



Esterex™ — ExxonMobil's ester portfolio

Esterex esters make up part of ExxonMobil's API Group V base stock portfolio. If your challenge is the need to formulate high performance lubricants that meet the current trends for long-lasting, clean, varnish-free performance, and high-temperature stability, then we have the solution.

As legislative demands on emissions have increased, global markets have continued to increase their use of both lower-emission technologies, as well as the implementation of new equipment that is capable of handling higher power densities. In turn, this has pushed formulators to innovate and create higher performing lubricants and greases that provide extended durability and improved energy efficiency. Using Esterex esters as part of those base fluids, formulators will see lubricating benefits in modern high performance applications.

Ester category	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	Biodegrad- ability	Passenger car motor oil	Heavy duty motor oil	Automatic transmission fluid	Automotive gear oil/ Heavy duty transmission	2 & 4 stroke oil	Electric vehicle drive line	Industrial gear oil	Turbine lube	Chain lube	Hydraulic fluid	Compressor oil	Grease	Food processing/ textile lube
		ASTM D4052	ASTM D445	ASTM D445	ASTM D2270	ASTM D97 / D5950	ASTM D92	OECD 301F/ 301B													
Octyl Adipate	Esterex™ A32	0.928	2.8	9.5	149	-65	207	Readily	○	○	○	○	○	○	○		○	○	○	○	○
Nonyl Adipate	Esterex™ A34	0.922	3.2	12	137	-60	199	Readily	○	○	○	○	○	○	○		○	○	○	○	○
Decyl Adipate	Esterex™ A41	0.921	3.6	14	144	-57	231	Readily	○	○	○	○	○	○	○		○	○	○	○	○
Tridecyl Adipate	Esterex™ A51	0.915	5.4	27	136	-57	247	Readily	○	○	○	○	○	○	○		○	○	○	○	○
Fatty Acid TMP Polyol Ester - a	Esterex™ NP343	0.945	4.3	19	136	-48	257	Inherently	○		○	○	○	○	○	○	○	○	○	○	○
Fatty Acid PE Polyol Ester - b	Esterex™ NP451	0.993	5	25	130	-60	255	Readily	○				○			○		○	○		
Decyl Phthalate	Esterex™ P61	0.967	5.4	38	62	-42	224	Readily	○				○		○				○		
Tridecyl Phthalate	Esterex™ P81	0.955	8.3	84	52	-33	265	Inherently	○				○		○				○		
Tridecyl Phthalate	Esterex™ P101	0.965	10.1	100	76	-33	250	Inherently					○		○		○		○		
Nonyl Trimellitate	Esterex™ TM111	0.978	11.9	124	81	-33	274	Not Inherently					○		○		○		○	○	○

a: TMP = Trimethylolpropane
b: PE = Pentaerythritol

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

○ >80% ○ 40-60% ○ ≤20%

Performance benefits



Long-lasting, clean and varnish-free performance in formulations



High performance in wide temperature range



Readily or inherently biodegradable options



Excellent hydrolytic and thermal stability



Improved energy efficiency from excellent lubricity properties



Low volatility, non-VOC and high temperature resistance

Application flexibility

Esterex esters can be used in a broad range of automotive and industrial applications, including:

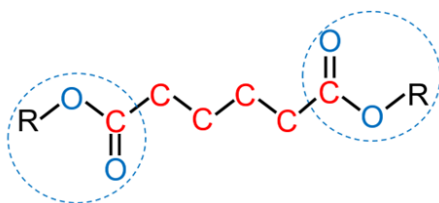
- Compressor
- Refrigeration compressor
- Hydraulic
- Turbine
- Industrial gear
- Paper machine
- Food process machinery
- Heat transfer
- Chain
- Greases

Diesters:

Derived from synthetic dibasic acids and monofunctional alcohols, diesters provide a wide temperature operating range and low volatility. These synthetic esters are often used as co-base stocks with hydrocarbon oils to improve additive solubility and seal compatibility.

Diester

- A hydrocarbon center
- 2 ester functional groups



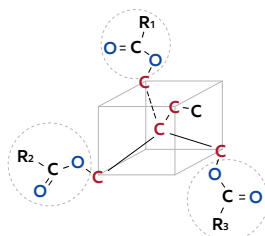
Adipate Diester

Polyol esters:

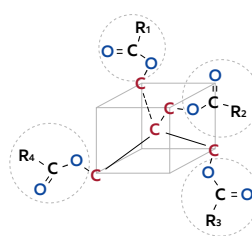
Polyol esters are derived from organic carboxylic esters and neo-polyols. Polyol esters are available in a wide viscosity range and offer long-lasting, clean and varnish-free performance, and are the preferred choice for high-temperature applications.

Polyol ester

- Tetrahedron center
- Spherical molecule



Trimethylolpropane (TMP)
Polyol Ester



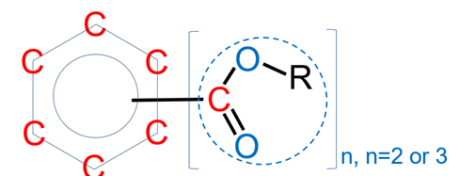
Pentaerythritol (PE)
Polyol Ester

Aromatic esters:

With unique structures that resist oxidation and prevent the formation of deposits and varnish, aromatic esters are high viscosity base stocks that offer superb hydrolytic and thermal stability.

Aromatic ester

- An aromatic center
- 2 or 3 ester linked side chains



Phthalate Ester (n=2) & Trimellitate Ester (n=3)

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