



Synesstic™ alkylated naphthalene (AN) portfolio

Synesstic AN, the ExxonMobil API Group V base stock, can enable formulators to create new formulations that meet the growing need for long-lasting, varnish-free, high-thermal oxidative stability, and excellent hydrolytic stability lubricants. Increasing legislative demands on GHG emissions, new technologies and equipment for higher power density, improved energy efficiency, and extended durability, are all paving the way for lubricants and greases that deliver higher performance and improved efficiency. Formulators can leverage the unique characteristics of Synesstic AN base stocks to develop modern, high-performance lubricants in various applications.

Grade	SG at 15.6/15.6°C	KV at 100°C cSt	KV at 40°C cSt	VI	Pour point °C	Flash point (COC) °C	Biodegradability*	Passenger car motor oil	Heavy duty motor oil	Automatic transmission fluid	Automotive gear oil/ Heavy duty transmission fluid	2 & 4 stroke engine oil	Electric vehicle driveline fluid	Industrial gear oil	Turbine oil	Chain oil	Hydraulic fluid	Compressor oil	Grease	Food processing/ textile oils
	ASTM D4052	ASTM D445	ASTM D445	ASTM D2270	ASTM D97 / D5950	ASTM D92	OECD 301F/ 301B													
Synesstic™ 5	0.908	4.7	29	74	-39	222	Readily	○	○	○	○	○	○	○	○	○	○	○	○	○
Synesstic™ 12	0.887	12.4	109	105	-36	258	Inherently		○					○	○	○	○	○	○	○

The data shown are typical that may vary with time. The colored circles represent the treat rates of each Synesstic grade in various applications. In a number of cases, different treat rates can be chosen to achieve specific formulation goals.

○ >80% ○ 40-60% ○ ≤20%

Alkylated naphthalene

With unique structures that resist oxidation and prevent the formation of deposits and varnish, alkylated naphthalene is a family of low and high viscosity base stocks that offer superb oxidative, thermal, and hydrolytic stability.



A double-ring aromatic center with 1,2 or more alkyl side chains

Performance benefits



Long-lasting, clean performance and deposit control in formulations



High performance in wear protection



Excellent thermal-oxidation resistance



Controlled seal swell and additive solubility performance



Excellent hydrolytic and thermal stability



Improved performance under severe conditions



Low volatility



Improved additive response

Application flexibility

Synesstic alkylated naphthalene can be used in a broad range of automotive and industrial applications:

- Compressor
- Industrial gear
- Greases
- Turbine
- Food process machinery
- Chain

*Biodegradability using OECD 301F/301B testing guidelines. (OECD, 1992)

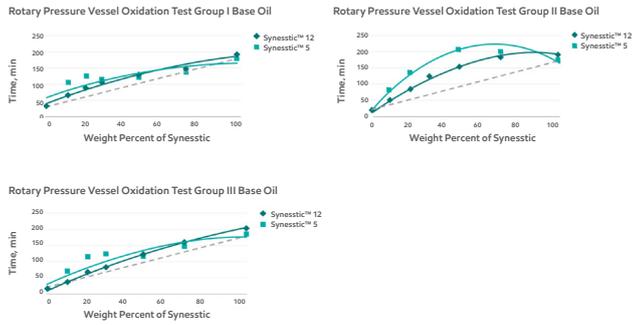
Readily biodegradable: A substance is considered "readily biodegradable" when the test material achieves greater than 60% biodegradation in 28 days. Single substances with one isomer (a monomer, e.g. ethanol) must pass the 10-day window criterion, which means that once the 10% biodegradation mark has been attained, test material must then reach the 60% biodegradation mark within 10 days and before day 28 of the test. The 10-day window criterion does not apply to complex mixtures (isomeric mixtures).

Inherently biodegradable: A substance is considered "inherently biodegradable" when the test material achieves greater than 20% biodegradation in 28 days, or greater than 60% biodegradation within 60 days.

Source: ExxonMobil data.

Please refer to your regional / country product documentation (Safety data sheet) for detailed information.

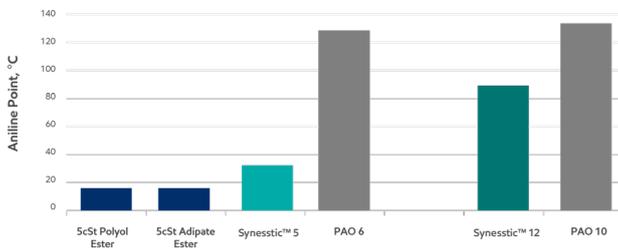
Oxidative stability in Group I - III mineral oils



Synesstic™ AN can improve mineral oil oxidative stability across the board.

Test method: ASTM D2272

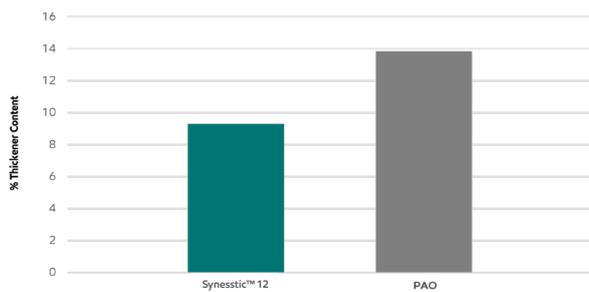
Synesstic™ AN solvency



Synesstic™ AN have excellent additive solvency for polar compounds due to their aromatic structures.

Test method: ASTM D611

Grease - thickener efficiency



NLGI No. 2 grease
Lithium complex thickener and commercial additive package

The solvency of Synesstic™ AN allows improved thickener efficiency during grease manufacture.

Data from tests performed by or on behalf of ExxonMobil

©2025 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," and "ExxonMobil" are each used for convenience, and may include ExxonMobil Corporation, or any affiliate either directly or indirectly stewarded. Nothing contained herein is intended to override the corporate separateness of affiliated companies.

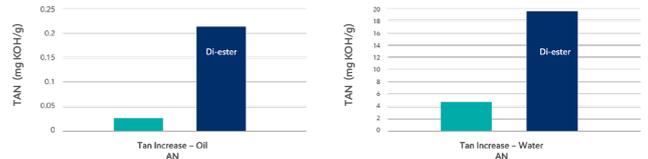


Scan to learn more

Synesstic™ AN improves hydrolytic stability

Formulation:

- 73 % PAO
- 25 % Di-ester or Synesstic™ 5
- 2 % Additive

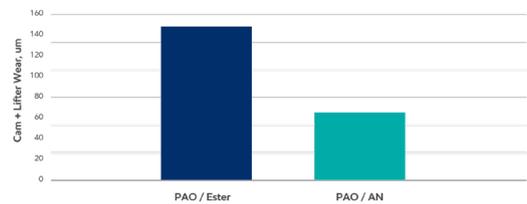


Synesstic™ AN exhibits a lower TAN increase compared to a similar di-ester based formulation.

Test method: ASTM D2619

Synesstic™ AN improved anti-wear additive response

Sequence IIIIG Wear Performance of Experimental Low Phosphorus 0W-30 Engine Oils



Synthetic engine oils blended with PAO and Synesstic™ AN demonstrate improved wear performance to PAO/ester formulations.

Regulatory compliance

Synesstic™ 5 and Synesstic™ 12 are suitable for use as lubricant base stock fluids in applications involving incidental food contact. They may be used as components in food grade lubricants, provided they comply with applicable regulatory requirements.

Their regulatory status includes:

- listed in U.S. FDA (Food and Drug Administration) Inventory of [Effective Food Contact Substance Notifications](#)
- listed by NSF Nonfood Compounds Directory with registration status under category code H1 / HX-1
- Kosher and Halal certified
- widely registered on national chemical inventories, including [EU REACH](#)
- not subject to candidate list for Substances of Very High Concern (SVHC) under [EU REACH](#)

ExxonMobil