



ExxonMobil Lubricants & Specialties
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Mobil

A comprehensive solution for extreme and specialty applications

The demands of modern business mean you are often working to extremes, pushing your equipment to ever greater limits. When it comes to lubricating industrial and automotive equipment, you need greases that can provide you with the necessary protection and performance to help increase productivity, lower maintenance costs, extend equipment life, and improve your bottom line.

Choose Mobil lubricants and services for your extreme condition lubrication solution.

Benefits of Mobil Greases

- **Reduced complexity in the purchasing process** through Mobil's comprehensive lubrication solution
- **Enhanced equipment reliability and performance** even in extreme operating conditions
- **Cost-effective lubrication and reduced waste** from innovative greases' long life and long re-lubrication intervals
- **Improved uptime and productivity** from extended bearing life and less maintenance
- **Saved time and hassle** through expert advice from our on-site engineers, equipment builder relationships, and technical resources
- **Enhanced peace of mind** from consistent quality you can trust



Mobil Grease Lubrication

The Extreme Condition Grease Solution



www.mobil.com

ExxonMobil
Lubricants & Specialties

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Mobil greases perform in your extreme and specialty applications

Mobil greases are specially formulated to help increase productivity, lower maintenance costs, extend equipment life, and improve your bottom line. To satisfy the unique needs of a wide range of industries, Mobil offers a comprehensive line of specialty greases, including synthetics for extreme conditions, polyurea-thickened for long life and high temperature, food grade, and environmentally aware.

Advanced Greases for High Performance

To meet the growing demands of industry, customers and equipment builders, we are committed to the continual research and development of technically advanced greases. As a result, Mobil greases are based on carefully selected mineral and synthetic base fluids, in combination with patented thickener technology and synergistic additive systems. Modern manufacturing techniques provide the backbone for consistent quality and performance.

Global Standards Mean Consistent Quality You Can Trust

Quality is central to ExxonMobil. Whether you are a maintenance manager, business owner, lubrication technician, or purchasing agent, our consistent quality and high standards ensure you can get your job done right.

Our fully integrated program enables us to monitor and ensure quality from start to finish – from the refining of base oils, through the manufacture of lubricants, to the delivery of finished product to customer premises. Our quality does not stop there. Our customer service, technical support, and on-line resources round out our products to ensure your satisfaction.

Stringent testing and monitoring at every stage of the supply chain promote consistent products, quality service, and customer satisfaction both on the plant floor and in the purchasing office.

Mobil Lubrication Solutions

Mobil greases are designed to meet a wide variety of operating conditions in both industrial and automotive applications, including extreme conditions such as high & low temperature, excessive moisture, heavy or shock loads, or variable speeds. They are available in a range of viscosity grades to offer you added choice and flexibility. In addition to our core products, we have specialty greases for high speed bearings, environmental protection, drive gear boxes, food machinery, open gears, and couplings.

Our years of expertise in grease technology allow us to meet extreme demands worldwide.

Mobil Technical Support

Matching the correct Mobil grease with your application depends on various criteria. At Mobil, we don't just sell grease, we work with you to ensure you have the proper technical support you need. Our global network of lubrication sales and field engineers directly interface with you to provide lubrication technology, expertise and training. Extreme or unusual conditions require additional focus. Our Certified Lubrication Engineers have the knowledge and tools to perform Elastohydrodynamic Lubrication (EHL) calculations to pinpoint the right grease for optimum performance.

Our products and people work together so you receive an outstanding lubrication solution.



Mobil addresses the unique needs of your industry



Pulp and Paper

- High operating temperature-wet and dry
- Corrosive process water
- Centralized grease dispensing systems
- Equipment builder recommendations



Manufacturing and Assembly

- Extreme range of operating conditions
- Multipurpose greases for a wide range of applications
- Centralized grease dispensing systems
- Equipment builder recommendations



Steel and Aluminum

- High temperatures, heavy loads, stress & vibration
- Long service life lubricants, fire resistant & non-staining
- Consistent supply for round the clock operation
- Long re-lubrication intervals for cost-effective lubrication



Commercial Vehicles and Off-Road Equipment

- Long service life products for trouble free operation
- Heavy load capabilities on moving parts
- Robust quality for adverse working conditions
- High shear stability and water resistance

Field proven results



roller bearings

Application: Steam-heated press machine rollers operating at high temps
Problem: Short bearing life and excessive grease consumption due to grease bleeding
Solution: Mobilith SHC 460
Results:

- **Longer component life**
Bearing service life extended to over two years
- **Reduced grease consumption and labor costs**
Regreasing frequency cut in half
- **Less unscheduled downtime and higher productivity**
Grease bleed issue eliminated
- **Savings of US \$8,000 per year**
Jingfeng Paper Co., Ltd., China



fan bearings

Application: Wood kiln fan bearings at high temperatures
Problem: Frequent bearing failure exacerbated by severe conditions
Solution: Mobilith SHC 220
Results:

- **Lower maintenance costs**
Bearing failure frequency reduced by over 75%, from 28 times per year to fewer than 4 times per year
- **Less unscheduled downtime and higher productivity**
Savings of US \$140,000 per year

Brown and Dureau Wood Mills, Australia



spindle bearings

Application: Fan motor spindle bearing
Problem: Spindle bearing failure every 50 hours due to extreme conditions
Solution: Mobilith SHC 100
Results:

- **Lower downtime and maintenance costs**
Unplanned shutdowns eliminated
- **Higher productivity**
1000 hours of continuous operation
- **Savings of US \$220,000 per year**
Associated Cement Companies, Ltd., India



electric motors

Application: Wood kiln electric motor bearings
Problem: Harsh environment & extreme temperature range caused premature motor failure
Solution: Polyrex EM and personnel training
Results:

- **Reliable component performance**
Kiln electric motor failures decreased by 42%
- **Increased equipment uptime for greater productivity**
Plum Creek Timber, USA



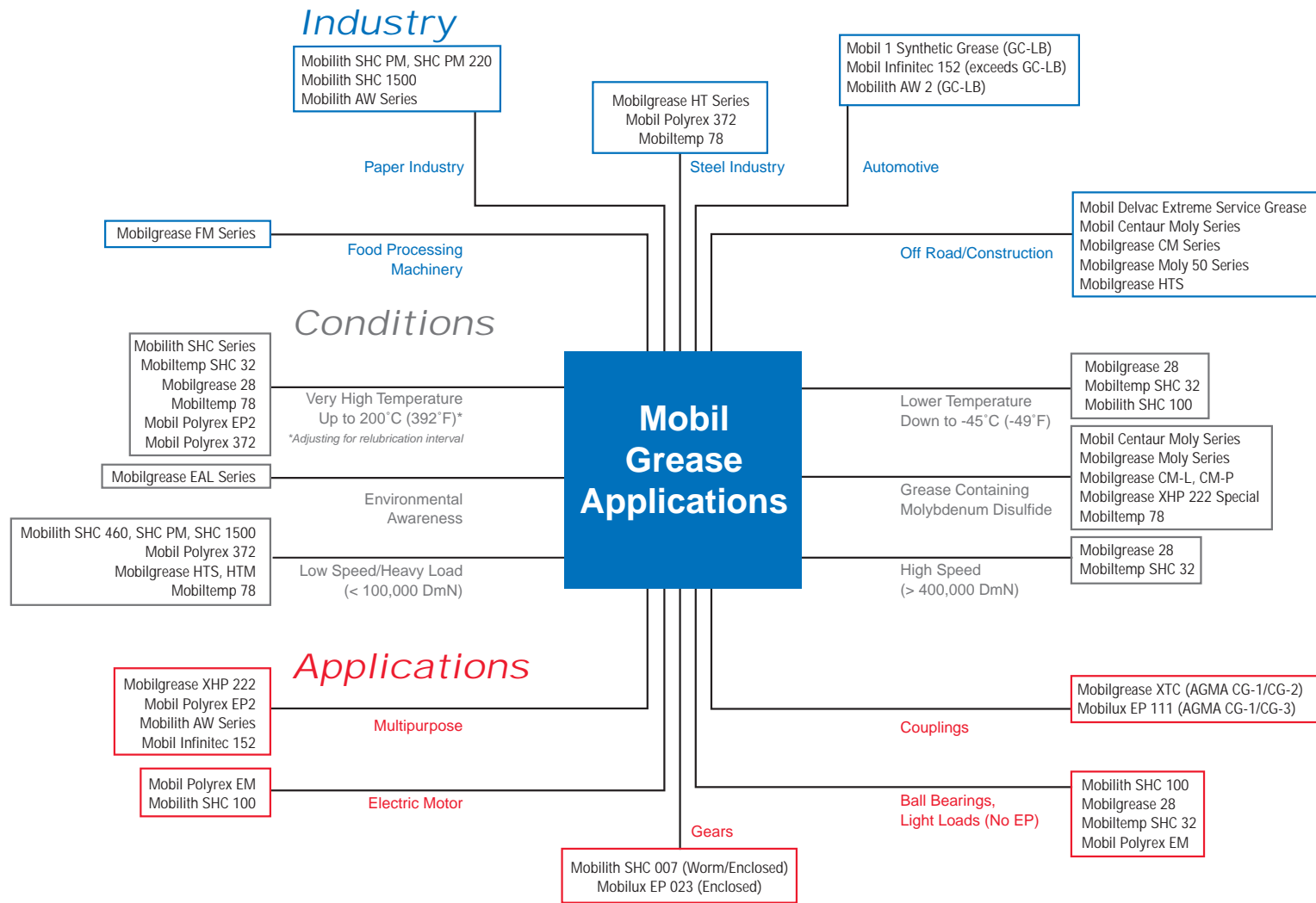
For additional technical information or to identify the nearest supply source, contact us at 1-800-MOBIL-25 or visit www.mobil.com

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Mobil advanced technology greases are designed to offer you long re-lubrication intervals, low maintenance costs and maximum equipment availability.



Mobil Grease Selection Guide



This is intended as a general guide only. For more information, please contact your local sales representative, call 1-800-MOBIL-25, or visit www.mobil.com.



Grease		Color*	Thickener	Base Oil Viscosity	NLGI	Typical Applications
Synthetic Base Oil (PAO)				cSt at 40°C		<i>Specially formulated for severe and high temperature conditions.</i>
		Mobilith SHC 007	Lithium Complex	460	00	Slow speed gear boxes. Non-driven wheel hubs. Long life.
		Mobilith SHC 100	Lithium Complex	100	2	High speed bearings, including electric motors and fans.
		Mobilith SHC 220	Lithium Complex	220	2	Industrial and automotive applications. Long life.
		Mobilith SHC PM 220	Lithium Complex	220	1.5	High speed paper machines.
		Mobilith SHC 221	Lithium Complex	220	1	Industrial and railroad applications. Long life.
		Mobilith SHC 460	Lithium Complex	460	1.5	Moderate speeds, heavier loads.
		Mobilith SHC PM	Lithium Complex	460	1.5	Paper mills and paper machines. Excellent wear and water protection.
		Mobilith SHC 1500	Lithium Complex	1500	1	Mining, Cement, Paper mills. Highly loaded, low speed bearings. Excellent wear and water protection.
		Mobil 1 Synthetic Grease	Lithium Complex	220	2.0	Automotive applications. GC-LB registered. Long life.
		Mobiltemp SHC 32	Clay	28	-1	High speed, rolling element spindle bearings. Machine tools.
		Mobilgrease EAL 102 (Ester)	Lithium	100	2	Environmentally sensitive applications. Biodegradable and non-toxic.
Mineral Base Oil						
		Mobiltemp 78	Clay	460	1	Low speed plain/roller bearings at high temperatures. 1% moly.
		Mobil Polyrex EM	Polyurea	115	-2	Electric motor bearings. High temp. Low noise. Long life.
		Mobil Polyrex EP2	Polyurea	220	2	Multipurpose, high temp applications.
		Mobil Polyrex 372	Polyurea	370	2	Multipurpose for heavy duty and high temp applications.
		Mobilgrease FM 101, 102	Aluminum Complex	100	1, 2	Multipurpose grease for the food industry. USDA H1/NSF registered.
		Mobil Delvac Xtreme Service Grease	Lithium Complex	320	2	Heavy duty truck and off highway equipment. Good water resistance.
		Mobilgrease XHP 222	Lithium Complex	220	2	Multipurpose industrial and automotive applications. Good water resistance.
		Mobilgrease XHP 222 Special	Lithium Complex	220	2	Lube points with sliding and pivoting movements. Good water resistance. 0.75% moly.
		Mobilgrease Moly 50, 51, 52	Lithium Complex	320	0, 1, 2	Off highway equipment. 5% moly.
		Mobilgrease CM-L	Lithium Complex	150	1	Contractor/mining applications. Winter grade. 3% moly.
		Mobilgrease CM-P	Lithium Complex	320	2	Contractor/mining applications. Good water resistance. 3% moly.
		Mobilgrease CM-S	Lithium Complex	320	2	Heavily loaded bearings. Good water resistance.
		Mobilgrease CM-W	Lithium Complex	150	1	Heavily loaded bearings. Winter grade.
		Mobilith AW 00	Lithium Complex	100	00	Central grease dispensing systems. Gear lubrication. Good low temperature pumpability.
		Mobilith AW 0	Lithium Complex	150	0	Central grease dispensing systems. Good low temperature pumpability.
		Mobilith AW 1, 2, 3	Lithium Complex	150	1, 2, 3	Multipurpose industrial applications.
		Mobilgrease HTR	Lithium Complex	320	0.5	Central grease dispensing systems. Low temp. Good water resistance.
		Mobilgrease HTM	Lithium Complex	460	1.5	Slow speed, heavily loaded bearings. Excellent pumpability. Good water resistance.
		Mobilgrease HTS	Lithium Complex	680	2	Heavily loaded bearings. Fifth wheel. Good water resistance.
		Mobilgrease HTF	Lithium Complex	680	2	Fire resistant for castor/strip mills.
		Mobilgrease XTC	Lithium/Polymer	680	1	AGMA type CG-1/CG-2 high speed, flexible couplings.
		Mobil Infinitec 152	Lithium Complex	150	2	Automotive wheel bearings. GC-LB registered. Long life.
		Mobil Centaur Moly 1, 2	Calcium Sulfonate	320	1, 2	Heavily loaded bearings. Excellent corrosion protection. Good water resistance. 3% moly.

Key

Industries

- Pulp & Paper
- Manufacturing & Assembly
- Steel & Aluminum
- Cement
- Heavy Commercial Vehicles
- Off-Road Equipment
- Railroads
- Food Manufacturing
- Automotive

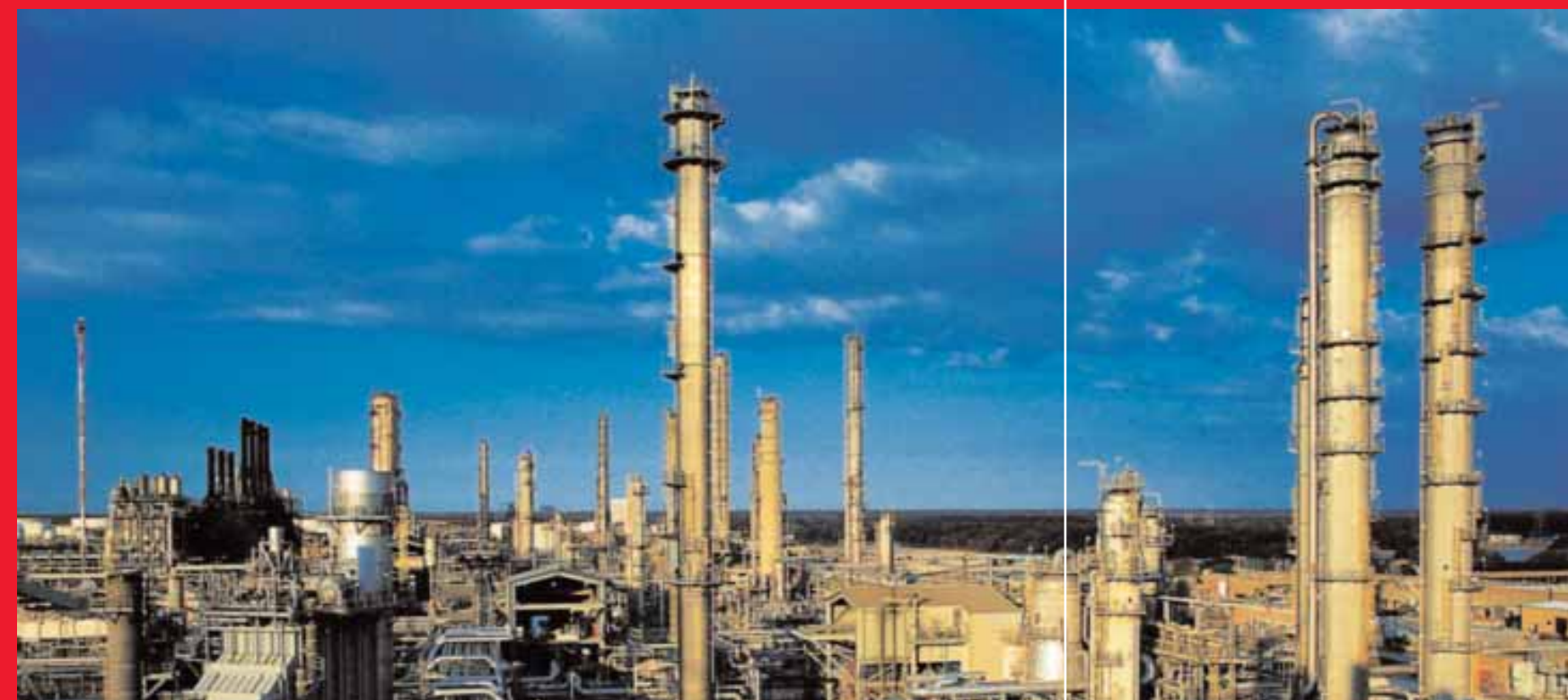
Components

- Electric Motor Bearings
- Electric Fan Bearings
- Spindle Bearings
- Gears
- Couplings
- Environmentally Aware

This is intended as a general guide only. For further information, please contact us at our local sales office. *Please note that color swatches are approximations.

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The Multipurpose Grease Solution



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Exxon is the multipurpose grease solution.

Exxon's multipurpose grease solution helps you improve your bottom line in today's demanding business environment. Take advantage of Exxon's quality, efficiency, and reliability to satisfy your lubrication needs. Exxon grease can help you:

- **Simplify inventory, ordering, and application** through an Exxon multipurpose grease solution.
- **Improve equipment life** by protecting from rust, corrosion, and contamination.
- **Minimize downtime** by performing consistently under mechanical stress and in changing operating conditions.
- **Ensure efficient performance** through Exxon's quality application advice and support.

Effective Grease Lubrication

Based on selected high quality base oils and containing structurally stable thickener systems and high performance additives, the Exxon grease line offers high mechanical stability, good water resistance and low re-greasing rates. Exxon greases aim to provide cost effective lubrication and protection over long periods of operation.

Application Advice and Support

Our sales and technical personnel bring worldwide experience of customers and equipment builders in a wide variety of grease applications. We not only assist you in selecting the right grease but we also provide advice and support to ensure that you obtain the best performance from the product.

Global Standards Mean Consistent Quality You Can Trust

Quality is central to ExxonMobil. Whether you are a maintenance manager, business owner, or purchasing agent, our consistent quality and high standards ensure you can get your job done right.

Our fully integrated program enables us to monitor and ensure quality from start to finish -- from the refining of base oils, through the manufacture of lubricants, to the delivery of finished product to customer premises. Our quality does not stop there. Our customer service, technical support, and on-line resources round out our products to ensure your satisfaction.

Stringent testing and monitoring at every stage of the supply chain promote consistent products, quality service, and customer satisfaction both on the plant floor and in the purchasing office.



Exxon Greases Can Help You

- Simplify inventory, ordering, and application through a multipurpose grease approach
- Extend equipment life with all-around protection
- Improve uptime and re-lubrication intervals through consistent and reliable product quality
- Ensure efficient performance through Exxon's quality application advice and support

Grease Selection

Grease is made from three components – base oil, thickener, and performance additives – that determine its characteristics. These characteristics are important in selecting the right grease.

Grease Consistency

Consistency describes the physical thickness of the grease as determined by the type and amount of thickener used in the grease. Consistency provides the structure, like a sponge, that houses the base oil.

The National Lubricating Grease Institute (NLGI) grades for grease consistency describe the penetration of a standard cone into a grease sample under prescribed conditions. A low NLGI grade indicates greater penetration, and therefore softer grease.

NLGI Grade	Worked Penetration, 0.1mm	Appearance
000	445-475	Very fluid
00	400-430	Semi-fluid
0	355-385	Soft
1	310-340	Semi-soft
2	265-295	Firm
3	220-250	Very Firm
4	175-205	Hard
5	130-160	Very hard
6	85-115	Block

Base Oil Viscosity of the Grease

During lubrication, base oil is released from the thickener of the grease to lubricate the components. Many manufacturers consider the grease's base oil viscosity to be the key factor in grease selection. Through our long-standing relationships with original equipment manufacturers, our engineers can advise you of the proper base oil viscosity.

Base oil viscosity is rated according to the International Standards Organization Viscosity Grade (ISO VG). The chart below shows ISO VGs appropriate for a variety of operating conditions.

ISO VG (cSt@40°C)	Application Examples	Load	Speed	Oil Separation*	Pumpability*
22	High Speed Spindles	Low	High	High	High
100	Large High Speed Electric Motors	↓	↑	↑	↑
150	Wheel Bearings				
220	Paper Mills Multipurpose-Industrial				
460	Paper Mills Steel Mills	↓	↑	↑	↑
1000	Mining Equipment Crushers, Bearings etc.				
1500	Very Low Speed Heavy/Shock Loads	High	Low	Low	Low

*Oil Separation & Pumpability are also influenced by grease consistency and thickener type.
**Scales indicate directionality.

Exxon Multipurpose Greases for Many Applications

Exxon greases have been designed and manufactured to meet the increasing demands of customers and equipment builders where quality and consistency are the primary concerns.

Exxon greases operate under a wide range of operating conditions, including heavy loads, shock and vibration in industrial and automotive applications with the aim of increasing re-lubrication intervals and providing reliable machine operation.



For additional technical information or to identify the nearest supply source, contact us at 1-800-44-EXXON or visit www.exxon.com

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Exxon Grease Selection Guide



Industrial/General Purpose Greases				Specialty Greases		Commercial Vehicle Greases	
	Beacon EP	Unirex EP	Ronex ED	Unirex N	Unirex S2	Ronex MP	Ronex Extra Duty Moly 2
Properties							
Color	Tan	Green	Orange	Green	Brown	Green	Gray-Black
Thickener	Lithium	Lithium Complex	Lithium Complex	Lithium Complex	Lithium Complex	Lithium Complex	Lithium Complex
Viscosity cSt at 40°C	150	220	460	107	150	150	460
NLGI Grade	0, 1, 2	1, 2	1, 2	2, 3	2	2	2
Dropping Point °C (°F)*							
	176 (348)	260 (500)	230 (446)	218 (425)	260 (500)	230 (446)	230 (446)
Special Properties							
				Full Synthetic (Ester)		3% Molybdenum Disulfide	
Mechanical Performance							
High Speed	✓✓	✓✓	✓	✓✓✓	✓✓✓	✓✓	✓
Low Speed	✓	✓✓	✓✓✓	✓	✓✓	✓✓	✓✓✓
High Load	✓✓	✓✓✓	✓✓✓	✓	✓✓	✓✓	✓✓✓
High Temp**	✓	✓✓	✓✓	✓✓✓	✓✓✓	✓✓	✓✓
Low Temp/Torque	✓✓	✓✓	○	✓✓	✓	✓✓	○
Water Resistance	✓✓	✓✓	✓✓✓	✓✓	✓	✓✓	✓✓✓
Anti-Corrosion	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓	✓✓	✓✓
Pumpability***	✓✓	✓✓	✓	✓	✓	✓✓	✓
Typical Applications							
	<ul style="list-style-type: none"> ■ Multipurpose ■ Plain/roller bearings 	<ul style="list-style-type: none"> ■ Centralized systems ■ General purpose for industrial & auto 	<ul style="list-style-type: none"> ■ Heavy duty ■ Construction ■ Pulp & Paper 	<ul style="list-style-type: none"> ■ Long bearing life ■ Electric motors 	<ul style="list-style-type: none"> ■ Extreme temp ■ Conveyor bearings in kilns/ovens ■ Steel mill ladle bearings 	<ul style="list-style-type: none"> ■ Industrial multipurpose ■ Automotive GC-LB 	<ul style="list-style-type: none"> ■ Heavy duty ■ Chassis lubrication ■ Pins & Hinges

Suitable for ✓✓✓ Exceptional Performance ✓✓ Performance Benefit ✓ Acceptable Performance ○ Not Recommended

* Dropping point typical results can be significantly higher.
 ** Assumes normal relubrication frequencies are used.
 *** Varies by grade.

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