

Liquid Concentrated Package to Make Easier Polyurea Grease

Roberto Saruls

Lubes em Foco – São Paulo – October 2025



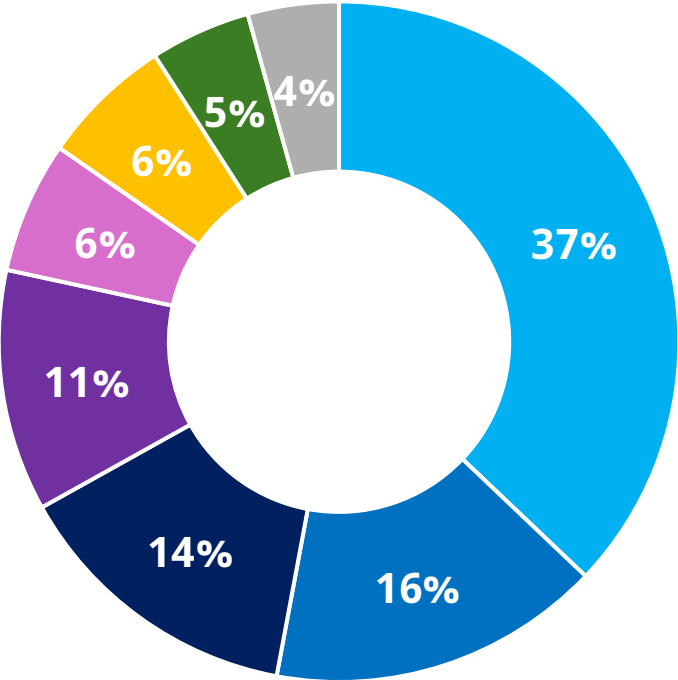
Imagined for Life. Enabled by Science.™

© 2025 The Lubrizol Corporation. All rights reserved.

Grease Market Scenario

Global Market Data – Volume Percentage by Region

Total 2024 Worldwide Sales: 1.201 Million MT

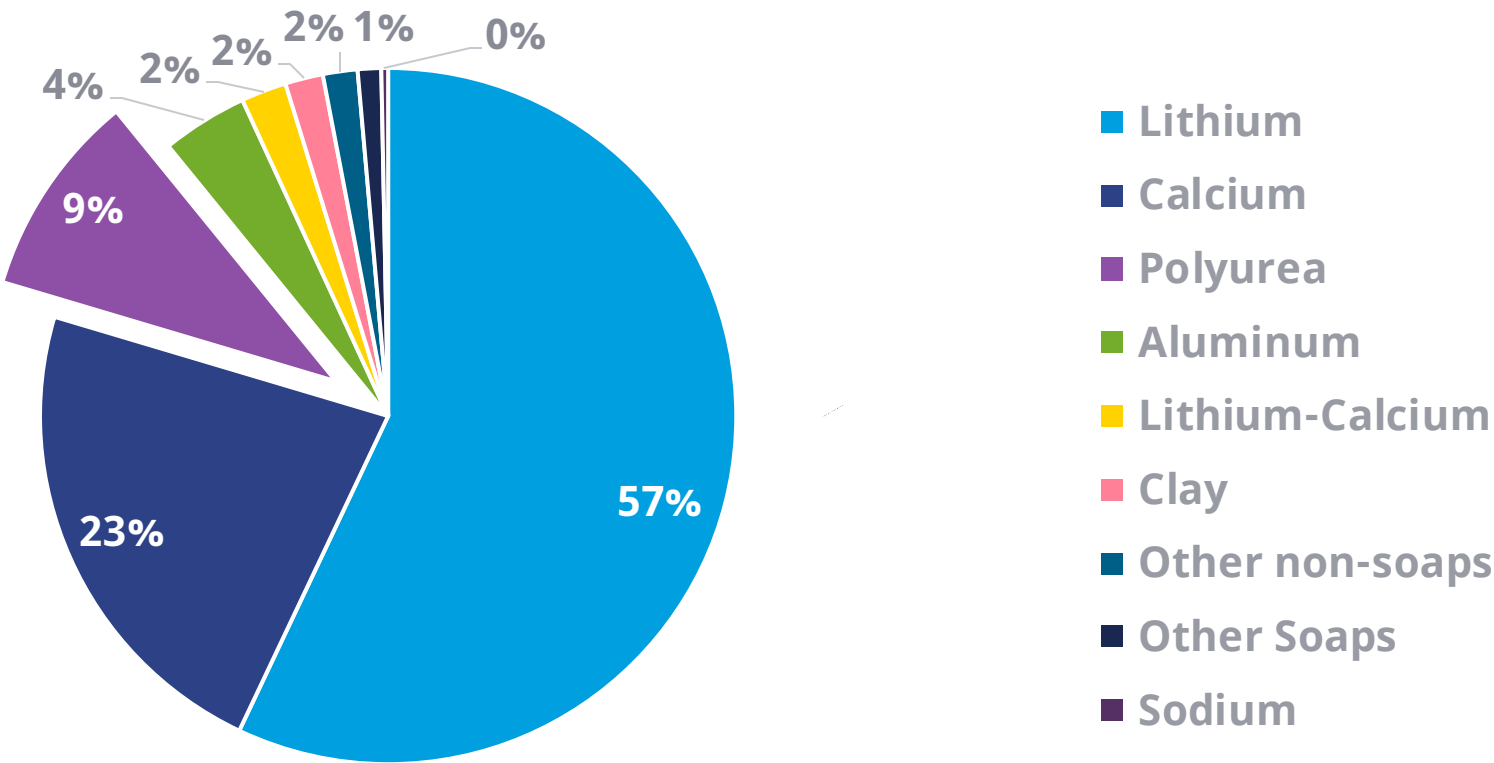


AME = Africa and Middle East
CCSA = Caribbean, Central and South America
NA = North America
PRC = China
SEA = Southeast Asia including Australasia

■ China ■ Europe ■ NA ■ India ■ Japan ■ SEA ■ AME ■ CCSA

South America volume is low, so trends are driven by larger markets

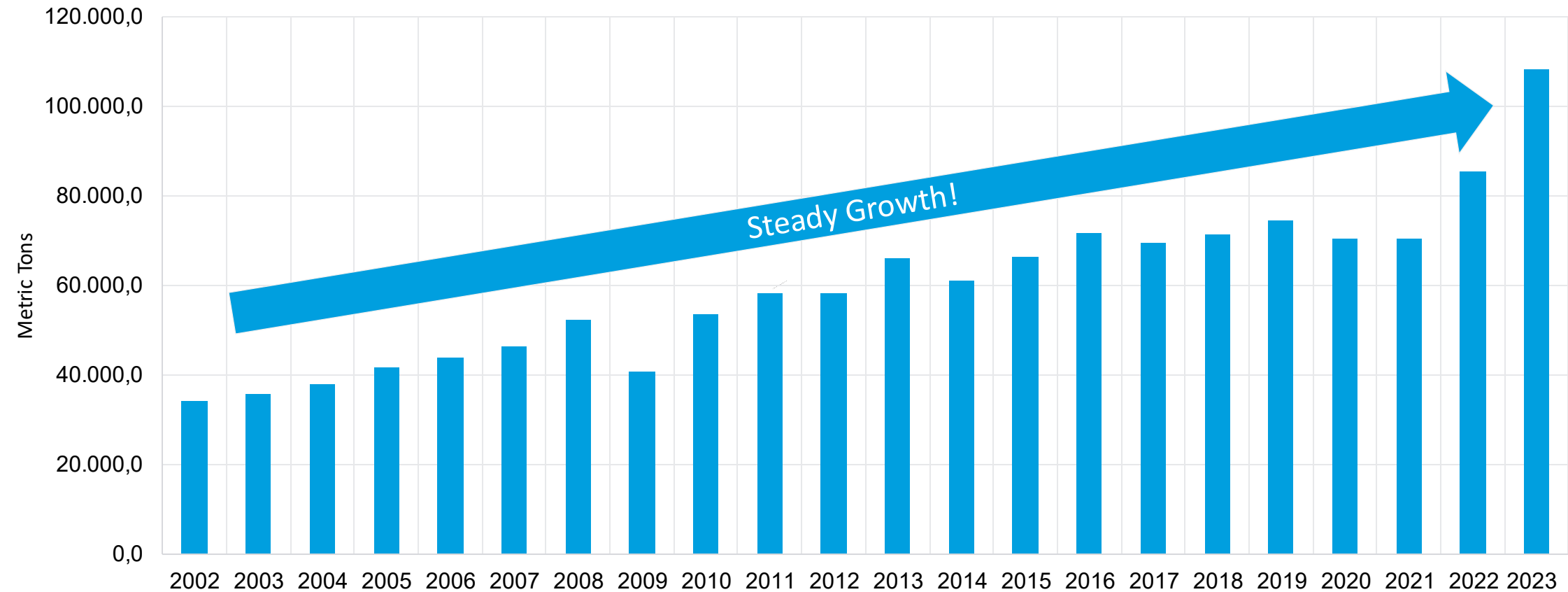
Global Market Data Volume by Thickener Type



Total 2024 Worldwide Sales: 1.201 million MT

Global Grease Production Volume Evolution

Polyurea Grease



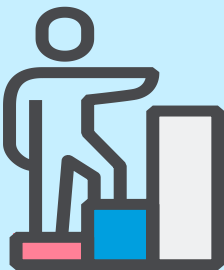
Source: NLGI Annual Production Surveys 2006, 2010, 2014, 2018, 2022, and 2023

2024 Grease Market Comments

- Notes
 - Conventional lithium greases are down significantly (8 wt%) with a CAGR of -3.5, lithium complex down slightly CAGR at -1.8
 - Use of Pre-formed powders are boosting urea thickener volumes 5Y CAGR at 7 wt%
 - Calcium sulfonates still growing with CAGR at 8.9 wt%
 - Significant under reporting in India (71,000 MT) but based on input from NLGI India Chapter, volume has been adjusted up to 138,000 MT
 - Under reporting in Caribbean, Central and South America (30,600 MT) but based input from Brazil volume has been adjusted to 52,000 MT but may still be low
- Official NLGI volume figure for 2024 is 1.109 Million MT
- Volume adjusted to 1.201 Million MT

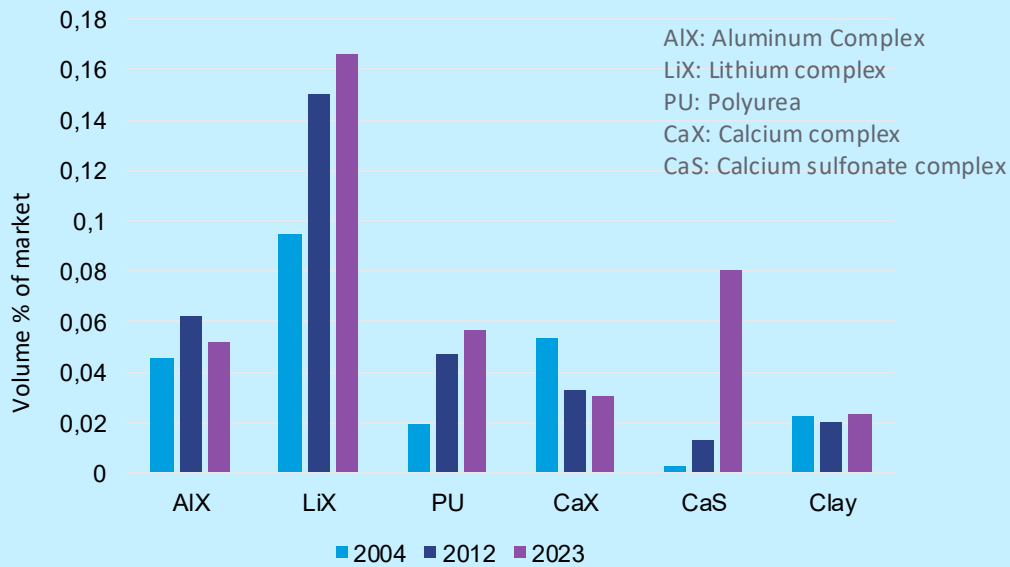
Opportunities in the Grease Market (European View)

- Some industry experts perceive the grease market as one positioned for continued growth within the industrial lubricants sector.
- Notably, it is expected to remain unaffected by, or even benefit from, certain processes such as those related to electric vehicles.
- (1) Increasing demand for high-temperature greases, (2) need for more environmentally friendly greases in off-road, (3) ongoing requirement for enhanced performance in heavy-duty applications.



- Marine
- Off-Highway
- Heavy Industries
- Electric Motors
- Power Generation

Evolution of European Grease Demand by High Temperature Thickener Type



Source: NLGI Annual Production Surveys 2007, 2015, and 2023

Expand and strengthen your brand in a global market with ~3-4% CAGR

Polyurea properties

Polyurea Grease

- Definition: Lubricants using urea derivatives as thickeners
- Types: Includes Diureas, Tetraureas, Octoureas, and Polyureas
- Properties: Similar properties with varying thermal and mechanical stabilities
- Versatility: Compositions can be adjusted to optimize benefits
- Benefits: High-temperature stability and long service life



Key Applications:

- ✓ Electric Motors: Motor bearings for high thermal stability and long-lasting lubrication
- ✓ Automotive Components: CV (constant velocity) joints, wheel bearings, and other high-performance parts
- ✓ Industrial Machinery: Suitable for pumps, fans, and continuous casters
- ✓ Sealed-for-Life Applications: Sealed bearings and components where grease is not regularly replaced
- ✓ High-Temperature Environments: High temperature resistance for demanding applications

Unique Properties for Premium Markets

Key Features of Polyurea Grease

Advantages

- **Unique properties:**
 - Ashless
 - Excellent Antioxidation Performance in High-Temperature Applications
- **High value:**
 - Ideal for Niche and High-Value Processes



Disadvantages

- **Handling Raw Materials:**
 - Manufacturing requires dealing with challenging materials like isocyanates
- **REACH Registration Complexity:**
 - Multiple chemistries involved, lacking a common registration pathway
- **Solid PU Powders:**
 - Difficult to disperse and homogenize

Introducing : Lubrizol® Liquid Concentrated Package to Make Easier Polyurea Grease

Lubrizol® GR9C3PU Background

9	Global
C	Concentrated
3	NLGI 3 consistency grade
PU	Polyurea grease



Lubrizol® GR9C3PU

Simplified Manufacturing and Enhanced Versatility



Being able to pour the liquid at room temperature simplifies manufacturing, and eliminates the issues associated with processing solid PUs



Enhanced versatility allows it to be finished with any base oil carrier (Gp I or Gp II) and top-treated with package technologies designed for PU (Lubrizol® 5240)



It can be conveniently diluted to achieve lower NLGI grades, maintaining base grease design features even at more than 50% dilution



The quickest and easiest way to add diurea grease to your portfolio

Lubrizol® GR9C3PU | Manufacturing and Finishing



Pour the necessary amount of LUBRIZOL® GR9C3PU in your reactor



Raise temperature to 160 °C



Keep at 160 °C for three hours with constant agitation



Check to see the grade and then determine the amount of your grading oil (or mixture) to get to grade and add additives when the mixture gets to 80 C



Mill through a 3-roll mill, Gaulin at about 2500 to 3000 psi or a Charlotte mill at setting 3

- Overheating may lead to faulty structure and thus lower yields
- Milling at too high temperature or in excess will affect structure

Provides a more simplified approach to the production process

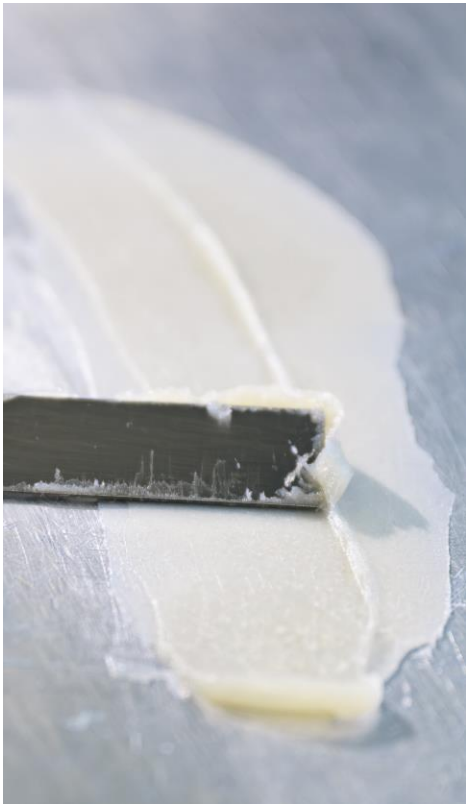
Lubrizol® GR9C3PU | Target Performance

If no other grading oil is used, Lubrizol® GR9C3PU, processed as previously described, will result in the following grease properties:

Characteristic	Test Method	Result
Consistency (W0)	ASTM D217	233 which gives NLGI 3
Dropping Point (°C)	ASTM D2265	>300°C high temperature drop point

After the addition of approximately 50% grading oil (ideal ISO 150) to achieve NLGI 2 consistency, the results were as follows:

Characteristic	Test Method	Result
Consistency Class	ASTM D217	NLGI 2 grade as desired
Dropping Point °C	ASTM D2265	>300°C high temperature drop point
Bleed 30hs , 100 °C	ASTM D6184	1.59% oil bleed low level even with 50% dilution. HPM Core for Li = 3.3%



Lubrizol® GR9C3PU Summary

- **The simplest solution** for your company to start producing Diurea-based greases
- **Convenient and straightforward** to handle and manufacture
- **Fully compliant** with REACH and other international regulations
- **Easily enhanced** with additional components or packages
- **Cost-effective** due to the ability to dilute in large proportions



As the lubricant industry evolves, Urea Thickened Greases will be crucial in meeting modern application demands

Imagined for Life. Enabled by Science.™



lubrizol.com



[LinkedIn](#)



[Instagram](#)

Disclaimer

The Lubrizol Corporation (“Lubrizol”) hopes that you have found the information provided helpful, but you are cautioned that this material, including any prototype formulas, is for informational purposes only and you are solely responsible for making your own assessment of appropriate use of the information. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAWS, LUBRIZOL MAKES NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES (WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE), INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR REGARDING THE COMPLETENESS, ACCURACY, OR TIMELINESS OF ANY INFORMATION. Lubrizol does not guarantee how the materials referenced herein will perform in combination with other substances, in any methods, conditions, or processes, with any equipment, or in non-laboratory environments. BEFORE COMMERCIALIZATION OF ANY PRODUCT CONTAINING THESE MATERIALS, YOU SHOULD THOROUGHLY TEST SUCH PRODUCT, INCLUDING HOW THE PRODUCT IS PACKAGED, TO DETERMINE ITS PERFORMANCE, EFFICACY, AND SAFETY. You are solely responsible for the performance, efficacy, and safety of any products you manufacture. Lubrizol shall not be liable, and you shall assume all risk and responsibility for, any use or handling of any material. Any claims may not be approved in all jurisdictions. Any entity making claims related to these products is responsible for complying with local laws and regulations. Nothing contained herein is to be considered as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner, and it is your sole responsibility to determine if any issues related to patent infringement of any component or combination of components relating to the information provided exists. You acknowledge and agree that you are using the information provided herein at your own risk. If you are dissatisfied with the information provided by Lubrizol, your exclusive remedy shall be to not use the information.