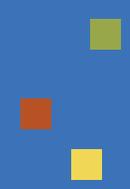


A decorative graphic consisting of several small, colored squares (blue, green, orange, yellow) arranged in a loose, abstract pattern on the left side of the page.

# being essential



# being essential

At Lubrizol, our mission is straightforward:

To be an essential ingredient in our customers' success through collaboration, applied science and demonstrated value. But *being essential* is about more than fulfilling that mission. It's our way of working, our way of life.

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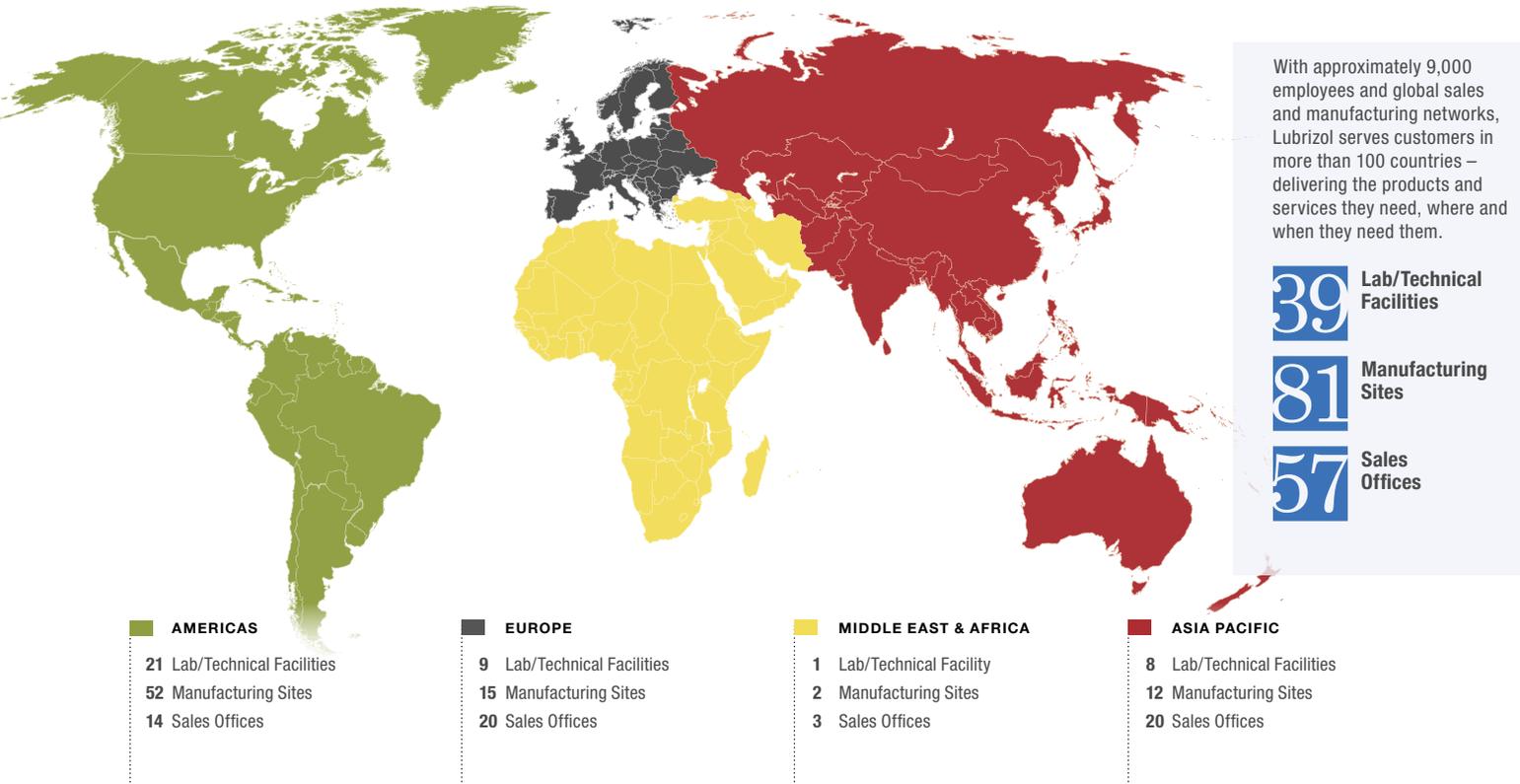
INSIDE  
BACK  
COVER

## About Lubrizol

The Lubrizol Corporation, a Berkshire Hathaway company, is a technology-driven global company. We combine complex specialty chemicals to optimize the quality, performance and value of our customers' products while reducing their environmental impact.

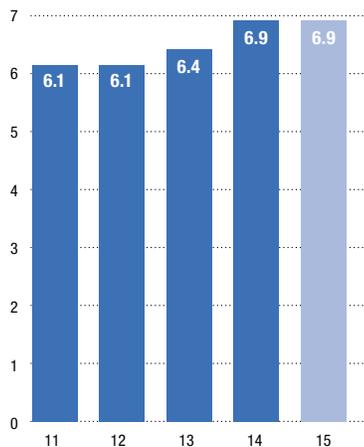
We know that Lubrizol isn't a common household name to most people. So it might surprise you that our products and technologies are in things you use every day – quite likely on surfaces and in fluids in the vehicles you drive, in the shampoos and soaps you use, in a medicine you take, in the clothes you wear, and in electronic devices and plumbing systems in your home.

### Global Footprint



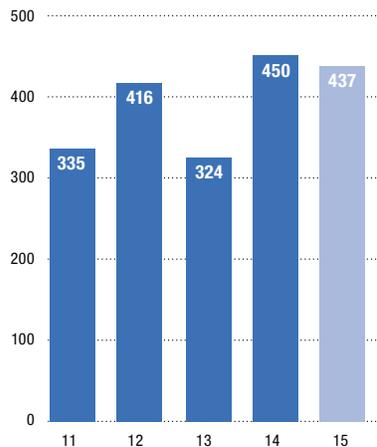
### Revenues

Dollars in Billions

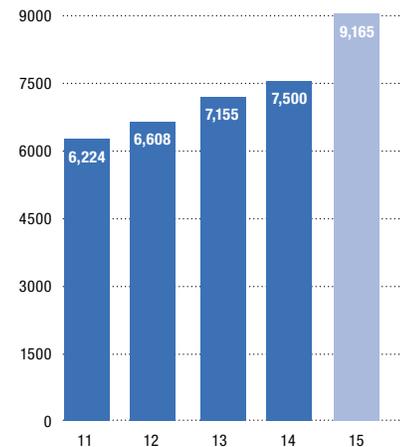


### Capital Expenditures

Dollars in Millions



### Employees



# A Letter from the CEO

## At Lubrizol, we focus on both today and tomorrow.

Again in 2015, our talented employees applied innovative thinking and the utmost effort to customer challenges every day – a hallmark of our company throughout its history. Each of our segments and every one of our businesses maintains a keen focus on identifying and serving current and future market needs through our advanced and diverse technological portfolio.

In doing so, we help our customers overcome challenges and take advantage of opportunities. Just as importantly, we continually position our company for success and growth over the long term.

### Strategic Review and Outlook

In 2015, favorable raw material pricing, strong margin management, good expense control and contributions from recent strategic investments in acquisitions helped Lubrizol achieve approximately \$7 billion in revenue and increase operating income for the 12th consecutive year.

Nevertheless, sales volumes were lower than expected across the organization, and we experienced unfavorable foreign exchange rates. We are feeling the impact of the ongoing slowdown in global oil markets as well as a challenging specialty chemicals economic market that we expect will continue in 2016.

In the face of these challenges, our top priority is to focus on the activities with the greatest impact and highest returns. And this focus is reflected in our strategy that continues to guide us in 2016 and beyond:

- Drive organic growth through product innovation and geographic expansion
- Improve operating profitability through efficiencies
- Strengthen our portfolio of products

We continue to work on successfully integrating our recent acquisitions, including Chemtool (Lubrizol Additives); EcoQuimica, Particle Sciences, Vesta and Warwick (Lubrizol Advanced Materials); and Weatherford International businesses (Lubrizol Oilfield Solutions). In addition, we continue to identify opportunities for bolt-on acquisitions that enhance our portfolio and help to advance the success of our strategy.



**James L. Hambrick**  
Chairman, President and Chief Executive Officer

Because our strategy hinges on our ability to live by the values articulated in our corporate philosophy, our commitment to doing the right thing is stronger than ever. Across the globe, Lubrizol employees are engaged in significant efforts to improve upon our strong record of health, safety and environmental performance, enhance diversity and inclusion within our organization and make a difference in the communities where we live and work.

By doing what we do best every day, our employees – backed by our strong culture and technological foundation – are ensuring Lubrizol’s ability to remain strong and serve customer needs well into the future.

### Lubrizol Additives: Leveraging Technology to Address Customer Needs and Market Trends

New product development, growth in adjacent markets and superb margin management drove the growth of our Lubrizol Additives segment in a challenging and highly competitive environment in 2015. Even so, it was a year in which we further demonstrated Lubrizol’s value proposition to drive successful outcomes through new products and technology applications.

We continue to collaborate with original equipment manufacturers (OEMs) and other longstanding partners and were rewarded with customer approvals that enabled us to maintain – and in some cases, gain – market share. Additionally, through partnerships with key global customers, we are expanding our capabilities and offerings.

## Major Capital Investments

■ LUBRIZOL ADDITIVES ■ LUBRIZOL ADVANCED MATERIALS ■ LUBRIZOL OILFIELD SOLUTIONS

**Kinuura, Japan**  
Update blending and testing service capabilities

**Zhuhai, China**  
Open new testing facility

**Hazelwood, U.K.**  
Upgrade chemical testing laboratories, improve chemical synthesis facility

**Calvert City, Kentucky**  
Expand manufacturing facility to increase Carbopol® capacity

**Wilmington, Massachusetts**  
Complete major capital expansion

**Midland, Michigan**  
Expand CPI Fluid Engineering (subsidiary) facility

**Mumbai, India**  
Upgrade fuel and lubricants laboratory

**Wickliffe, Ohio**  
Renovate Technical Center

**Louisville, Kentucky**  
Expand CPVC manufacturing facility

## Acquisitions

**Nalco Performance Products Group**  
**Personal and Home Care**  
Specialty polymers and formulation additives

**Merquinsa Engineered Polymers**  
Specialty thermoplastic polyurethanes (TPUs)

**Active Organics, Inc. Personal and Home Care**  
Naturally derived specialty ingredients for personal care

**Paratherm Corporation CPI**  
Heat transfer fluids

**Lipotec SA Personal and Home Care**  
Advanced active ingredients for skin and hair care

2011

2012

For example, we recently added LUCANT™, a viscosity modifier, and HR-PIB, a key raw material in the manufacture of Lubrizol's proprietary dispersants, to our robust portfolio of technologies.

Reflecting our deeper engagement with OEMs and in support of industry upgrade initiatives, we have expanded our already strong testing capabilities, most notably in support of PC-11 and GF-6, two critical industry drivers. Our ongoing customer engagement is also helping us respond to the industrywide drive toward increased efficiency.

Our adjacent market growth initiative contributed to the expansion of many of our additives businesses. A good example is in our Driveline Products business, where our sales teams have been successful in driving the growth of our automatic transmission fluid service fill business. Enhanced team training and development, including added emphasis on securing customer-focused market insights, has contributed to this success.

### Lubrizol Advanced Materials: Adding Capacity and Enhancing Capabilities

Our Lubrizol Advanced Materials segment saw several of its capital investment projects come online in 2015 and further enhanced its capabilities through acquisition, strategic customer relations and new product development.

Lubrizol's Engineered Polymers business is already starting to benefit from our increased global CPVC capacity, as new or expanded facilities in Dahej, India, Louisville, Kentucky, and Rayong, Thailand, started up production in 2015. Additionally, our Personal and Home Care business opened its new surfactant plant in Brazil. Our facilities in these strategic locations provide more reliable supply for our customers, and allow us to be more responsive to both regional and global needs.

Furthering its strategy, our Lubrizol LifeSciences business acquired Particle Sciences, a global leader in complex formulations for the drug and healthcare industry. With this enhanced capability, we are more strongly positioned as a valued partner for our medical device and pharmaceutical customers.

Organic growth in this segment has also been a priority. We are working to achieve this growth through deeper customer relationships and strong new products. Our Engineered Polymers business significantly expanded a strategic relationship with a top sports and

recreation customer, where Lubrizol's technologies are helping this customer achieve its innovation goals. In the new product space, our Performance Coatings business launched new ink-receptive coating technology. This is another example of how our strong technological foundation positions us to capitalize on new and exciting market opportunities.

### Lubrizol Oilfield Solutions: Investing for Growth

Despite especially challenging market conditions, Lubrizol Oilfield Solutions – our newest segment – had a number of key successes. Notably, we have been working diligently to strengthen our position for when the market recovers by successfully integrating the Weatherford International acquisition and rolling out Oilfield Chemistry's updated commercial strategy.

Lubrizol Specialty Products Inc. (LSPi) had another strong year, achieving record volume and operating income. Additionally, this business has made strides in expanding capacity, including major manufacturing debottlenecking projects and expansions in Batesville, Arkansas; and Bryan and China, Texas.

### Looking Ahead

Lubrizol remains a strong company with the technological strength to serve our customers, and we appreciate being an essential ingredient in their success. While we remain realistic about the macroeconomic challenges our industry faces, we believe in the future opportunities for Lubrizol. With the strong support of Berkshire Hathaway, all of us are excited about what lies ahead.

Of course, our success would not be possible without our employees; thank you all for your hard work and dedication to the company. I look forward to our future together as a strong company poised for continued success.



**James L. Hambrick**

Chairman, President and Chief Executive Officer  
March 2016

**Zhuhai, China**  
Open new additives manufacturing facility

**Le Havre, France**  
Upgrade blending plant, expand capabilities

**Avon Lake, Ohio**  
Expand hyperdispersants plant

**Painesville, Ohio**  
Expand plant to increase capacity and improve site infrastructure

**Belford Roxo, Brazil**  
Open new Personal and Home Care surfactants facility

**Dahej, India, Louisville, Kentucky, and Rayong, Thailand**  
Expand CPVC resin and compounding capabilities globally

**Singapore**  
Introduce new lab capabilities at the Performance Coatings Innovation Center

**United States**  
Expand LifeSciences' Vesta manufacturing facilities

**Batesville, Arkansas; Bryan and China, Texas**  
Expand manufacturing capacity for pipeline flow improvers

**Chemtool Incorporated**  
Custom-formulated greases

**Vesta LifeSciences**  
Medical devices

**Phillips Specialty Products, Inc. Pipeline Flow Improvers**  
*Owned by Berkshire Hathaway with Lubrizol overseeing its strategic direction*

**EcoQuimica Performance Coatings**  
Coatings technology in Latin America

**Particle Sciences LifeSciences**  
Drug formulations

**Triphyto Personal and Home Care**  
Cosmetic actives used primarily in skin care products

**Warwick Chemicals Personal and Home Care**  
Stain removal technology

**Weatherford Engineered Chemistry and Integrity Industries Oilfield Chemistry**  
Oilfield chemicals and drilling fluids

**2015**

**2013**

**2014**



**Lubrizol...  
an essential partner**

**We want Lubrizol to be the first company that comes to mind when customers face a new challenge or opportunity.**

Our work begins at the molecular level, where we add value by delivering chemistries that differentiate and optimize the quality and performance of products you probably use every day.

Lubrizol products and technologies are essential ingredients in fluids and on surfaces in the vehicles you drive... in the shampoos and soaps you use... in the clothes you wear, and much more. In fact, our unique formulations result in many of the distinct characteristics that drive consumer buying decisions.

We are proud to serve customers in more than 100 countries. Our customer base comprises a wide range of multinational and regional market leaders – including oil marketers and leading manufacturers of industrial and consumer products.

Lubrizol's global supply chain is built to maintain the continuity, predictability and efficiency of our customers' businesses. A highly efficient, reliable and integrated system connects every Lubrizol manufacturing facility, warehouse and distribution point in real time. Our industry-leading resources include strategic relationships with key suppliers, as well as integrated laboratories and testing facilities in key locations throughout the world.

Approximately 9,000 employees across the globe thrive on collaborating to tackle the industry's toughest challenges. We take great pride in helping our customers – and their customers – gain a competitive edge.

In everything we do, we pride ourselves on being an essential partner to our customers. Regardless of industry, end market or desired solution, they look to Lubrizol to address their challenges and opportunities. Why? Because we listen. We collaborate. And we develop solutions to help them succeed.





# A responsible corporate citizen

## Our Corporate Philosophy | WE BELIEVE IN:

- Rewarding our shareholders by providing a high return on invested capital
- Providing superior products and outstanding service to our customers
- Investing in research and development to maintain and improve our technical position
- Insisting on honesty and integrity with customers, suppliers, all third parties and with one another
- Treating each employee with dignity and a sense of worth and supporting open communication with one another
- Developing and promoting personnel from within our ranks on the basis of individual performance
- Rewarding employees' efforts through a merit-oriented compensation program
- Maintaining the health and safety of our employees, customers and neighbors, and protecting the environment



**Just as we help make our customers' products better, we have a responsibility to our people, communities and other stakeholders to help create a better, more sustainable world for all of us.**

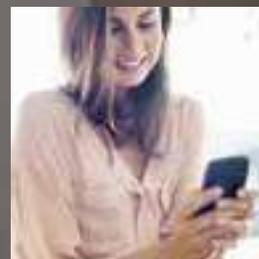
Continuous improvement in our health, safety and environmental performance, and investing in and supporting our people and communities, are important to us. They're all key parts of being an essential corporate citizen.

- All of our facilities worldwide must adhere to the highest environmental and safety standards, including the American Chemistry Council's global Responsible Care® initiative, and we audit performance against these standards.
- We work closely with our customers to provide products and services that help them meet their environmental performance goals. Life cycle assessments help us generate innovations in product design, development and manufacturing processes that will lead to reductions in environmental impact.
- We have reduced our worldwide injury and process safety incident rates through goal-setting, risk assessments, training, safe work procedures, system improvements and capital investments.
- Our diversity and inclusion strategy guides our efforts to actively embrace and leverage distinct demographic, economic, political and cultural practices in global contexts.
- Lubrizol employees volunteer thousands of hours of service globally, and we make significant grants and donations in support of education, health and human services, and civic and cultural activities in our communities and beyond.

For more information about Lubrizol's commitment to responsible corporate citizenship, please visit [www.lubrizol.com/CorporateResponsibility](http://www.lubrizol.com/CorporateResponsibility).

# Lubrizol... essential every day

longer engine life



comfortable  
grip

refreshingly clean

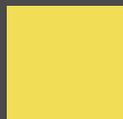
less fading



better fuel economy



consistent performance



On the pages that follow,  
we invite you to learn more about  
each of our major product lines.

gorgeous hair



improved  
productivity

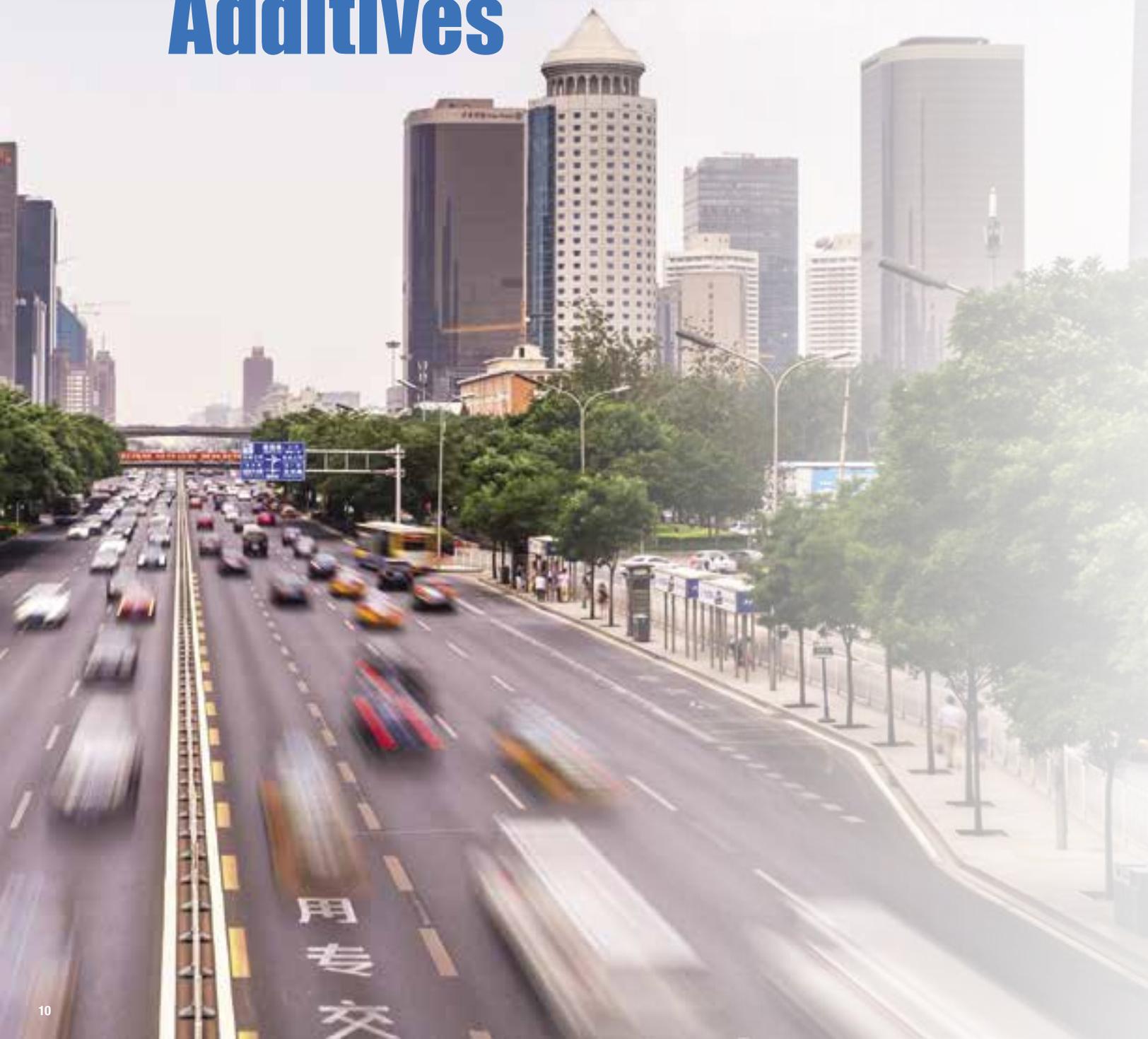


sparkling countertops





# Lubrizol Additives



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**Lubrizol Additives is a pioneering global supplier of chemical additive technologies including additives for engine oils, driveline applications, gasoline and diesel fuel, other transportation-related fluids and industrial lubricants.**

### Success Together

Lubrizol Additives is committed to bringing value to our customers and stakeholders, and we understand that success comes from working together. To our business relationships, we bring trusted expertise, testing confidence, supply assurance and independent strength. These reflect our passion and energy, and, through collaboration, help to inspire new ideas, create opportunities and enable the advancement and adoption of innovative technologies. We are committed to serving an increasingly complex market, which requires planning and investment by us as well as a return on investment that will enable us to continue innovating. Together with our customers, we can discover unique perspectives, gain competitive advantages in dynamic markets and enjoy measurable success in virtually every part of the world.

### 2015 Highlights

- Received key customer approvals that enabled us to maintain or gain market share in a tough competitive environment thanks to our longstanding relationships and technical expertise
- Added technologies – including LUCANT™, a viscosity modifier, and HR-PIB, a key raw material in the manufacture of our proprietary dispersants – through relationships with key partners
- Expanded our strong testing capabilities to support our customers' efforts to meet PC-11 and GF-6, two critical industry drivers, and continued our highly active field testing program
- Drove growth in several adjacent markets – for example, Driveline Products expanded its automatic transmission fluid service fill business and Engine Oil Products saw gains in marine and other areas



### Our Businesses

- Driveline Products
- Engine Oil Products
- Viscosity Modifiers
- Fuel Products
- Industrial Products
- Specialty Solutions



# Driveline Products

## Applications and End-Uses

- Passenger cars
- Commercial vehicles
- Off-highway applications
  - Construction
  - Mining
  - Agriculture
  - Forestry

## The Value We Provide

- Partnership and collaboration with OEMs to deliver differentiated products that meet and exceed a wide range of OEM requirements, such as efficiency and cost of ownership
- Technology that enables our customers to succeed in a continuously evolving marketplace that frequently drives the use of new materials in their products
- Investment to address market drivers and deliver superior performance to solve our customers' toughest challenges, enabling OEMs to innovate for their customers
- Technical knowledge of our people and in-house, global testing capabilities to develop differentiated products that have better performance in a wide variety of applications and meet unique regional needs

## Lubrizol's broad additive product line covers a wide range of on- and off-road driveline applications.

As the transportation industry faces ever more stringent global demands for reducing emissions and greenhouse gases, our key focus is delivering efficiency without compromising durability. We provide complete breadth and depth of knowledge, superior technical facilities, regional testing capabilities and talented people, all of which allow us to continue introducing innovative performance packages for gear oils, transmission fluids and off-highway fluids.

Lubrizol's commitment to the research, development and testing of new technologies ensures that we will continue to lead the industry in delivering products that meet the changing needs and performance standards of OEMs and end-users worldwide. Lubrizol operates testing centers globally in North America, Europe and Asia, a capability that adds to our ability to provide solutions to our customers tailored to the unique needs of their location. We have a strong asset base in developing markets and will continue to build off that base to deliver valued products and services to our customers.

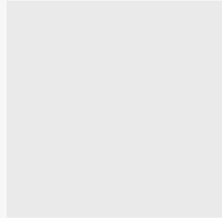
## DUAL NEED FOR FUEL EFFICIENCY AND DURABILITY DRIVING INNOVATION

Among the challenges facing our customers are competing needs for fuel efficiency and durability. Lubrizol is committed to ongoing innovation to deliver industry-leading fuel economy and durability. Through joint development programs with OEMs and our regional testing network, Lubrizol develops unique combinations of the driveline additive and the viscosity modifier that make this superior performance possible.

Our new technologies are used across driveline applications, including in the axles of light duty passenger car vehicles and commercial vehicles. Benefits of our lighter-viscosity gear oil technologies include reduced greenhouse gas emissions, lower costs of ownership and increased efficiency. Best of all, our products deliver fuel efficiency while still providing protection that maintains equipment durability.



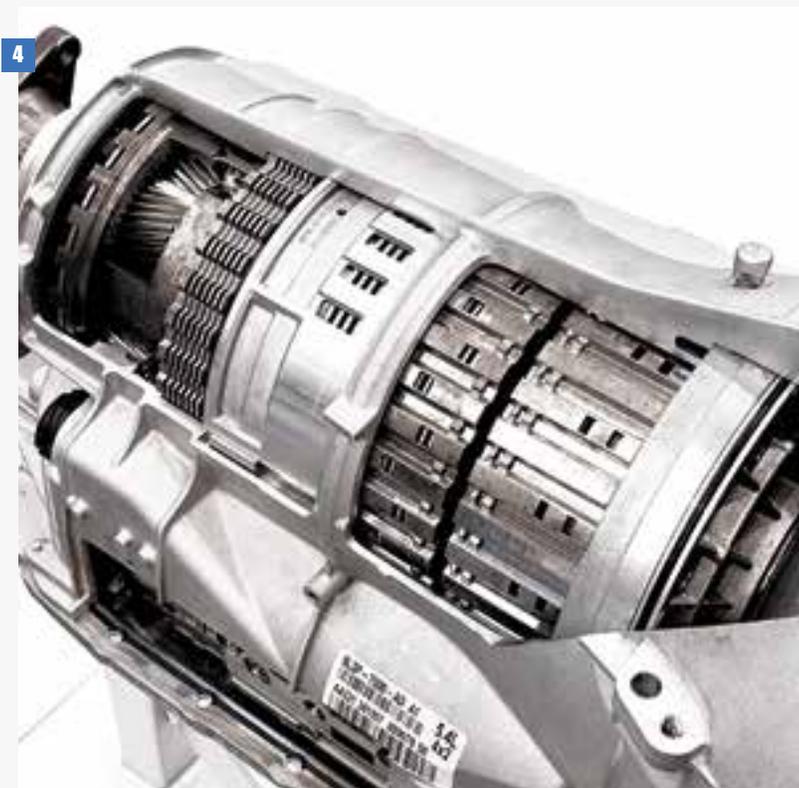
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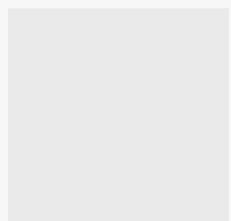
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**1 OFF-HIGHWAY: MINING**

World-class additive package enabling increased productivity

**2 COMMERCIAL VEHICLES**

Total driveline lubricant technology for both axle and transmission applications

**3 CONTINUOUSLY VARIABLE TRANSMISSIONS (CVTs)**

Balancing the demands of both belt and chain CVTs

**4 AUTOMATIC TRANSMISSION FLUIDS (ATFs)**

Sophisticated ATFs offer unmatched durability and anti-shudder protection with numerous OEM approvals

**5 OFF-HIGHWAY: TRACTORS**

Expertise in developing highly engineered multipurpose additive technology for formulating Universal Tractor Transmission Oils

**6 PASSENGER CARS**

Additive technology that enables drivability and efficiency while maintaining durability

# Engine Oil Products

## Applications and End-Uses

- Heavy duty diesel engines
- Passenger car engines
- Large engines – marine, stationary gas and railroad
- Small engines – motorcycle oil, power tools and recreational vehicles

## The Value We Provide

- Protection against wear, corrosion and extreme temperatures, extending equipment life while delivering increased efficiency
- Technology leadership, providing the right oil for the right application
- Market insights that provide customers with proven performance and cost-effective solutions
- Best-in-class due diligence, compliance knowledge and rigorous testing to ensure that products meet and exceed performance specifications

**Today's engines run hotter and harder than ever, as emission standards and new hardware technologies drive more power from smaller engines.**

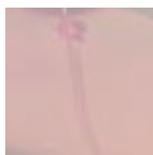
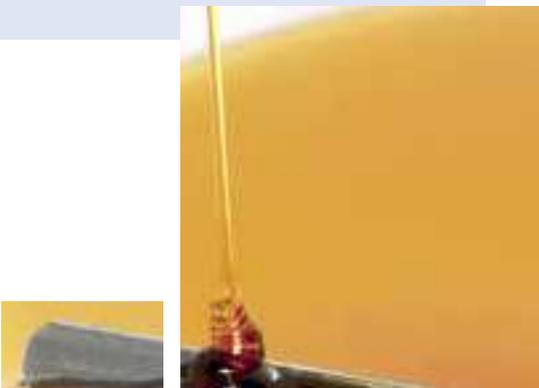
Lubrizol engine oil additives are designed to protect both modern, high-tech engines and older vehicles operating under a variety of routine and heavy duty environmental conditions. Our technologies provide greater efficiency and fuel economy, and reduced emissions without compromising durability or engine life.

Backed by decades of experience in the science of lubricant additives, we create market-leading additive technologies to enable vehicles and equipment to work better and last longer while minimizing environmental impact. This market leadership position, combined with our extensive testing and applications development expertise, has made Lubrizol an essential partner to our customers. Together, we solve complex challenges that enable customers to differentiate their brands in the marketplace.

## IN-HOUSE TESTING CAPABILITIES BENEFIT CUSTOMERS AND MARKETS

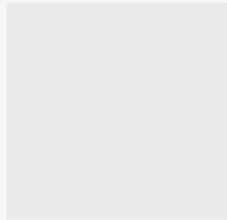
The lubricant industry faces heightened challenges to develop products that enable engines to function optimally under severe conditions for long operating periods, while also reducing emissions and operating cost. In addition, end users are demanding improved fuel economy and productivity. At the same time, the development of new specifications for both passenger car motor oil and heavy duty diesel continues to drive product innovation and opportunities for differentiation. In particular, lubricant manufacturers that are able to go to market quickly with higher-performance products will benefit.

Lubrizol's strength lies in utilizing our additives technology expertise to help customers and markets improve various aspects of engine operation, while being able to test and certify to that higher level of performance. Over the past several years, we have invested significantly in expanding our in-house testing capabilities, which provide our customers with access to resources that will help their new products get to market quicker and with a higher degree of performance assurance. These capabilities also bring us closer to OEMs as they make critical decisions on the needs of their next generation of lubricants.





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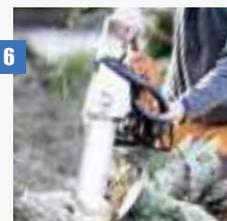
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6



7

**1 COMMERCIAL VEHICLES**

Delivering unmatched heavy duty diesel additive technology

**2 RECREATIONAL BOATS**

Additives plus viscosity modifiers mean improved performance

**3 MOTORCYCLES**

Dedicated products ensure the right oil for the right application

**4 PASSENGER CARS**

Leading the way in advanced additive technology in a more complex operating environment

**5 MARINE**

Advanced fluids for advanced engines

**6 POWER TOOLS**

Solutions for a wide range of equipment

**7 STATIONARY NATURAL GAS**

Field-tested additives for reliable and efficient performance

# Viscosity Modifiers

## The Value We Provide

- Performance-enhancing polymers that improve the efficiency, durability, cleanliness and protection of engines, transmissions, gear boxes, hydraulic systems and more
- Expertise to provide a “total systems approach,” with the viscosity modifier designed alongside the additive to enable an optimum lubricant solution for each application
- Significant investment in R&D to ensure a full product and application development portfolio that aligns with current and future customer needs
- Industry-leading testing capabilities, including test development for the next generation of products, to ensure robust product performance and customer confidence
- Partnerships with lubricant marketers to help them meet specifications and differentiate their brands

**Lubrizol’s viscosity modifiers are more than just thickeners – they are polymer technologies that bring significant performance improvement to lubricants.**

We innovate, develop and supply the broadest range of technologies on the market, including performance-enhancing polymers, viscosity index improvers, synthetic base fluids and advanced pour point depressants.

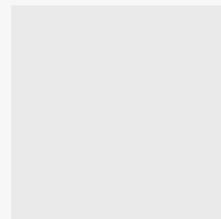
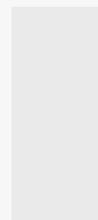
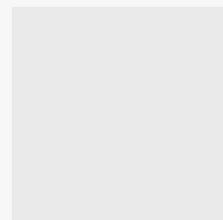
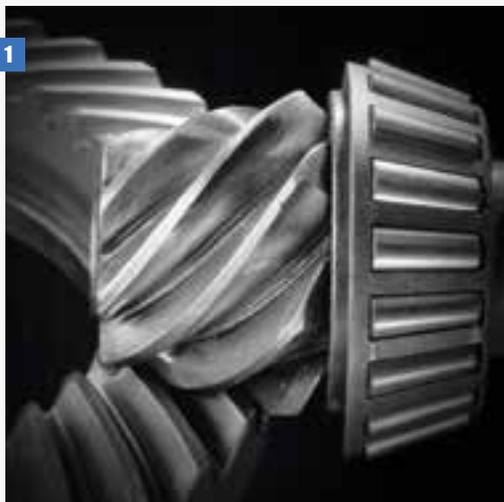
We work closely with equipment manufacturers and lubricant marketers to truly understand global industry trends, consumer needs, global regulations and equipment advances, and innovate new polymeric solutions to meet the most challenging of demands. Our performance polymers are used in a wide variety of applications, including engine oils, driveline fluids, industrial lubricants and greases, and energy production and transportation. Today, our world-class research and development team continues to work on new polymer technologies that will improve lubricant efficiency, durability and performance under a wide range of demanding conditions.

## NEW PRODUCT PIPELINE FULFILLS CUSTOMER NEEDS

Market-driven solutions are a significant driver for Lubrizol’s viscosity modifiers business. Our pipeline of new products and technologies allows our customers to differentiate their products in the marketplace, respond to end-market needs and enable hardware changes at the OEM level.

Our recent innovations include performance polymers designed specifically to enhance durability and fuel efficiency when using lower-viscosity-grade fluids for driveline and industrial applications. Another innovation includes viscosity modifiers for engine oils that are specifically designed to reduce deposits and improve soot handling performance, ultimately providing enhanced engine protection and enabling compliance with demanding European engine manufacturer and OEM requirements. When we introduce new solutions, we have already undertaken extensive laboratory and application testing, including field testing, to ensure a high degree of reliable performance and customer confidence. Our proven expertise in designing additives with the appropriate viscosity modifier, as well as the significant testing capabilities we maintain to support our innovations, makes us well-prepared to solve our customers’ toughest challenges – enabling us to enjoy success together in the market.





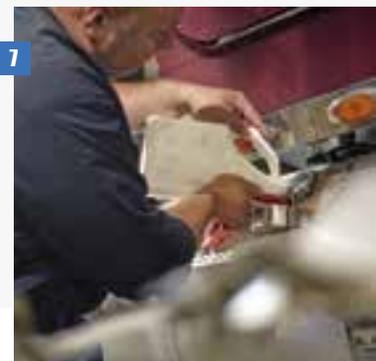
**Viscosity Modifiers** enhance lubricant performance in a variety of applications:

- 1 **DRIVELINE SYSTEMS**
- 2 **HEAVY DUTY DIESEL ENGINES**
- 3 **INDUSTRIAL APPLICATIONS**
- 4 **PASSENGER CAR ENGINES**
- 5 **GREASE**



**Aftermarket Performance Chemicals'** global expertise enables us to meet the needs of local markets and two types of consumers:

- 6 **DO-IT-YOURSELF**
- 7 **DO-IT-FOR-ME**



## Aftermarket Performance Chemicals

### Our Approach

One of the challenges in Aftermarket Performance Chemicals is that, in most applications, there are no industry specifications or standard tests. Lubrizol delivers proof of performance – backed by strong science and solid documentation.

**Lubrizol's Aftermarket Performance Chemicals business develops and supplies innovative chemistries that bring proven performance and value to additive bottlers and marketers – whether their target audiences are do-it-yourselfers or do-it-for-me services that cater to the needs of consumers, fleets, mechanics and OEMs.**

Lubrizol works with customers to create products that enhance the performance and efficiency of a range of vehicles, including passenger car, heavy duty, off-highway and recreational.

Our aftermarket performance chemicals address real-world vehicle issues, including hesitation or power loss, severe driving conditions, fuel economy decreases, routine maintenance and oil leaks. Our innovation, expertise and real-world testing capabilities that replicate the experience of consumers enable us to formulate additive solutions that meet these challenges. The aftermarket is driven by a number of favorable market trends, including increasing severity of engine operation in modern vehicles, fuel efficiency expectations, increasingly stringent fuel regulations and standards, and many consumers and businesses holding onto their vehicles longer.

# Fuel Products

## Applications and End-Uses

- Gasoline
- Diesel fuel
- Home heating oil
- Industrial fuel
- Marine fuel

## The Value We Provide

- Understanding of global market needs, technological leadership and customer focus, which allow us to provide solutions for our customers' toughest challenges and to help them deliver differentiated fuel performance
- Maximum engine and equipment protection to extend machine and vehicle life by eliminating or reducing deposits, corrosion and friction; optimizing cold weather performance; and improving fuel stability
- Improved fuel efficiency and reduced emissions, helping our customers meet global regulatory requirements

**Lubrizol offers a full range of gasoline, diesel and residual fuel additives to remove fuel system deposits and keep critical parts clean, prevent wear and corrosion, and improve combustion and flow characteristics.**

Our additive technologies promote optimal power, fuel efficiency, engine and equipment life, as well as help to reduce emissions for transportation and industrial markets.

Our portfolio of products is designed to meet stringent performance demands of OEMs, fuel system manufacturers and fuel producers around the world, and help them comply with increasingly strict environmental requirements. This business serves the downstream fuel market, which complements our upstream-focused Oilfield Solutions business, positioning Lubrizol as a broad-based solutions provider to the energy industry.

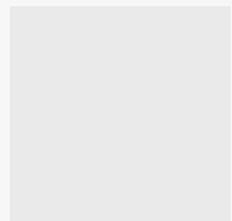
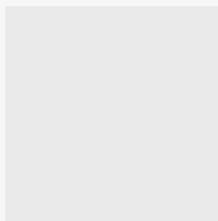
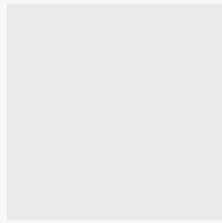
## CUSTOMERS ADOPTING PREMIUM DIESEL ADDITIVE FOR DEPOSIT CONTROL

The Lubrizol® 9040 Zer0™ Series of premium diesel fuel additives eliminates nozzle deposits and internal diesel injector deposits, both of which can cause significant engine problems. Without our additive, the deposits can accumulate and lead to reduced power and fuel economy, and increased emissions.

The worst-case scenario is injector failures.

Our 9040 Zer0 Series is a trusted solution because of our extensive performance testing that has demonstrated these products' ability to meet and exceed market expectations. The product line's high level of deposit control enables our fuel marketer customers to develop and substantiate differentiated product claims for their diesel fuels.





Lubrizol's innovative fuel additives deliver differentiated performance to meet and exceed the needs of today's sophisticated equipment:

- 1 **GASOLINE ENGINES**
- 2 **HOME HEATING OIL**

- 3 **INDUSTRIAL BOILERS**
- 4 **DIESEL EQUIPMENT**

- 5 **MARINE ENGINES**

# Industrial Products

## Applications and End-Uses

- Heavy duty industrial equipment
- Manufacturing plants
- Steel mills and paper mills
- Power generation
- Automotive equipment
- Farm machinery
- Construction equipment
- Mining and exploration
- Food-grade packaging and processing
- Primary metal processing
- Small metal parts and components
- Wire rope and cable

## The Value We Provide

- Additives that drive industrial efficiency, and machine reliability and durability, resulting in higher-performing lubricants
- Broad product portfolio, from single ingredients to additive packages – making Lubrizol a full-service, one-stop resource
- Comprehensive formulation and testing expertise to maximize performance and peace of mind for customers
- In-depth knowledge and close relationships with OEMs to meet their exact specification needs
- Foresight to develop industrial additives that address evolving regulatory demands
- Proprietary test rigs for industrial gear oils and hydraulic fluids to measure system efficiency

**Lubrizol offers one of the most complete lines of performance additives used to formulate lubricants for hydraulic, industrial gear, turbine, grease, metal processing and metal protection applications.**

Our customers blend our additive chemistry to formulate higher-performing fluids, then package and sell finished industrial lubricants to countless end-user operations around the world.

We work closely with our customers to develop products that create value by meeting specific performance attributes, including increased machine efficiency, long-lasting lubrication and reduced environmental impact. Our portfolio includes Chemtool Incorporated, a custom grease manufacturer; and CPI Fluid Engineering, a supplier of synthetic and mineral oil-based fluids for refrigeration, food processing and industrial applications.

## ■ LUBRIZOL'S TURBINE ADDITIVE ADDRESSES CHALLENGES IN POWER GENERATION

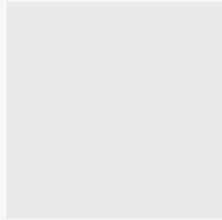
Lubrizol's customers in the power generation market are facing a difficult issue: power interruptions due to varnish buildup in turbines. Conventional turbine oils generate varnish as they are used. Because the turbines are subject to increased starting and stopping, this situation is becoming more critical.

In consultation with end users, Lubrizol's technical team developed a varnish deposit-inhibiting turbine additive, which caught the attention of a major U.S. power producer. Lubrizol and the company embarked on a five-year field demonstration to test the new turbine fluid additive.

At the end of the five years, the two turbines testing the lubricant with the new additive experienced no incidents of power trips or non-starts. Conversely, the two control turbines using conventional oils experienced frequent power interruptions and required regular replacement of critical turbine components. The additive is proving to be a significant step forward for the power generation industry.



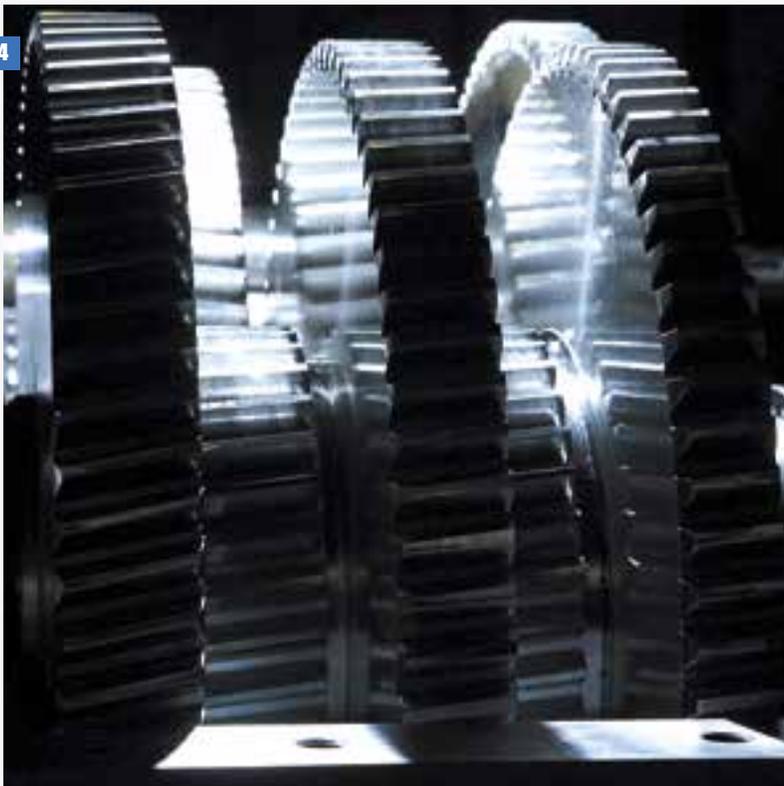
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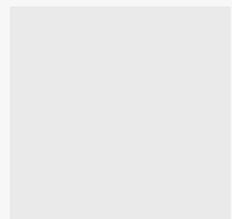
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**1 INCREASING TURBINE UPTIME**

Premium turbine oil additive technology is formulated to prevent oxidation and thermal degradation

**2 DEVELOPING RUST-PREVENTIVE TECHNOLOGY**

Premium, thin-film, rust-preventive alternatives are designed for demanding indoor storage conditions

**3 INHIBITING HYDRAULIC VARNISH DEPOSITS**

Premium anti-wear additives to extend hydraulic component and fluid life

**4 PROTECTING INDUSTRIAL GEARBOXES**

Advanced micropitting and bearing protection extends the life of industrial gearboxes

**5 REPLACING CHLORINATED PARAFFINS IN METALWORKING FLUIDS (MWFs)**

Mineral oil-free, self-emulsifying MWF additive is an effective alternative to regulated chlorinated paraffins

**6 IMPROVING GREASE MANUFACTURING CAPABILITIES**

Product portfolio includes automotive, food-grade, open gear and environmentally considerate greases

# Specialty Solutions

## ADEX™ Emulsifiers

### Expanding to Serve Customers in More Countries around the World

Lubrizol's emulsifiers business has a global portfolio with a balanced geographic presence across North America, South America, Asia Pacific and Europe. We are able to deliver our products to our customers efficiently, no matter their location, due to our integrated global supply chain. The supply confidence we bring to our customers is allowing us to expand our geographic footprint even further to pursue growth opportunities in Latin America, Eastern Europe, Russia/CIS and Africa.

Our emulsifiers business has been strong in Brazil for more than a decade, and we are extending our advantage in the region by expanding into nearby countries such as Argentina, Colombia and Chile. In Russia, the mining industry is expanding eastward, creating additional opportunities in that area, and there is also significant potential in Africa for our customers and Lubrizol.

### Lubrizol's ADEX™ Emulsifiers for emulsion explosives are used in the mining, quarrying and civil construction industries.

Our technologies, which we supply in concentrate or fuel phase, enable our customers to formulate bulk or packaged products with chemical or micro-balloon sensitization. Our emulsifiers improve safety through better product stability. ADEX products provide our customers with the ability to customize their product rheology to meet specific application needs. We empower our customers to deliver consistent differentiated solutions to the market, and we support our products with unmatched technical service, customer training and security of supply around the world.

#### 1 MINING

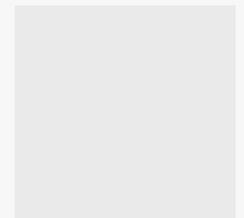
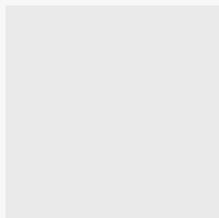
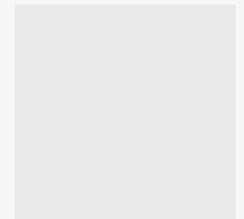
Serving our global customers to support their growth

#### 2 EMULSIFIERS

Products and technical expertise that help keep explosives stable

#### 3 GLOBAL SECURITY OF SUPPLY

Boosting customer confidence with efficient delivery of products around the globe



# AMPS® Specialty Monomers

## Enhancing Polymer Performance through Monomer Technology

AMPS® Specialty Monomers are used to improve the performance of polymers in a variety of ways, including:

- Exhibiting exceptional thermal and hydrolytic stability for oilfield operations
- Inhibiting calcium, magnesium and silica scale buildup in cooling towers, boilers, air washers and gas scrubbers
- Precipitating solids and flocculation aid in the treatment of industrial and mining effluent
- Acting as superplasticizers for cement
- Serving as an effective skin lubricant, helping cosmetics feel better on the user's skin
- Improving performance characteristics for fibers, including enhanced color, moisture absorbency, process efficiency, tensile strength and static resistance
- Improving electrical conductivity, adhesion, absorption and oxidative stability for medical hydrogels and enabling enhanced wound care

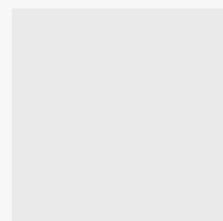
**Lubrizol's AMPS® Specialty Monomers contribute to a better world by enabling polymer producers to manufacture unique, water-soluble polymers for use in a wide range of consumer, medical and industrial products.**

Our high level of product purity ensures consistent performance and optimum versatility, and our distinct level of technical support and customer service is unique in the global market. Available in granular form or as a salt solution, our products can be delivered immediately to our customers anywhere in the world via our global supply and distribution network.



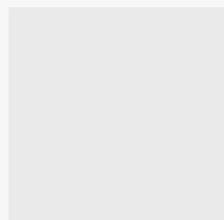
### 1 OIL DRILLING

Monomers that help inhibit fluid loss in drilling operations under extreme conditions



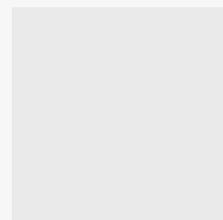
### 2 COSMETICS

Enhancing features that consumers demand in products such as moisturizers and facial cleansers



### 3 WATER TREATMENT

Solutions for desalination and the prevention and dispersion of scale



A woman in a white cardigan and blue jeans is helping a young girl in a pink shirt and blue jeans stand on her feet. The girl is sitting on the floor, and the woman is holding her hands and one of her feet. They are in a bright, modern living room with a large window, a sofa, and a rug. The scene is warm and intimate, suggesting a moment of care and support.

# Lubrizol Advanced Materials

**Lubrizol Advanced Materials** is a leading global producer of advanced specialty polymers, polymer-based additives and chemical additives used in everyday consumer and industrial applications. As an innovation leader, we leverage our core polymer and surface active chemistries and formulations to create proprietary, high-performance materials for our customers in a wide range of industries.

Consumers likely touch Lubrizol Advanced Materials products every day. They are in the shampoos and soaps people use, the clothes they wear, on surfaces at home and at work, and in electronics, plumbing materials and various medical devices, medications and drug delivery systems. Our unique formulations result in many of the distinct characteristics that drive our customers' product claims and consumers' buying decisions.

### 2015 Highlights

- Started production in new or expanded CPVC facilities in Dahej, India, Louisville, Kentucky, and Rayong, Thailand, providing additional global capacity
- Opened a new Personal and Home Care surfactant plant in Brazil, expanding our supply capability for hair and body care, fabric care and dish care products in this critical market
- Acquired Particle Sciences to strengthen our Lubrizol LifeSciences business, providing enhanced formulation capabilities to serve our customers
- Introduced a unique thermoplastic polyurethane (TPU) with self-healing capabilities to help overcome surface scratches caused during the molding and assembly of premium-quality consumer goods
- Launched new ink-receptive coating technology, a Performance Coatings textile pretreatment enabling new levels of digital pigment ink performance while preserving fabric integrity



### Our Businesses

- Engineered Polymers
- Personal and Home Care
- Performance Coatings
- LifeSciences



# Engineered Polymers

## Applications and End-Uses

- Exercise, sports and intimate apparel
- Footwear and recreational goods
- Wearable devices and smartphones
- Wire and cable jacketing, hose and tube
- Film and sheet, adhesives
- Dissipative packing trays for sensitive electronic components

## The Value We Provide

- Ability to leverage decades of TPU innovation expertise to benefit customers
- Highly durable and reliable solutions that enable customers' products to perform at a high level
- Solutions that bridge the gap between flexible rubber and rigid plastics with numerous physical property combinations, making our products extremely adaptable for a variety of end-use applications
- Focus on end-use applications that are of greatest impact for our customers
- Dedication to researching and developing innovative technologies

**Lubrizol Engineered Polymers draws upon decades of innovation, combining thermoplastic polyurethanes, co-polyesters and conductive polymer technologies to provide one of the deepest specialty polymer product portfolios available today.**

From industrial applications to those in sports, recreation and consumer goods, customers choose our products for their outstanding physical and aesthetic properties. Our innovative polymer solutions improve lives by making products safer, more durable, better-performing, more appealing and longer-lasting.

From adhesives that enable novel fabrication and assembly to polymers carefully engineered to provide superior chemical, temperature, abrasion and UV resistance, our broad portfolio presents a convenient, single source of reliable solutions for customers across the globe. We take pride in partnering with our customers to provide remarkable solutions to some of the industry's toughest applications challenges.

## **LUBRIZOL PARTNERS TO PROVIDE NOVEL MICROCELLULAR FOAM SOLUTIONS FOR SPORTS & RECREATION APPLICATIONS**

Aligned with our strategy to become a more valuable solutions provider to the sports and recreation industry, Lubrizol recently partnered with a specialty foam technology provider. The combination of Lubrizol's polymer chemistry and know-how with the provider's patented foaming process resulted in a new, differentiated technology called BounCell-X™ high-performance TPU foam.

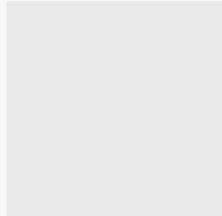
BounCell-X delivers highly elastic microcellular parts that provide superior cushioning and long-term resistance to crushing and compression – essential performance benefits in footwear and other sporting goods. BounCell-X enables shoe manufacturers to surpass the performance of traditional foam solutions, with improved automation and sustainability benefits as well.



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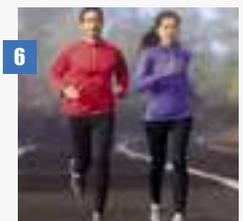
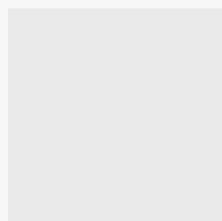
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**1 WEARABLE DEVICES**

Formulations for enhanced aesthetics, soft touch feel and durability

**2 SURFACE PROTECTION AND OPTICAL FILMS**

Solutions that provide protection for paint, as well as strength and resilience in ballistic and laminated glass applications

**3 FOOTWEAR**

Enhanced cushioning and durability for athletes who demand high performance

**4 WIRE AND CABLE JACKETING**

Unequaled protection from extreme environments, abrasion and kinking

**5 AUTOMOTIVE INTERIOR/EXTERIOR**

Solutions designed to keep colors and surfaces looking great, while protected from UV exposure

**6 PERFORMANCE APPAREL**

Polymers that provide comfortable compression to improve how users feel and how they perform

# Engineered Polymers continued

## Applications and End-Uses

- Residential and commercial plumbing
- Residential and commercial fire protection
- Water treatment and chemical conveyance
  - Mineral and chemical processing
  - Semiconductors
  - Power generation

## The Value We Provide

- Support in all parts of the value chain, including demand creation, manufacturing and installation
- Formulation expertise and capabilities – for efficient, cost-effective replacement of copper and other metal pipe
- Expanded capacity across all geographies, most recently in Southeast Asia
- Alignment with key market drivers around the globe, including construction activity and the growth of the middle class in emerging economies

**Lubrizol is an innovator and world leader in chlorinated polyvinyl chloride (CPVC) resins and compounds for hot and cold water plumbing, fire sprinkler systems and industrial piping.**

Our high-performance technology found in FlowGuard® pipe and fittings, BlazeMaster® fire sprinkler systems and Corzan® industrial systems is also used in a variety of specialty applications.

Beyond the products themselves, Lubrizol's compounds for piping applications provide More Inside™ with every system because they are backed by our R&D, technical expertise and global capabilities. Our people, including dedicated piping systems consultants, provide science and support for every pipe and fitting, delivering quality and confidence for every project. Billions of feet of our piping systems have been installed globally – in established markets such as North America and Europe, fast-growing economies such as Brazil, China and India, and emerging markets in Africa and Asia.

## INTEGRATED BUSINESS MODEL DRIVES SUCCESS

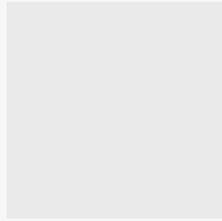
Lubrizol's polymer technology is a preferred material of professional installers around the world because it offers consistent quality, is durable and corrosion-resistant, is lightweight compared with copper and other metals, and is easy to install. Just as important is Lubrizol's service and support offering.

Lubrizol technicians partner closely with leading piping manufacturers throughout the manufacturing, lead generation and installation processes. Our experts are on the ground with our customers, solving their challenges and ensuring the quality of the finished product. Whether it's experience with regulatory code requirements, the knowledge of where and how to get the right formulation and size of piping needed or outreach that generates demand, Lubrizol is there with our customers through it all.

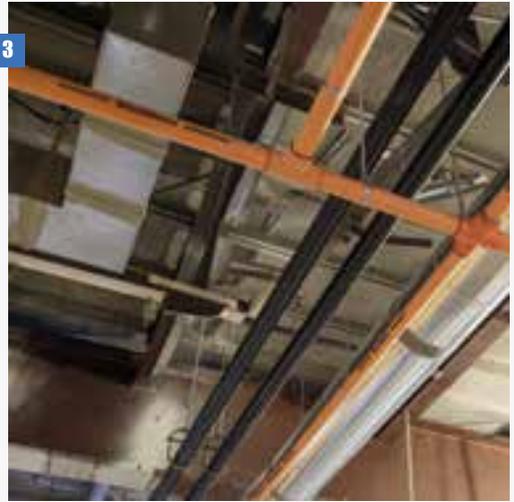
An additional facet of our approach is investment in the markets where we and our customers see growth. We have recently invested approximately \$200 million in the expansion and enhancement of our global manufacturing and fulfillment capabilities – including building a new compounding plant and warehouse in Dahej, India; expanding our production facility in Louisville, Kentucky; and entering into a joint venture for a resin manufacturing facility in Rayong, Thailand.



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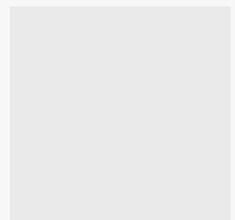
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**1 TOTAL SOLUTION**

Lubrizol simplifies piping system design by providing a total solution for even the most complex residential and commercial applications

**2 COMPOUNDS AND RESINS**

FlowGuard®, BlazeMaster® and Corzan® products are engineered with Lubrizol's specially formulated polymer compounds

**3 BLAZEMASTER® FIRE SPRINKLER SYSTEMS**

Recently passed UL testing for use with exposed composite wood joist systems in residential basements

**4 COMPREHENSIVE PRODUCT SUITE**

Allows contractors to specify one trusted material for the entire job

**5 CORZAN® INDUSTRIAL SYSTEMS**

Meet the critical demands of industrial environments and offer corrosion resistance and high-pressure-bearing capability

**6 FORMULATED FOR GLOBAL MARKET NEEDS**

Various formulations that are designed to meet specific local hot and cold water needs around the world

# Personal and Home Care

## Applications and End-Uses

- Hair care solutions – shampoos, conditioners, styling gels, hair color, ethnic hair care
- Bath and shower solutions – body washes, facial cleansers, hand soaps, baby care, men’s grooming
- Skin care solutions – facial creams, body care lotions, sun care products, color cosmetics, antiperspirants
- Home care solutions – fabric care, laundry detergents and softeners, dish detergents, kitchen and bathroom cleaners, floor care

## The Value We Provide

- Products that perform – creating gorgeous hair, radiant skin, a refreshing cleansing experience, fresher clothes, sparkling dishes, and clean, hygienic surfaces
- Ability to create endless array of custom formulations that deliver multiple benefits and functionality
- Technology and formulation knowledge and expertise
- Global supply chain capabilities and technical support to help customers use our products efficiently
- Knowledge of consumer trends and preferences as well as global regulations and industry practices

**Lubrizol’s Personal and Home Care business develops, manufactures and markets a broad range of essential ingredients used in fast-moving consumer goods for personal hygiene, hair care, skin care, dish, surface and fabric care.**

Our innovative ingredients modify physical properties, enhance functional performance and ease of use, and deliver aesthetic benefits to support key consumer product claims – the “front-of-the-bottle” benefits that drive consumer products’ differentiation and brand loyalty.

We partner closely with customers to create winning brands – through our commitment to market intimacy, knowledgeable people, technical expertise and indispensable, market-driving solutions. Our primary focus is on the needs and demands of our customers and consumers on a global basis, and we are committed to “accessible innovation” that directly addresses the market trends important to them.

## INVESTING TO HELP CUSTOMERS LEVERAGE MARKET TRENDS

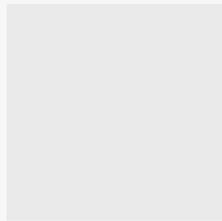
Lubrizol’s Personal and Home Care business works closely with customers to deliver innovative product concepts that address key market dynamics and trends. In addition to offering strong technical and regulatory support and flexibility in supply and delivery, we continually invest in our business to address those trends in partnership with our customers. Recent examples include our new surfactants plant in Brazil and our acquisition of Warwick Chemicals.

The new, flexible manufacturing facility is capable of producing a wide range of products used to produce on-trend consumer goods such as mild, sulfate-free cleansing products. Additionally, many of the products are manufactured from vegetable-derived raw materials, also consistent with consumers’ desires for more sustainable alternatives.

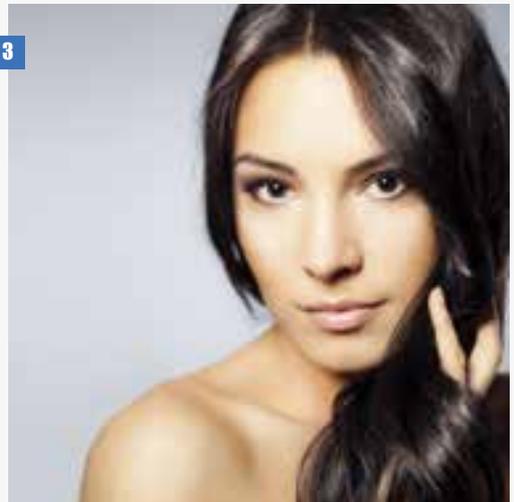
Warwick Chemicals specializes in stain removal technology with hygiene benefits. Its products are an essential element in laundry detergent powders and automatic dishwashing products used in more than 50 countries. The Warwick technology enhances Lubrizol’s strong home care product portfolio, further improving our ability to offer integrated, high-value technology solutions to global customers.



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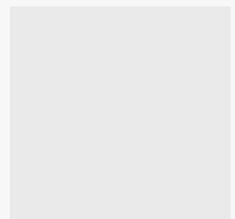
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**1 BODY WASHES**

For effective and refreshing cleansing

**2 FACIAL CLEANSERS**

Mild formulas provide gentle cleansing and radiant skin

**3 HAIR CARE PRODUCTS**

Solutions that cleanse, style, nourish, repair, protect and strengthen hair

**4 SKIN CARE PRODUCTS**

Skin care solutions that help to renew, nourish, protect and beautify skin

**5 FABRIC CARE**

High-performance functional ingredients for whiter whites, long-lasting freshness and enhanced softness

**6 DISH AND SURFACE CARE**

Cleaning solutions that deliver spotless dishes and sparkling surfaces

# Performance Coatings

## Applications and End-Uses

- Metal
- Wood
- Masonry
- Composite Systems
- Digital Print
- Functional Paper
- Print & Packaging
- Performance Textiles

## WHAT WE ADD MAKES THE DIFFERENCE.™

We help customers achieve success in their markets by providing:

- **Product Innovation:** Commitment to market-driven product innovation means we can balance the aesthetics, durability, efficiency and functionality needs of our customers' products
- **Application Understanding:** An extensive understanding of the market needs for various surface applications allows us to help solve highly specialized coatings challenges
- **Formulation Expertise:** Full engagement in our customers' product and market needs leads to solutions that provide the differentiated performance they require
- **Testing Capabilities:** Extensive product testing capabilities ensure high performance and durability of solutions
- **Global Customer Alignment:** With expanded market positions and infrastructure in Latin America, China and South Asia, we are growing alongside our customers

## Lubrizol Performance Coatings' mission is to make the world more beautiful by bringing innovation to surfaces.

We offer differentiated solutions designed to enhance the appearance, functionality and sustainability of a wide array of substrates and surfaces.

Decades of experience in dispersion, adhesion, surface protection and rheology control position Lubrizol Performance Coatings as a leading supplier to industries such as paints and coatings, printing inks, plastics, engineered paper, textiles and packaging. We offer a broad portfolio of polymers, resins, hyperdispersants, surface modifiers and formulated solutions, under the Carboset®, Hycar®, Solsperse™, Lanco™, Sancure™ and other brand names. We provide our customers with solutions that combine differentiated products and applications expertise – all backed by our responsive support team, customer training and extensive product testing capabilities.

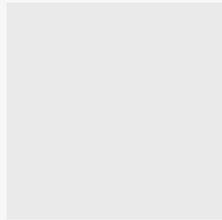
## EXPANDING CAPABILITIES TO SERVE CUSTOMERS IN LATIN AMERICA

Lubrizol's Performance Coatings business understands the importance of growing with our customers to continue meeting their global needs. Our recent acquisition of EcoQuimica – located in the state of São Paulo, Brazil – is one example. EcoQuimica was well known in the region as a quality supplier of polymer technology for coatings used in diverse applications such as wood, masonry, textiles and paper. The acquisition expands Lubrizol's resin footprint in Latin America, further strengthening our ability to support our customers both regionally and globally.

The expanded knowledge and technologies allow Lubrizol to provide customers with more comprehensive solutions, including the ability to supply regional customers with products that are locally manufactured and tailored to meet their specific needs. Further investment and expansion efforts exist for new warehousing capacity and an applications and technical services lab. These investments will help Lubrizol solidify our position as a global coatings solutions provider.



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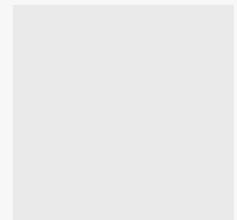
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Innovative technologies from Lubrizol help our customers develop advanced coatings that balance aesthetics, functionality, durability and sustainability for a variety of surfaces and substrates.

- 1 **AUTOMOTIVE METAL**
- 2 **PERFORMANCE TEXTILES**
- 3 **WOOD**

- 4 **COMPOSITE SYSTEMS**
- 5 **DIGITAL PRINT**
- 6 **MASONRY**

- 7 **PRINT & PACKAGING**
- 8 **INDUSTRIAL METAL**
- 9 **FUNCTIONAL PAPER**

# LifeSciences

## Applications and End-Uses

- Implantable medical devices and drug eluting products
- Extrusion, dip casting, injection molding and more
- Medical tubing, films, meshes, fibers and balloons
- Wound care, including dressings, tapes and films
- Drug delivery systems, including films, hydrogels, balloons and patches
- Medicated creams, lotions, gels and ointments
- Oral solid dosage, e.g., tablets and capsules
- Controlled-release technology

## The Value We Provide

- Advanced solutions for medical device and pharmaceutical products
- End-to-end solutions to enable our customers' success in the drug delivery market
- Global reach to include manufacturing, supply chain and regulatory compliance capabilities
- Commitment to quality and mitigating customer risk
- Collaboration with customers to grow their business and offer peace of mind

**Lubrizol LifeSciences links science to life. We combine an in-depth understanding of functional polymer systems with a portfolio of specialty materials to deliver application-specific, quality solutions to the medical device and pharmaceutical industries.**

LifeSciences has significantly expanded our capabilities through new products, state-of-the-art facilities, acquisitions and collaborations. The combination of Lubrizol's polymer expertise, Particle Sciences' leadership in drug formulation development and Vesta's quality medical manufacturing allows LifeSciences to offer our customers end-to-end solutions for success in the drug delivery market.

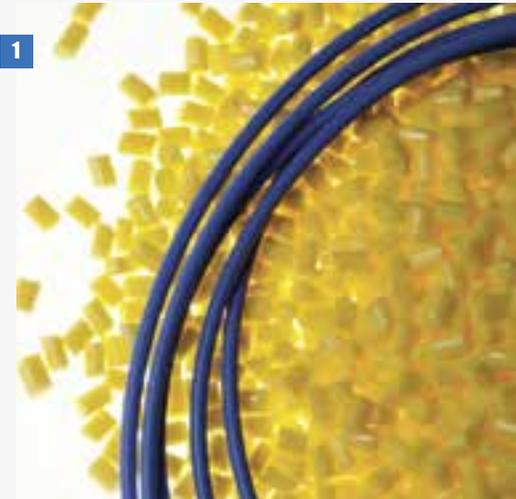
Our R&D capabilities, analytical and product testing, and technical expertise enable us to deliver differentiated technologies that meet our customers' needs and provide a competitive edge. With a dedicated focus on the life sciences, Lubrizol is able to address customer needs for innovative technology solutions, high product quality, and global product sourcing and availability.

## **LIFESCIENCES STRENGTHENS POSITION AS FULL-SERVICE SOLUTIONS PROVIDER**

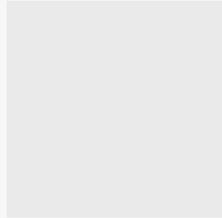
With the recent additions of Particle Sciences and Vesta, LifeSciences is now positioned as the only healthcare product solution partner offering polymer customization, complex drug formulation and contract manufacturing solutions.

Particle Sciences bolsters Lubrizol's complex formulation capabilities including drug eluting device product development. This acquisition allows Lubrizol to leverage our core polymer chemistry into implantable drug delivery solutions. With Vesta, LifeSciences also expanded its medical device contract manufacturing capabilities. This addition complements Lubrizol by deepening our expertise in precision thermoplastic extrusion and adding capabilities for silicone processing.

When customers partner with Lubrizol LifeSciences, they benefit from working with us at every stage in their development process. With a long history of polymer expertise and significant investment, Lubrizol LifeSciences is able to offer full-service development for next-generation medical and pharmaceutical innovations.



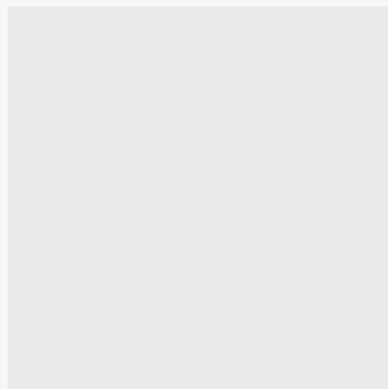
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## 1 POLYMERS

Portfolio of medical polymers focused on long-term implantables and drug delivery

- Medical TPU
- Carbopol® polymers
- Pemulen™ polymeric emulsifiers
- Excipients

## 2 FORMULATION

Global leader in complex pharmaceutical formulations including drug eluting device product development

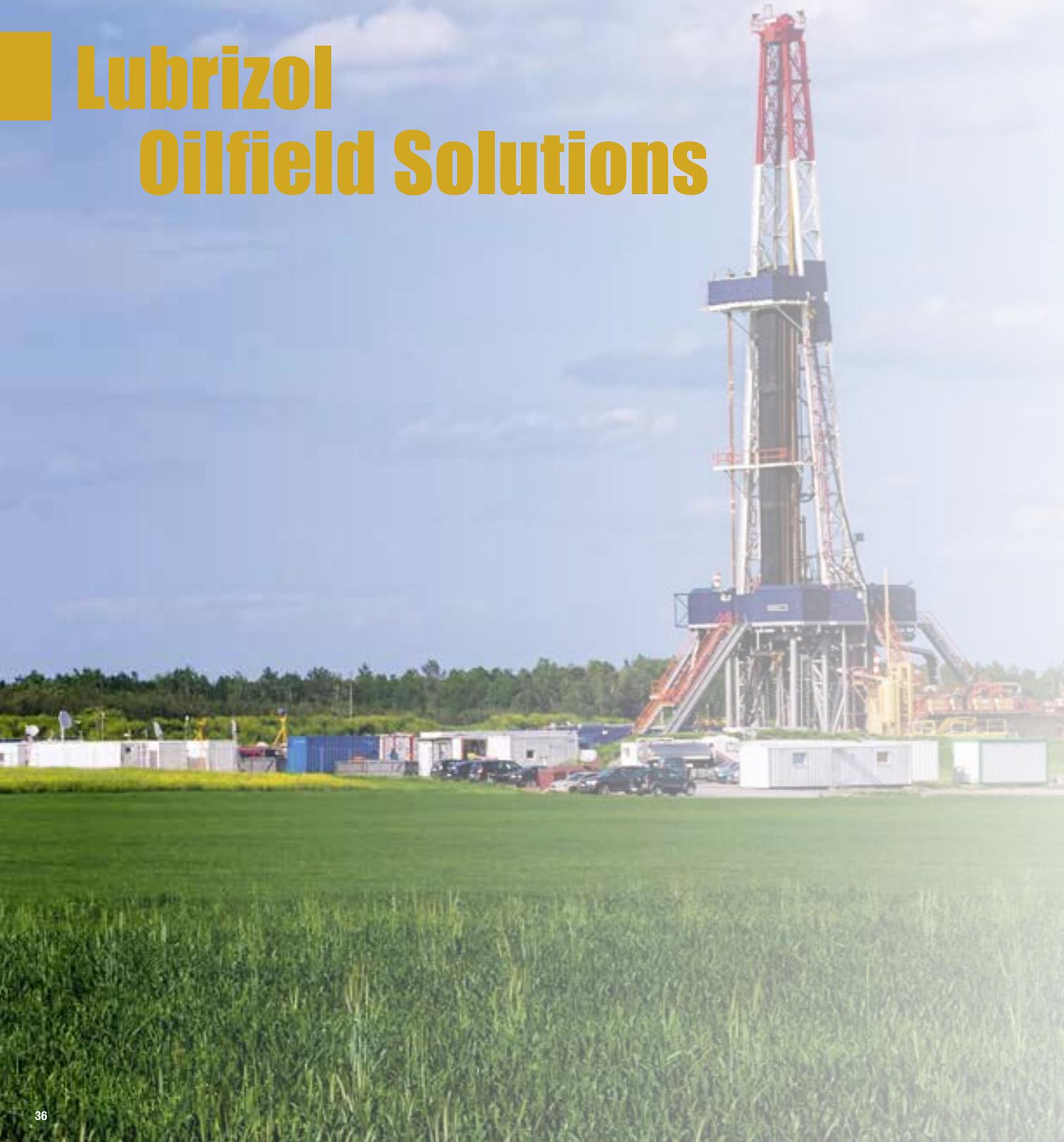
- High-potency active pharmaceutical ingredients
- Nanoparticles
- Color matching
- Radiopacity
- Complex drugs

## 3 MANUFACTURING

Medical device contract manufacturing capabilities from cardiovascular to wound care applications

- Silicone
- Thermoplastic elastomers
- Tubes, films, fibers, assembly, etc.
- Moldings, extrusions, casting

# Lubrizol Oilfield Solutions



**Lubrizol Oilfield Solutions** is an advanced technology solutions provider to all phases of oilfield activity, including exploration, production and transportation. With industry-leading quality, technology and supply chain reliability, we strive to exceed our customers' expectations for performance and service.

Our Oilfield Solutions business combines the experience and capabilities of Lubrizol Specialty Products, Inc. (LSPI) with the range of oilfield solutions provided by Oilfield Chemistry. We leverage our expertise and numerous technologies to deliver targeted chemical solutions to our customers.

### 2015 Highlights

- Transitioned Oilfield Chemistry business into corporate Lubrizol systems and processes
- Developed and rolled out commercial strategy for Oilfield Chemistry
- Achieved record volume and operating income in our LSPI business
- Implemented critical manufacturing capacity projects and expansions in key LSPI facilities



### Our Businesses

- Oilfield Chemistry
- Pipeline Flow Improvers



# Oilfield Chemistry

## Applications and End-Uses

- Well Construction – drilling and cementing
- Well Completion – acidizing and fracturing
- Production Chemicals
- Intermediates

## Lubrizol delivers chemistry expertise to help keep oilfield projects on track, complex operations running smoothly and critical production objectives on target.

For generations, Lubrizol has been a leader in surface wear, surface modification and fluid flow technologies. As gas and oil development becomes more technologically challenging in conditions such as deep water, unconventional reservoirs and high-temperature, high-pressure wells, the industry is continually challenged to deliver environmentally safer and more cost-effective solutions. We leverage our expertise and technologies to help deliver targeted chemical solutions that meet all of the demands of our customers.

## The Value We Provide

### ■ Well Construction

- Drilling fluids and cementing chemicals that perform when and where our customers demand it
- Technology that allows customers to control the impact of downhole conditions and ensure that cement slurries have the right rheological properties at all stages of a cement job

### ■ Well Completion

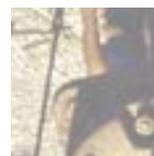
- Complete line of fracturing and acidizing fluid systems engineered to provide maximum return from the pay zone
- Extensive knowledge of formation damage, mineralogy, acid chemicals and the mechanics of acid-stimulation techniques

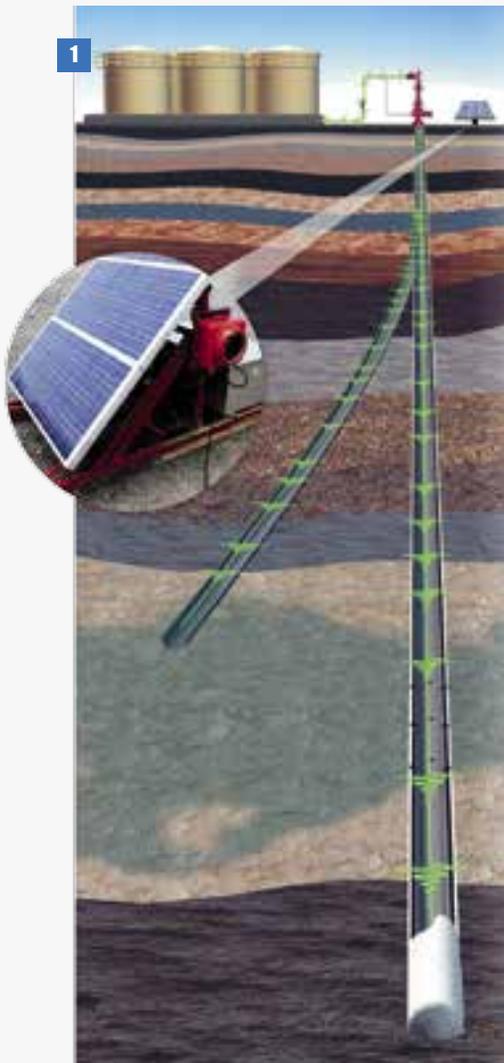
### ■ Production Chemicals

- Performance packages that include selection, application, monitoring and optimization of production chemicals

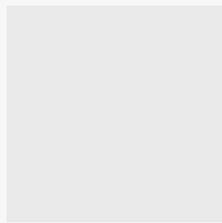
### ■ Intermediates

- Specialized chemical intermediates used in oil and gas production activities to increase operating efficiencies and reduce cost





1



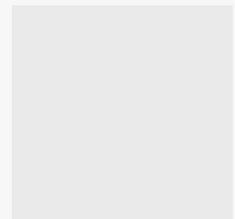
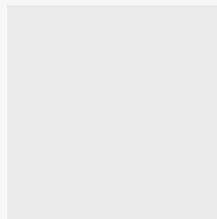
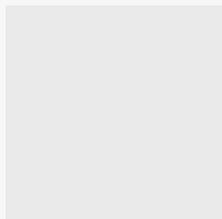
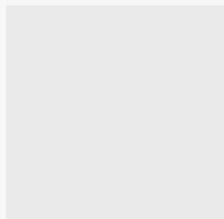
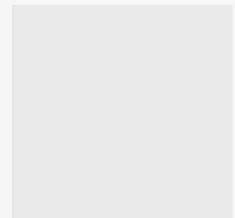
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**1 CLEARWELL™**

One-of-a-kind technology to prevent scale deposition in the wellbore and surface facilities

**2 GLOBAL SUPPLIER OF CHOICE**

Sophisticated supply chain connects customers around the world with our systems, facilities and support network in real time

**3 CHEMICAL FORMULATION EXPERTISE**

Technical support resources dedicated to solving our customers' long-term application challenges

**4 FLOZOL®**

Paraffin and asphaltene deposit control that is proven to be effective on the most difficult waxy crudes

# Pipeline Flow Improvers

## Applications and End-Uses

- Crude and refined product pipelines
  - Trunk lines
  - Gathering lines
  - Production lines

## The Value We Provide

- LSPI's world-class manufacturing capabilities ensure the highest-quality production, and LSPI holds ISO 9001:2008 certification
- Our patented technologies are industry-leading, and we continue to innovate and serve our customers as market needs evolve
- LSPI engineers work with customers to provide or enhance performance modeling and complete system optimization based on more than 35 years of data
- Our injection equipment is specially designed for our products to ensure maximum uptime and reliability
- Our global logistics team coordinates distribution to customers around the world, ensuring seamless on-time product delivery
- Pipeline performance can often be improved without major capital investment

## Lubrizol Specialty Products, Inc. (LSPI) is a full-service provider of pipeline drag reduction solutions.

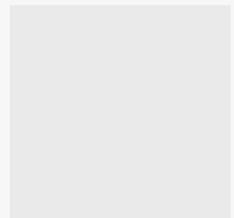
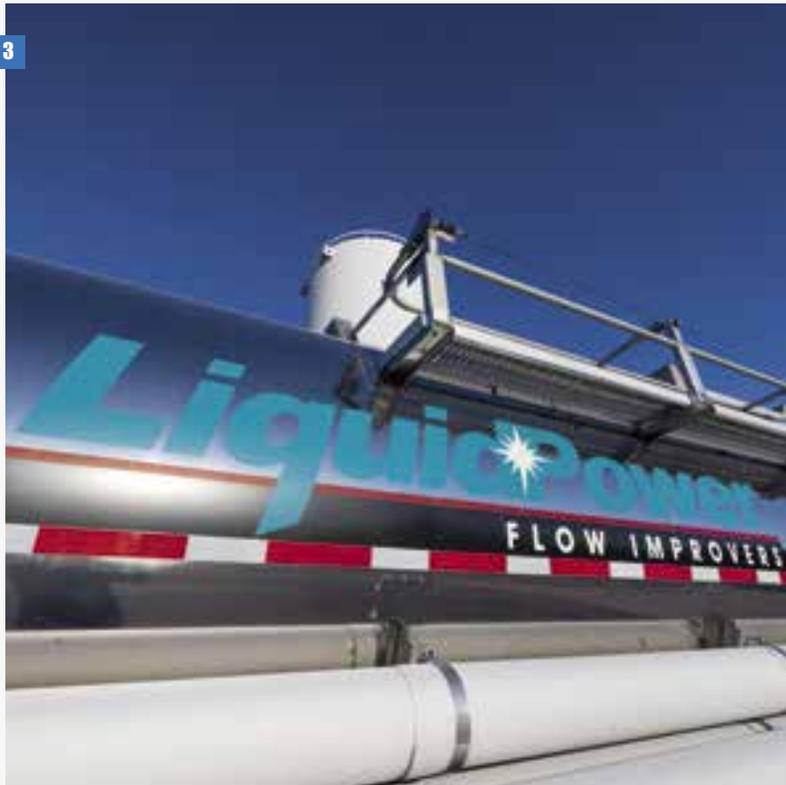
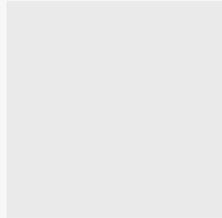
The flow improver business, owned by Berkshire Hathaway and overseen by Lubrizol, specializes in maximizing the flow potential of pipelines, resulting in increased operational flexibility, throughput capacity and bottom-line results. Backed by a dedicated team of scientists, engineers, logistics professionals and field service representatives, we continue to optimize and broaden our pipeline technology platforms and supply chain for better performance and reliability.

LSPI offers a comprehensive range of drag reducing agents (DRA), also called flow improvers. As the global leader in DRA technology, LSPI offers not only patented technology, but full-service DRA solutions as well. Dedicated teams ensure our customers receive necessary support, from pipeline modeling and optimization to equipment design, deployment and maintenance. By reducing frictional pressure loss, our LiquidPower®, ExtremePower® and RefinedPower® flow improvers effectively increase throughput in pipelines for crude and refined products across the globe.

## LSPI EXTENDS MARKET LEADERSHIP POSITION IN COMPLETE DRAG REDUCTION SOLUTIONS

LSPI's legacy and commitment to customer success remained strong through the seamless transition into a Berkshire Hathaway company during 2014. LSPI continued to invest in its business to drive industry-leading innovation and provide a complete full-service drag reduction solution. LSPI executed capacity expansions to enhance its ability to meet growing customer demands, and recently brought transportation capabilities in-house by establishing LSP Transport, LSPI's private product delivery trucking fleet.

Additionally, LSPI has continued to focus on the development and delivery of advanced chemical technology. For example, LSPI developed ExtremePower® flow improvers to treat heavy oil, when no other drag reducing agent on the market could provide a solution for heavy oil applications. Commercialized in 2008, ExtremePower® was the first product available to treat heavy crudes, and due to ongoing investment, it remains cutting-edge technology today.



**1 DRAG REDUCING AGENTS**

Chemical additives that increase pipeline efficiency, flow and throughput

**2 TECHNICAL EXPERTISE**

Ongoing innovation to serve evolving customer and market demands

**3 BROAD PRODUCT PORTFOLIO**

Patented technology designed to treat crude oil and refined products

**4 FULL-SERVICE SOLUTION**

Working directly with our customers, from pipeline modeling to equipment maintenance



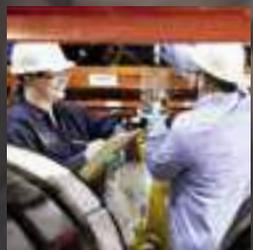
# being an essential ingredient

Although we spend a lot of time at the molecular level, we love to make a big difference. By doing what we do best – solving problems – we know we are helping our customers gain a competitive edge in whatever market they serve, anywhere in the world.

As a company and as individuals, we strive every day to fulfill our mission:

**To be an essential ingredient in our customers' success through collaboration, applied science and demonstrated value.**

To all of us at Lubrizol, that's what *being essential* is all about.



## Lubrizol's Leadership

Lubrizol's leaders are industry experts, focused on bringing the company forward in fulfilling our vision, while staying committed to our corporate philosophy. Our leadership harnesses the power of experience and drive to make this enterprise one of the most successful companies in the business.



Beginning at left:

**ERIC R. SCHNUR**

Corporate Senior Vice President  
and President of Lubrizol Advanced Materials

**DANIEL L. SHEETS**

Corporate Senior Vice President  
and President of Lubrizol Additives

**MIKE VAUGHN**

Corporate Vice President,  
Operations, Supply Chain and HSES

**ANDREW B. PANEGA**

Corporate Vice President, Human Resources

**GREGORY D. TAYLOR**

Corporate Vice President, Corporate Strategy  
and Development

**SUZANNE F. DAY**

Corporate Senior Vice President,  
Chief Legal and Ethics Officer  
and President of Lubrizol Oilfield Solutions

**MARK SUTHERLAND**

Corporate Vice President,  
Global Communications and Public Affairs

**JOHN J. KING**

Corporate Vice President,  
Information Solutions and Business Processes

**JAMES L. HAMBRICK**

Chairman, President and Chief Executive Officer

**BRIAN A. VALENTINE**

Corporate Vice President, Chief Financial Officer and Treasurer

**ROBERT T. GRAF**

Corporate Vice President, Research and Development

### Want to learn more about us?

**Corporate and Business Information**

[lubrizol.com](http://lubrizol.com)

**Careers**

[lubrizol.com/Careers](http://lubrizol.com/Careers)

 [@LubrizolJobs](https://twitter.com/LubrizolJobs)

**Corporate Responsibility**

[lubrizol.com/CorporateResponsibility](http://lubrizol.com/CorporateResponsibility)





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