CASE STUDY

PROTECT USB CONNECTORS FROM FRETTING CORROSION

INDUSTRY:
Automotive

APPLICATION:
Electronic Data Logger

COMPONENT:
USB Connector

LOCATION:
USA

BACKGROUND

Commercial truck fleets are becoming more electrified and digitally connected as the demand for added safety, tracking, and comfort features increases. Electronic logging systems can help companies manage fleet logistics and minimize downtime. But when connectors fail, these features then become obsolete and downtime increases as systems need to be repaired. A supplier approached Nye after they noticed the USB connectors in their electronic data logger design had experienced failures due to fretting corrosion. They needed a grease that could protect their connectors against fretting corrosion to prevent future electrical failures and restore connectivity to connectors affected in the field.

CHALLENGES

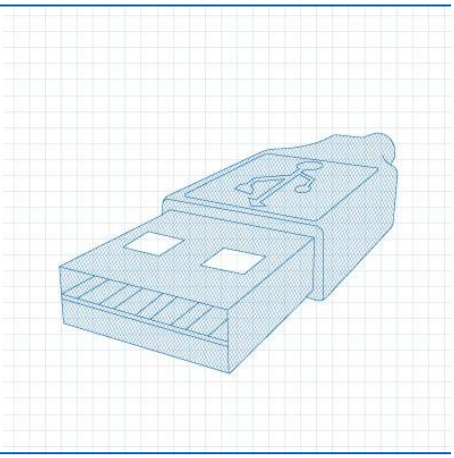
- Can Nye provide a lubricant that can withstand 10 insertions and a five-year lifecycle?
- Can Nye provide a lubricant that can prevent fretting corrosion and be easily dispensed in the field?

SOLUTION

NYOGEL® 760G

A silica thickened, medium viscosity, synthetic hydrocarbon grease.

- Reduces insertion force
- Compatible with most plastics and elastomers
- Provides lifetime lubrication for lasting connections
- Protects against fretting corrosion and restores connectivity



RESULTS

After completing third-party validation testing to verify fretting and insertion force properties, the supplier determined that NyoGel® 760G successfully prevented fretting corrosion and extended the life of their USB connectors. Nye helped the supplier determine the appropriate amount of grease for each USB connector to ensure that the connector received the proper coverage without overfilling the socket. Nye also helped the supplier select different packaging options suitable for field servicing and mass production.

Base Oil Properties	Conditions	NyoGel® 760G	Test Method
Chemistry	–	Silica / PAO	–
Temperature Range	–	-40 to 135 °C	–
Kinematic Viscosity	40 °C	400 cSt	ASTM D445
Viscosity Index		148	ASTM D2270
Grease Properties			
NLGI Grade	–	2	ASTM D217
Oil Separation	24 h, 100 °C	1.5%	ASTM D6184
Evaporation	24 h, 100 °C	0.3%	ASTM D972
Water Washout	1 h, 80 °C	2%	ASTM D1264
Copper Corrosion	24 h, 150 °C	1a, Slight Tarnish	ASTM D4048
Salt Spray Resistance	750 h	No Corrosion	MIL-G-81827A
Dielectric Breakdown Voltage	–	11.2 kV	CTM*

*CTM: Nye Company Test Method

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Nye Lubricants is a leader in the innovation, formulation and provision of synthetic lubricants, enabling and improving breakthrough products and critical new technologies. We bring proven experience, deep technical knowledge and customer focus to solve our customers' toughest challenges, adding tangible value to products in a wide range of industries and applications.

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