b>Lithium Complex</b>		
PETRONAS Grease LiX EP 2/380	PETRONAS Grease LiX EP 2/380 is an extreme pressure Lithium complex grease specifically developed for high temperature general purpose industrial applications.	2
PETRONAS Grease LiX MEP	PETRONAS Grease LiX MEP is an extreme pressure Lithium complex grease with solid additives specially developed for lubrication of heavy duty applications where good adhesive properties are required.	2
<b>Polyurea (MDI)</b>		
PETRONAS Grease PUA	PETRONAS Grease PUA is a polyurea (MDI) thickened lubricating grease based on mineral oil. The grease contains antioxidants, corrosion inhibitors and EP/AW additives.	2

# White Oils & Process Oils

PETRONAS White Oil Series are high-quality oils specially developed for a variety of uses, especially in the pharmaceutical and food grade field.



	Process Oils	White Oils
Standard	<b>PETRONAS Process Oil N</b> <ul style="list-style-type: none"> <li>High color stability</li> <li>High solvency</li> <li>High additive miscibility</li> </ul>	<b>PETRONAS Process Oil P</b> <ul style="list-style-type: none"> <li>Low evaporation loss</li> <li>Low volatility</li> <li>Neutral colour</li> </ul>
	<b>PETRONAS Process Oil C</b> <ul style="list-style-type: none"> <li>Low evaporation loss</li> <li>Low volatility</li> <li>Good chromatic stability</li> </ul>	<b>PETRONAS CLRPO</b> <ul style="list-style-type: none"> <li>High quality and rich in paraffinic side-chains and saturated rings</li> <li>Strong oxidation resistance, a low fragrance level and a high level of chromatic stability under light and heat</li> </ul>
	<b>PETRONAS Preme</b> <ul style="list-style-type: none"> <li>Strong oxidizing agents, hard acids and bases</li> </ul>	<b>PETRONAS White Oil P</b> <ul style="list-style-type: none"> <li>High stability</li> <li>Excellent purity</li> <li>Multiple applications</li> </ul>

# Spray Oils

Our Spray Oils are highly refined paraffinic mineral oils with emulsifiers, specifically designed for agricultural and horticultural applications. They provide effective solutions for insect control on fruit crops and ornamental plants while also serving as carriers and enhancers for pesticides and herbicides. With varying evaporation rates and resistance to weathering, they ensure targeted performance throughout all seasons, including deep dormancy periods.



Material			
Standard	PETRONAS Spray Oil 7E WO OLEOC	PETRONAS Spray Oil 7E WO Staehler	PETRONAS Spray Oil 7E WO
	PETRONAS Spray Oil 7E AMC MOR	PETRONAS Spray Oil 11E	PETRONAS Spray Oil 11N
	PETRONAS Banana Oil	PETRONAS Oliocin Plus	PETRONAS All Season

# Other Oils

## Air Tool Oils

### PETRONAS ATO

PETRONAS ATO Series is a range of high performance air tool oils specially developed for a range of pneumatically operated rock drills in underground and surface mining. Formulated with high quality selected mineral base oils enhanced with advanced antiwear, anti-rust, anti-oxidant and anti-foam additives, our air tool oils provide excellent anti-wear, metal wetting properties, adhesiveness, fog and emulsion control. The fog generation is kept at minimum and is non-toxic.



## Chainsaw Oils

### PETRONAS CHAINSAW

PETRONAS Chainsaw Series is a range of high quality chainsaw oil specially developed for the lubrication of cutting chains and cutter bars of modern chainsaws. Formulated with selected mineral base oils enhanced with advanced heavy metal free antiwear, anti-oxidant, anti-rust and adhesive additives, our chainsaw oils provide high anti-wear, high lubricity and adhesive properties for smooth operation of the chainsaws.



## Transformer Oils

### PETRONAS ELEKTRON

PETRONAS ELEKTRON is a range of premium performance oils specially developed to meet the main specifications of all major transformers. Formulated with high quality synthetic base oils enhanced with anti-oxidant additive, PETRONAS ELEKTRON oils provide excellent insulating and cooling properties which extend the oil life due to their natural resistance to degradation.

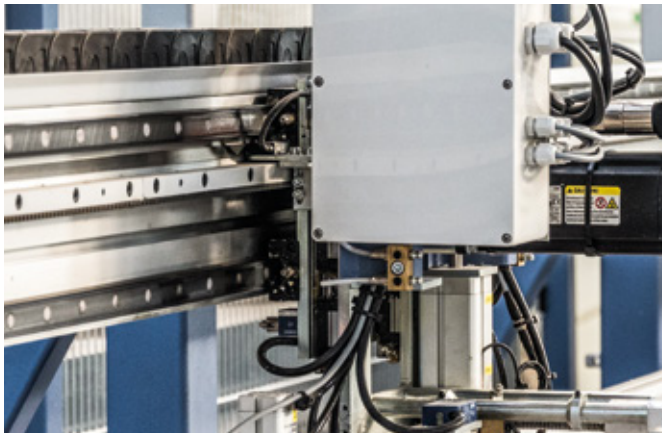




## Slideway Oils

### PETRONAS SLIDEWAY

PETRONAS Slideway Series is a range of high performance lubricants specially developed for machine-tool ways and slides where precision or slow speeds make it necessary to eliminate the 'stick-slip' of tables and slides. Formulated with high quality selected mineral base oils enhanced with advanced antioxidant, anti-rust, extreme pressure, anti-wear and anti-foam additives, our slideway oils provide excellent separation from water-miscible cutting fluids, high antiwear protection and a combination of adhesiveness and stick-slip characteristics ensuring smooth operation of the machine tools.



## Heat Transfer Oils

### PETRONAS HTO

PETRONAS HTO Series are high performance heat transfer fluids specially developed for open and enclosed heat transfer systems operating at high bulk oil temperatures. Formulated with high quality selected mineral base oils enhanced with advanced antioxidant and detergent additives, our heat transfer oils provide high anti-oxidant protection and detergency to eliminate build-up and deposits.



# PETRONAS *Tutela*

The PETRONAS Tutela range of fluids are specifically engineered to provide enhanced protection for ancillary systems and are designed to work in conjunction with PETRONAS Urania to keep your business moving.

- **PETRONAS Tutela Transmission Fluids** combine lower viscosity with strengthened fluid film resistance, to reduce friction and improve fuel efficiency without compromising on protection.
- **PETRONAS Tutela Axle and Gear Fluids** offer outstanding shock load resistance to protect the axle, particularly in low-speed, high-load scenarios such as those experienced in distribution and construction.
- **PETRONAS Tutela Brake Fluids** are designed with all the most critical safety features in mind – protecting vehicles, drivers and passengers in all conditions.
- **PETRONAS Tutela Coolants,** formulated with high-quality additive technologies, cater to the cooling systems of passenger vehicles, light and heavy-duty vehicles, and off-highway equipment.

For further details, please refer to the Automotive PM.



# PETRONAS Urania<sup>®</sup>



PETRONAS Urania with StrongTech™ technology, our range of engine oils for commercial vehicles, is formulated with incredibly strong molecule chains that lock away harmful deposits to maintain optimal viscosity and defend against wear and oxidation, extending the oil's efficiency right up to the next drain.

To withstand the hostile environment deep inside the engine over long distances and in stop/start operating conditions, an oil needs to be incredibly resilient. It needs the durability to maintain its optimal viscosity in the face of high temperatures and harmful deposits. It needs core strength. PETRONAS Urania with StrongTech™ technology is engineered to stay stronger for longer, forming a uniquely strong fluid film to extend drain intervals and engine life, maximise performance and profitability, and give you the core strength to keep moving.

- **Ultimate Protection**  
Prevents wear, cleans deposits, and resists breakdown under extreme conditions.
- **Enhanced Performance**  
Increases power, extends engine life, and protects vital components.
- **Durable Efficiency**  
Extends lifespan, improves fuel efficiency, and reduces operating costs.

For further details, please refer to the Automotive PM.



# PETRONAS *Arbor*

PETRONAS Arbor is the full range of lubricants tailored for agricultural and construction machinery able to keep their efficiency while guaranteeing a longer life-cycle.

PETRONAS Arbor is the perfect solution for high and long-lasting performances for hard daily work.







- **Sludge control**

Sludge slows moving parts down, leading to excessive friction. PETRONAS Arbor protects the engine from sludge and deposits that can affect the machinery's reliability and its durability.

- **Wear protection**

Hard work take its toll on the machinery, putting extra loads throughout the engine. PETRONAS Arbor has been developed to deliver high levels of wear protection.

- **Piston cleanliness**

During the diesel engine combustion process, deposits accumulate, increasing engine wear. PETRONAS Arbor guarantees the operational life of engine components.

- **Soot handling**

Soot leads to a viscosity increase that can affect the engine performance. PETRONAS Arbor with its high resistance against soot can keep high the performance of your engine.

- **Viscosity stability**

Because of its soot handling and its resistance to oxidation, PETRONAS Arbor keeps an optimal viscosity avoiding filters' blockage and protecting the engine longer.

For further details, please refer to the Automotive PM.

# PETRONAS Expert Solutions

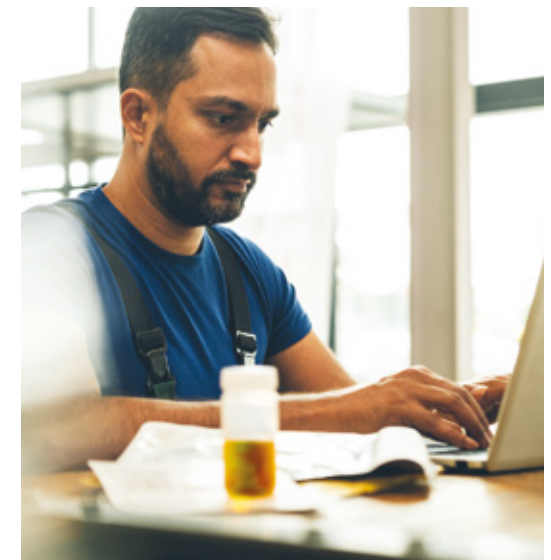
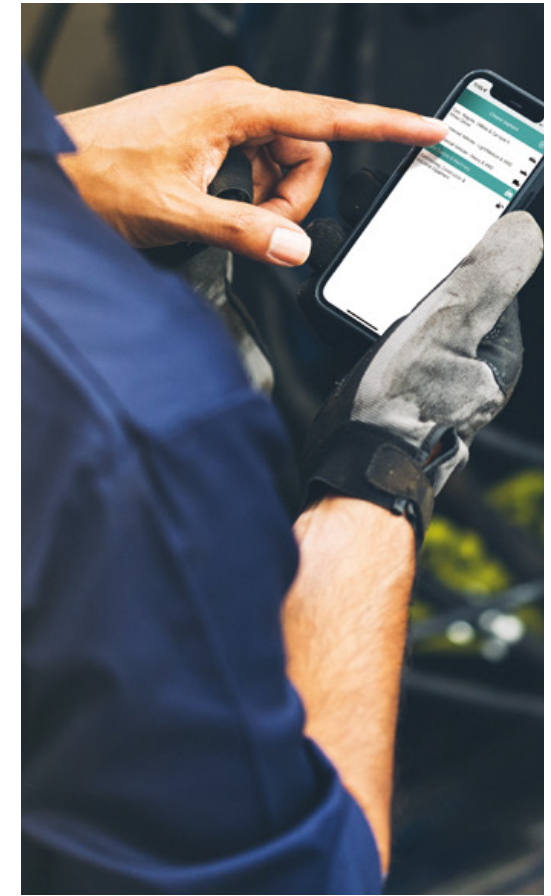
## Your progress. Our priority.

By partnering with you to solve the problems you face today and tomorrow, we can help you move ahead and develop your business. Our insight-driven services help you improve reliability, reduce your operating costs and free up your potential – all because we share your goals and priorities. Expert Solutions from PETRONAS is your secret weapon in your mission to do more, use less and grow faster. It's how our passion for progress can help take you to an exciting and more sustainable future.

## Equipment

Downtime is the enemy of progress. With predictive maintenance and support for your equipment and fluids, we can identify problems before they take hold – so you can plan ahead and focus on success.

- Diagnostics - Oil condition monitoring
- Fluid recommender

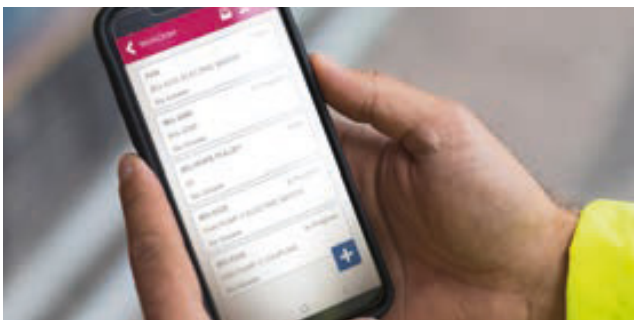
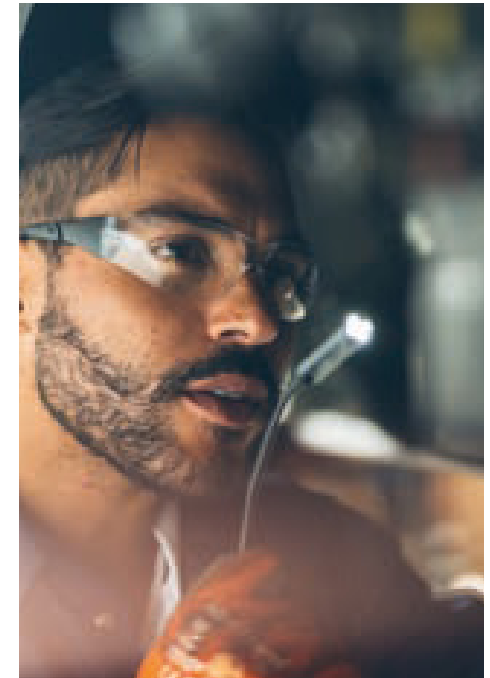




## Operations

With so much happening in your business, it's easy to lose sight of what matters. Our Expert Solutions use tools, services and support to help you achieve greater progress more quickly – and improve efficiency while reducing operational costs.

- Fleet survey
- Fluid-i for remote fluid level visibility and alerts for automatic stock orders



## People

With the right knowledge in your team, you can progress further, faster. That's why we work with your people to build their skills and help them work more effectively day in, day out.

- Technical training programme

# Notes

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[www.pli-petronas.com](http://www.pli-petronas.com)