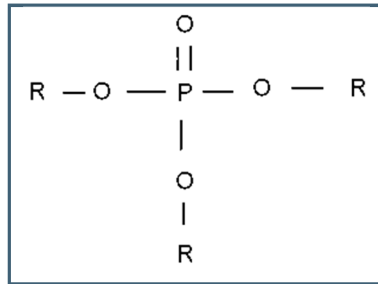
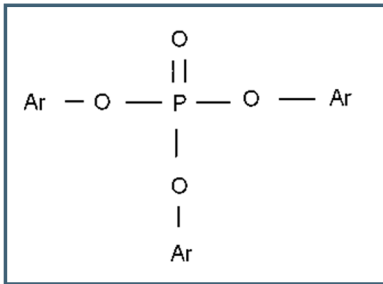


Product Bulletin SYN-O-AD® Phosphate Esters

OVERVIEW

SYN-O-AD® lubricant additives and base stocks are triaryl or trialkyl phosphates, which provide Ashless anti-wear/EP film formation and Superior oxidation and thermal stability

Organic phosphate esters are important functional additives employed in lubricants and metalworking fluids. SYN-O-AD® lubricant additives are free of metallic, sulfur, and chlorine compounds. SYN-O-AD® phosphate ester products exhibit superior oxidative stability. Lubrication is enhanced based on the decomposition of the additive at the contacting metal surfaces. Additive level in formulations ranges between 1-3 wt. %. Improved seal swell level is at 1-2 wt. %.



SYN-O-AD® PRODUCT SELECTOR

Butylated Phenyl Phosphate

SYN-O-AD® 8485
 SYN-O-AD® 8478
 SYN-O-AD® 8477
 SYN-O-AD® 8499 *features low TPP*

Trixylenyl Phosphate

SYN-O-AD® 8475

Tricresyl Phosphate

SYN-O-AD® 8484

Tributyl Phosphate

SYN-O-AD® 8412

Isopropylated Phenyl Phosphate

SYN-O-AD® 9578

SAFETY & HANDLING

Consult the Material Safety Data Sheet. Note that the modern phosphate ester SYN-O-AD® 8499 provides the needed % Phosphorus, Viscosity and AW performance in a more sustainable product design that includes a reduced HSE profile, shown on the SDS not classified under GHS nor regulated for transport.

SHIPPING INFORMATION

SYN-O-AD® 8412 is available in bulk and 455 lb. drums.
 SYN-O-AD® 8477 is available in bulk and 525 lb. drums.
 SYN-O-AD® 8478 is available in bulk and 533 lb. drums.
 SYN-O-AD® 8485 is available in bulk and 533 lb. drums.
 SYN-O-AD® 8499 is available in bulk and 525 lb. drums.

TYPICAL PROPERTIES

*Typical properties are not Sales Specifications. Sales Specifications are available on request

SYN-O-AD® Product	8485	8478	8477	8499	9578	8484	8475	8412
Specific gravity, 20/20°C	1.18	1.17	1.16	1.16	1.16	1.17	1.14	0.98
Viscosity, cst @ 40°C	22	32	46	46	32	32	46	2.4
Pour point, °C	-26	-23	-18	-18	-24	-30	-29	-80
Flash point, °C	241	257	260	246	255	241	235	166
Acidity, mgKOH/g	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture, weight %	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Phosphorus, weight %	8.5	8.0	7.7	7.9	8.0	8.4	7.7	11.7

KEY APPLICATIONS

Product	8485	8478	8477	8499	9578	8484	8475	8412
ATF Fluid	X	X	X	X	X			
Aviation hydraulic fluid							X	X
Drilling mud additive							X	X
Engine/turbine oils	X	X	X	X	X	X		
Fire resistant hydraulic fluids	X	X	X			X		
Grease	X	X	X	X	X			
Metalworking fluids	X	X	X	X	X	X	X	X
Refrigerant lubricant additive	X	X	X	X	X	X		
Seal swell agent	X	X	X	X	X	X	X	
Vegetable hydraulic fluid	X	X	X	X	X	X		

ANTIWEAR PERFORMANCE

Four Ball Wear Test, ASTM D-4172, mm wear scar 1200 RPM, 40 kg, 60 min, 75°C

Product	8485	8478	8477	8499	9578	8484	8475	Reference Oil
2% wt. in mineral oil (ISO 22)	0.46	0.48	0.49	0.46	0.43	0.44	0.95	
2% wt. in PAO (ISO 32)		0.48	0.49	0.51	0.51	0.48	0.46	0.86
2% wt. in polyol ester (ISO 22)		0.50	0.51	0.51	0.51	0.54	0.51	0.75

For more information about our products and to place an order, please contact your nearest ICL-IP regional sales office:

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Tel: 021-53863336
Fax: 021-53863336

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