

Polywater® PR Cable Lubricant



TECHNICAL SPECIFICATION

Description:

Polywater® Lubricant PR is a high performance, liquid cable pulling lubricant. Lubricant PR's silicone enhancement provides excellent tension reduction in all types of cable pulling. Its high shear resistance allows friction reduction even under high sidewall pressure in bends. Lubricant PR is slow drying. The residue is a thin, slippery film that retains lubricity for months after use.

Polywater® Lubricant PR is a stringy, silicone-enhanced liquid that can be poured or pumped into duct. It is recommended for underground, power cable pulling. The lubricant is suitable for transmission and distribution cable.

Friction Testing:

Lubricity: Polywater® PR Lubricant shows good friction reduction across a broad class of jacket types. Typical values at 200 lbs/ft (2.91 kN/m) normal pressure are shown. Results are based on the method described in the white paper, "Coefficient of Friction Measurement on Polywater's Friction Table, 2007" (polywater.com/FTable.pdf). Values are compiled from testing on multiple cable jacket and conduit materials.

Cable Jacket	Conduit Type		
	HDPE	PVC	Steel
XLPE	.08	.12	.13
LLDPE	--	.11	.12
PVC	.12	.11	.17

Coefficient of friction data is available on additional cable jackets and conduit substrates from American Polywater Corporation.



Product Benefits:

- Automatic application
- Silicone enhanced
- Superior friction reduction
- Compatible with cable jackets
- Clean and non-staining
- Temperature stable

End Use:

- Use for all types of cable installations, including:
- Underground cable pulling
 - Automated systems and applications
 - High percentage conduit fill

Performance Properties

Combustibility:

Lubricant has no flash point and dried residue is non-flammable.

Corrosivity:

Lubricant is non-corrosive to steel, copper, or aluminum.

Pourability:

A five-gallon pail of Polywater® Lubricant PR will empty from a Reike® spout without a notched air hole in lid in 1 minute 18 seconds and with a notched air hole in lid in 34 seconds.

Cable Compatibility:

Polyethylene Stress Cracking:

No stress cracking on DYNK (an untreated polyethylene prone to stress cracking) and LDPE cable jackets when tested by ASTM D1693.

Tensile and Elongation Effects:

LLDPE, XLPE, HDPE, and CSPE cable jacket materials aged in Polywater® Lubricant PR per IEEE Standard 1210¹ meet the tensile and elongation performance requirements of that standard.

Volume Resistivity:

There are no significant changes in the conductive properties of XLPE semi-conducting compounds when volume resistivity is tested according to IEEE Standard 1210¹.

¹ IEEE Std 1210-2004; IEEE Standard Tests for Determining Compatibility of Cable-Pulling Lubricants with Wire and Cable.

Application Properties:

Application Systems:

Polywater® PR is a thin stringy liquid that is easy to pour into duct for underground applications. It can also be pumped directly into the conduit or onto the cable using specialty lubricant pumps. The string character allows it to “pull itself along” and continue to coat the cable through long installations with multiple bends.

Polywater® Pump Models LP-3 and LP-D5 are available to apply cable lubricants. The use of pumps allows for the practical transfer and consistent application of lubricant. These low-shear pumps will not change the stringy character of Polywater® PR lubricant. These pumps allow for variable pump rates of 1 – 3 gallons per minute.

Polywater® PR is available in large, 275-gallon totes for larger scale operations. Lubricant may be gravity transferred to truck-mounted tanks and pumped using diaphragm style pumps. These pumps are high capacity with a wide range of flow rates available. Lubricant is injected into the conduit using flexible hosing and a trigger-grip nozzle applicator (similar to gas pumps).

Pull Planner™ 2000 and 3000 Cable Tension Planning software is available. Planning the installation to minimize tension will lengthen the life of the cable and reduce wear and tear on equipment.

Temperature Use Range:

20°F to 120°F (-5°C to 50°C).

Temperature Stability:

No phase-out after five freeze/thaw cycles or 5-day exposure at 140°F (60°C).

Clean-Up:

Non-staining. Complete clean-up possible with water.

Storage and Shelf Life:

Store tightly sealed, away from direct sunlight. Lubricant shelf life is one year past the date of manufacture.

Directions for Use:

Polywater® PR Lubricant can be poured or pumped directly onto the cable as it enters the conduit.

Directly lubricate the cable or wire during the entire portion of the pull. It is best to coat the entire cable or wire as it enters the conduit.

For clean-up, use a rag to squeegee the end of the cable, tightly gripping the cable with a rag. The remaining residue will evaporate quickly.

Recommended Lubricant Quantity

$$Q = .0015 \times L \times D$$

Where: Q = quantity needed in gallons
L = length of conduit in feet
D = nominal ID of the conduit,
inches

The appropriate quantity for use on any given pull can vary from this recommendation by 50%, depending on the complexity of the pull. Consider the following factors:

Cable weight and jacket hardness
(Increase quantity for stiff, heavy cable)
Conduit type and conditions
(Increase quantity for old, dirty or rough conduits)
Conduit fill
(Increase quantity for high percent conduit fill)
Number of bends
(Increase quantity for pulls with several bends)
Pulling environment
(Increase quantity for high temperatures)

Physical Properties:

<u>Property</u>	<u>Result</u>
Appearance:	Pourable, white, stringy liquid with no odor
Percent Non-Volatile Solids:	<2
VOC Content:	0 gms/liter
Viscosity:	1,000 – 3,000 cps @10rpm
pH:	6.5 – 7.5

Model Specification:

The statement below may be inserted into a specific job specification to help maintain engineering standards and ensure project integrity.

The cable pulling lubricant shall be Polywater® Lubricant PR. It shall produce a low coefficient of friction on a wide variety of cable jacket materials and shall conform to the physical and electrical requirements of IEEE 1210. The lubricant shall be silicone-enhanced, have a low solids content and the residue shall retain its slippery character. It shall not have a flash point.

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

Order Information:

<u>Cat #</u>	<u>Package Description</u>
PR-128	1-gallon pail (3.78 Liter) 4/case
PR-320	2 1/2- gallon jug (9.6 Liter) 2/case
PR-640	5-gallon pail (18.9 Liter)
PR-Drum	55-gallon drum (208 Liter)
PR-Tote275	275-gallon tote

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Makers of Polywater® and Dyna-Blue® Cable Lubricants
and Pull-Planner™ 2000 Software

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Corporation

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