



Your Foundation for Innovation

Synfluid[®] PAOs – The proven problem solvers

As the world's computing needs advance, technology is evolving with demand and with it comes the challenge of finding an energy solution that is efficient and sustainable. Data centers and similar computing infrastructures consume a large amount of energy and water for cooling, and the environmental impact is a growing concern.

Traditional means of cooling data centers, such as air-cooling, present many drawbacks including consuming more energy, high water usage, increasing emissions, generating noise pollution, and requiring a larger footprint. Immersion cooling offers an efficient alternative to air-cooling.



What is immersion cooling?

Immersion cooling is a method of cooling where computer server components and hardware are immersed in a dielectric, thermally conductive fluid to transfer heat away. Heat can be managed more effectively with immersion cooling since the heat transfer efficiency is tied to the density of the cooling fluid. The density of an oil is more than a thousand times that of air, therefore liquid cooling offers improved heat transfer capabilities.

This is an application where Synfluid[®] PAOs excel as the foundation for your formulation. Synfluid[®] PAOs are carefully designed synthetic base oils with excellent heat transfer, viscosity, and dielectric properties, as well as stability over a wide range of temperatures. Synfluid[®] PAOs have been used in similar applications to immersion cooling for over 40 years.

Let Synfluid® PAOs be your foundation for innovation

PAOs are used in many synthetic products such as lubricants, greases and fluids, and have emerged as essential components in many applications. The increase in PAO applications is largely driven by the stability of the PAO molecule. This stability, along with a host of other unique performance characteristics, makes PAOs far superior in a variety of end uses.



Energy reduction

- Excellent dielectric properties and effective liquid insulators
- Superior thermal conductivity and heat transfer capabilities
- Low volatility and excellent thermal stability over a wide range of temperatures



Environmentally friendly and safe

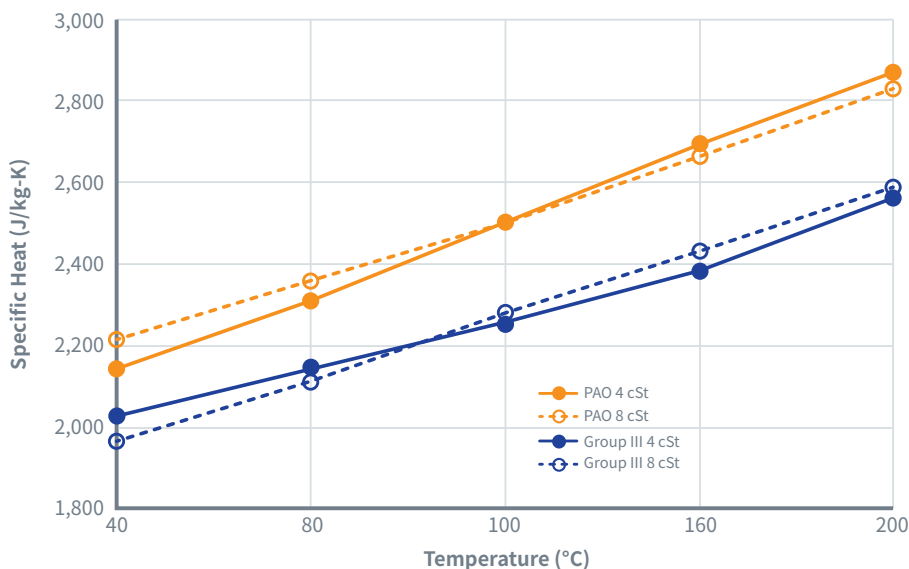
- Low viscosity PAOs can be used in environmentally friendly and biodegradable fluids. Our lowest viscosity products, PAO 2 and 2.5, are readily or inherently biodegradable.
- Increased safety thanks to low flammability, high flash and fire points
- All Synfluid® products are NSF H1 and HX-1 registered and incidental food contact certified.



Improved reliability

- High viscosity index (VI) of our PAOs provides maximum protection in both hot and cold operating conditions
- High material compatibility, not corrosive to copper, and non-staining to aluminum
- Outstanding oxidative stability, hydrolytic stability, and water shedding properties lead to long-lasting fluids

Excellent PAO Thermal Properties



Typical Synfluid® PAO Properties

Properties	Method	Units	PAO 2	PAO 4	PAO 6
Color, Pt-Co	ASTM D5386		0	0	0
Density	ASTM D7042	Lb/gal	6.660	6.835	6.910
Dielectric Constant	ASTM D150		2.09	2.10	2.13
Flash Point (°C)	ASTM D92	°C	155	219	240
Fire Point (°C)	ASTM D92	°C	177	252	274
Kinematic Viscosity					
100°C	ASTM D445/D7042	cSt	1.71	3.84	5.86
40°C	ASTM D445/D7042	cSt	5.03	16.78	30.89
Thermal Conductivity					
93°C	ASTM D 7896	W/m-K	0.136	0.143	0.151
38°C	ASTM D 7896	W/m-K	0.141	0.150	0.155
Specific Heat					
120°C	ASTM E 1269	J/kg-K	2,504	2,510	2,327
40°C	ASTM E 1269	J/kg-K	2,203	2,143	2,028

A full listing of our products is available at www.synfluid.com.

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Contact us

www.synfluid.com

synfluid@cpchem.com

Chevron Phillips Chemical Company

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