

# **Friction Modifiers Market ? Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Organic (Fatty acids, Esters & Amides and Functional polymers) and Inorganic (Molybdenum Compounds and Nanoparticles)), By Application (Transportation Lubricants (Commercial Vehicle, Passenger Vehicle, Aviation, Marine) and Industrial Lubricants), By Region & Competition, 2021-2031F**

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## **Abstracts**

The Global Friction Modifiers Market is projected to expand from USD 1.23 Million in 2025 to USD 1.72 Million by 2031, registering a CAGR of 5.75%. Friction modifiers function as chemical additives within lubricants to lower the coefficient of friction between moving parts, thereby minimizing wear and optimizing fuel efficiency. This market growth is underpinned by rigorous international regulations concerning emissions and fuel economy, which require advanced lubricant formulations to achieve statutory compliance. Additionally, the industrial sector's growing requirement for prolonged machinery durability supports sustained consumption of high-performance fluids. Highlighting the ongoing need for automotive fluids, the European Automobile Manufacturers' Association reported that global car manufacturing reached 75.5 million units in 2024.

Conversely, a major hurdle hindering market potential is the rapid global shift toward electric vehicles. This structural evolution threatens to diminish the total volume of operational internal combustion engines, which currently represent the primary consumers of friction-reducing additives. As a result, the industry encounters the challenge of navigating a transforming landscape where the aggregate demand for

conventional engine oils is expected to experience a significant decline in the approaching years.

### **Market Driver**

The enforcement of strict government mandates regarding vehicle emissions acts as a major driver for the Global Friction Modifiers Market, pushing automotive manufacturers to implement sophisticated additive technologies. As regulators aggressively lower greenhouse gas limits, Original Equipment Manufacturers (OEMs) must adopt superior lubricant formulations that reduce energy loss through boundary friction mitigation. These additives are critical for enhancing fuel economy in internal combustion engines, offering a solution that avoids expensive mechanical redesigns. For instance, the US Environmental Protection Agency's 'Final Rule: Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles', released in March 2024, establishes an industry-wide target of 85 grams/mile of CO<sub>2</sub> for light-duty fleets by 2032, a reduction of nearly 50% from 2026 standards. This regulatory environment directly drives the demand for low-viscosity engine oils enhanced with effective friction modifiers.

In parallel, the growth of industrial manufacturing and heavy machinery sectors offers a vital expansion path separate from the automotive industry's electrification hurdles. Industrial operators, especially in developing nations, are ramping up production, thereby maintaining demand for hydraulic fluids, gear oils, and greases that necessitate strong additive profiles to endure extreme pressures. This sector depends on friction modifiers to improve load-bearing capabilities and prolong the service life of essential equipment. According to the United Nations Industrial Development Organization's 'World Manufacturing Production - Quarterly Report (Q1 2024)' released in June 2024, industrializing economies saw a quarterly output rise of 1.4%, emphasizing the strength of manufacturing operations reliant on lubricated machinery. Furthermore, Shell plc reported maintaining a leading 11.6% share of the global finished lubricants market in 2024, demonstrating the vast scale of fluid volume that incorporates these modifiers.

### **Market Challenge**

The swift global migration toward electric vehicles acts as a significant constraint on the friction modifiers market. These additives are primarily used in internal combustion engines to mitigate mechanical friction among pistons, liners, and bearings, thereby enhancing fuel efficiency. As both manufacturers and consumers increasingly embrace battery-electric powertrains that operate without traditional crankcase engine oils, the

volume of lubricants required by the automotive sector is expected to shrink. This fundamental shift reduces the overall consumption of lubricant additives tailored for piston engines, presenting a long-term volume risk for suppliers who rely heavily on conventional automotive uses.

The consequences of this transition are highlighted by recent sales trends that favor non-combustion technologies, effectively shrinking the available market for standard friction reduction chemistries. Data from the International Energy Agency indicates that electric car sales are anticipated to hit roughly 17 million units globally in 2024. This notable rise in electric mobility lowers the relative market share of new vehicles that require standard engine lubricants. Accordingly, the demand for friction modifiers is experiencing downward pressure as the composition of the global vehicle fleet progressively moves away from technologies dependent on fossil fuels.

## **Market Trends**

The innovation of specialized friction modifiers for Electric Vehicle (EV) E-fluids marks a pivotal change in additive technology, transcending the combustion-focused needs of conventional engine oils. In contrast to internal combustion engines, electric powertrains require fluids that deliver exceptional thermal management for cooling motors and battery packs, while ensuring electrical compatibility to avoid short circuits. This requirement has led to the creation of advanced additives that provide dielectric characteristics, copper corrosion protection, and significant heat transfer abilities. Highlighting this advancement, Shell Lubricants announced in a September 2025 press release titled 'Shell EV Thermal Fluid Development Paves Way for Sub-10-Minute Charging with enhanced safety' that they have developed a new thermal management fluid allowing a battery pack to charge from 10% to 80% in under 10 minutes, emphasizing the vital function of specialized fluids in addressing electrification challenges.

Simultaneously, the increasing use of renewable and bio-based friction modifiers is transforming the raw material supply chain as the industry emphasizes carbon footprint reduction and sustainability. Manufacturers are progressively replacing petroleum-based additives with oleochemicals and plant-based esters, which provide high biodegradability and reduced toxicity without sacrificing film strength or lubricity. This shift is motivated by the necessity to separate additive production from fossil fuel sources and achieve circular economy targets, distinct from fuel economy mandates. Evidencing this material transition, Croda International Plc stated in its 'Sustainability Impact Report 2024', released in March 2025, that 56% of its organic raw material

volume in 2024 originated from bio-based sources, demonstrating the substantial extent to which renewable chemistries are being incorporated into the industrial value chain.

### **Key Market Players**

Afton Chemical Corporation

The Lubrizol Corporation

BASF SE

Croda International PLC

Chevron Corporation

Infineum International Limited

LANXESS AG

Vanderbilt Chemicals, LLC

ADEKA Corporation

BRB International B.V.

### **Report Scope**

In this report, the Global Friction Modifiers Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Friction Modifiers Market, By Type

Organic (Fatty acids, Esters & Amides and Functional polymers) and  
Inorganic (Molybdenum Compounds and Nanoparticles)

Friction Modifiers Market, By Application

## Transportation Lubricants (Commercial Vehicle, Passenger Vehicle, Aviation, Marine) and Industrial Lubricants

### Friction Modifiers Market, By Region

#### North America

United States

Canada

Mexico

#### Europe

France

United Kingdom

Italy

Germany

Spain

#### Asia Pacific

China

India

Japan

Australia

South Korea

#### South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

### **Competitive Landscape**

Company Profiles: Detailed analysis of the major companies present in the Global Friction Modifiers Market.

### **Available Customizations:**

Global Friction Modifiers Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

### **Company Information**

Detailed analysis and profiling of additional market players (up to five).

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