



Lubeletter

Synthetic Lubricant News from The SmartGrease[™] Company

NEWSClips

Nye's North Carolina office welcomed engineer Joe Brooks to the SmartGrease[™] team.

FCI's Product Evaluation Lab Manager Glen Sparks is co-authoring a paper on the evolution of automotive electrical terminal interface grease with Nye's Technical Support Manager Kevin Akin for IICIT's September symposium.

Shell Global Solutions visited Nye to discuss an exclusive North American distributorship for Pennzane.[®]

ExxonMobil and Nye collaborated to install a 27,000-gallon indoor tank farm at Nye's Fairhaven plant to store three grades of PAO used in the manufacture of synthetic lubricants.

The Hulk, director Ang Lee's bid for the green this summer, uses a Nye Optical Products poster as set dressing in Bruce Banner's lab. Good trivia, no royalties.

MORE On-line

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New "Near Universal" MIL-PRF Grease

Rheolube 374A, a new lithium soap, synthetic hydrocarbon grease, is poised "to replace many currently used military greases," according to *news@afri*, the official voice of the Air Force Research Laboratory.

Nye formulated Rheolube 374A at the request of Wright-Patterson AFB, Nonstructural Materials Branch, to meet the requirements of MIL-PRF-32014, a multipurpose grease for aircraft and missile systems. As reported in *Tribology Transactions* (April 2003), MIL-PRF-32014 grease was designed in the 1980s to replace a sodium-thickened, petroleum grease in missile engine bearings. After a year in storage, moisture had penetrated the bearing causing most of the petroleum grease to leak out, rendering the engine inoperable. The goal was to develop a stable grease that would extend missile bearing overhaul intervals to 30 months. MIL-PRF-32014 did much more. It pushed maintenance intervals to 60 months — which resulted in "cost savings estimated at \$60 million over the life cycle of the missile engines."

In 2000, the Wright-Patterson AFRL was asked to investigate severe wear, rust, and corrosion of the landing gear of the C-5, a heavy-cargo, intercontinental transport that provides strategic airlift at jet speeds to deploy and supply combat and support forces. The C-5's landing gear assembly is continually exposed to moisture, rain, and other

environmental conditions. Its clay-thickened, synthetic hydrocarbon grease did not offer suitable protection. Wright-Patterson recommended Rheolube 374A and began qualifying tests.



Courtesy of Wright-Patterson AFRL

C-5 landing gear is challenged by corrosion, which can be minimized by proper grease selection.

"While testing will be long term," *news@afri* reported, "the success of the grease has been validated by several military agencies and by Williams International. (Our) researchers have conducted rigorous high-humidity and high-speed testing of the grease over long periods of time and in adverse conditions, and have described the grease as a 'robust, high-performance' product. The grease exhibits water washout resistance, high load carrying ability, high-temperature and high-speed performance, and corrosion resistance. If the continued testing is successful, researchers expect the grease to replace many currently used military greases and become 'near-universal.'" **MORE On-line**



Courtesy of Robins AFB

International Corner

Switch for VW

When Hong Yan Electric, China's largest rocker switch producer, had quality problems with a grease recommended by VW-Shanghai, it learned first-hand the importance of proper grease selection. The VW-specified grease attacked nitrile rubber, compromising Hong Yan's product life.

Rheolube 363, a lithium-soap synthetic hydrocarbon grease, solved the problem and improved switch quality. Compatible with most plastics and rubbers, it has an excellent viscosity index, which helps ensure low resistance and wear over broad temperature ranges. Its gellant tolerates repeated mechanical stress.



Indications are that Hong Yan will be volume users of Rheolube 363. Shanghai Volkswagen has 40% of the Chinese car market. VW's two-door Gol debuted in Shanghai — a bid to capture the sub-100,000 yuan (\$12,000) market, the fastest growing auto segment in China. Further, *just-auto.com* says, VW aims to increase production capacity in China from 750,000 to a million vehicles a year by 2007.

Nye is represented in China by Nanjing Haymo Trading Co., Ltd. [MORE On-line](#)

UniFlor Drafted for F-15 and F-16 Sorties

UniFlor™ 8991MT has been specified for high-temperature actuators in jet engines manufactured by Pratt & Whitney for Boeing F-15 and Lockheed-Martin F-16 fighters worldwide.



Courtesy of USAF

UniFlor 8991MT is a custom-formulated, non-melting, perfluoropolyether (PFPE) grease designed by Nye in cooperation with the USAF and Pratt & Whitney. UniFlor 8991MT was originally formulated for actuators in Pratt & Whitney engines F100-PW-100 through PW-232, which are used in most F-15 and F-16 fighters. The grease may also be used for other high-temperature engine components.

The actuator grease is part of a broader UniFlor family of high performance, PFPE oils and greases. UniFlor competes with other PFPE brands, including Krytox®, Barrierta®, Braycote®, Endurex®, and Demnum®. Unlike other PFPE brands, however, UniFlor offers five types of PFPE (K, M, Y, Z, and D). Each has different molecular structures and performance characteristics, so UniFlor customers can get the PFPE — or blend of PFPEs — best suited for their products.

Stable and chemically inert, PFPEs function from -90°C to +250°C; resist harsh chemicals, gasses, fuels, and fluids; do not swell, shrink, or embrittle natural rubber and elastomers; do not crack, craze, discolor, or dissolve plastics; and do not create varnish or sludge. While PFPEs do not offer the wear protection of a synthetic hydrocarbon, they enable the use of lubricants in environments where non-PFPE lubricants would likely fail. [MORE On-line](#)

Trademarks and their owners: Krytox, DuPont; Brayco and Edurex, Castrol; Barrierta, Kluber; Demnum, Daikin Industries.

Get smart about grease

Adding a lubricant to contacts of separable connectors reduces insertion force, mating wear, fretting corrosion, and oxidation. But why don't lubricants, which are insulative in bulk, drive up resistance?

The answer lies on the contact surface. Microscopically it's like a lunar landscape of peaks and valleys. Through sliding action, lubricant is forced off the peaks or asperities (A-spots) where current actually passes, and fills the "valleys," which seals the contact surface from oxidation and reduces friction and wear. [MORE On-line](#)

Tough Connector Grease

Oshkosh Truck Corporation chose NyoGel® 760G for all 200+ electrical connectors in its cutting edge Medium Tactical Vehicle Replacement. MTRV operates at -50°F to 125°F, carries a 7-ton payload cross-country or up to 15 tons at 65 mph on primary or secondary roads, traverses a 60% gradient and a 30% side slope, fords 5 feet of water, and has an on-road cruising range of 300 miles. One tough truck. One tough grease. [MORE On-line](#)



Courtesy of Oshkosh Truck Corporation



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