

SpectraSyn™ Polyalphaolefins (PAO)

2 -10 cSt

Description

ExxonMobil's low viscosity SpectraSyn™ PAO Group IV category products are hydrogenated olefin oligomers manufactured by the catalytic polymerization of linear alphaolefins. They have well-defined, wax-free isoparaffinic structures.

The low viscosity SpectraSyn™ PAO products feature numerous performance advantages compared to mineral oils. These advantages include better low temperature properties (pour point and viscosity), low volatility, and improved thermal stability. Because of their excellent response to antioxidant additives, SpectraSyn™ PAO products can be formulated to provide very high oxidation resistance. SpectraSyn™ PAO products have high viscosity indices, which translate into improved flow at low temperatures and increased film thickness at high temperatures. In addition, low viscosity SpectraSyn™ PAO products are hydrolytically stable, have good compatibility with mineral oils and can be combined with other synthetic basestocks (e.g. esters or alkylated naphthalenes) for improved solvency and deposit control. All of these features make the low viscosity SpectraSyn™ PAO products attractive blend components for upgrading basestock quality.

Applications

ExxonMobil's low viscosity SpectraSyn™ PAO products provide superior lubrication as the primary basestocks for synthetic lubricants used in passenger car engines, heavy-duty diesel engines, transmissions, gear boxes and a variety of industrial applications. SpectraSyn™ PAO can also be combined with our high viscosity SpectraSyn PAO and/or SpectraSyn Ultra™ PAO to meet a wide range of viscosity targets including wide cross-grade engine and automotive gear oils as well as various ISO VG industrial oils. SpectraSyn™ PAO should be considered for upgrading mineral oil basestocks and for other applications where high-quality, high-purity hydrocarbons are required.

Synthetic lubricants formulated with SpectraSyn™ PAO may offer the following benefits:

- Extended drain intervals
- Improved fuel economy/energy efficiency
- Enhanced wear protection
- Wide range of operating temperatures

SpectraSyn™ PAO products are registered worldwide, meet the FDA 21 CFR 178.3620(b) requirements for Technical White Oil, have USDA H1 approval for lubricants with incidental food contact, and are listed in the National Sanitation Foundation (NSF) White book.

	SpectraSyn™	2	2B	2C*	4	5*	6	8	10
Basics	Specific Gravity @ 15.6/15.6°C	0.798	0.799	0.798	0.820	0.824	0.827	0.833	0.835
	Kinematic Viscosity @ 100°C, mm ² /s (cSt)	1.7	1.8	2.0	4.1	5.1	5.8	8.0	10.0
	Kinematic Viscosity @ 40°C, mm ² /s (cSt)	5	5	6.4	19	25	31	48	66
	Kinematic Viscosity @ -40°C, mm ² /s (cSt) ^a	262	---	---	2,900	4,920	7,800	19,000	39,000
	Viscosity Index	---	---	---	126	138	138	139	137
	Pour Point, °C	-66	-54	-57	-66	-57	-57	-48	-48
	Flash Point, Open Cup, °C	157	149	> 150	220	240	246	260	266
	Water, ppm	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	Refractive Index @ 25.0°C ^a	1.4418	---	1.4400	1.4535	---	1.4565	1.4605	1.4615
	Total Acid Number (TAN), mg KOH/g	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Appearance	Appearance (B&C = Bright & Clear)	B&C	B&C	B&C	B&C	B&C	B&C	B&C	B&C
	Color, ASTM	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

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Flow	Kinematic Viscosity @ 0°C, mm²/s, (cSt) ^a	19	---	---	100	---	208	402	593
	Kinematic Viscosity @ -20°C, mm²/s, (cSt) ^a	42	---	---	392	---	980	2,060	3,380
	Kinematic Viscosity @ -54°C, mm²/s, (cSt) ^a	---	---	---	14,500	---	68,500	---	---
	Apparent Viscosity @ -40°C by Mini-rotary Viscometer, cP ^a	---	---	---	< 5,000	4,200	6,500	16,200	---
	Brookfield Viscosity @ -40°C, cP ^a	360	---	---	2,500	---	7,310	17,590	36,650
	Cold Cranking Simulator @ -25°C, cP ^a	---	---	---	---	---	1,410	2,880	5,080
	Cold Cranking Simulator @ -30°C, cP ^a	---	---	---	910	---	2,260	4,800	8,840
	Cold Cranking Simulator @ -35°C, cP ^a	---	---	---	1,424	2,420	---	---	---
	High-Temp. High-Shear Viscosity @ 150°C, cP ^a	---	---	---	1.46	---	2.08	2.58	---
	Surface Tension @ 24°C, mN/m, (dynes/cm) ^a	28.0	---	27.3	29.1	---	29.7	29.8	30.2
Thermal	Specific Heat @ (Temperature °C) ^a	0.55 ⁽³⁹⁾	---	---	0.53 ⁽³⁷⁾	---	0.55 ⁽⁷⁵⁾	0.55 ⁽⁷⁵⁾	0.55 ⁽⁷⁵⁾
	Autoignition Temperature, °C ^a	350	---	---	351	---	378	378	---
	Density Correction Factor, (g/cc)/°C ^a	6.73 x 10 ⁻⁴	---	6.47 x 10 ⁻⁴	6.41 x 10 ⁻⁴	---	6.28 x 10 ⁻⁴	6.24 x 10 ⁻⁴	6.32 x 10 ⁻⁴
	Fire Point, °C ^a	176	---	---	256	---	266	286	296
	Evaporation Loss 150°C for 22 hrs. wt.% ^a	75.3	---	---	1.6	---	1.4	0.8	0.7
	Evaporation Loss 205°C for 6.5 hrs. wt.% ^a	---	---	---	---	---	10.3	5.5	---
	Noack Volatility, wt. %	---	---	---	14	6.8	6.4	4.1	3.2
	Thermal Conductivity @ [BTU/hr(ft)²(°F/ft)] (Temp °C), ^a	0.0810 ⁽³⁹⁾	---	---	0.0850 ⁽³⁹⁾	---	0.0903 ⁽³⁸⁾	0.0906 ⁽³⁸⁾	---
	Vapor Pressure @ 150°C, mm Hg abs. ^a	18	14.4	---	0.23	---	0.14	0.11	---
Solubility	Aniline Point, °C ^a	100.8	103.7	104.5	119.2	---	126.1	130.8	134.6
	Kauri-Butanol Value (KB) ^a	+ 4.0	---	---	- 3.8	---	- 9.5	- 16.1	- 18.4
	Solubility Parameter @ 25°C, (cal/cc) ^{0.5} ^b	7.99	---	8.04	8.09	---	8.14	8.15	8.17
Perform.	Dielectric Constant @ 25°C ^a	2.08	---	---	2.10	---	2.11	2.12	---
	Dielectric Strength, kv ^a	43.1	---	---	43.6	---	39.4	37.7	35.6
	Copper Corrosion @ 100°C for 3hrs. ^a	1b	---	1b	1b	---	1b	1b	1b
	Demulsibility @ 82°C 40-40-0, min ^a	0	---	---	0	0	0	0	0
	Foam, Seq. 1, mL/mL ^a	0/0	---	0/0	0/0	---	15/0	25/0	70/0

^a Single sample or two sample average determinations

^b Calculated

* Contact sales representatives for information on SpectraSyn™ 2C & 5

Safety and Handling

For information on toxicology and safe handling of these products refer to the Material Safety Data Sheets, available on request or visit our Web site at www.exxonmobilsynthetics.com.

Shipping Information

DOT Hazard Class: Not Regulated

DOT Hazard Labeling: None Required

Availability

ExxonMobil SpectraSyn™ PAO products are available in drums and in bulk. Samples are available upon request. Please call 1.800.682.8342 in the U.S., 32.2.722.36.50 in Brussels; 86.21.2407.5157. in Shanghai; 65.6885.8419 in Singapore or 81.3.6713.4040 in Tokyo. Or visit our Web site at www.exxonmobilsynthetics.com

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