Nye® LUBRICANTS

AUTOMOTIVE LubeLetter

Volume 26 Number 1A

The World Leader in Synthetic Lubricants

How to Make Consumers Feel Good About Automotive Components

Zero defects used to be an enviable achievement for automotive manufacturers. Now, it's only the price of admission to the marketplace. Today's consumers expect more, much more. They won't tolerate squeaks and leaks, wind noise or noisy components, hand-operated devices that aren't smooth as silk. They want perfection.

As consumers' expectations multiply, automotive component manufacturers must rise to a new challenge. Suppliers must strive to meet the Big Three's 10-year, 150,000-mile standard; they must also measure up to the perceived quality standards of today's demanding consumer: smooth, quiet performance — and that ubiquitous quality feel.

The new double standard. A switch that goes 150,000 miles but makes an annoying click isn't perceived as a "quality" switch by the vehicle owner. A well-engineered shifter mechanism or lumbar adjustment knob that does not have the "right feel" is perceived as an inferior quality component. Noisy gearboxes, foot pedal parking brakes that recoil like a speeding bullet, temperature control cables or audio tuners that don't slide smoothly and effortlessly, rear view mirrors that drift when the car is in motion, shifter cables that carry vibration from the transmission to an operator's hand resting on the shift stick — all these components may be defect-free and may meet manufacturer's life requirements. Nonetheless, they are perceived by the vehicle owner, the utimate arbiter, as something less than a quality component.

The good news is that many of a vehicle owner's noise, feel, and motion control standards can be met economically by automotive suppliers. Since the late 1980s, suppliers have increasingly turned to a unique family of greases designed specifically to impart a quiet, smooth, "quality feel" to automotive components. They're called damping greases.

Old concept meets new application. Damping greases have been used for more than 50 years to build fine tolerances economically into microscopes, telescopes, and camera zoom lenses. The "velvet feel," virtually silent operation, and the fact that a lens doesn't coast are all the work of a damping grease on the focusing threads. Despite their success in optical instruments — and later in potentiometers — few automotive suppliers considered damping greases because of limited functional temperature ranges. When Nye Lubricants introduced the first broad-temperature line of damping greases in the mid-1980s, automotive engineers took notice.

Switch manufacturers were the first to jump on the damping grease wagon. They found that a small amount of damping grease applied to detents reduced the annoying click of plastic molded switches and gave them a smooth, "quality feel" — without the

Where and Why Damping Greases are Used in Today's Autos

SWITCHES
Quality "Feel"/Quiet Operation

Multifunction • Head lamp • Ignition • Climate Control • Power Window • Power Seat • Power Door Locks • Power Mirrors • Rear Defrost • Hazard • Map Lamp • Trunk Release • Traction Control

INTERIOR COMPONENTS
Improved Tactile Quality

Window Visors • Visor Vanity Mirrors • Rear View Mirror • Control Knobs/ Buttons • HVAC Air Flow Vents • Retractable Cupholders • Ashtrays • Slide-out Storage Trays • Shifter Mechanisms • Glovebox Latches/ Hinges • Steering Column • Lumbar Adjustment Knob

GEARBOXES *Noise Reduction*

Door Lock Actuators • Power Side View Mirrors • Folding Side View Mirrors • Convertible Roof Gearboxes • Sunroof Motors

CABLES *Smooth Operation*

Parking Brake • Shifter • Temp Control • CV Joint Clunking

OTHER *Motion Control*

Seat Tracks • Starter Solenoids • Suspension System

The** broad-temp, stay-in-place, plastic-compatible, transparent, non-staining, water-resistant, anti-corrosion, noise-reducing, motion-control, improve-perceived-quality, make-the-engineer-look-good, make-the-driver-feel-good, **grease.

Nye quells quality problems.

expense associated with tight engineering tolerances. Today, damping greases from Nye are specified for dozens of automotive switches. Sometimes, they even help component suppliers win major contracts. One Nye customer reported being named by General Motors Corp. as the exclusive supplier of a multifunction column switch for one of GM's '97 models, in part, because "this unique switch has tactiles developed to match 'best-in-class' designs." Read damping grease.

With functional temperature ranges from -50°C to +250°C, damping greases by Nye are now used in many other automotive components (see table), as an economical way to reduce noise, deliver a quality feel, and control motion. Several Nye damping greases are also specified by Ford, GM, and Chrysler, e.g., Fluorocarbon Gel 880, which is used in parking brake cables, disk brake calipers, and, most recently, ball joints.

How damping greases work. Formulated with highly viscous base oils, a damping grease has a high internal shear resistance, so it requires some degree of force to move an object through it. This shear resistance is the quality that prevents backlash and coasting and ensures smooth, incremental motion. To achieve the "right feel" for a component, engineers can choose from various grease consistencies, from very light to ultra heavy. For example, the volume control on a radio would call for a lighter grease; the release mechanism on a parking break, a heavier grease. An additional benefit, because of their consistency, damping greases seal out moisture, dust, and other pollutants, extending component life.

A damping grease is also formulated to adhere to moving parts and prevent contact of mating surfaces. Moving parts actually move within the grease itself, thereby silencing the noise normally associated with metal-on- metal, metal-on-plastic, or plastic-on-plastic contact. Quiet operation is the result.

The suppliers' challenge. Understanding how the consumer perceives component design is increasingly important in the automotive world. As more and more responsibility for component quality shifts from the manufacturer to the supplier, this presents suppliers with a triple challenge. They have to develop components that meet manufacturers' specs, that pass vehicle owners' perceived quality tests — both while reducing costs to ensure their competitive edge. When quiet, smooth operation and that "Lexus feel" are the objectives, damping greases just may be part of the success formula.

A Sampling of Nye's Family of Automotive Damping Greases

Damping Grease	"Tactile Feel"	Functional Temp. Range (°C)
NyoGel 774VL	Very Light	-50 to 125
NyoGel 774L	Light	-40 to 125
NyoGel 774	Medium	-30 to 125
NyoGel 774H	Heavy	-20 to 125
NyoGel 774VH	Very Heavy	-10 to 125
NyoGel PG-44A	Ultra heavy	+20 to 125
Fluorocarbon Gel 836A	Light	-40 to 200
Fluorocarbon Gel 880	Medium	-40 to 200
Fluorocarbon Gel 835C	Heavy	0 to 200
Fluoroether Grease 849	Light	-20 to 250
Fluoroether Grease 857A	Medium	-26 to 250

Nye Lubricants is the only company in the US to offer a complete line of damping greases. For customers with special requirements, Nye also custom-formulates damping greases to meet a variety of "feel" and temperature requirements.

Try Nye's Damping Greases – Free

Be one of the first 25 automotive design or product engineers to submit a potential damping grease application, and you'll receive The Damping Grease Kit free. The kit contains a sampling of seven different damping greases, from very light to ultra heavy viscosity.

Simply call Nye's Detroit office to discuss your application with one of Nye's engineers, or complete the Lubricant Sample Request form that accompanied this newsletter, and mail or fax it to Nye's Detroit office. Be sure to mention the free Damping Grease Kit.

The Damping Grease Kit is also sold by Nye's authorized small volume distributor, TAI Lubricants. You may call TAI at (302) 326-0200. TAI accepts Visa and MasterCard.

How To Contact Our Detroit Office

Nye Lubricants, Inc.
360 East Maple Rd. — Suite R
Troy, MI 48083
Tel: (248) 597-0077 Fax: (248) 597-0078

E-Mail
Brian Holley: bholley@nyelubricants.com
Roger Cady: rcady@nyelubricants.com
Derrick Black: dblack@nyelubricants.com

Nye® LUBRICANTS

P.O. Box 8927 New Bedford, Massachusetts 02742-8927
Phone 508-996-6721 Fax 508-997-5285 E-Mail techhelp@nyelubricants.com

Australia • Austria • France • Germany • Israel • Italy • Japan
Netherlands • Singapore • South Korea • Switzerland • United Kingdom

ISO 9002 Registered
Certificate Number
FM 37483