
Your one-stop shop for optimizing
your automotive performance blends
Energy lives here™
ExxonMobil

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High-quality lube oil and fuel components for increased engine performance

Quality lube oil and fuel are paramount to the performance, smooth running and durability of engines. To reach the level of quality necessary to fulfill the most demanding engine requirements, all the components that make lube oil and fuel blends must possess the best performance attributes and come from a renowned, reliable source. Formulators can count on our commitment to produce consistent high-quality products and to bring the most efficient production capacity to the marketplace, thus ensuring long-term, reliable supply across many industries:

Overview of our main products and brands

High-performance base stocks	o Americas CORE™ o Americas SN o EHC™
Synthetic base stocks	o SpectraSyn Elite™ o SpectraSyn™ o SpectraSyn Plus™ o Synesstic™ o Esterex™
Synthetic intermediates*	o u65 and u150 grades
Fluids	o Solvesso™ o Exxsol™ o Isopar™ o ExxonMobil™ SBA
Higher olefins	o ExxonMobil™ Heptene o ExxonMobil™ Nonene o ExxonMobil™ Tetramer
Alcohols	o Exxal™ 8 o Exxal™ 10 o Exxal™ 13
Neo acids	o ExxonMobil™ neopentanoic acid o ExxonMobil™ neodecanoic acid

*Additional grades currently being scoped. Please contact your sales representative for additional information.

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High-performance base stocks

Our base stocks provide broad formulation coverage for a wide range of lube applications

As one of the world's largest manufacturers of base stocks, we offer a range of consistent, intelligently designed global slates that enable a single approval for each global formulation and create off-the-shelf, OEM-approved products. By continuously investing in innovative products, optimizing blend plants and simplifying logistics, we propose reliable supply solutions and show our commitment to providing a broad range of base stocks for lubricant innovators today and in the future.

Our portfolio comprises robust Group I CORE™ and Group II/II+ EHC™ base stock slates, thus providing a broad range of base stocks with compatible characteristics.

Key features and benefits

- Offer broad blending coverage for applications ranging from engine oils to industrial lubricants
- Technical specifications that enable supply chain flexibility and simplified qualification testing requirements
- Can be blended to meet the requirements of the most popular lubricants, providing increased flexibility and reduced need for Group III

Selection of ExxonMobil base stocks: Sales specifications

Property	Limit	Standard method	Americas CORE™ 100	Americas CORE™ 150	Americas CORE™ 600	Americas CORE™ 2500	EHC™ 45	EHC™ 65	EHC™ 120*
Appearance		Visual	Clear & Bright	Clear & Bright	Clear & Bright	Clear & Bright	Clear & Bright	Clear & Bright	Clear & Bright
ASTM Color	Max	ASTM D1500	1.5	1.5	4	6	L0.5	L0.5	0.5
CCS Viscosity -25°C mPa•sec	Max	ASTM D5293	1650				1550		
CCS Viscosity -20°C mPa•sec	Max	ASTM D5293		2100				3100	
Flash Point, COC Deg C	Min	ASTM D92	194	210	246	294	204	214	255
Kinematic Viscosity @ 40°C mm2/sec	Min-Max	ASTM D445	18.5-21.0	29.0-32.0	109.0-116.0				96-108
Kinematic Viscosity @ 100°C mm2/sec	Min-Max	ASTM D445				30.6-32.7	4.4-4.7	6.3-6.6	11.7-12.5
NOACK Volatility, wt%	Max	PROCEDURE B	30	20			15	10	
Pour Point Deg C	Max	ASTM D97	-18	-15	-6	-6	-18	-18	-15
Viscosity Index	Min	ASTM D2270	95	95	95	95			
	Min-Max	ASTM D2270					113-119	103-109	102-115

Source: ExxonMobil data.
In lieu of standard test method, alternate test methods may be used for the certification of a product property. Note 1: Products are certified on release to meet the values specified. Actual values may deviate within the established reproducibility of the test method specified.

For the purpose of determining conformance with specification, observed or calculated values shall be rounded off to the nearest unit in the last significant digit used in expressing the limiting value in accordance with the ASTM E29 method.

For information on availability of the products and testing methods, please contact ExxonMobil at **https://www.exxonmobil.com/en/basestocks/where-to-buy.**

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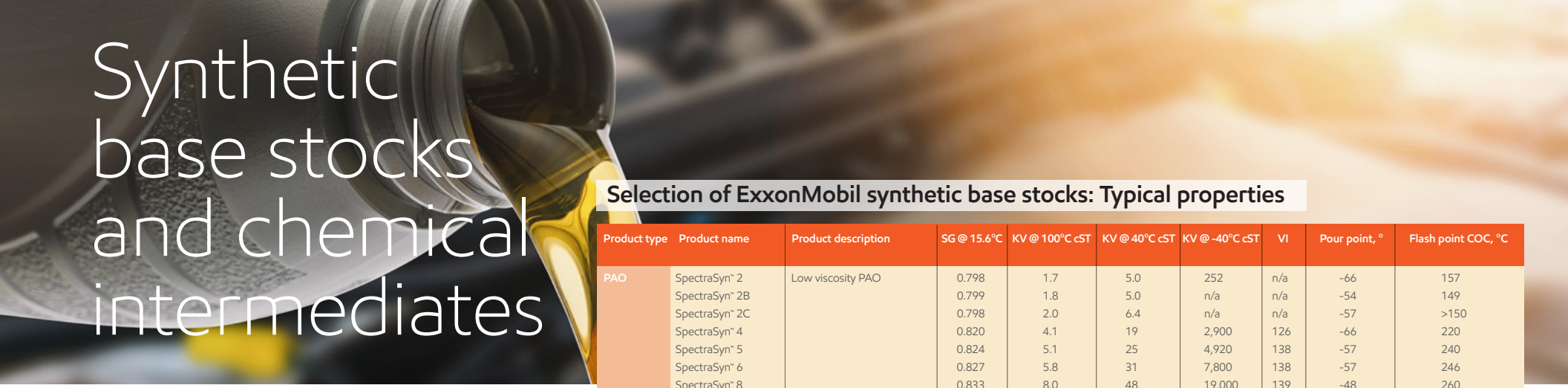

Synthetic base stocks and chemical intermediates

Trust our 50 years' experience in advanced synthetic base stocks for innovative lubricants

Developing innovative and commercially successful lubricants requires commitment to supply reliability, global product integrity and deep insights into the lubricant market and applications.

Our synthetic base stocks represents one of the broadest portfolios in the industry and enable the formulation of high-quality lubricants to help you meet today's energy efficiency, emission reduction and fuel economy challenges. They are ideally suited not only for automotive and marine lubricants and fluids, but also for industrial lubricants and greases, fiber optic cable, as well as food-grade processing lubricants and greases.

Key features and benefits

Group IV

- SpectraSyn™ PAO – Available in a full range of viscosities, meeting the requirements of synthetic and synthetic blend lubricants.
- SpectraSyn™ MaX PAO – Through unprecedented balance of low viscosity and low volatility, groundbreaking SpectraSyn MaX PAO is designed to help deliver enhanced fuel economy and energy efficiency without sacrificing durability and wear protection.
- SpectraSyn Plus™ PAO – Offering lower volatility and improved low-temperature fluidity vs. conventional PAO, helping to meet the challenges of extended drain intervals and improved energy efficiency.

Selection of ExxonMobil synthetic base stocks: Typical properties

Product type	Product name	Product description	SG @ 15.6°C	KV @ 100°C cST	KV @ 40°C cST	KV @ -40°C cST	VI	Pour point, °	Flash point COC, °C
PAO	SpectraSyn™ 2	Low viscosity PAO	0.798	1.7	5.0	252	n/a	-66	157
	SpectraSyn™ 2B		0.799	1.8	5.0	n/a	n/a	-54	149
	SpectraSyn™ 2C		0.798	2.0	6.4	n/a	n/a	-57	>150
	SpectraSyn™ 4		0.820	4.1	19	2,900	126	-66	220
	SpectraSyn™ 5		0.824	5.1	25	4,920	138	-57	240
	SpectraSyn™ 6		0.827	5.8	31	7,800	138	-57	246
	SpectraSyn™ 8		0.833	8.0	48	19,000	139	-48	260
	SpectraSyn™ 10		0.835	10	66	39,000	137	-48	266
	SpectraSyn™ 40	High viscosity PAO	0.850	39	396	n/a	147	-36	281
	SpectraSyn™ 100		0.853	100	1,240	n/a	170	-30	283
	SpectraSyn™ MaX 3.5		n/a	3.51	14.26	n/a	128	-78	234
	SpectraSyn Plus™ 3.6	Low viscosity PAO with improved volatility and CCS	0.816	3.6	15.4	2,000	120	<-65	224
	SpectraSyn Plus™ 4		0.820	3.9	17.2	2,430	126	<-60	228
	SpectraSyn Plus™ 6		0.827	5.9	30.3	7,400	141	<-54	246
mPAO	SpectraSyn Elite™ 65	High viscosity, high VI. mPAO	0.846	65	614	n/a	179	-42	277
	SpectraSyn Elite™ 150		0.849	156	1,705	n/a	206	-33	282
	SpectraSyn Elite™ 300		0.849	303	3,358	n/a	241	-33	286
AN	Synesstic™ 5	Alkylated naphthalene	0.908	4.7	29.0	n/a	74	-39	222
	Synesstic™ 12		0.887	12.4	109	n/a	105	-36	258
Esters	Esterex™ A32	Adipate esters	0.928	2.8	9.5	985	149	-65	207
	Esterex™ A34		0.922	3.2	12	1,970	137	-60	199
	Esterex™ A41		0.921	3.6	14	3,286	144	-57	231
	Esterex™ A51		0.915	5.4	27	16,970	136	-57	247
	Esterex™ P61	Phthalate esters	0.967	5.4	38	n/a	62	-42	224
	Esterex™ P81		0.955	8.3	84	n/a	52	-33	265
	Esterex™ TM111	Trimellitate esters	0.978	11.9	124	n/a	81	-33	274
	Esterex™ NP343	Polyol esters	0.945	4.3	19	2,540	136	-48	257
	Esterex™ NP451		0.993	5.0	25	7,610	130	-60	255

Source: ExxonMobil data.

- SpectraSyn Elite™ mPAO – Offering improved shear stability, higher VI, and improved low temperature fluidity to enable better blending efficiency and performance capabilities vs. conventional PAO.

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Synthetic base stocks and chemical intermediates

Group V

- Synesstic™ Alkylated Naphthalenes (AN) – Providing additive solvency and seal compatibility, with exceptional hydrolytic, thermal and oxidative stability.
- Esterex™ Esters – Providing additive solvency, seal compatibility and varying degrees of biodegradability to enhance lubricant capablity.

Group IV Intermediates

- uPAO: Unhydrogenated PAOs with high vinylidene content, providing Adcos with new options for functionalization into performance-enhancing additives.

Selection of ExxonMobil synthetic intermediates: Typical properties

U65

Basics	Typical Value (English)	Test Based On
Specific Gravity (60.1°F (15.6°C))	0.840	ASTM D4052
Appearance	Bright & Clear	Visual
Color	<0.5	ASTM D1500/D6045
Kinematic Viscosity (104°F (40°C))	520 cSt	ASTM D445
Flash Point, COC	531 °F	ASTM D92
Bromine Number	8.9 g Br/100 g	AS-M 1377
Water	15 ppm	ASTM D6304
Total Acid Number	<0.10 mg KOH/g	ASTM D974

U150

Basics	Typical Value (English)	Test Based On
Specific Gravity (60.1°F (15.6°C))	0.840	ASTM D4052
Appearance	Bright & Clear	Visual
Color	<0.5	ASTM D1500/D6045
Kinematic Viscosity (104°F (40°C))	160cSt	ASTM D445
Flash Point, COC	536 °F	ASTM D92
Bromine Number	4.6 g Br/100 g	AS-M 1377
Water	< 15 ppm	ASTM D6304
Total Acid Number	<0.10 mg KOH/g	ASTM D974

Source: ExxonMobil data.

ExxonMobil

Fluids

ExxonMobil offers a wide portfolio of fluids to meet your fuel and lube additive needs.
With over 30 years' experience supporting fuel and lubricant-additive customers, our technical expertise enables us to ensure that the right solvent is chosen to optimize your formulation.

Lubricant additive

We recognize the importance of having a lubricant additive which not only protects the base oil, but also improves performance and protects the lubricated surface. ExxonMobil's SBA is made with consistent quality to allow for optimal performance in the formulation.

Fuel additive

Whether you are treating fuels within a refinery or a personal vehicle, ExxonMobil's Hydrocarbon Fluids offer a solution to your fuel additive needs.
As one of the largest global refiners, we understand the importance of additives such as antioxidants and corrosion inhibitors. We offer a variety of narrow boiling-range Solvesso™ Fluids as effective solvents to address your formulation needs.

Key features and benefits

- > 99% aromatic content for optimal solvency.
- Low pour points to improve flow at lower temperatures.
- Low viscosity @ 25°C allows for easy blending.

When it comes to preventing the formation of deposits in areas such as the fuel injectors or octane boosters, we offer a range of Exxsol Dearomatized and Isopar Fluids as carriers for your active ingredient(s).

- < 1% aromatic content allows for low odor in the finished product.
- Narrow distillation ranges.

Selection of hydrocarbon and oxygenated fluids: Typical properties*

HYDROCARBON FLUIDS	Distillation range ° IBP	DP	Flash point	Density at 15°C kg/m3	Evaporation rate at 25°C n-BuAc=100	Vapor pressure 20°Cmm Hg	Aniline point mixed^	Kinematic viscosity at 25°CcST	Aromatic content vo%:wt%
AROMATICS									
Solvesso™ 100	166	181	50	877	18	0.2	14^	100	>99
Solvesso™ 150	180	206	66	896	7.7	0.08	15^	1.27	>99
Solvesso™ 200	231	280	105	885	0.4	0.003	13^	2.74	>99
DEAROMATIZED FLUIDS									
Exxsol™ D40	160	203	44	777	16	1.3	67	1.34	0.015
Exxsol™ D60	190	214	65	793	3.5	0.3	70	1.77	0.01
Exxsol™ D80	207	240	83	807	1.2	0.09	72	2.28	0.002
Exxsol™ D95**									
ISOPARAFFINS									
Isopar™ C	98	104	-7	699	380	34	78	0.69	0.001
Isopar™ E	115	139	5	723	170	15	73	0.82	0.001
Isopar™ H	178	189	53	759	6.9	0.6	80	1.8	0.001
Isopar™ L	190	207	63	767	3.6	0.3	82	2.11	0.002
Isopar™ M	227	254	97	782	0.3	0.02	86	4.23	0.004
	Distillation range ° IBP	**DP**	**Flash point**	**Density at 20°C lb/gal**	**Evaporation rate at 25°C n-BuAc=100**	**Vapor pressure 20°Cmm Hg**	**Aniline point mixed^**	**Kinematic viscosity at 25°CcST**	**Aromatic content vo%:wt%**
OXYGENATED FLUIDS									
ExxonMobil™ SBA	99.5	100.1	23	805	160	–	–	3.79	–

*Source: Fluids at a glance EMEA portfolio: exxonmobilchemical.com/emea-portfolio
For other regions, please refer to
**Fluids at a glance — Americas portfolio: exxonmobilchemical.com/americas-portfolio
**Fluids at a glance — Asia Pacific portfolio: exxonmobilchemical.com/ap-portfolio

ExxonMobil

Higher olefins

Building blocks in a vast array of derivatives used in lube oil and fuel additives and other industrial applications

ExxonMobil is the largest producer of higher olefins. The majority of our production is used as feedstocks to produce our own branched alcohols and neo acids. With our global manufacturing capability, customers can rely on our consistent and reliable supply around the world.

Provide flexibility to address a wide number of applications

Higher olefins are reactive intermediates used to manufacture products used in lube oil additives, and are also used for surfactants, agricultural chemicals, coatings and corrosion inhibitors.

ExxonMobil markets a whole range of higher olefins that address different applications.

Key features and benefits

- Versatile feedstocks for a number of applications
- Benefits of the branched structures such as liquidity and solubility
- Allow selection of appropriate viscosity, volatility and solubility of the final derivative

Selection of higher olefins: Typical properties, Sales specifications

	Peroxides, active oxygen max ppm	Color, Pt-Co max	Saturates max Wt/vl%/wt%^	Specific gravity min @20/20°C	Specific gravity max @20/20°C	Sulfur max wppm	Water content Wt%/wppm^
ExxonMobil™ Heptene	10 ASTM D3703/ BRCP 4615	40 BRCP 4273/ ISO 6271-2	4.0 ^ BCI GC-0/ BRCP 4790	0.705 BRCP 4843/ CALCULATED	0.716 BRCP 4843/ CALCULATED	50 BRCP 7731/ WTM 90	
ExxonMobil™ Nonene	10 AMS 300.10/ BRCP 4615/ ECIM 3006	15 BRCP 4273/ ECIM 1003/ ASTM D5386	1.0 BRCP 4790/ ECIM 2011	0.738 ASTM D402(mod)/ BRCP 4843/ ECIM 1009	0.743 ASTM D402(mod)/ BRCP 4843/ ECIM 1009	10 ASTM D5453/ BRCP 7731/ ECIM 7731	
ExxonMobil™ Nonene LSAT	10 BRCP 4615	BRCP 4273	0.60 BRCP 48790	0.738 BRCP 4843	0.743 BRCP 4843	10 BRCP 7731	150 BRCP 5053
ExxonMobil™ Tetramer M	10 AMS 300.10/ ECIM 3006	15 ECIM 1003/ ASTM D5386		0.767 ASTM D4052(mod)/ ECIM 1009	0.778 ASTM D4052(mod)/ ECIM 1009	10 ASTM D5453/ ECIM 2033	150 ^ ASTM E1064 (mod)/ECIM 3003

Source: ExxonMobil data.

ExxonMobil

Alcohols

Building blocks in a vast array of derivatives used in lube oil and fuel additives and other industrial applications.
Customers around the world can rely on our Exxal™ alcohols to synthesize derivatives used in different industrial applications. We are committed to meeting your needs through our global manufacturing and supply capabilities.

Offer many performance advantages thanks to their branched structure

Exxal™ alcohols are isomeric branched, primary alcohols that contain both even- and odd-numbered hydrocarbon chains, ranging from C8 to C13. Our customers use Exxal alcohols to synthesize derivatives used in lube and fuel additives in the automotive industry as well as other industrial applications such as surfactants, polymer additives, adhesives and lubricant esters.

Key features and benefits

- Provide solubility in lubes
- Provide the required decomposition ranges for antiwear ZDDP
- Used in the production of VI improvers and pour point depressants
- Used in the production of anti-oxidants and detergents-dispersants for lubes

Selection of alcohols: Typical properties for globally available Exxal™ alcohols

Alcohol Chemical name	**Acid value** mg KOH/g	**Boiling range** °C ASTM D1078	**Carbonyl number** mg KOH/g	**Color Pt-Co** ASTM D5386	**Density at 20°C** g/cm3 ASTM D4052	**Flash point** PMCC °C	**Hydroxyl number** mg KOH/g	**Purity** Wt% Total alcohol	**Viscosity** @20°C mm2/s ASTM D455	**Water content** wt% ISO 12937
	ASTM D1045		ISO 1843-3/ ASTM E411			ASTM D93	ISO 1843-5	ROP 103/ BRCP 5287		
Exxal™ 8 Isooctanol	<0.03	187-193	<0.15	5	0.831	>70	424	>99	13	<0.1
Exxal™ 10 Isodecanol	<0.05	217-224	<0.2	5	0.837	>90	350	>99	21	<0.1
Exxal™ 13 Isotridecanol	<0.03	255-262	<0.2	5	0.845	>100	284	>98.5	48	<0.1

Analytical methods depend on production site. Other equivalent methods can be used. See specification sheets for complete information. Source: ExxonMobil data.

ExxonMobil

Neo acids

Building blocks in a vast array of derivatives used in lube oil and fuel additives and other industrial applications.
ExxonMobil™ neo acids exhibit excellent thermal and hydrolytic stability in derivatives. Our global supply capabilities enable us to provide consistent products to our customers.

Superior building blocks for chemical derivatives

ExxonMobil™ neo acids are aliphatic carboxylic acids produced via carbonylation of the higher olefins. They are used to produce chemical derivatives such as corrosion inhibitors and esters with high hydrolytic stability. Their highly branched structure offers very specific properties to the products and their derivatives.

Key features and benefits

- Very high thermal and hydrolytic stability of derivatives as esters
- Used as corrosion inhibitors in antifreeze coolants
- Easy transportation, storage and handling due to low pour point

Selection of neo acids: Typical properties

Alcohol Chemical name	**Acid value** mg KOH/g ASTM D1980	**Boiling range °C** ASTM D1078	**Color** Pt-Co ASTM D5386	**Density at 20°C** g/cm3 ASTM D4052	**Flash point** PMCC °C ASTM D93	**Pour point** °C ASTM D5950	**Purity** Wt% (single isomer) BRCP 4523	**Viscosity** mm2/s ASTM D455	**Water content** wt% ASTM E1064
Neopentanoic acid 2,2. Dimethyl propionic acid	550	160-162	White solid at RT	0.905 at 40°C	>60	36	>99.7	1.7 at 60° C	<0.1
Neodecanoic acid Neodecanoic acid	324	250-262	7	0.911 at 20°C	>120	<-40		42 at 20°C	<0.1

Source: ExxonMobil data.

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Notes

Notes

Typical values:

Typical values may vary within modest ranges, and specifications may be subject to change. To the extent permitted by applicable law, all warranties and/or representations, express or implied, as to the accuracy of the information are disclaimed, and no liability is accepted for the accuracy or completeness of the same.

Health and Safety:

Detailed health and safety information for our products is provided in the material safety data sheet (MSDS), available upon request through your local sales representative or from **www.ExxonMobil.com**

Contact us for more information

exxonmobilchemical.com/en/resources/contact-us
exxonmobilchemical.com
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