

PETRONAS CIRCULA PM SERIES

Premium Performance Anti-wear Circulating Oil

PETRONAS Circula PM Series are premium performance anti-wear circulating oils specially developed for paper machine circulating systems operating under normal to extremely heavy duty conditions.

Formulated with high quality selected mineral base oils enhanced with advanced anti-wear, anti-oxidant, anti-rust and anti-foam additives coupled with friction modifiers, PETRONAS Circula PM oils provide excellent anti-wear protection under toughest operating conditions, excellent water separability, excellent resistance to sludge formation, high thermal and oxidation stability for more than 3x longer lasting performance*.

PETRONAS Circula PM Series meets key OEM requirements.

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

Applications

PETRONAS Circula PM Series are recommended for use in:

- lubrication of bearings, gears and auxiliary equipment in the wet and dryer sections of paper machines
- heavy duty circulating system with gears and bearings

Features and Benefits

Features	Benefits
Excellent anti-wear protection	Protects equipment components from excessive wear and provides longer equipment life
High thermal and oxidation stability	Maintains performance levels under high temperatures and pressure, enabling long oil drain intervals
Excellent water separability	Due to excellent water separability the system is protected from water degenerative effects, maintaining circulating system efficiency at required level and reducing maintenance costs
Excellent resistance to sludging	Excellent cleanliness for sludge free circulating systems
Excellent foam stability	Maintains excellent efficiency in circulating systems, ensures smooth operation. Protects the system from air degenerative effects reducing maintenance costs
High rust & corrosion protection	Inhibits the corrosion process that occurs in presence of water, improving equipment life
High multi metal compatibility	Compatible with most metal alloys ensuring trouble free performance of the system
High compatibility with most seal and elastomers	Compatible with most seals and elastomers, which prevents oil leaks and contamination due to seal erosion

PETRONAS CIRCULA PM SERIES

Premium Performance Anti-wear Circulating Oil

Typical Properties

Characteristic	Method	Specification	150	220	320
Specific Gravity @15°C	ASTM D 4052	(1)	0,881	0,895	0,902
Kinematic Viscosity at 40°C, cSt	ASTM D 445	±10%	150	220	320
Kinematic Viscosity at 100°C, cSt	ASTM D 445	**	14,6	19,2	24,9
Viscosity Index	ASTM D 2270	(1)	96	98	100
Flash Point, °C	ASTM D 92	Report	240	240	240
Pour Point, °C	ASTM D 97	**	-21	-21	-18
TAN, mgKOH/g	ASTM D 664	(1)	1,5	1,5	1,5
FZG, Stages Passed	ISO 14635-1	(1)	12	12	12
4-Ball Wear Scar (600N, 1475rpm, 1hr, RT) Scar diameter, mm	DIN 51350-3	(1)	0,7	0,7	0,7
Water Separability, 40/37/3 - mins	ASTM D 1401	**	10	10	15
Copper Strip Corrosion	ASTM D 130	Max. 2	1a	1a	1a
TOST life, hours	ASTM D 943	Min. 1000	3200	3200	3200
Air Release (75°C), mins	ISO 9120	Report	8,7	11,7	12,5
Foam Sequence I, mL	ASTM D 892	Max. 150/0	0/0	0/0	0/0
Foam Sequence II, mL		Max. 75/0	0/0	0/0	0/0
Foam Sequence III, mL		Max. 150/0	0/0	0/0	0/0

All technical data is provided for reference only and all specification based on ISO 11158 HM

**Individual limits accordingly with each viscosity grade / (1): not required in specification / SS is available upon request including quality control limits

Performance Levels

- DIN 51524 Part II HLP (2006)
- DIN 51517 Part II CL and Part III CLP (2009)
- Voith VS 108 Wet End (2021)
- Voith VS 108 Dry End (2021)
- Voith VS 108 Press Rolls (2021)
- Voith VS 108 Hydraulic Rolls (2021)
- SKF Dry End Requirements (2006)

PETRONAS CIRCULA PM SERIES

Premium Performance Anti-wear Circulating Oil

Health, Safety and Environment

This product is unlikely to present any significant health and safety hazards when used in the recommended application. Avoid contact with skin. Wash immediately with soap and water after skin contact. Do not discharge into drains, soil or water.

For further detail regarding storage, safe handling, and disposal of product, please refer to product SDS or contact us at: www.pli-petronas.com.

Important Note

The word PETRONAS, the PETRONAS logo and such other related trademarks and/or marks used herein are trademarks or registered trademarks of PETRONAS Lubricants International Sdn. Bhd. ("PLISB"), or its subsidiaries or related Holding Corporation under license unless indicated otherwise. The PLI Documents and the information contained herein are believed to be accurate as of the date of printing. PLISB makes no express or implied representation or warranties as to its accuracy or completeness or information in or any transaction performed. The PLI Documents and information provided are based on standard tests under laboratory conditions and is given only as a guide. Users are advised to ensure that they refer to the latest version of these PLI Documents. It is the responsibility of the users to evaluate and use products safely, to assess suitability for the intended application and to comply with all applicable laws and regulations imposed by the respective local authorities.

Safety Data Sheets are available for all our products and should only be consulted for appropriate information regarding storage, safe handling and disposal of the product. No responsibility shall be taken by either PLISB or its subsidiaries and related holding corporation for any loss or injury or any direct, indirect, special, exemplary, consequential damages or any damages whatsoever, whether in action of contract, negligence or other tortuous action, in connection with or resulting from abnormal use of the materials and/or information, from any failure to adhere to recommendations, or from hazards inherent in the nature of the materials and/or information. All products, services and information supplied are under our standard conditions of sale. Please consult with any of our local representatives in the event you require any further information.