

## Polywater<sup>®</sup> PR Cable Lubricant

### DESCRIPTION

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

Polywater 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 perfect for installing cables from the transformer to the service entrance of businesses or homes.



*Polywater PR is poured into a conduit stub-up*

### FRICITION TESTING

**Lubricity:** Polywater PR 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](http://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	.11	.11	.17

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

### PRODUCT FEATURES

- **Field Friendly:** Packaging designed for the installer.
- **High Shear Resistance:** Allows friction reduction even under high sidewall pressure in bends.
- **Slow Drying:** The residue is a thin, slippery film that retains lubricity for months after use.
- **Compatible with Common Cables:** Suitable for use on many cable jackets.
- **Cold Weather Formula:** Available in Winter Grade version, Polywater WPR.

### END USE

Use for all types of cable installations, including:

- Underground cable pulling
- Automated systems and applications
- High percentage conduit fill

## 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 PR per IEEE Standard 1210<sup>1</sup> 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 1210<sup>1</sup>.

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

## PHYSICAL PROPERTIES

PROPERTY	RESULT
Appearance	Pourable, white, stringy liquid with no odor
Nonvolatile solids (%)	<2
VOC content	0 g/L
Viscosity	1,000–3,000 cps @10rpm
pH	6.5–7.5

## PERFORMANCE PROPERTIES

### Combustibility:

Polywater PR has no flash point and dried residue is nonflammable.

### Corrosivity:

Polywater PR is noncorrosive to steel, copper, and aluminum.

### Pourability:

A 5-gallon pail of Polywater PR will empty from a Reike<sup>®</sup> spout without a notched air hole in lid in 1 minute, 18 seconds and with a notched air hole in lid in 34 seconds.

## APPLICATION PROPERTIES

### Application Systems:

Polywater PR is a thin stringy liquid that is easy to pour into duct for underground applications. The string character allows it to “pull itself along” and continue to coat the cable through long installations with multiple bends.

Polywater PR can also be pumped directly into the conduit or onto a cable using the Polywater LP-D5 specialty pump. Polywater’s low-shear pump will not change the gel character of Polywater PR. The LP-D5 allows hands-free transfer and consistent application of lubricant. It supports a lubricant application rate of 1–2 gallons (4–8 liters) 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. Polywater PR is injected into the conduit using flexible hosing and a trigger-grip nozzle applicator (like gas pump dispensers).

Pull Planner™ Tension Calculation 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:

Polywater PR:

20°F to 120°F (-5°C to 50°C).

Polywater WPR (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 140°F (60°C).

### Cleanup:

Nonstaining. Complete cleanup possible with water.

### Storage and Shelf Life:

Store tightly sealed, away from direct sunlight. Lubricant shelf life is 24 months past the date of manufacture.

## DIRECTIONS FOR USE

Polywater PR 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 cleanup, 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:

$$Q = k \times L \times D$$

Where:

Q = quantity in gallons (liters)

L = length of conduit run in feet (meters)

D = ID of the conduit in inches (mm)

k = 0.0015 (0.0008 if metric units)

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)*

## 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 PR Lubricant. 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 the requirements of this specification.

## ORDER INFORMATION

CAT #	PACKAGE DESCRIPTION
PR-128	1-qt. squeeze bottle (3.78 liter) 4/case
PR-320	2½-gal. pail (9.6 liter) 2/case
PR-640	5-gal. pail (18.9 liter)
PR-Drum	55-gal. drum (208 liter)
PR-Tote275	275-gal. tote
	<b>Winter Grade</b>
WPR-128	1-qt. squeeze bottle (3.78 liter) 4/case
WPR-640	5-gal. pail (18.9 liter)
WPR-Drum	55-gal. drum (208 liter)

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## CONTACT US

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**IMPORTANT NOTICE:** The statements here are made in good faith based on tests and observations we believe to be reliable. However, the completeness and accuracy of the information is not guaranteed. Before using, the end-user should conduct whatever evaluations are necessary to determine that the product is suitable for the intended use.

American Polywater expressly disclaims any implied warranties and conditions of merchantability and fitness for a particular purpose. American Polywater's only obligation shall be to replace such quantity of the product proven to be defective. Except for the replacement remedy, American Polywater shall not be liable for any loss, injury, or direct, indirect, or consequential damages resulting from product's use, regardless of the legal theory asserted.

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