

Autumn 1995

Solving Design Problems With Synthetic Lubricants

## PCR Names Nye Distributor of Custom, Wide-Temp, Mil-Spec Silicone Fluid

PCR, a Division of Harris Specialty Chemicals in Gainesville, Florida, selected Nye Lubricants, Inc. as its exclusive distributor of Prosil 52 M-20, a custom synthesized silicone fluid that combines the ability to withstand severe operating environments with superior wear prevention characteristics.

Developed and formerly marketed by General Electric who licensed its manufacture to PCR, Prosil 52 M-20 is a chlorophenylpolysiloxane that offers excellent thermooxidative stability, minimum change in viscosity with temperature and a broad serviceable temperature range from -70° C to +200° C. Further, because Prosil 52 M-20 is halogenated with chlorine, it provides good wear prevention characteristics for many metal combinations under boundary conditions, where other silicone fluids tend to be poor lubricants.

Prosil 52 M-20 meets Mil S-81087, and is now distributed by Nye under the name *Nyosil-M20*.

"We ultra-filter Prosil 52 M-20 before packaging it as Nyosil-M20," said Nye Technical Director Paul Bessette, "but chemically the products are identical. PCR remains the 'qualified producer,' and Nye takes on the role of marketer."

Nye also offers PCR's non-Mil-spec version of the fluid under the name *Nyosil-M25*. Nyosil-M20 and Nyosil-M25 are both available in one quart plastic bottles and five gallon pails.

Nyosil-M20 and Nyosil-M25 are severe service fluids. They are intended for use in lubricating, hydraulic, damping and related applications including: hydraulic systems and servomechanisms; crank cases and gear boxes for mechanical compressors,

engines and pumps; lightly loaded ball, sleeve and pivot bearings in precision instruments, electronic equipment and electrical motors; clocks and timing devices; and fluid transmissions.

Nye also formulates two greases with Nyosil. Nye NyoGel 781D, suitable for lightly to moderately loaded rolling element bearings, is a soft lithium soap-gelled grease serviceable from -70° C to +200° C. Nye Fluorocarbon Gel 813-1, one of a broad family of popular PTFE-thickened greases by Nye, is frequently used to meet the wide temperature and low starting torque requirements of potentiometers.

For technical data and evaluation samples of Nyosil-M20, Nyosil-M25 or their grease counterparts, call Nye at (508) 996-6721, or fax your request to Nye at (508) 997-5285.

## Detroit Team Expands

Roger Cady, formerly a product development manager at Aeroquip North American automotive operations in Mt. Clemens, Michigan, joined Brian Holley in May as Nye's second Regional Engineering Manager in Detroit. Brian opened Nye's Detroit office in 1989.

Roger brings nearly 20 years experience in automotive manufacturing to Nye, "a level of maturity" that Nye President and CEO Jerry Madden says our automotive customers will appreciate.

"Roger will serve as a translator," Jerry said. "Using his knowledge of the automotive industry, its production issues and processes, he's well equipped to translate the needs and problems of the automotive world into the language of the lubricant world — and bring back solutions to our customers."



**Changing Names, Same Product.** Developed by General Electric Silicones as GE F-50, manufactured by PCR as Prosil 52 M-20, and distributed by Nye as Nyosil-M-25, this custom synthesized, Mil S-81087 silicone fluid offers good boundary lubrication at temperatures as low as -70° C. Evaluation samples are available from Nye.



*Roger Cady, Detroit Regional Engineering Manager*

A journeyman toolmaker by trade, Roger was employed by Volkswagen of America from 1977 to 1988. He was a supervisor of quality assurance for the engine test group at Volkswagen's assembly plant in New Stanton, Pennsylvania, and later was transferred to the company's central office in Troy, Michigan in 1980 where he served as senior production engineer for the power train chassis group. Subsequently, he was named supervisor of production engineering, a position he held until he joined Aeroquip in 1988.

Roger describes his coming to Nye as an opportunity to cultivate his interest in the field of customer service.

"I'm very technically oriented," Roger said. "I've set up production lines, resolved production problems, become adept at troubleshooting. Now, I want to bring those skills directly to customers. I've always enjoyed the customer contact I've had in my other positions. Working with Nye is a unique opportunity to do that full time, while using the technical expertise I've gained over the last 20 years."

Roger and Brian can be reached at Nye's Woodward Avenue office at (810) 542-2720.

### **Want the next issue of the LubeLetter?**

If this is your first issue of our newsletter and you'd like to stay on our mailing list, it is important that you check the "Lubeletter" box on the enclosed Literature Request card and return it to Nye.

## **New Fluoroether Switch Greases Offer "More Chutzpah"**

Nye engineers set out to formulate a custom lubricant for a severe duty headlamp control switch designed by one of our customers, and ended up adding a new branch to our family of fluoroether greases.

Traditionally, fluoroether greases consist of a perfluoropolyether (PFPE) fluid thickened with polytetrafluoroethylene (PTFE). As with all greases, the thickener holds the oil in place. The new Nye fluoroether formulation, however, combines PFPE oils with a non-PTFE gellant system, which actually extends the operating life of the grease — and the switch it lubricates.

Nye's new fluoroether grease also contains a special anti-wear additive which improves the "boundary" lubricating characteristics of the grease. Under boundary conditions, where metal-to-metal contact is inevitable, the chemical properties of a lubricant are more important than viscosity in preventing wear. According to Nye Technical Director Paul Bessette, "(the anti-wear additives) give more chutzpah to the fluorinated materials under boundary conditions. And that could open up a whole new avenue of applications for these materials."

In general, fluoroether greases — PTFE-thickened and those with Nye's

new, extended-life gellant system — are ideal candidates for specialized switch applications. Fluoroether oils withstand temperatures as high as 250° C, and remain fluid at temperatures as low as -70° C. Chemically inert, they also can survive the harshest operating environments. For example, they lubricate switches found in chemical pumps and handling equipment, semi-conductor processing equipment, and automotive underhood controls. Further, in applications where arcing may occur, fluoroether greases leave no residue upon decomposition, a distinct advantage over traditional synthetic greases that leave resistive carbon debris.

Interestingly, the switch manufacturer for whom the new grease was developed makes the grease serve double duty. One of Nye's NyoGel 717 Series was modified to a soft consistency and applied to the face of the switch to reduce sliding contact friction and wear. It also acts as a coupling agent, filling any gaps between the underside of the switch and its attached heat sink, to help draw heat away from the circuit board.

For more information about Nye's family of fluoroether or other synthetic greases, and an evaluation sample of a custom lubricant for your application, call Nye at (508) 996-6721.

## **New Compounds Improve IC Chip, Power Transistor Performance**

In the unusual applications corner, two new heat sink compounds developed at Nye may prove useful for OEMs who need to minimize heat in integrated circuit chips and power transistors.

A heat sink compound is a flexible, grease-like material that is used to conduct thermal energy away from heat-producing elements in electrical and electronic equipment to larger ventilated components, called heat sinks. The grease fills gaps or voids between the conducting surfaces, facilitating the transfer of thermal energy to the heat sink.

In one application that involved medical diagnostic equipment, an IC chip was clamped to a cooling coil to minimize heat and maintain chip reliability. A standard heat sink compound was used between the chip and the coil. The compound began freezing at -30° C and fractured when the arm of the equipment moved during operation — leaving gaps between the chip and the coil which interfered with heat transfer. A lower viscosity silicone version dropped the freezing point to -70° C, but the customer wanted a still more flexible compound. A light fluoroether base oil finally provided



the solution. The new heat sink compound remains flexible at -90° C.

In another application, adding an electrically conductive material to a heat sink compound helped minimize heat generated by a power transistor.

"Most people assume that because there's an electrical connection, the heat sink compound is electrically conductive," said Nye's electrical engineer Kevin Akin. "However, that's not usually the case — even though it would improve the overall efficiency of the transistor."

Nye recently formulated a new electrically conductive heat sink com-

pound, stable to 200° C.

"Because the new compound is thermally conductive," Kevin said, "it radiates heat away from the transistor. Because it's electrically conductive it helps reduce the connection resistance, decreasing overall heating and increasing the life of the transistor."

Samples of either compound are available for evaluation. The low temperature product is called Nye Heat Sink Compound 929, and the electrically conductive material is Experimental Grease KA940627.

## Web Browsing? Look for Nye.

If you have a computer and a modem, you can now do business with Nye Lubricants 7 days a week — through Industry.Net's Online Marketplace.

Industry.Net, the largest industry-focused site on the World Wide Web, a.k.a. The Internet, currently includes more than 250 leading manufacturers of products and services used by industry buyers and specifiers.

Nye is now one of those manufacturers.

Using a Web Browser, software that helps you get around the Web,

your computer takes you to Industry.Net's web site address (called a URL, universal

resource location). Industry.Net's URL is <http://www.industry.net>. Once there, simply follow on-screen instructions until you get to Nye's "home page." From there, you can read about Nye's products and services, peruse a collection of informative application summaries and request more information from Nye simply by clicking on a word or icon.

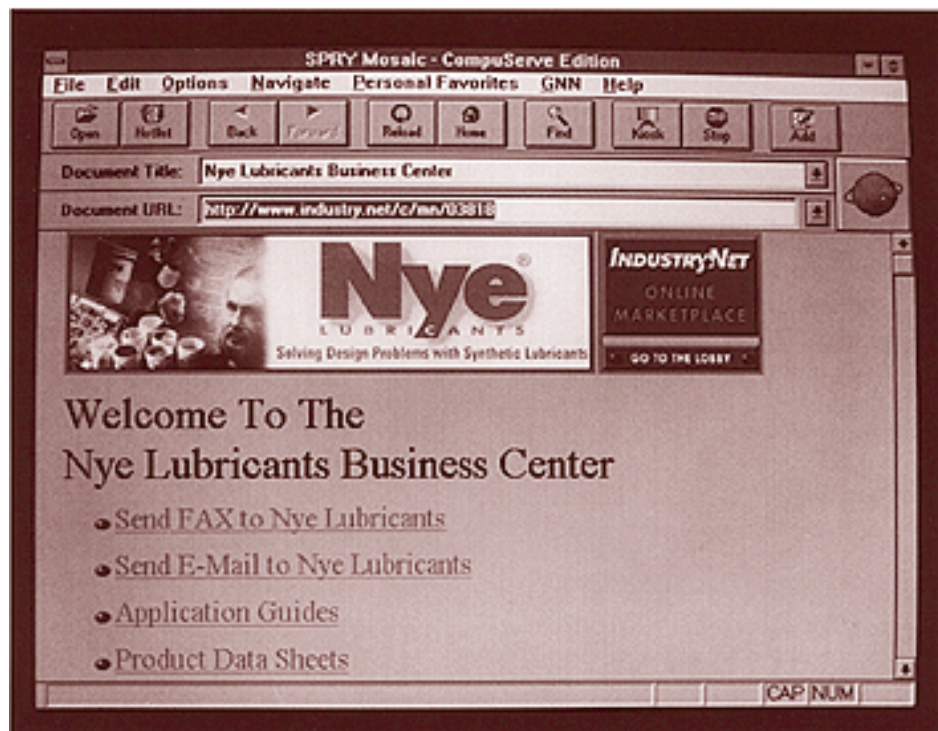
Requests for information have already arrived from as far away as Hong Kong, which is really just a moment away on the Information Highway.

Next time you're traveling it, stop by Nye's Electronic Business Center. We're open 24 hours a day.

See us in the



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REPORT**



## Nye Introduces Thread Lubricant and Sealant



*Nye's new FTL 9000 pipe thread lubricant and sealant is available in 30-cc syringes and one-pound jars. For an evaluation sample, technical data or a Material Safety Data Sheet, call Nye at (508) 996-6721.*

Venturing into a new market, Nye engineers unveiled Nye FTL 9000, an inert metal pipe thread lubricant and sealant formulated specifically to help prevent leakage in severe high pressure applications, including the transportation and storage of corrosive gasses and chemicals.

Nye FTL 9000 is an NLGI Grade 4 paste formulated from a special fluorocarbon polymer and a synthetic halogenated fluid with exceptional anti-seize characteristics. A high level of lubricating solids assures excellent lubricity and sealing without compromising the chemical inertness of the product. Waterproof and non-flammable, the new thread lubricant and sealant offers excellent thermooxidative and mechanical stability, and is fortified with additives to help reduce metal corrosion.

Nye FTL 9000 is intended for customers who transport or store oxygen, nitrogen, chlorine, and other corrosive gasses and chemicals. An effective alternative to PTFE tape, it is more pliable, won't rip and forms a more durable barrier to help prevent leakage.

## Nye Adds Gear Expo to Its International Itinerary

Jeff Lay, Nye's Midwest Regional Engineering Manager and resident gear expert, will represent Nye Lubricants at Gear Expo '95 — The World of Gearing, an exhibit sponsored by the American Gear Manufacturers Association in Indianapolis, November 12-15, 1995. Jeff's mission: to expand Nye's presence in the gear marketplace.

Nye's history in gear lubricants extends back to the company's founding in 1844, when its principal product was a specialty lubricant for gear trains in clocks and watches. Today, Nye still focuses on smaller gear trains, typically working with product design engineers to custom formulate synthetic lubricants for wide temperature, harsh environment and lubed-for-life applications.

"We've been very successful in this niche of the gear market," said George Mock, III, Nye's Executive Vice President. "Our lubricants are used in major-brand washing machine and dryer timer motors, actuator motor packs in automotive applications, turntables in microwave



## The World Of Gearing INDIANAPOLIS, NOVEMBER 12-15, 1995

ovens, small gear mechanisms in vending machines, ABS systems and superchargers. We've got proven products and the capability to formulate custom lubricants, but we've never promoted either very aggressively. Hiring Jeff, who has extensive experience in the gear industry, and attending Gear Expo are signs that we're ready to do just that."

While lubed-for-life applications are Nye's special area of expertise, difficult high tech maintenance is also an area Nye wants to explore, George added.

One issue Jeff is now addressing with several power tool manufacturers is the use of synthetic greases rather than oils in lubed-for-life power tool gear trains. A synthetic, stay-in-place grease can be

equally effective while obviating the need for and manufacturing expense of a seal assembly.

Similarly, grease use in gears for production line equipment can replace oil mist lubrication, thereby eliminating the need for oil mists being exhausted into plant atmospheres.

"It takes special application sense to determine which greases will work best in these applications," Jeff said. "That's the kind of knowledge — and cost-efficiency — Nye can bring to the gear industry."

In addition to Gear Expo, other exhibits on Nye's schedule include SAE, Detroit; Design Engineering, Chicago; Electronic Components and Information Fair, London;

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