TECHNICAL DATA SHEET

POLYWATER® SPY CABLE LUBRICANT

polywater.com

DESCRIPTION

Polywater® SPY is based on unique lubricant chemistry and technology. Much like a paint, the lubricant thins as it is sprayed or wiped. Once on the cable or conduit surface, it thickens to stay coated. Polywater SPY works even after it has dried. The residue is a thin, slippery film that retains lubricity for months after use.

Polywater SPY Spray Lubricant can be sprayed into the duct or wiped on the cable for thin film lubrication. Polywater SPY is highly concentrated and effective without a thick coating.

Polywater SPY is recommended for spray or wipe lubrication with no mess. The lubricant is suitable for all types of cable installations.

FRICTION TESTING

Lubricity:
Polywater SPY shows superior friction reduction on a variety of jacket types. Typical friction coefficients at 200 lbs/ft (2.91 kN/m) normal pressure are shown. Test results are based on the method described in the white paper, "Coefficient of Friction Measurement on Polywater's Friction Table, 2019". Values are averages based on cable jacket and conduit materials from multiple manufacturers.

CABLE JACKET	CONDUIT TYPE		
	PVC	STEEL	EMT
LLDPE	.07	.07	.12
Nylon (THHN)	.08	.09	.16
PVC (THWN)	.11	.11	.21
XLPE (XHHW)	.06	.14	.17

Coefficient of friction data on additional or specific cable jackets or conduits can be obtained from American Polywater Corporation.

Polywater Spy can be sprayed directly into ducts or onto cables

PRODUCT FEATURES

- **Lubricates with a Thin Film:** Efficiently reduces friction on wire/cable.
- **Zero Mess:** Dries quickly and cleanly; continues to lubricate after it is dried.
- **Versatile Application:** Can be sprayed into conduit or wiped onto cable jacket.
- **Compatible with Most Cable Jackets:** Suitable for use with a broad variety of cables and building wires.

END USES

Effective for general construction. Lowers tension on traditional building wire. Effectively reduces friction for cable pushing. May be sprayed or poured for no-mess underground cable installation.

APPROVALS

UL Listed
UL Listed to Canadian safety standards

CABLE COMPATIBILITY

Polyethylene Stress Cracking:
Polywater SPY shows no stress cracking on LLDPE cable jacket when tested per IEEE Standard 1210.[1]

Tensile and Elongation Effects:
LLDPE, XLPE, and PVC cable jacket materials aged in Polywater SPY per IEEE Standard 1210[1] meet the tensile and elongation retention requirements of that standard.

Volume Resistivity:
There are no significant changes in the conductive properties of XLPE and EPR semi-conducting compounds when volume resistivity is tested according to IEEE Standard 1210.[1]

Building Wire Testing:
THHN and XLPE building wire meet UL tensile, elongation, and voltage withstand requirements after exposure to Polywater SPY as tested by UL requirements.[2]

Corrosivity: Lubricant is non-corrosive to steel, copper, or aluminum. Passes UL 267[2] corrosion testing on zinc-coated EMT.

[1] *IEEE Std 1210-2004, IEEE Standard Tests for Determining Compatibility of Cable-Pulling Lubricants with Wire and Cable.*

[2] *UL Subject 267, Investigation for Wire-Pulling Compounds.*

PHYSICAL PROPERTIES

Polywater SPY is a thin, concentrated liquid lubricant.

PROPERTY	RESULT
Appearance	Slightly thickened, white liquid
Percent nonvolatile solids	4%
VOC content	0 gms/liter
Viscosity	240-1200 cps @10rpm
pH	7.5-9

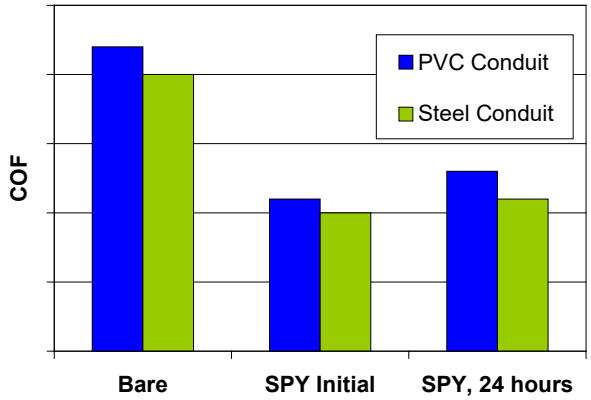
Temperature Use Range:
Polywater SPY:
20°F to 120°F (-5°C to 50°C).
Polywater WSPY (Winter Grade version):
-20°F to 120°F (-30°C to 50°C)

Temperature Stability:
No phase-out after five freeze/thaw cycles or 5-day exposure at 120°F (50°C). *Will not phase out or separate during the shelf life of lubricant.*

PERFORMANCE PROPERTIES

Dry Lubrication:
Dry lubrication measurements indicate the capability of thin-film lubricants to continue to lubricate when dry.

Polywater SPY Lubricant continues to work even after it dries. Coefficient of friction values measured on cable coated and then dried for 24 hours are within 20% of the initial "wet" value. Measurements were done using the Friction Table Method described in the white paper, "Coefficient of Friction Measurement on Polywater's Friction Table, 2019".



Improves Enhanced Cable Performance:
Polywater SPY further lowers friction on enhanced (treated) cables. Coefficient of friction is tested using the Friction Table Method. Results show lower tension by 40%-70%.

Wetting—Continuous Coat:
Wetting is a measure of the lubricant's ability to coat the jacket as a thin film for continued lubricity on longer pulls.

Polywater SPY Lubricant will wet out evenly on cable surfaces. It will not bead up or rub off the cable jacket. Lubricant will completely coat a 1-inch diameter THHN or PVC-jacketed cable dipped 6 inches (152 mm) into the lubricant and then withdrawn after 10 seconds. The lubricant coating shall cover 100% of the immersed cable jacket without dripping off, nonwetting, or drawing back from the edges as the cable is held horizontally for one minute at 70°F (21°C).

Combustibility:
Lubricant has no flash point and dried residue is nonflammable.

APPLICATION PROPERTIES

Polywater SPY is a thin, concentrated liquid that can be sprayed into the duct or wiped on the cable. Industrial sprayers are available for automatic spraying application. Polywater SPY has been successfully tested for a variety of uses:

- Lubricating fiberglass rods for easier and longer insertions during fishing.
- Spraying holes in wood studs to reduce tension in hand-pulled Romex wire.
- Eliminating need to fish by allowing shorter runs of wire to be pushed.
- Lowering tension on traditional building wire pulling into EMT or PVC conduits.
- Pressurized spraying for no-mess underground cable installation.

Application Systems:
Polywater SPY Lubricant can be applied in several unique and innovative ways. This thin liquid can be sprayed or wiped directly on the cable jacket. Shorter cable runs can be pushed once the cable is coated with Polywater SPY. The slightly gelled character of Lubricant SPY helps it to coat and wet the cable for more difficult and complex cable pulls as well.

Spraying Characteristics:
Low-viscosity lubricant allows product to flow through airless spray heads. Lubricant will not clog valves or atomizers on the sprayer.

Trigger Spray Bottle:
Use the trigger sprayer on the SPY-35LR bottle to spray Polywater SPY directly on the cable or into the conduit. The bottle can be refilled for multiple uses.

Wipe Application:
For small cables, use the SPY-D20 towelette to wipe the lubricant on the cable jacket. This presaturated wipe lays down a thin, even coat of lubricant. The towel material will release the lubricant without a mess.

Clean-up:
Nonstaining. Complete clean-up is possible with water.

Storage and Shelf Life:
Store Polywater SPY in a tightly sealed container away from direct sunlight. Lubricant shelf life is 18 months.

DIRECTIONS FOR USE

Polywater SPY can be sprayed or wiped directly onto the cable as it enters the conduit. Coat the entire cable jacket for best friction reduction.

Polywater SPY is effective at a lower quantity than traditional cable pulling lubricants. For short runs, spray or pour an appropriate amount of Polywater SPY into the conduit before the pull, so the cable will pick up the lubricant as it is pulled.

Polywater SPY leaves a light, clean residue. Any remaining residue will evaporate quickly.

Recommended Lubricant Quantity:
$Q = k \times L \times D$

Where:

Q = quantity in gallons (liters)
L = length of conduit run in feet (meters)
D = ID of the conduit in inches (mm)
k = 0.0005 (0.00027 if metric units)

The appropriate quantity for use on any given pull varies, depending on the complexity of the pull. Factors that may increase difficulty are heavy cables, poor conduit condition, high number of bends, and extreme temperature conditions.

Lubricant Wipe Guidelines:
Polywater SPY wipe package (SPY-D20) is a convenient way to apply lubricant for shorter cable runs. Each wipe coats and lubricates 50 to 100 feet (15 to 30 meters) of cable. Use additional wipes as needed for longer, larger, or more difficult pulls. A light coating of Polywater SPY facilitates cable pushing or pulling.

Wipe application with Polywater SPY-D20

MODEL SPECIFICATION

The statement below may be inserted into a customer specification to help maintain engineering standards and ensure work integrity.

The cable pulling lubricant shall be Polywater® SPY Lubricant. Lubricant has a sprayable viscosity and will not clog valves or applicators. It shall coat and cling to the cable. It shall be nonstaining.

Lubricant shall produce a low coefficient of friction on a wide variety of cable jacket materials and shall lubricate at low coating thickness. Lubricant shall continue to reduce friction after it has dried. It shall conform to the physical and electrical requirements of IEEE 1210. It shall not contain solvents and shall not have a flash point.

No substitutions are permitted without certification from an officer of the manufacturer that the substitute product meets all the requirements of this specification.

ORDER INFORMATION

CAT #	PACKAGE DESCRIPTION
SPY-D20	20-count wipe canister 12/case
SPY-35LR	1-qt. spray bottle (0.95 liter) 12/case
SPY-128	1-gal. jug (3.78 liter) 4/cases
SPY-640	5-gal. pail (18.9 liter)
	Winter Grade
WSPY-640	5-gal. pail (18.9 liter)

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