

Product Data Sheet

Esterex™ Adipate Esters

Description

ExxonMobil's Esterex™ esters are API category Group V fluids. Esterex™ Adipate Esters are produced by the reaction of mono-alcohols with adipic acid. These esters have excellent low-temperature properties, high viscosity indices, good lubricating properties and lower volatilities than mineral oils with comparable viscosities. In addition, the high polarity of the Esterex™ Adipate Esters makes them effective solvents that provide lubricant additive solubility and lubricant system cleanliness.

Applications

Esterex™ Adipate Esters can be used as either sole basestocks or as blendstocks with other synthetic fluids in many automotive and industrial lubricant applications. When used as primary basestocks, these esters are ideal in high-temperature conditions, such as reciprocating air compressors, where discharge valve cleanliness is required. When used as blendstocks with polyalphaolefins, Esterex™ Adipate Esters also provide excellent additive solubility in engine oil and industrial oil applications. Typical lubricants that incorporate Esterex™ Adipate Esters can include:

Compressor oils
High-temperature greases

Engine oils
Mist lubrication systems

	Esterex™	A32	A34	A41	A51
Basics	Specific Gravity @15.6/15.6°C	0.928 °	0.922 °	0.921	0.915
	Water, ppm	< 500	< 1000	< 500	< 350
	Total Acid Number (TAN), mg KOH/g	< 0.08	< 0.08	0.01	0.02
	Refractive Index @ 25.0°C ^a	1.4465	1.4487	1.4505	1.4559
Appearance	Appearance	Bright & Clear	Bright & Clear	Bright & Clear	Bright & Clear
	Color, ASTM	< 0.5	< 0.5	< 0.5	< 0.5
	Color, Saybolt ^a	> +30	+ 17	+11	+12
Flow	Kinematic Viscosity @ 100°C, mm²/s or cSt	2.8	3.2	3.6	5.4
	Kinematic Viscosity @ 40°C, mm²/s or cSt	9.5	12	14	27
	Kinematic Viscosity @ -40°C, mm²/s or cSt ^a	985	1,970	3,286	16,970
	Viscosity Index	149	137	144	136
	Pour Point, °C	- 65	- 60	- 57	- 57
	Surface Tension @ 24°C, mN/m or dynes/cm ^a	29.4	30.7	32.3	30.4
Thermal	Autoignition Temperature, °C ^a	360	360	381	375
	Flash Point, Open Cup, °C	207	199	231	246
	Flash Point, Closed Cup, °C ^a	203	170	201	207
	Fire Point, °C ^a	238	248	249	280
	Noack Volatility, wt. %	30.3	20.4	15.6	7.4
	Evaporation Loss 205°C for 6.5 hrs, wt.% ^a	53.0	37.0	22.3	10.1
	Density Correction Factor, (g/cc)/°C ^a	7.56 x 10 ⁻⁴	7.33 x 10 ⁻⁴	7.18 x 10 ⁻⁴	7.02 x 10 ⁻⁴
	Thermal Conductivity @ 37.8°C, cal/sec(cm)²(°C/cm) or [BTU/hr(ft)²(°F/ft)] ^a	3.40X10 ⁻⁴ [0.0823]	3.20X10 ⁻⁴ [0.0725]	3.65X10 ⁻⁴ [0.0884]	3.30X10 ⁻⁴ [0.0799]
	High Temperature Thermal Stability @ 204°C for 100 hrs ^a				
	Increase in viscosity, %	4.9	2.0	2.0	3.5
	Change in TAN, mg KOH/g	+ 3.41	+ 0.34	+ 0.37	+ 0.34
	Appearance after exposure	Lt. sludge	Yellow, no precipitate	No precipitate	No precipitate

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Solubility	Aniline Point, °C ^a	< 20.0	- 9.8	< 20.0	< 20.0
	Kauri-Butanol Value, (KB) ^a	106.5	84.5	72.0	29.0
Performance	4-Ball Wear, mm scar diameter ^a	0.69	0.67	0.73	0.68
	Demulsibility @ 54.4°C, min ^a	5	5	5	5
	Foam Seq. 1, mL/mL ^a	0/0	0/0	0/0	0/0
	Hydrolytic stability, TAN change mg KOH/g ^a	+ 0.10	+ 0.11	+ 0.13	+ 0.16
	HPDSC, OIT iso @ 220°C with AO ^b , min ^a	34	32	27	29
	RPVOT (Neat), min ^a	315	---	415	265
	RPVOT with AO ^b @ min ^a	> 1210	> 1210	> 1210	> 1210
	Oxidation and Corrosion with AO ^b @ 175°C for 72 hrs ^a				
	TAN increase, mg KOH/g	2.7	1.8	1.4	---
	Increase in viscosity, %	6.5	5.0	5.2	---
	Lead Corrosion wt. change, mg/in ² ^a	- 1.7	- 8.9	- 7.2	- 1.0
	Copper Corrosion @ 121°C for 3 hrs ^a	1b	1b	1b	1b
	Biodegradation in 28 days, OECD 301F, % ^a	70.2	78.5	76.5	58.5
Elastomer Compatibility Nitrile ^a					
	Volume change, %	+ 41.3	+ 17.2	+ 23.5	+ 12.0
	Hardness change	- 18	- 16	- 12	- 8
	Tensile strength change, %	- 60.7	- 14.9	- 50.5	- 32
	Elongation change, %	- 44.9	- 30.9	- 41.3	- 20.9
Flouorelastomer ^a					
	Volume change, %	+ 28.1	+ 8.6	+ 8.3	+ 3.4
	Hardness change	- 18	- 7	- 4	- 2
	Tensile strength change, %	- 42.4	- 22.0	- 6.6	- 3.1
	Elongation change, %	- 6.7	- 2.4	- 9.1	- 9.1
Polyacrylate ^a					
	Volume change, %	+ 72.8	+ 42.1	+ 42.7	+ 19.8
	Hardness change	- 23	- 24	- 17	- 8
	Tensile strength change, %	- 55.0	- 45.0	- 38.3	- 19.9
	Elongation change, %	- 22.4	- 22.5	- 22.0	- 12.0

^a Single sample or two sample average determinations

^b 1 wt.% diphenylamines and phenyl naphthylamine antioxidant (AO) added

^c Specific Gravity @ 20.0/20.0°C

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 Esterex™ products are available in drums and in bulk. Samples are available upon request. Please call 800.682.8342 in the United States; 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.

150026 - April 2007

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