



Electric Power Transmission & Distribution

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Lubenotes:

Design Engineer's Guide to Selecting a Lubricant

Traditional lubricants have played an important role in the operation of electrical power transmission and distribution equipment. However, today's equipment is being designed for tomorrow's extended maintenance intervals needing a much longer trouble-free operating life, and requiring more than traditional lubricants can deliver.

Nye offers the highest performance synthetic lubricants that meet today's OEM design and specification requirements, and extends into tomorrow's need for longer maintenance intervals involving both new equipment designs, as well as upgrading existing equipment currently in operation. Nye synthetic lubricant formulations not only minimize component friction and wear to ensure free mechanical operation, but also offer superior protection from aggressive environments, preventing component corrosion/oxidation that could otherwise develop into electrical resistivity problems over time.

Lubricants for electric power transmission and distribution equipment:

Mechanical components must remain well lubricated to provide low friction and free operating motion, even with long periods of infrequent operation. Nye's synthetic formulations offer extended long-term component protection from oxidation and environmental degradation, with superior protection from long-term exposure to UV, moisture and water spray, even while exposed to wide temperature swings.

Electrical sliding and mating contact surfaces must remain free of oxidation and corrosion that could increase resistivity, and free of wear debris and other contaminants that could compromise surface finish and prevent proper interfacing. Nye's synthetic formulations offer excellent stay-in-place lubrication, good film strength to prevent wear (normal operation and fretting due to thermal cycling), as well as protecting surface integrity from exposure to environmental elements and subsequent oxidation over time.

Arcing electrical contacts see flash temperatures sufficiently higher than organic molecules can withstand. Therefore, Nye's synthetic lubricant technology, developed specifically for high voltage arcing applications, incorporates chemistries that will flash off in an innocuous manner, preserving conductivity of mating contact surfaces without leaving behind carbonized contaminants. The use of an inappropriate lubricant that does burn leaving carbon deposits, can result in the buildup of a resistive layer and generation of heat.

Actuator pistons and control valves (metal on rubber, metal on metal) require very low sliding friction to be maintained at a wide range of operating temperatures. Nye's synthetic lubricant technology, for this application, provides exceptionally low coefficient of friction, allowing minimal actuating force to operate valves efficiently in the widest range of operating temperatures.

Plastic components such as levers, and other sliding components (plastic on plastic, plastic on metal), can benefit from a lubricant to ensure smooth and wear free sliding motion. Nye's lubricant family formulated specifically for this application, includes chemistries compatible with most plastics and elastomers, and incorporates tackifiers to improve adhesion and stay-in-place on plastic surfaces.

On the back of this page is a partial list of the most commonly used Nye synthetic lubricants for electric power transmission and distribution equipment.

Electrical Contact Surfaces	Voltage Range			High Temps (>125°C)	Lubricant Chemistry		Typical Applications
	LV (<1KV)	MV (1KV-72KV)	HV (72KV+)		Base Oil	Thickener	
Rheolube® 375	•				PAO	Lithium	Sliding contact surfaces (switch blades, etc.)
Rheolube® 368		•			PAO	Lithium	Sliding contact surfaces (switch blades, etc.)
Rheotemp™ 763G	•			•	PAO/AN	Urea	Sliding contacts exposed to higher temperatures
NyoGel® 760G		•		•	PAO	Silica	Connections with higher loading forces (primary disconnects, etc.)
UniFlor™ 8623B		•		•	PFPE	Silica	Sliding contacts exposed to very high temperatures & mechanical forces
NyoGel® 782D			•		Glycol	Silica	Arcing contacts requiring no carbonized residuals contaminants
NyoGel® 718B	•	•		•	PPE	Silica	Gold plated contacts

Operating Mechanisms	High Temps (>125°C)	High Loading (EP)	Lubricant Chemistry		Typical Applications
			Base Oil	Thickener	
Rheolube® 375			PAO	Lithium	Low mechanical torque/forces at low temperatures
Rheolube® 368			PAO	Lithium	Wide range of operating mechanisms
Rheolube® 368AX-1		•	PAO	Lithium	Slides & Gears - requiring low friction & wear
NyoGel® 774VLF		•	PAO	Silica	Heavily loaded operating at slower speeds
UniFlor™ 8623B	•	•	PFPE	Silica	Heavily loaded mechanisms exposed to very high temperatures

Plastic Mechanisms	Lubricant Chemistry		Typical Applications
	Base Oil	Thickener	
Rheolube® 362HM	PAO	Lithium	Sliding plastic surfaces, where tackifiers provide stay in place lubrication on plastic components

Actuator Pistons & Control Valves	Lubricant Chemistry		Typical Applications
	Base Oil	Thickener	
NyoGel® 741A	Silicone	Lithium	Pistons (metal on rubber, metal on metal) requiring very low sliding friction at a wide range of operating temperatures

Enclosures & Electrical Connections (Dielectric Sealant)	Lubricant Chemistry		Typical Applications
	Base Oil	Thickener	
Rheolube® 368	PAO	Lithium	Coat gaskets & mating surfaces to seal out environment (boots, cases, etc.)
NyoGel® 760G	PAO	Silica	Directly in & around connections to seal out environment
UniFlor™ 8917	PFPE	Melamine Cyanurate	Chemical resistant, high temperature lubricant for electrical connections