

# PETRONAS HYDRAULIC ZF SERIES

## Premium Performance Ashless Hydraulic Fluids

PETRONAS Hydraulic ZF Series are ashless premium performance anti-wear hydraulic fluids specially developed for a wide range of mobile and industrial hydraulic equipment operating under normal to heavy duty conditions and presence of water that may cause filter blockage.

Formulated with high quality selected base oils enhanced with advanced anti-wear (zinc-free), anti-oxidant, anti-rust and anti-foam additives, PETRONAS Hydraulic ZF fluids provide excellent anti-wear protection under tough operating conditions and up to 5x longer lasting performance\*.

PETRONAS Hydraulic ZF Series meet or exceed key industrial specifications and OEM requirements.

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

### Applications

PETRONAS Hydraulic ZF Series are recommended for use in:

- various mobile and industrial hydraulic systems operating under normal to heavy duty conditions
- hydraulic systems with smaller reservoirs & smaller coolers generating high thermal stress on hydraulic fluids
- sensitive to sludge and varnish formation systems with tight tolerance pumps and servo valves
- hydraulic systems demanding long life lubricants

### Features and Benefits

Features	Benefits
Zinc free Based formula	Reduces risks of ash formation maximizing filter efficiency
Low temperature protection	Ensures proper protection of equipment components during cold starts
High anti-wear protection	Protects equipment components from excessive wear and provides long equipment life
High wet and dry filterability	Maintains high filter efficiency without giving rise to undue pressure drop, thus increasing filter lifetime
Excellent thermal and oxidation stability	Maintains performance levels under high temperatures and pressure, enabling long oil drain intervals
High 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 is protected from water degenerative effects, maintaining hydraulic system efficiency at required level and reducing maintenance costs

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Features	Benefits
High air release and foam stability	Maintains high efficiency in hydraulic systems, ensures smooth operation due to fast air release. Protects the system from air degenerative effects reducing maintenance costs
Excellent 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

### Typical Properties

Characteristic	Method	Specification	32	46	68
Specific Gravity @15°C	ASTM D 4052	(1)	0,871	0,877	0,883
Kinematic Viscosity at 40°C, cSt	ASTM D 445	±10%	32	46	68
Kinematic Viscosity at 100°C, cSt	ASTM D 445	**	5,4	6,8	8,9
Viscosity Index	ASTM D 2270	(1)	102	102	104
Flash Point, °C	ASTM D 92	Report	220	220	230
Pour Point, °C	ASTM D 97	**	-33	-33	-30
TAN, mgKOH/g	ASTM D 664	(1)	0,08	0,08	0,08
FZG, Stages Passed	ISO 14635-1	Min. 10	>12	>12	>12
Water Separability, 40/37/3 - mins	ASTM D 1401	**	15	15	20
Copper Strip Corrosion	ASTM D 130	Max. 2	1b	1b	1b
TOST life, hours	ASTM D 943	Min. 1000	4950	4950	4950
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 DIN 51524-2 (2006) and ISO 11158 HM (FDIS 2008)

\*\*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)
- Eaton Brochure 03-401-2010
- Fives Cincinnati P-68, P-69 and P-70
- ISO 11158 HM (FDIS 2008)
- Parker Denison HF-0, HF-1, HF-2

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

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