

PETRONAS GEAR SYN PAO SERIES

Premium Performance Synthetic (PAO) Industrial Gear Oil

PETRONAS Gear Syn PAO Series are premium performance industrial gear oils specially developed for various types of enclosed gear drives operating under normal to extremely heavy duty conditions.

Formulated with high viscosity index synthetic base oil (PAO) enhanced with advanced extreme pressure, anti-oxidant, anti-rust and anti-foam additives, PETRONAS Gear Syn PAO oils provide excellent extreme pressure and anti-wear protection, energy saving, reduced bulk oil temperatures, smooth operation of the gear drives and up to 3x longer lasting performance vs conventional mineral gear oils.

PETRONAS Gear Syn PAO Series meets or exceeds key industrial specifications.

Applications

PETRONAS Gear Syn PAO Series are recommended for use in:

- various types of enclosed industrial gears (spur/helical/bevel/planetary) with circulation or splash lubrication systems operating at bulk oil temperature up to 200°C
- gear drives subjected to high variations in operating and/or ambient temperatures, including cold start-ups
- gears drives subjected to extremely heavy loads
- gear drives sensitive to sludge formation
- non-gear applications include shaft couplings, ball roller and other types of anti-friction bearings

Note: They are not recommended for worm gears due to compatibility concerns of sulfur/phosphorus additives with bronze metallurgy. Industrial gear lubricants as a class are not formulated for some types of heavily loaded hypoid gearing. In these cases automotive type gear lubricants offer better protection.

PETRONAS Gear Syn PAO Series are compatible and could be mixed with conventional mineral gear oil.

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Features and Benefits

Features	Benefits
Low temperature protection	Ensures proper protection of equipment components during cold starts
High viscosity index	Ensures superior performance and protection over a wide temperature range
Excellent extreme pressure protection	Excellent extreme pressure performance giving long gear life in sever loaded gear drives
Excellent anti-wear protection	Protects equipment components from excessive wear and provides longer equipment life
Excellent thermal and oxidation stability	Maintains performance levels under high temperatures and pressure, enabling long oil drain intervals
Excellent resistance to sludging	Excellent cleanliness for sludge free gear drives
Excellent rust & corrosion protection	Inhibits the corrosion process that occurs in presence of water, improving equipment life
Excellent water separability	Due to excellent water separability the system are protected from water degenerative effects, maintaining gear drives efficiency at required level and reducing maintenance costs
Excellent multi metal compatibility	Compatible with most metal alloys ensuring trouble free performance of the system
Very good seal and elastomer compatibility	Compatible with most seals and elastomers, which prevents oil leaks and contamination due to seal erosion

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Typical Properties

Characteristic	Method	Specification	150	220	320
Specific Gravity @15°C	ASTM D 4052	Report	0,868	0,872	0,877
Kinematic Viscosity at 40°C, cSt	ASTM D 445	±10%	150	220	320
Kinematic Viscosity at 100°C, cSt	ASTM D 445	(1)	18,0	23,0	29
Viscosity Index, min	ASTM D 2270	**	133	128	123
Flash Point, °C	ASTM D 92	Min. 200	236	238	238
Pour Point, max °C	ASTM D 97	**	-42	-33	-33
Rust test, A/B	ASTM D 665	(1)	Pass	Pass	Pass
Water Separability, 42/38/0 - mins	ASTM D 1401	**	30	30	30
Copper Strip Corrosion, Visual	ASTM D130	Max. 1	1a	1a	1a
Foam Sequence I, mL	ISO 6427	Max. 100/10	0/0	0/0	0/0
Foam Sequence II, mL		Max. 100/10	0/0	0/0	0/0
Foam Sequence III, mL		Max. 100/10	0/0	0/0	0/0
Weld Load, Kgf	ASTM D2783	(1)	250	250	250
Four-ball wear, mm	ASTM D 4172	(1)	0,40	0,40	0,40
Timken OK Load, lbs	ASTM D2782	(1)	70	70	70
FZG, Stages Passed	ISO 14635-1	Min. 12	>12	>12	>12
Characteristic	Method	Specification	460	680	
Specific Gravity @15°C	ASTM D 4052	Report	0,881	0,885	
Kinematic Viscosity at 40°C, cSt	ASTM D 445	±10%	460	680	
Kinematic Viscosity at 100°C, cSt	ASTM D 445	(1)	37	48	
Viscosity Index, min	ASTM D 2270	**	122	121	
Flash Point, °C	ASTM D 92	Min. 200	238	238	
Pour Point, max °C	ASTM D 97	**	-33	-27	
Rust test, A/B	ASTM D 665	(1)	Pass	Pass	
Water Separability , 42/38/0 - mins	ASTM D 1401	**	30	30	
Copper Strip Corrosion, Visual	ASTM D130	Max. 1	1a	1a	
Foam Sequence I, mL	ISO 6427	Max. 100/10	0/0	0/0	
Foam Sequence II, mL		Max. 100/10	0/0	0/0	
Foam Sequence III, mL		Max. 100/10	0/0	0/0	
Weld Load, Kgf	ASTM D2783	(1)	250	250	
Four-ball wear, mm	ASTM D 4172	(1)	0,40	0,40	
Timken OK Load, lbs	ASTM D2782	(1)	70	70	
FZG, Stages Passed	ISO 14635-1	Min. 12	>12	>12	

All technical data is provided for reference only and all specification based on DIN 51517-3 and ISO 12925-1

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

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Performance Levels

- AGMA 9005-E02
- DIN 51517 Part III
- U.S. Steel 224

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

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