



Lubrication



Collaboration



Innovation





The FUCHS Group Completes Acquisition of Nye Lubricants

The FUCHS Group, which operates globally in the lubricants industry, signed an agreement to acquire Nye Lubricants Inc. back in October 2019. After having received all the required regulatory approvals, the acquisition was closed today.

For more information, click [here](#).



Case Study: Improving the Feel of Interior Door Handles

Background

A prominent Automotive supplier came to Nye in search of a lubricant that would be compatible with the chrome finish on the interior door handles of their new pickup truck design. If not properly lubricated, components within the door handle experience friction during use, which creates audible vibrations that passengers may find off-putting. The supplier needed a lubricant to control the motion of the door handle to reduce the noise, vibration, and harshness emitted during use.

Challenge

- Extend the life of door handle components.
- Control motion to reduce noise, vibration, and harshness.
- Exhibit chrome compatibility.

Solution

Uniflor™ 8172
A PTFE thickened, light viscosity, completely fluorinated grease.

- Exceptional wide service temperature from -45 to 225°C
- Compatible with chrome and most plastics and elastomers
- Light viscosity provides a quality feel to eliminate
- Specifications: GM: 9985880



Product	Chemistry	Temperature Range	Oil Separation (24 hrs @ 100°C)	Evaporation (24 hrs @ 150°C)
Uniflor™ 8172	PFPE/PTFE	-45 to 225 °C	3.8%	0.23%

Results

The Automotive supplier completed compatibility and durability testing to validate Uniflor™ 8172 for their application. Uniflor™ 8172 passed all customer testing and improved the life of the door handle spring while also reducing noise emissions. The Automotive supplier ultimately selected Uniflor™ 8172 to lubricate the interior door handle of their new truck design and remain with its performance.

Rheotemp™ 600

Sophisticated mechanical designs demand superior performance from their bearings. The reliability of these bearings is often safety-critical and great care should be taken to protect them from wear. General purpose lubricants will not adequately protect bearings exposed to extreme service conditions like high speeds, high and low temperatures, and harsh environments.



Rheotemp™ 600, Nye’s next-generation wide-temperature bearing grease, is intended for high-speed bearings exposed to extreme service conditions such as those within the aviation, automotive, trucking, and power and utility industries. This grease will also act as a direct next-generation replacement for Rheotemp™ 500, our discontinued legacy grease, used widely in aviation applications.

During development of the replacement grease, our engineers determined they didn’t want to formulate a comparable product—they wanted to provide a superior, next-generation lubricant. Nye completed extensive testing to formulate a wide-temperature grease that offers additional protection against low temperatures, fretting wear, oxidation, and saltwater corrosion to extend bearing life.

Low-Temperature Torque

Engineers are being required to design applications to lower temperature specifications. Lubricants must be able to withstand low temperatures without negatively effecting start-up or running torque. Rheotemp™ 600 generates far less starting and running torque than Nye’s heritage bearing lubricant.

Product	Conditions ASTM D-1478	Starting Torque	Running Torque (60 mins)
Rheotemp™ 500	1 RPM, -54°C	2.17 Nm	0.34 Nm
Rheotemp™ 600	1 RPM, -54°C	0.66 Nm	0.09 Nm

Resists Water & Rust

Bearings exposed to extreme service conditions, like water intrusion or salt corrosion, must offer superior water resistance to ensure the bearing remains lubricated and protected against rust. The results below indicate the amount of lubricant that washes away when exposed to water. Rheotemp™ 600 offers excellent water resistance, as shown below, more than 4X what was offered by our heritage bearing lubricant.

Rheotemp™ also protects against rust and salt corrosion. When exposed to 3% synthetic sea water for one week under both dynamic and static conditions, Rheotemp™ 600 exhibited no corrosion per ASTM D-6138.

Product	Conditions ASTM D-1264	Mass Loss
Rheotemp™ 500	600 RPM, 1 hr, 5 mL water/sec, 41°C	15.50%
Rheotemp™ 600	600 RPM, 1 hr, 5 mL water/sec, 41°C	3.74%

Low-Oil Separation

When oil separates from grease in high-temperature bearing applications, the grease can dry out and harden. This creates insufficient lubrication conditions that increase bearing temperatures, increase wear, and accelerate the need for relubrication. Per ASTM D-6184, higher weight loss is a direct indicator of increased oil separation. Rheotemp™ 600 exhibits minimal oil separation making it extremely shear stable.

Product	Conditions ASTM D-6184	Weight Loss
Rheotemp™ 500	30 hrs, 177°C	23.1%
Rheotemp™ 600	30 hrs, 177°C	1.7%

Prevents Fretting

When bearings remain stationary for extended periods of time, they are exposed to micromotions that lead to fretting wear. This can remove existing lubrication and wear down the bearing, leading to component failure. Once the bearing is actuated, it may cause operational and/or safety problems.

For example, cars are prone to fretting wear even before they arrive at the dealership when they are transported from the

factory by railcar. These bearings may be stationary during transport, but the moving rail car produces vibrations that cause the balls of the bearing to move back and forth and wear at the raceway surface. Rheotemp™ 600 offers superior fretting protection with very little bearing mass loss when compared to the legacy Rheotemp™ 500 and other comparable bearing lubricants.

Product	Conditions ASTM D-4170	Bearing Race Mass Loss
RHEOTEMP 500	30 Hz, 2450 N, 22 hrs	13.6 mg
RHEOTEMP 600	30 Hz, 2450 N, 22 hrs	0.5 mg

Protects Against Oxidation

Demanding applications require bearing lubricants with excellent oxidation stability. A lubricant with poor oxidative stability will deteriorate at high temperatures, removing the protective barrier that prevents corrosion and potentially leaving solid deposits that can contaminate the raceway and cause bearing failure. Rheotemp™ 600 exhibited no oxidation during testing.

Extends Bearing Life At High Speeds

Nye validates all our lubricants to ensure they work properly for our customers. Our ROF+ Bearing tests the functionality and life of lubricating grease in rolling bearing applications at high speeds and temperatures. When compared to Rheotemp™ 500, Rheotemp™ 600 offers more than twice the bearing life and a higher speed factor.

**Failure occurs when 50% of bearings reach 30°C above the set temperature or the electric motor current draw exceeds 6.4 amps.*

Rheotemp™ 600 will go on sale soon and is available for sampling now. To discuss how our grease will work in your application or to request a sample, [contact us](#).

Product	Conditions Nye CTM	Bearing Life
Rheotemp™ 500	17,500 RPM, 150°C, 568K Speed Factor	163.5 hrs
Rheotemp™ 600	17,500 RPM, 150°C, 700K Speed Factor	345.5 hrs



Meet The Author

Robert Mulkern - Senior Research & Development Chemist

Robert Mulkern is a Senior Research and Development Chemist who development Rheotemp™ 600. During his nine years with Nye, Robert has a keen understanding of tribology and extreme pressure greases. Robert holds a Bachelors in Biochemistry from the University of Massachusetts Dartmouth.

Click [here](#) to contact Robert Mulkern.

Lubricants for Electrical Contacts in Household Appliances

Nicole St. Pierre, Nye's Director of Manufacturing, is featured as an author in this month's issue of the Appliance & HVAC Report where she explains how grease protects connectors to improve the safety and reliability of household appliances. Read an excerpt of the article below. *To read the full article, [click here](#).*

"Appliance manufacturers are challenged to deliver innovation and value to everyday household products. Some areas of innovation focus on customer experience, low water/energy usage, smaller size, personalization, and shorter cycle times. Value is often delivered in the design, function, quality, durability, and reliability of a product. Appliance lubrication can enable innovation without sacrificing the value that customers expect.

In the appliance industry there are many applications besides gear boxes that can benefit from lubrication. Electrical contacts, sensors, and connectors are in appliances like refrigerators, dehumidifiers, dryers, dishwashers, ovens, and washing machines. Any water intrusion into these electrical components can not only jeopardize performance but could lead to more serious operation concerns such as short circuits which could pose a potential fire hazard.

Vibration, moisture, corrosion, extreme temperatures, and demanding load-carrying requirements are all common causes of component failure in household appliances. A small amount of lubricant can create a barrier that protects components from the environment, wear, and ultimately, product failure. When electrical components fail, it creates serious problems for OEMs including poor customer experience, increased warranty costs, and safety concerns.

Oven temperature sensors and connections on control panels of dishwashers and washing machines which control water temperature, set water volume, and wash time are a few examples where an instantaneous short circuit or a communication network fault due to signal loss can have serious consequences for consumers. Something seemingly as small as connector reliability could mean the difference between safe operation and costly recalls for the manufacturer.



Meet The Author

Nicole St. Pierre - Director of Manufacturing

Nicole St. Pierre has been with Nye for 20 years and was recently appointed to the role of Director of Manufacturing. Prior to her current role, Nicole spent 12 years as Nye's Technical Development manager after having started at Nye as a Research and Development chemist. Nicole holds a Bachelor of Science in Chemistry from the University of Massachusetts Dartmouth.

Click [here](#) to contact Nicole St. Pierre.



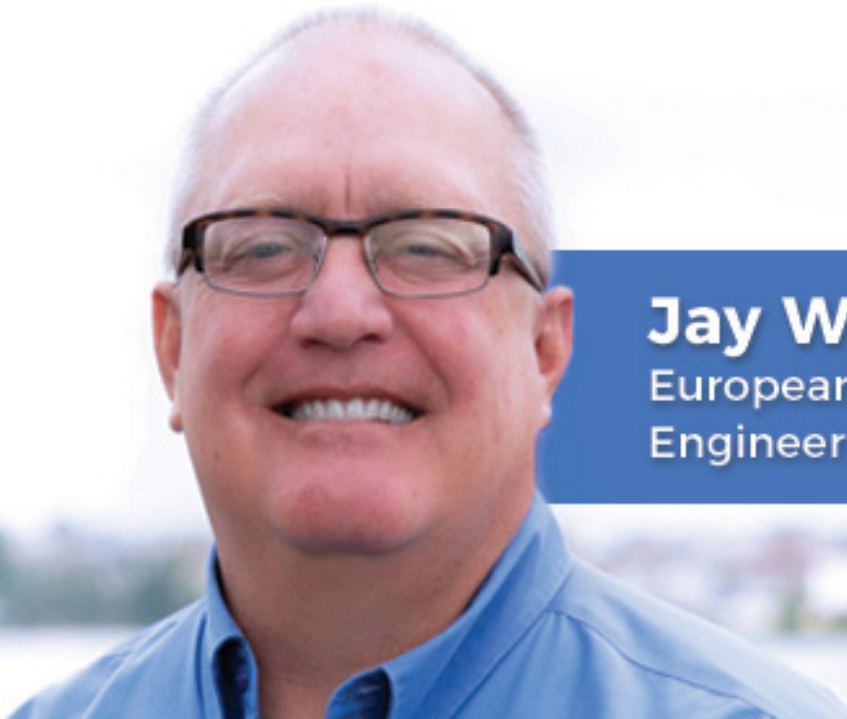
Dielectric Grease

There are many misconceptions about the use of dielectric grease on electrical connections. People mistakenly conclude that dielectric grease should never be used on electrical connections because the word dielectric refers to an electrically insulating material. This conclusion is based on a misunderstanding of how dielectric grease works. Dielectric grease has several key properties that make it desirable specifically for use on electrical connections, especially in applications that see moisture like refrigerators, dishwashers, and washing machines..."

Read the [full article](#) to learn more about how dielectric grease protects appliance connectors from failure.

Meet Nye - Jay Weikel

Jay Weikel has been with Nye for 25 years, most recently serving as Nye's European Engineering Manager where he works with engineers across a wide range of industries to provide them with application-specific lubrication solutions. Prior to his current role, Jay provided engineering and sales support to our customers in the Southeastern United States. With much of the medical device industry operating out of Europe, he has an intimate knowledge of biocompatible gels and fluids for medical applications and serves as our primary sales contact within this industry. Jay holds a Bachelor of Science in Chemical Engineering from North Carolina State University and a Masters in Business Administration from the University of Delaware.



Jay Weikel
European
Engineering Manager

◆ What trends dominate the medical device industry today?

In my opinion, today's medical device industry is seeing increasingly complex mechanical design and automation. Examples range from drug delivery devices to powered surgical tools to catheters to electrical connectors. Complexity and sophistication in design is growing as medical devices become more effective, targeting specific applications, new usage situations, and often utilizing new materials of construction. Miniaturization is an important trend, as is the requirement for compliance with strict global quality and regulatory standards and protocols.

◆ What is a common question that you get asked by medical device engineers?

"Can you supply a 'medical grade' lubricant?"

There is a misconception that there is a certification system for lubricants for medical applications, similarly to those held by food-grade lubricants. This is simply not the case. The NyeMed® product line has been confirmed as biocompatible with appropriate data. This, along with our ISO 13485 certification, helps customers mitigate risk and make appropriate decisions for their devices.

◆ **Could you explain the significance of our ISO 13485:2016 certification?**

Nye is the only specialty lubricant supplier that has taken the necessary steps to achieve this certification. It demonstrates Nye's commitment to the industry and helps assure customers that Nye understands the requirements of the industry.

◆ **How have you seen the lubrication industry change since you started at Nye 25 years ago?**

I think the biggest change has been utilizing synthetic lubricant technology to develop commodity products. For example, polyalphaolefin/lithium soap grease is offered by almost every lubricant manufacturer but not all of these greases offer the same performance. At Nye, we continue to develop innovative methods in order to solve our customers toughest challenges. Using advanced additives and lubricant technology, we can formulate specialized products that offer superior performance under the most extreme conditions.

◆ **What is your favorite part about working at Nye?**

I enjoy learning about customer's applications and helping to solve their problems with unique solutions. The wide variety of applications that we deal with makes every day interesting.



**Stay tuned for
more updates
next month!**