



Product Portfolio Overview

High Performance Lubricant Base Stocks & Additives



Driving Innovation for Sustainable Lubricants

Engineered for Performance, Sustainable by Nature™

Founded in 1840, Emery Oleochemicals has a rich heritage developing and manufacturing natural-based chemicals made predominantly from renewable oils and fats. Emery Oleochemicals' philosophy of 'Creating Value' for our customers is evident through our wide-ranging product portfolio that caters to the diverse and unique needs of an evolving marketplace.

Today, over 180 years later, Emery Oleochemicals is known for world-leading, in-depth technical expertise and the production of high-quality specialty chemicals. Through our global operations, we provide our customers with best-in-class sustainable solutions, engineered for performance.

Lubricant Components and Solutions

Our Bio-Lubricants products are targeted to improve and optimize processing efficiencies, lower maintenance costs, improve technical performance and enhance environmental safety for a wide variety of applications in the lubricant and oilfield industries. Our innovative and evolving portfolio covers a broad set of products including azelaic and pelargonic acids, dimer and isostearic acids, as well as synthetic esters based on both oleochemical and petrochemical raw materials.

Creating Value, Globally

With Emery's global footprint of technical and commercial contacts in the Americas, Europe and Asia, our Bio-Lubricants business offers strength in product development, manufacturing, distribution, sales and technical support to our customers around the world.



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Our Technology Advantage



Leading in Ester and Specialty Acid Technology

As a pioneer in the commercial development of ozone technology and the world's largest industrial producer of azelaic acid, Emery Oleochemicals provides proven and sustainable technical expertise to enable our customers in the formulating and service industry to develop innovative products for lubricant applications.

In addition, Emery Oleochemicals has advanced global sustainability through over 60 years of innovation in esters technology. Through our focus on research and technological advancements, we are poised to provide you with differentiated, innovative and even customizable products and solutions.

Your Preferred Technology Partner

Emery's Bio-Lubricants business can provide the necessary technical expertise and R&D capabilities from our global Technical Centers of Excellence. Here we design products for existing and emerging industry requirements, creating solutions that make an impactful difference. Our laboratories feature synthetic capacity combined with longstanding experience in ester development and application testing capabilities.

Emery Oleochemicals is also committed to work with our customers to develop and commercialize innovative and market-leading components for all types of lubricant applications. Through our dedicated Product and Application Development labs in the USA and in Germany, we offer both exclusive and joint solutions development efforts to meet customer-specific performance and technical requirements; supporting the continuous evolution of high-performance lubricants.

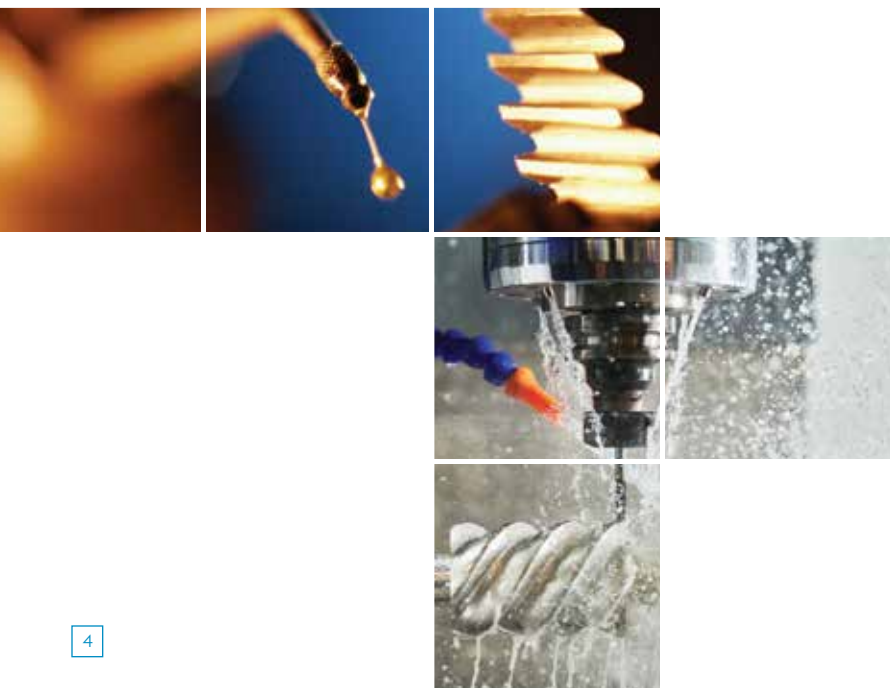
Catering to the increasing demand for environmentally responsible solutions, Emery Oleochemicals' Product, Safety and Regulations department provides the necessary support for certifications, registrations and listings such as US EPA environmentally acceptable lubricants (EALs), mass balance (MB) products certified by the Roundtable on Sustainable Palm Oil (RSPO), HX-I components in the NSF White Book, and the European Ecolabel lubricant substance classification (LuSC) list.



Monoesters

Monoesters from Emery Oleochemicals provide very low viscosity for high spreading and wetting abilities while maintaining a high flash point and low volatility compared to petrochemical base stocks of the same viscosity grade. Our monoesters are available in both unsaturated and saturated lines for use in a variety of applications, including metalworking fluids, biohydraulic oils, steel rolling, automotive fluids and more.

CATEGORY	PRODUCT	DESCRIPTION	KV@40°C CST (mm ² /s)	INDUSTRIAL FLUIDS	METAL WORKING FLUIDS	STEEL ROLLING	ALUMINUM PROCESSING	BIOHYDRAULIC OILS	AUTOMOTIVE FLUIDS
UNSATURATED									
	DEHYLUB® I 325	2-EH Fatty Acid Ester	7 - 10	X	X				
	DEHYLUB® 4146	2-EH Ester	≤7	X	X	X	X		
	DEHYLUB® 4012	2-EH Oleate	7 - 9	X	X			X	
	DEHYLUB® 4012 MY	2-EH Oleate (vegetable-based)	7 - 9	X	X			X	
	DEHYLUB® 4043	Iso-Butyl Oleate	5 - 7	X	X		X		
	DEHYLUB® 4042 MY	Methyl Ester (vegetable-based)	4 - 6	X	X		X		
SATURATED									
	DEHYLUB® 4003	2-EH Laurate	4 - 6		X				X
	DEHYLUB® 4018	2-EH Palmitate	7.5 - 9	X	X			X	X
	DEHYLUB® 4033	2-EH Palmitate/Stearate	8.5 - 10.5		X				
	DEHYLUB® BS 4015	n-Butyl Stearate	6.5 - 7.5	X	X		X		
	DEHYLUB® 4134	Specially for MQL	4 - 6		X				
	DEHYLUB® 4004	Iso-Butyl Stearate	6 - 8	X	X		X		
	DEHYLUB® 4010	Iso-Tridecyl Stearate	15 - 17	X	X			X	X



Learn more

Diesters

As one of the leading suppliers of environmentally-acceptable base stocks, Emery Oleochemicals offers diester products with renewable content for lubricant formulators who are looking for more environmentally-friendly alternatives to help meet sustainability objectives. We also offer diesters based on traditional petrochemical components.

PRODUCT	DESCRIPTION	KV @40°C cSt (mm ² /s)	INDUSTRIAL FLUIDS	METAL WORKING FLUIDS	ALUMINUM PROCESSING	COMPRESSOR OILS	GREASES	CHAIN OILS	BIOHYDRAULIC OILS	FIRE-RESISTANT HYDRAULIC FLUIDS	AUTOMOTIVE FLUIDS
DEHYLUB® 4005	Di-2-EH Sebacate	10.5 - 12.5	X	X			X				X
DEHYLUB® 1337	Di-isotridecyl Adipate	23 - 29	X	X			X		X		X
DEHYLUB® 4045	Di-isodecyl Adipate	12 - 15	X								X
DEHYLUB® 4039	Di-2-EH Azelate	10 - 12	X				X		X		X
DEHYLUB® 4121	Polyglycol Diester	30 - 40		X	X		X				
DEHYLUB® 4144	Fatty Acid Polyglycol Diester	50 - 65		X	X		X				
DEHYLUB® 4105	Di-2-EH Dimerate	85 - 100	X	X		X	X	X	X	X	X
DEHYLUB® 4155	EG Dimerate	800 - 1600	X	X		X	X	X			



Learn more



Polyol Esters

To achieve optimal performance parameters in combination with a very favorable ecotoxicological profile, the polyol ester range of Emery Oleochemicals' Bio-Lubricants product portfolio uses neopentyl glycol, trimethylolpropane and pentaerythritol as the alcohol part in combination with oleochemical fatty acid cuts. This makes our polyol esters, both unsaturated and saturated, the ultimate base stock for environmentally acceptable lubricants (EALs) such as for use in marine applications.

CATEGORY	PRODUCT	DESCRIPTION	KV@40°C CST (mm ² /s)	INDUSTRIAL FLUIDS	METAL WORKING FLUIDS	STEEL ROLLING	ALUMINUM PROCESSING	COMPRESSOR OILS	GEAR OILS	CHAIN OILS	GREASES	MARINE LUBRICANTS	BIOHYDRAULIC OILS	FIRE RESISTANT HYDRAULIC FLUIDS	AUTOMOTIVE FLUIDS
UNSATURATED															
	DEHYLUB® 4016	NPG Oleate (vegetable-based)	22 - 27	X	X	X	X						X		
	DEHYLUB® 4016 US	NPG Oleate	22 - 27	X	X	X	X						X		
	DEHYLUB® 4030	TMP Oleate	42 - 50	X	X	X		X			X	X	X	X	
	DEHYLUB® 4030 MY	TMP Oleate (Kosher & Halal possible)	42 - 50	X	X	X		X			X		X	X	
	DEHYLUB® 4085	TMP Oleate (vegetable-based)	42 - 50	X	X		X				X	X	X	X	
	DEHYLUB® 4136	TMP Oleate	44 - 53	X	X		X				X		X	X	
	DEHYLUB® 4145	TMP Oleate	43 - 53	X	X		X				X		X	X	
	DEHYLUB® 4028	Glycerol Oleate	< 45		X		X						X		
	DEHYLUB® 4050	PE Oleate	62 - 74	X	X						X	X	X	X	
	DEHYLUB® 4129	TMP Monomerate	80 - 90	X	X		X				X				
	DEHYLUB® 4008	PE Dioleate	86 - 105		X			X	X		X				X
	DEHYLUB® 4038	Glycerol Monooleate	100 - 120	X	X		X	X	X		X				X
SATURATED															
	DEHYLUB® 4052	NPG Cocoate	14 - 18	X	X	X	X								
	DEHYLUB® 4022	TMP Fatty Acid Ester	18 - 21	X	X			X	X		X	X			X
	DEHYLUB® 4119	TMP Fatty Acid Ester	19 - 23	X	X			X	X		X	X			X
	DEHYLUB® 4026	PE Fatty Acid Ester	27.5 - 33	X	X			X			X		X		X
	DEHYLUB® 4086	TMP Cocoate	34 - 38												
	DEHYLUB® 4148	NPG Isostearate	41.4 - 50.4	X	X	X		X		X	X	X	X	X	
	DEHYLUB® 4087	TMP Isostearate	95 - 105	X	X			X		X	X	X	X	X	
	DEHYLUB® 4049	PE Isostearate	135 - 150	X	X			X	X	X		X		X	
	DEHYLUB® 4167	Dipentaerythritol Ester	200 - 240	X	X				X	X					



Learn more

Complex Esters

Complex esters from Emery Oleochemicals give formulators the right tool to optimize lubricant fluids while maintaining other criteria like ecotoxic profile, usage of renewable resources and low toxicity. Emery Oleochemicals' complex esters are available in unsaturated and saturated lines. Both lines offer various viscosity grades to provide our customers with the appropriate viscosity grade, or a blending scheme can be applied to achieve any viscosity grade in between.

CATEGORY	PRODUCT	DESCRIPTION	KV@40°C CST (mm ² /s)	INDUSTRIAL FLUIDS	METAL WORKING FLUIDS	COMPRESSOR OILS	GEAR OILS	CHAIN OILS	GREASES	MARINE LUBRICANTS	BIOHYDRAULIC OILS	FIRE RESISTANT HYDRAULIC FLUIDS	AUTOMOTIVE FLUIDS
UNSATURATED													
	DEHYLUB® 4060	TMP Complex Ester VG 68	61.2 - 74.8	X	X	X	X	X	X	X	X	X	
	DEHYLUB® 4062	TMP Complex Ester VG 150	135 - 165	X	X	X	X	X	X	X	X	X	
	DEHYLUB® 4064	TMP Complex Ester VG 320	288 - 352	X	X	X	X	X	X	X	X	X	
	DEHYLUB® 4066	TMP Complex Ester VG 680	612 - 748	X	X	X	X	X	X		X	X	
	DEHYLUB® 4067	TMP Complex Ester VG 1000	900 - 1100	X	X	X	X	X	X		X	X	
	DEHYLUB® 4153	Polymeric Ester	> 400	X	X	X	X	X	X				
	DEHYLUB® 4172	Polymeric Ester	250 - 350	X	X	X	X	X	X				
SATURATED													
	DEHYLUB® 4100	Complex Ester	425 - 465	X	X	X	X		X		X		
	DEHYLUB® 4071	Complex Ester VG 46	43 - 51	X	X				X	X	X		X
	DEHYLUB® 4059	Complex Ester VG 100	105 - 120	X	X				X	X	X		X
	DEHYLUB® 4077	Complex Ester VG 320	288 - 352	X	X	X	X		X		X		X




Learn more

Trimellitate Esters

For high temperature applications, our trimellitate (TMA) esters serve as valuable base stock components in industrial fluid formulations. The unique structure of Emery Oleochemicals' TMA esters provides high flash points combined with suitable low temperature behavior.

CATEGORY	PRODUCT	DESCRIPTION	KV @ 40°C CST (mm ² /s)	INDUSTRIAL FLUIDS	CHAIN OILS	GREASES	FIRE RESISTANT HYDRAULIC FLUIDS
UNSATURATED							
	DEHYLUB® 4029	Trimellitate Ester (stabilized)	45-55	X	X	X	X
	DEHYLUB® 4149	Trimellitate Ester (unstabilized)	45-55	X	X	X	X
	DEHYLUB® 4032	Trimellitate Ester (stabilized)	80-95	X	X	X	X



 Learn more

Specialty Acids

Emery Oleochemicals offers unique specialty monobasic and dibasic acids for a variety of applications. They are typically used in the form of a salt or ester derivative in lubricants, fuels and metalworking fluids. Functional benefits include improvements in lubricity, solubility, wettability, solvency, corrosion protection, oxidative stability and rheological properties.

CATEGORY	PRODUCT	DESCRIPTION	LUBRICANT BASE STOCKS	LITHIUM COMPLEX GREASE	CORROSION INHIBITORS	METAL CLEANING	OILFIELD	FUEL ADDITIVES
AZELAIC ACID								
	EMEROX® 1110	Azelaic Acid (79% C9D)	X	X				
	EMEROX® 1144	Azelaic Acid (89% C9D)	X	X				
	EMEROX® 1185	Diacid Blend (C9D-C12D)			X			
	EMEROX® 1199	Diacid Blend (C9D-C12D)			X	X	X	
PELARGONIC ACID								
	EMERY® 1202	Pelargonic Acid (90% C9M)	X		X	X		
	EMERY® 1203	Pelargonic Acid (98% C9M)	X		X	X		
DIMER ACID								
	EMERY® 2003	Technical Dimer Acid (80% C36D)			X		X	X
	EMERY® 2016	Dimer Acid (80% C36D)			X		X	X
	EMERY® 2932	Monomer Acid	X			X		
	EMERSOL® 3875	Isostearic Acid (tallow-based)	X			X		X



Azelaic



Pelargonic



Dimer

Oilfield Chemicals

As a global provider of renewable-based, high-performance and innovative solutions for production chemicals, drilling applications, stimulation and other oilfield chemical solutions, Emery Oleochemicals provides a unique and comprehensive portfolio for the oil and gas industry.

Our oilfield chemical solutions include products for the following applications:

Drilling Chemicals

- Base fluids
- Lubricants
- Rheology modifiers
- Emulsifiers
- Cleaners

Production Chemicals

- Flow assurance
- Corrosion inhibitors

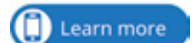
Stimulation, Ca-Napthanate Inhibition & Cold Flow Improvers (CFPP)

Emery places strong emphasis on providing environmentally-friendly products with high performance for oilfield applications to protect the environment and to help customers meet their sustainability goals. Many of our oilfield product solutions are ranked on the OCNS list by CEFAS.

In addition to our commercially-available product solutions, Emery Oleochemicals has a highly skilled technical Product & Application Development team to support both exclusive or joint development projects with customers to meet specific chemical solution needs.



View our comprehensive portfolio of oilfield drilling and production chemicals.



CREATING VALUE FOR OUR CUSTOMERS, ANYWHERE IN THE WORLD.



Global Network

Emery Oleochemicals' operations are supported by a global workforce and an extensive distribution network covering over 50 countries worldwide. Our technical and industry experts located around the world are ready to help you select the best product to meet your specific requirements.

The availability of our products is subject to regional demand and regulations. Detailed information and certifications are available upon request.

Visit our website to learn more about our comprehensive Bio-Lubricants solutions:
www.emeryoleo.com/bio-lubricants



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