



Product	Key Benefits	Key Applications	Fluid Technology	Viscosity Grade	TAN, mgKOH/g	Water Seperability (40/40/0) min	Oxidation TOST ASTM D943 (Hours)	FZG Stages Passed	Performance Levels
Heavy duty oil circulating systems									
PETRONAS Circula Syn	<ul style="list-style-type: none"> Excellent water seperability Over 4x longer oil life* Excellent anti-wear protection Excellent resistance to sludge formation 	Circulating systems for paper machine dryer bearings, calendars, winders, enclosed gear drives, large anti-friction and journal bearings	Synthetic	150, 220, 320, 460, 680	0.4	40/40/0-20	4100	12	-
PETRONAS Circula PM	<ul style="list-style-type: none"> Excellent water seperability Over 3x longer oil life* Excellent anti-wear protection Excellent resistance to sludge formation 	Lubrication of bearings, gears and auxiliary equipment in the wet and dryer sections of paper machines Heavy duty circulating system with gears and bearings	Mineral	150, 220, 320	1.5	40/40/0- 15	3200	12	Meets: DIN 51524 Part II HLP (2006) DIN 51517 Part II CL and Part III CLP (2009) Voith VN 108 Wet End (2012) Voith VN 108 Dry End (2012) Voith VN 108 Press Rolls (2012) Voith VN 108 Hydraulic Rolls (2012) SKF Dry End Requirements (2006)
PETRONAS Circula	<ul style="list-style-type: none"> Very good water seperability Very good anti-wear protection Over 2x longer oil life* 	Various heavy duty circulating systems requiring high anti-wear properties Circulating systems including plain or rolling-element bearings and hydraulics	Mineral	150, 220, 320, 460	0.33	40/40/0- 30	2000	10	DIN 51524 - 2 ISO 11158 HM
Steel mill									
PETRONAS Circula Mill NT	<ul style="list-style-type: none"> High water seperability Long oil life Excellent anti-wear & EP protection 	MORGOIL® No-Twist steel mill circulating systems MORGOIL® No-Twist dual steel mill circulating systems	Mineral	100, 460	0.16	40/40/0- 15		>12	MORGOIL® No-Twist Mill
PETRONAS Circula Mill	<ul style="list-style-type: none"> Excellent water seperability Long oil life High anti-wear protection 	MORGOIL® circulating systems requiring high quality circulating oils	Mineral	460	0.05	40/40/0- 10		N/A	MORGOIL® Advanced

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

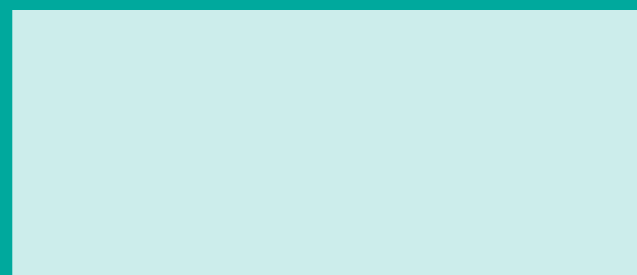


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PETRONAS
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**TAKING YOU TO THE NEXT LEVEL
IN EFFECTIVENESS
CIRCULATING OILS**

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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 circulating systems' effectiveness to the next level.

YOUR CHALLENGES, OUR EXPERTISE

Circulating oil systems provide a continuous flow of lubricant to bearings, gears and other large industrial applications. They are suitable for use in environments where high temperatures, contamination and extended oil life is expected and ensure system reliability. Our goal is to ensure we provide solutions that lead to optimized efficiency and reduce equipment and maintenance costs.

At PLI, we understand that maximizing performance is your key challenge. That is why we have developed

Fluid Technology Solutions™, an intelligent approach to your fluid requirements that maximizes your business performance through tailor-made product offerings and expert services. Focusing our expertise, we've developed a comprehensive portfolio of state-of-the-art circulating oils that serves every type of oil circulating system. Choose the right product for your application need and take the performance of your machinery to the next level.



Increasing performance and protection
Improving uptime and lowering maintenance costs

YOUR KEY TO MAXIMIZING PERFORMANCE

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

	Heavy duty oil circulating systems	Steel mill oil circulating systems
SUPREME	<p>PETRONAS Circula SYN</p> <ul style="list-style-type: none"> Excellent water separability Over 4x longer oil life* Excellent anti-wear protection Excellent resistance to sludge formation 	
PREMIUM	<p>PETRONAS Circula PM (Paper Machine)</p> <ul style="list-style-type: none"> Excellent water separability Over 3x longer oil life* Excellent anti-wear protection Excellent resistance to sludge formation 	<p>PETRONAS CIRCULA MILL NT</p> <ul style="list-style-type: none"> High water separability Long oil life Excellent anti-wear & EP protection
STANDARD	<p>PETRONAS Circula</p> <ul style="list-style-type: none"> Very good water separability Very good anti-wear protection Over 2x longer oil life* 	<p>PETRONAS Circula Mill</p> <ul style="list-style-type: none"> Excellent water separability Long oil life High anti-wear protection
BASIC	First price circulating oils	

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 the demands of higher productivity to operating under intense, severe conditions.

That's why we're presenting you with our **Fluid Technology Solutions™** Service Program – a tailor-made range of services designed to maximize your business performance. From specialized 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.