

Product	Key Benefits	Key Applications	Fluid Technology	Viscosity Grade	Viscosity Index	Pour Point (Flash Point) ***	Performance Levels
<b>Modern, anti-wear hydraulic fluids for multipurpose applications</b>							
PETRONAS Hydraulic ESF	<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 temp. range</li> </ul>	Mobile and industrial applications	Semi-synthetic	46 to 68	174	-33°C	Bosch Rexroth RDE 90235; DIN 51524 Part II HLP and III HVLP (2006); Eaton 03-401-2010; Eaton Lubricant Specification E-FDGN-TB002-E; Fives Cincinnati P-68/P-69/P-70; ISO 11158 HV (FDIS 2008); Parker Denison HF-0/HF-1/HF-2.
PETRONAS Hydraulic PLUS	<ul style="list-style-type: none"> <li>Excellent anti-wear protection</li> <li>Over 5x longer oil life**</li> <li>Excellent performance</li> </ul>	Mobile and industrial applications	Mineral	32 to 68	105	-33°C	Bosch Rexroth RDE 90235; DIN 51524 Part II HLP (2006); Eaton 03-401-2010; Eaton Lubricant Specification E-FDGN-TB002-E; Fives Cincinnati P-68/P-69/P-70; ISO 11158 HM (FDIS 2008); Parker Denison HF-0/HF-1/HF-2.
PETRONAS Hydraulic HV	<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 temp. range</li> </ul>	Mobile and industrial applications	Mineral	32 to 150	143	-33°C	ASTM D 6158 HV; Bosch Rexroth RD90220; DIN 51524 Part II HLP and III HVLP (2006); Eaton 03-401-2010; Fives Cincinnati P-68/ P-69/P-70; GM LS-2 (2004); ISO 11158 HV (FDIS 2008); JCMAS HK P041 (2004); Parker Denison HF-0/HF-1/HF-2; SAE MS1004; SEB 181 222 (2007); US Steel 126, 127 and 136.
PETRONAS Hydraulic	<ul style="list-style-type: none"> <li>Excellent anti-wear protection</li> <li>Over 3x longer oil life*</li> <li>High performance</li> </ul>	Mobile and industrial applications	Mineral	10 to 150	102	-33°C	ASTM D 6158 HM; Bosch Rexroth RD90220; DIN 51524 Part II HLP (2006); Eaton 03-401-2010; Fives Cincinnati P-68/P-69/ P-70; GM LS-2 (2004); ISO 11158 HM (FDIS 2008); JCMAS HK P041 (2004); Parker Denison HF-0/HF-1/HF-2; SAE MS1004; SEB 181 222 (2007); US Steel 126, 127 and 136.
<b>Zinc-free, anti-wear hydraulic fluids for multipurpose applications</b>							
PETRONAS Hydraulic SYN BIO	<ul style="list-style-type: none"> <li>Biodegradability</li> <li>High Viscosity Index</li> <li>Excellent thermal and oxidation stability</li> </ul>	Mobile equipment operating in extreme cold or hot weather conditions as well as in environmental sensitive areas	Synthetic	32 to 46	149	-42°C	Bosch Rexroth RD 90221-1, DIN EN ISO 15380 HEES, Eaton Brochure 03-401-2010 (ISO-VG 46), EU Ecolabel (UK/027/023), ISO 15380 HEES, JCMAS P042 (HKB), Parker HF-1 / HF-2 / HF-6, USDA Bio Preferred, VDMA 24570 (ISO-VG 46), Vessel General Permit (VGP)
PETRONAS Hydraulic HVZF	<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 temp. range</li> </ul>	Mobile and industrial applications	Mineral, Ashless	32 to 68	146	-33°C	DIN 51524 Part II HLP and III HVLP (2006); Eaton Brochure 03-401-2010; Fives Cincinnati P-68/P-69/P-70; ISO 11158 HV (FDIS 2008); Parker Denison HF-0/HF-1/HF-2.
PETRONAS Hydraulic ZF	<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>	Mobile and industrial applications	Mineral, Ashless	32 to 68	102	-33°C	DIN 51524 Part II HLP (2006); Eaton Brochure 03-401-2010; Fives Cincinnati P-68/P-69/ P-70; ISO 11158 HM (FDIS 2008); Parker Denison HF-0/HF-1/HF-2.
<b>Detergent enhanced hydraulic fluids for high water contamination control</b>							
PETRONAS Hydraulic HLPD	<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>	Mobile and industrial applications	Mineral	32 to 68	105	-33°C	Daimler Chrysler DBL 6721 (2000); DIN 51524 Part II HLPD (2006).
<b>Fire resistant hydraulic fluids for fire hazard applications</b>							
PETRONAS Hydraulic FR	<ul style="list-style-type: none"> <li>Excellent fire resistance</li> <li>High anti-wear protection</li> <li>High and stable performance over wide temp. range</li> <li>Environmentally friendly</li> </ul>	Mobile and industrial applications	Synthetic, Organic esters	46 to 68	174	(300°C)	Factory Mutual Approval; HFD Fluid.
PETRONAS Hydraulic HFC	<ul style="list-style-type: none"> <li>Excellent fire resistance</li> <li>Very good anti-wear protection</li> <li>Very good performance</li> </ul>	Industrial applications	Water-glycol	46	n.a.	(n.a.)	Factory Mutual Approval; HFC Fluid.

\*\*\* Typical value for VG 46  
n.a. - not applicable



### PROVEN EXPERTS, ALWAYS READY TO HELP!

At the heart of our services, our experts strive to give you the peace-of-mind you're looking for.

Partner with us and take your business to the next level.

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**PETRONAS**  
Fluid Technology  
Solutions™

**TAKING YOU TO THE NEXT LEVEL  
IN EFFECTIVENESS  
HYDRAULIC FLUIDS**



**YOUR PARTNER FOR PROGRESS**

PETRONAS Lubricants International (PLI) is the global lubricant division of PETRONAS, one of the most successful petrochemical companies in the world.

Our mission is to deliver proven product technology and related services benefitting from our 100 years of experience. We believe in maximising your productivity with value-added products and services that are global, yet personal – our presence in 128 countries ensures our technical expertise reaches you wherever you are.

PLI's differentiator is product excellence, developed by world-class Technology Centres and brought to your market with local expertise. Our passion for performance improvement makes us an obvious choice for key OEMs and delivers success in Formula One Motorsport. Now, it has translated into a comprehensive industrial product range and tailor-made services for you.



Together, let's take your hydraulic system's effectiveness to the next level.

Increasing performance and protection  
Improving uptime and lowering maintenance costs

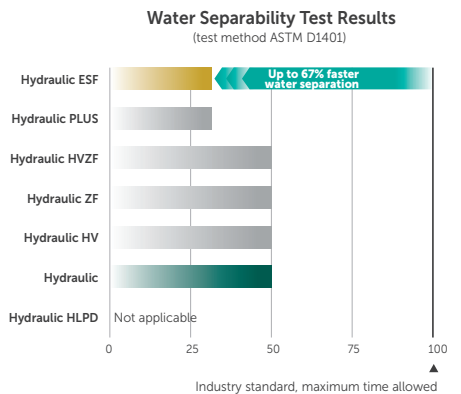
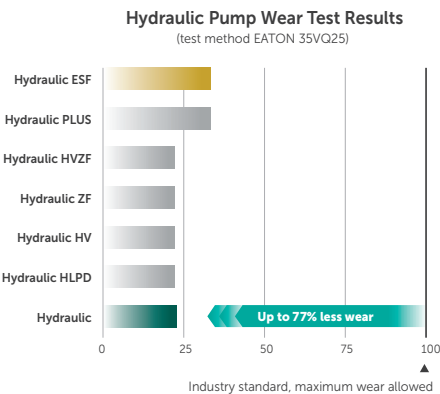
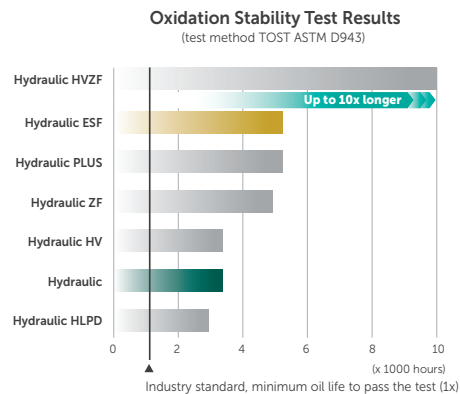
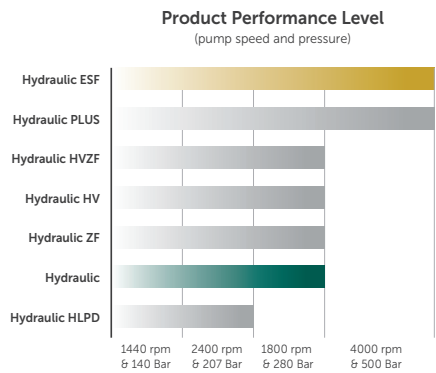
**YOUR KEY TO MAXIMISING PERFORMANCE**

Focusing our expertise, we've developed a comprehensive portfolio of hydraulic fluids that serves every mobile and industrial machinery application. Choose the right product for your application need and take the effectiveness of your hydraulic system to the next level.

	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
SUPREME	<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><li>Mobile and industrial applications</li></ul>	<b>PETRONAS Hydraulic SYN BIO</b> <ul style="list-style-type: none"><li>Biodegradability</li><li>High Viscosity Index</li><li>Excellent thermal and oxidation stability</li></ul>		
PREMIUM	<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><li>Mobile and industrial applications</li></ul>	<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><li>Mobile and industrial applications</li></ul>		
STANDARD	<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><li>Mobile and industrial applications</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><li>Mobile and industrial applications</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><li>Mobile and industrial applications</li></ul>	<b>PETRONAS Hydraulic FR</b> <ul style="list-style-type: none"><li>Excellent fire resistance</li><li>High anti-wear protection</li><li>High and stable performance over wide temperature range</li><li>Environmentally friendly</li><li>Mobile and industrial applications</li></ul>
BASIC	<b>PETRONAS Hydraulic</b> <ul style="list-style-type: none"><li>Excellent anti-wear protection</li><li>Over 3x longer oil life*</li><li>High performance</li><li>Mobile and industrial applications</li></ul>			<b>PETRONAS Hydraulic HFC</b> <ul style="list-style-type: none"><li>Excellent fire resistance</li><li>Very good anti-wear protection</li><li>Very good performance</li><li>Industrial applications</li></ul>
	<b>First price hydraulic fluids</b>			

\*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.



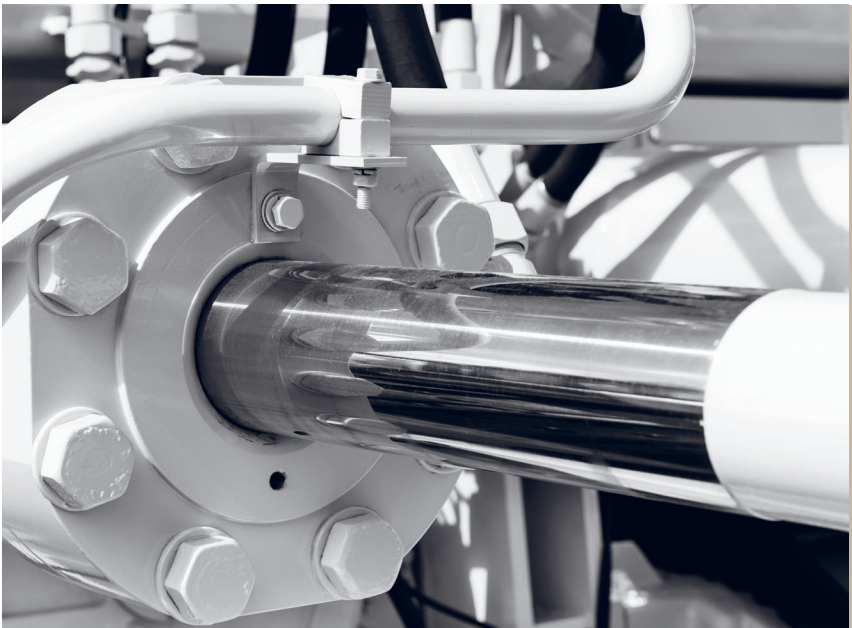
**YOUR CHALLENGES, OUR EXPERTISE**

Today is the age of smaller, faster and stronger. OEMs are offering increasingly compact and advanced hydraulic equipment that perform at increased speeds, higher pressures and tighter component tolerances to significantly improve system efficiency. Additionally, the competitive market compels equipment owners to pursue more effective and longer-lasting solutions to maintain business profitability.

The improvements in equipment design and end-user expectations demand more robust and innovative hydraulic fluids. Reduced oil reservoir capacities along with greater operating pressures and temperatures generate higher oil stress, causing low-quality lubricants to fail

prematurely, thus compromising system performance. This potentially leads to increased maintenance costs and in extreme situations can have a dramatic impact on the continuity of a production process.

At PLI, we understand that maximising uptime is your key challenge. That's why we have developed **Fluid Technology Solutions™**, an intelligent approach to your fluid requirements that maximises your business performance through tailor-made product offerings and expert services. Our superior solutions meet the most severe industry and OEM specifications, giving you the performance you can rely on.



**FTS SERVICE PROGRAM – TAILOR-MADE FOR YOU**

At PETRONAS, we believe success is made by close partnerships. It is that very belief that drives us to work together with you in overcoming the challenges you face – from demands of higher productivity to operating under intense, severe conditions.

That's why we present to you our **Fluid Technology Solutions™** Service Program – a tailor-made range of services designed to maximise your business performance. From specialised on-site analysis to emergency support for operational recovery, we are committed to assisting you in every possible situation.

Partner with us and take your business to the next level.