

# PETRONAS HYDRAULIC FP SERIES

## Premium Performance Synthetic Phosphate Ester Fire Resistant Hydraulic Fluid

PETRONAS HYDRAULIC FP 46 is a self-extinguishing, non-aqueous hydraulic fluid that is extremely difficult to ignite and does not support its own combustion. This self-extinguishing property exceeds the limits established for "Less Hazardous Hydraulic Fluids" and incorporates phosphate esters' unique true self-extinguishing property.

PETRONAS HYDRAULIC FP 46 offers good fire-resistance plus the excellent lubricity necessary for heavily loaded bearings.

PETRONAS HYDRAULIC FP 46 is widely used in critical hydraulic equipment found in die-casting, steel mills, forging shops, foundries, glass, ceramic factory, etc. where potential fire hazard is found and a HR-D fluid is recommended. Critical equipment should use this self-extinguishing fluid to get the highest level of protection from leaking fluid fires.

Superior Fire-Resistance Properties	FP 46	PAO	Polyol Ester	Mineral Oil
Flash Point, °C	246	235	313	216
Fire Point, °C	357	277	357	240
Auto-Ignition Point, °C	565	388	413	316
Heat of Combustion, kBTU/lb	13.3	17.2	17.1	17.3
Burning after Heat Source Removal	No	Yes	Yes	Yes

### Applications

PETRONAS HYDRAULIC FP 46 is stable up to operation temperatures of about 80°C (175°F). The normal operating temperature should be above 45°C (113°F) to 55°C (131°F).

In case of low environmental temperatures, PETRONAS HYDRAULIC FP 46 maybe pre-heated (not more than 1 W/cm<sup>2</sup> heat-flow) to avoid starting problems of the hydraulic due to too high viscosity.

PETRONAS HYDRAULIC FP 46 is stable in long-time storage; if frozen, it can be thawed and used without harm. If petroleum oil contamination is more than 3-5%, this will reduce the fire-resistance significantly.

### Features & Benefits

- Self-extinguishing fire-resistant properties
- Superior oxidation and thermal stability
- Good hydrolytic stability
- Excellent lubrication properties
- Biodegradable fluids

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## Typical Properties

Characteristic	Value
Color	Clear amber liquid
Specific Gravity, g/ml	1.15
Viscosity @40°C, cSt	46
Viscosity @100°C, cSt	5.0
Pour Point, °C	0
Boiling Point (°C @ 760 mmHG)	416
TAN, mg KOH/g	0.03
ASTM Rust Test, Procedure A	Passed
<b>Engineering Design Data:</b>	
Evaporation Loss, wt. % (22 hrs @149°C)	1.5
Coefficient of Thermal Expansion @37.8°C (ml/ml/°C)	0.0003
Thermal Conductivity @ 25°C (btu/hr/ft <sup>2</sup> /°C/ft)	0.0706
Surface Tension (dynes/cm) @ 20°C	42
Refractive Index @ 20°C	1.551
Heat of Combustion (btu/lb)	13, 459
Specific Heat (btu/lb/°C) @37.8°C	0.376
@149°C	0.442
<b>Performance Data</b>	
Shell 4-Ball Test	
1 kg load, Scar dia. mm, avg.	0.20
40 kg load, Scar dia. mm, avg.	0.54

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All technical data is provided for reference only and all specification based on ISO 12922

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

### Compatibility

PETRONAS HYDRAULIC FP 46 has no effect on metals if the fluid is kept in good storage condition.

It is compatible with Viton and butyl rubber seals but not neoprene or "BunaN" (NBR) seals.

### Packaging

In 205 Liters Drum

### Customer Advice

For further assistance on product SDS, recommendation or technical queries, please liaise with the regional technical services engineer or contact HQ technical engineers.

### Important Note

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