



## Trusted synthetic base stock for your premium lubricants

Formulators of finished automotive and industrial lubricants face difficult challenges. The marketplace demands enhanced performance capabilities, improved flow at low temperatures and better durability. For trusted solutions, they can turn to our portfolio of PAOs, which help meet a wide range of performance requirements for many lubricant applications, such as passenger car engine oils, driveline lubricants, industrial machinery, greases, and heavy-duty truck engines, as well as compliance with European and U.S. incidental food contact regulations.

### SpectraSyn™ PAO\*

| Grade          | SG at 15.6/<br>15.6°C | KV at 100°C<br>cSt | KV at 40°C<br>cSt | VI            | Pour point<br>°C   | CCS at A/B<br>cP** | NOACK<br>volatility, wt. % | Flash point (COC)<br>°C |
|----------------|-----------------------|--------------------|-------------------|---------------|--------------------|--------------------|----------------------------|-------------------------|
|                | ASTM D4052            | ASTM D445          | ASTM D445         | ASTM<br>D2270 | ASTM D97/<br>D5950 | ASTM D5293         | ASTM D5800/<br>DIN51581    | ASTM D92                |
| SpectraSyn 2   | 0.798                 | 1.7                | 5.0               | N/A           | -66                | —                  | —                          | 157                     |
| SpectraSyn 2B  | 0.799                 | 1.8                | 5.0               | N/A           | -54                | —                  | —                          | 149                     |
| SpectraSyn 2C  | 0.798                 | 2.0                | 6.4               | N/A           | -57                | —                  | —                          | >150                    |
| SpectraSyn 4   | 0.820                 | 4.1                | 19.0              | 126           | -66                | 1,424 A            | <14.0                      | 220                     |
| SpectraSyn 5   | 0.824                 | 5.1                | 25.0              | 138           | -57                | 2,420 A            | 6.8                        | 240                     |
| SpectraSyn 6   | 0.827                 | 5.8                | 31.0              | 138           | -57                | 2,260 B            | 6.4                        | 246                     |
| SpectraSyn 8   | 0.833                 | 8.0                | 48                | 139           | -48                | 4,800 B            | 4.1                        | 260                     |
| SpectraSyn 10  | 0.835                 | 10.0               | 66                | 137           | -48                | 8,840 B            | 3.2                        | 266                     |
| SpectraSyn 40  | 0.850                 | 39.0               | 396               | 147           | -36                | —                  | —                          | 281                     |
| SpectraSyn 100 | 0.853                 | 100.0              | 1240              | 170           | -30                | —                  | —                          | 283                     |

\* Typical properties; actual values will vary; not to be construed as specifications; sales specifications available at [exxonmobilsynthetics.com](http://exxonmobilsynthetics.com).

\*\*CCS at A/B: A= -35°C, B= -30°C

### Performance benefits include:



High viscosity index for enhanced wear protection and energy efficiency



Low-temperature fluidity for optimal flow



Low volatility to minimize oil consumption



Excellent thermal and oxidative stability for long drain intervals



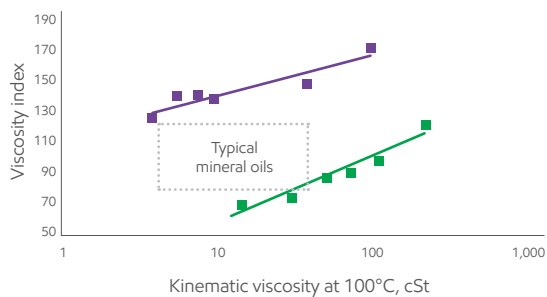
Low traction forces

Backed by our global supply network and decades of extensive research, SpectraSyn high-viscosity PAO base stocks are available in viscosity grades of 40 and 100 cSt. They are especially well suited for formulating industrial oils that require high stability under demanding conditions. Their high viscosity index (VI) can translate into improved flow at low temperatures and increased film thickness at high temperatures.

SpectraSyn low-viscosity (LoVis) PAO base stocks, available in viscosity grades from 2 to 10 cSt, are used to formulate synthetic lubricants and upgrade mineral oil-based products. Formulators use our LoVis PAOs to gain better low-temperature properties, low volatility and improved oxidative stability compared to mineral oils. LoVis PAOs are well suited for multigrade engine and automotive gear oils, as well as various ISO viscosity grade industrial oils. Find the solutions to your formulation challenges by choosing SpectraSyn PAO base stocks.

|                 | 4cSt |           | 6 cSt |           | 8cSt  |           |
|-----------------|------|-----------|-------|-----------|-------|-----------|
|                 | PAO  | Group III | PAO   | Group III | PAO   | Group III |
| KV@100°C, cSt   | 4.61 | 4.62      | 5.92  | 6.00      | 7.86  | 7.76      |
| Viscosity index | 131  | 129       | 139   | 133       | 138   | 129       |
| Pour point, °C  | <-66 | -24       | -54   | -21       | -48   | -21       |
| CCS@-30°C, cP   | 1000 | 1700      | 2260  | 4000      | 4800  | 8760      |
| MRV@40°C, cP    | 3400 | 151000    | 6500  | Frozen    | 16200 | Frozen    |

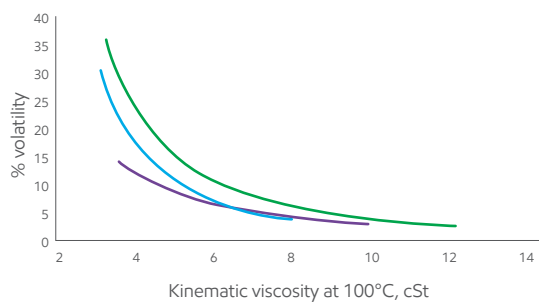
## Viscosity index comparison



At any given viscosity, the VI of the PAO is significantly higher than PIB and mineral oils.

Test method: ASTM D2270

## NOACK volatility



SpectraSyn™ PAOs demonstrate lower volatility at higher temperatures than mineral oils.

Test method: ASTM D5800/DIN51581

## Oxidation stability test

PAO vs. mineral oil (2% antioxidant)

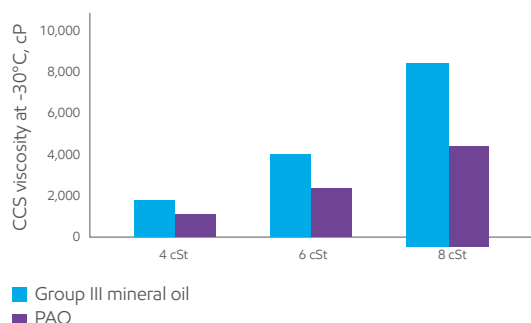
| Product               | Mineral oil Group II | 6 cSt PAO | 40 cSt PAO | 100 cSt PAO |
|-----------------------|----------------------|-----------|------------|-------------|
| % Vis change at 100°C | 215.7                | 3.5       | 2.6        | 1.8         |
| TAN change, mg        | 14.5                 | 0.1       | 0.08       | 1.1         |
| Lead loss, mg         | 160.7                | 0.9       | 0.1        | 0.2         |
| Sludge                | Moderate             | Nil       | Nil        | Trace       |

Good oxidative stability is essential for applications at elevated temperatures with air contact.

PAOs show excellent oxidative stability when formulated with suitable antioxidants.

Test conditions: 163°C (325°F), 72 hours  
Test method: ExxonMobil method

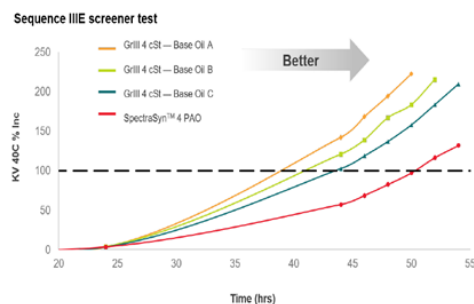
## Cold crank simulator comparison



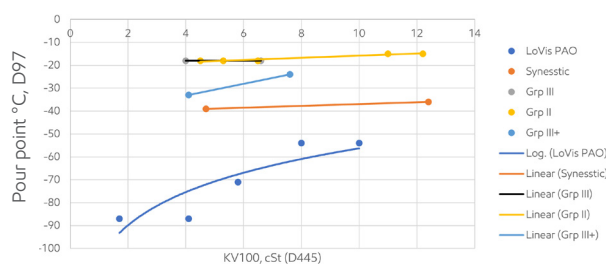
PAOs have significantly lower viscosity at low temperatures compared to a Group III mineral oil.

Test method: ASTM D5293

## Thermal — oxidative stability



## Low temperature fluidity



Data from tests performed by or on behalf of ExxonMobil

©2023 ExxonMobil. ExxonMobil, the ExxonMobil logo, the interlocking "X" device and other product or service names used herein are trademarks of ExxonMobil, unless indicated otherwise. This document may not be distributed, displayed, copied or altered without ExxonMobil's prior written authorization. To the extent ExxonMobil authorizes distributing, displaying and/or copying of this document, the user may do so only if the document is unaltered and complete, including all of its headers, footers, disclaimers and other information. You may not copy this document to or reproduce it in whole or in part on a website. ExxonMobil does not guarantee the typical (or other) values. Any data included herein is based upon analysis of representative samples and not the actual product shipped. The information in this document relates only to the named product or materials when not in combination with any other product or materials. We based the information on data believed to be reliable on the date compiled, but we do not represent, warrant, or otherwise guarantee, expressly or impliedly, the merchantability, fitness for a particular purpose, freedom from patent infringement, suitability, accuracy, reliability, or completeness of this information or the products, materials or processes described. The user is solely responsible for all determinations regarding any use of material or product and any process in its territories of interest. We expressly disclaim liability for any loss, damage or injury directly or indirectly suffered or incurred as a result of or related to anyone using or relying on any of the information in this document. This document is not an endorsement of any non-ExxonMobil product or process, and we expressly disclaim any contrary implication. The terms "we," "our," "ExxonMobil Product Solutions" and "ExxonMobil" are each used for convenience, and may include any one or more of ExxonMobil Product Solutions Company, Exxon Mobil Corporation, or any affiliate either directly or indirectly stewarded.

Scan for more  
information

**ExxonMobil**