Nye® Lubenotes:

Design Engineers' Guide to Selecting a Lubricant

Lubricants for Control Cables

Selecting the proper control cable lubricant can be tricky given the variety of materials, designs, routing requirements, loads, temperatures, and duty cycles. Tight cable routing and heavy loads make the selection of the right cable lubricant all the more critical.

The key is to choose a lubricant that improves cable efficiency — a measure of how quickly, smoothly and easily the cable moves under a broad range of operating conditions. This efficiency is directly related to how well a lubricant minimizes friction between the cable and its liner, that is, the lubricant's ability to wet and adhere to the cable and liner surfaces under both test and standard operating conditions. Since most tests involve constant rapid cycling, high film strength and the proper base oil viscosity are essential to maintaining the right amount of lubricant where it is needed.

While oil is still used for some lightly loaded cables with high efficiency needs, greases offer several advantages for control cable lubrication. A grease's stay-in-place capability mitigates leakage problems associated with oil. Greases also prevent wear better than oils. Formulated by gelling a base oil with a thickener system, they act as a sponge of oil, slowly releasing oil throughout the life of the cable and ensuring an adequate supply of lubricant during cycling. Special grease formulations can further improve cable performance and extend operating life. Nye's fluorocarbon gels, for example, incorporate PTFE which creates a surface with a very low coefficient of friction and aids in supporting medium and heavily loaded cables to reduce wear. Other anti-wear and load-carrying additives, as well as antioxidants and corrosion inhibitors, may also be introduced into grease formulations for specific applications. A less mobile form of lubrication, greases can also damp mechanical vibration and deliver a "quality" feel.

Greases for specific applications. Nye has custom-formulated greases for a variety of control cable applications, primarily for the automotive industry. We offer greases for mechanical systems that use cables, pulleys, tracks, and guides. Many are rust-inhibited for protection of metal rail systems. We also offer greases for push-pull cables. They feature a unique combination of silicone oils and PTFE gelling agents which provide excellent cable wetting, very low friction, and load-carrying capabilities. The very high viscosity greases also introduce varying degrees of damping which can be helpful when trying to reduce mechanical vibration from one end of the cable to the other. Damping can also deliver a preferred "quality" feel in a cable. Occasionally, certain designs require a unique degree of efficiency, or must operate well below freezing or above 200°C. Our "flea-power," wide-temperature greases are intended for these applications. The fluoroether greases offer low vapor pressure, excellent high-temperature oxidative stability, and resistance to aggressive chemicals.

Selecting the right lubricant for your application. Following is a partial list of popular Nye lubricants for control cables. Additional lubricants are available to meet a wide range of application requirements. For technical specifications, evaluation samples, or questions about any Nye products — or to discuss a lubricant *custom-designed* for your application — call us at (508) 996-6721. Nye is ready to work with you to ensure you make the best possible lubricant choice.

Lubricants for Control Cables

Greases for Cable Window Regulators, Sunroofs and Other Mechanical Systems	Temp Range (°C)	Consistency	Base Oil Viscosity @ 40°C	PTFE (low torque)	Corrosion Inhibited	High Load Capability
Rheolube 739A	-54 to 120	Very Soft	17 cSt	●		
NyoGel® 729F	-40 to 125	Soft	32 cSt	●		
Rheolube 789DM*	-40 to 150	Soft	53 cSt			●
Rheolube 363F	-40 to 125	Medium	58 cSt	●	●	●
Rheolube 723GR	-40 to 125	Soft	73 cSt		●	●

Greases for Push-Pull Cables (Hood/Trunk Release, Shift, Pedal, Parking Brake, Speedometer)	Temp Range (°C)	Consistency	Base Oil Viscosity @ 40°C	PTFE (low torque)	Mechanical Damping	High Load Capability
Rheosil 500F	-40 to 200	Soft	410 cSt	●		
Fluorocarbon Gel 836A	-40 to 150	Soft	10,000 cSt	●	●	
Fluorocarbon Gel 880	-40 to 200	Medium	19,600 cSt	●	●	●
Fluorocarbon Gel 990A	-40 to 200	Soft	31,500 cSt	●		●

Lubricants for "Flea-Power," Extremely Wide-Temp Applications	Temp Range (°C)	Consistency	Base Oil Viscosity @ 40°C	PTFE (low torque)	Flea Power	Chemical Resistance
NyoSil M25	-70 to 200	Oil	56 cSt		●	
Fluorocarbon Gel 813-1	-70 to 200	Soft	56 cSt	●		
UniFlor™ 8512S	-50 to 225	Soft	65 cSt	●		●
NyoGel® 741F	-54 to 200	Very Soft	83 cSt		●	
UniFlor™ 8981	-65 to 250	Medium	140 cSt	●		●

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