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TECHNICAL DATA SHEET

POLYWATER® J LUBRICANT

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DESCRIPTION

Polywater® J Lubricant is a high-performance cable pulling lubricant proven in the installation of millions of feet (meters) of cable over the last 30 years. Polywater J provides excellent tension reduction in underground and industrial cable pulls. It is recommended for both communications and electrical cable. Polywater J has excellent shear resistance for effective lubrication under high cable sidewall pressure in conduit bends.

The residue from Polywater J does not propagate flame when used with fire-retardant cable systems. Polywater J is slow drying. The residue is a thin, slippery film that retains its lubricity for months after use. Its dried residue is nonconductive and noncombustible.

Polywater J is a stringy gel. It can be applied by hand or by using Polywater's LP-D5 Pump. It is also available in the unique Front End Pack™ prelubrication bags.

FRICTION TESTING

Lubricity: Polywater J Lubricant 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				
	HDPE	PVC	STEEL	FRP	EMT
XLPE	.14	.11	.13	.16	.21
LLDPE	.10	.11	.16	.13	.13
PVC	.11	.11	.13	.16	.11
HDPE	.05	.09	.13	.13	.13

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



Polywater J is recommended for multiple-bend pulls.

PRODUCT FEATURES

- **Maximum Friction Reduction**: Lower cable pulling tension.
- **Clean and Nonstaining**: Minimize clean-up time.
- **Noncombustible Residue**: Suitable for fire-critical cables and installations.
- **Field-Friendly Application:** Pump, hand-apply, or distribute by Front End Pack.
- **Temperature Stable**: No ruined lubricant from freeze/thaw or high-temperature exposure.
- **High Cling Factor**: Stays on cable jacket during application.

END USE

Suitable for many types of cable installations, including:

- Heavy, underground installations
- Multiple-bend pulls; long pulls
- High conduit fill situations

OFFICIAL APPROVALS

UL Listed
CSA Listed

CABLE COMPATIBILITY

Polyethylene Stress Cracking:
Polywater J shows no stress cracking on LDPE, LLDPE, MDPE, or HDPE cable jacket when tested per IEEE Standard 1210.[1]

Tensile and Elongation Effects:
LLDPE, XLPE, and PVC cable jacket materials aged in Polywater J 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 XHHW building wire meet UL tensile, elongation, and voltage withstand requirements after exposure to Polywater J as tested by UL requirements.[2]

Nuclear Approval:
Polywater J does not contain halogenated compounds, sulfur compounds, or low melting point metals.[3]

Cable Approvals:
Polywater J is approved by most cable manufacturers. Contact American Polywater for details.

[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.*

[3] *Nuclear Test Methodology: Leachable Chlorides (ASTM D 512-88), Water Leachable Bromides (ASTM D 1246-88) Halogenated Compounds (ASTM D 808-87) Water Leachable Iodides (ASTM D 1246-88) Sulfur (ASTM D 129-78) Water Leachable Fluorides (ASTM D 1179-88)*

PHYSICAL PROPERTIES

PROPERTY	RESULT
Appearance	Cream-colored, stringy gel
Wax, grease, and silicone content	None
Percent nonvolatile solids	4.3
VOC content	10 gms/liter 200 gms/liter (Winter Grade)
Viscosity	25,000-40,000 cps @10rpm
pH	7.5-9.0

PERFORMANCE PROPERTIES

Cling Factor:
Cling factor is a measure of the ability to apply the lubricant and have it stay on the jacket while the cable enters the conduit.

A 6-inch length (152 mm) of a 1-inch (25 mm) diameter cable will hold at least 50 grams of Polywater J for one minute when held vertically at 70°F (21°C).

Coatability:
Coatability is a measure of the lubricant's ability to coat the cable jacket as a thin film for continued lubricity on longer pulls.

Polywater J will wet out evenly on cable jacket surfaces. It will not bead up or rub off the jacket sample. A 1-inch (25 mm) diameter XLPE cable dipped 6 inches (152 mm) into Polywater J, then withdrawn and held vertically, will retain at least 30 grams of Polywater Lubricant J for one minute at 70°F (21°C).

Combustibility:
Combustibility is a measure of combustion properties of the lubricant residue in a fire situation (with an impinging heat flux).

Polywater J has no flash point and its dried residue will not support combustion and spread flame. A 200-gram sample of the J Lubricant, when placed in a 1-foot, split metal conduit and fully dried for 24 hours at 105°C, will not ignite and spread a flame more than 3 inches beyond a point of ignition when subjected to a continuous heat flux of 40 kW/m^2. The total test time was one-half hour.

Test method described in "Fire Parameters and Combustion Properties of Cable Pulling Compound Residues," presented to the International Wire & Cable Symposium, 1987.

APPLICATION PROPERTIES

Application Systems:
Polywater J has a stringy gel consistency that makes it easy to lift, carry, and hand-apply.

Polywater J can also be pumped directly into the conduit or onto a cable using the drill-powered Polywater LP-D5 pump. Polywater's low-shear pump will not change the gel character of Polywater J. 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 J Front End Packs are bag packages that "prelubricate" the head end of the cable during the pull. The Front End Pack attaches to the winch line and prelubricates as it goes through the conduit. Two sizes are available to fit 2" and larger conduits.

Pull-Planner™ Tension Calculation Software is available from Polywater. Pulling tension estimations can ensure the use of appropriate pulling equipment and that the cable is installed within safe limits.

Polywater J is also available in a pourable version (lower viscosity) called Polywater PJ. Polywater PJ is primarily for use in underground work where pouring the lubricant into a cable feeder tube is a convenience.

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

Temperature Stability:
Polywater J will not phase out or separate after five freeze/thaw cycles or 5-day exposure at 120°F (50°C).

Clean-up:
Polywater J is nonstaining. Complete clean-up is possible with water.

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

DIRECTIONS FOR USE

Polywater J Lubricant can be hand-applied or pumped onto the cable as it enters the conduit. Polywater PJ is a thinner gel and can be poured.

For long pulls, place approximately two-thirds of the recommended quantity of lubricant into the conduit using the Front End Packs or by pumping.

For Front End Pack use, attach the packs of Polywater J to the winch line or pulling rope in front of the cable, using tape or cable ties. Start the pull and slit open the entire length of the pack(s) with a sharp knife as it enters the conduit.

Supplement with direct jacket lubrication as the cable enters the conduit.

Clean up by wiping off any excess lubricant with a rag.

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

Cable weight and stiffness
(Increase quantity for stiff, heavy cable)

Conduit condition
(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 specific job specification to help maintain engineering standards and ensure project integrity.

The cable pulling lubricant shall be Polywater® J Lubricant. The lubricant shall be UL (or CSA) listed. The lubricant shall contain **no** waxes, greases, silicones, or polyalkylene glycol oils. Lubricant manufacturer must provide cable manufacturer approvals upon request.

Cable jacket compatibility shall be tested by the IEEE 1210, Standard Tests for Determining Compatibility of Cable-Pulling Lubricants with Wire and Cable. It shall pass physical compatibility tests on LLDPE, XLPE, and PVC cable jacket or sheath materials. It shall not stress-crack polyethylene per ASTM Standard 1693. There shall be no significant changes in the conductive properties of XLPE and EPR semi-conducting compounds when the lubricant's effect on volume resistivity is tested according to IEEE Standard 1210.
A 200-gram sample of the lubricant, when placed in a 1-foot, split metal conduit and fully dried for 24 hours at 105 degrees C, shall not spread a flame more than three inches beyond a point of ignition at a continued heat flux of 40 kW/meter^2. Total time of test shall be one-half hour.

ORDER INFORMATION

CAT #	PACKAGE DESCRIPTION
	Regular
J-35	1-qt. squeeze bottle (0.95 liter) 12/case
J-128	1-gal. pail (3.78 liter) 4/case
J-640	5-gal. pail (18.9 liter)
J-27	1-qt. bag (0.95 liter) 12/case
J-99	1-qt. bag (0.95 liter) in a pail 16/pail
J-55	½-gal. bag (1.9 liter) 6/case
J-110	½-gal. bag (1.9 liter) in a pail 10/pail
J-DRUM	55-gal. drum (208 liter)
	Pourable
PJ-128	1-gal. jug (3.78 liter) 4/case
PJ-320	2½-gal. jug (9.6 liter) 2/case
PJ-640	5-gal. pail (18.9 liter)
PJ-DRUM	55-gal. drum (208 liter)
***Winter Grade version Polywater PJ available (WPJ)*	
	Winter Grade
WJ-35	1-qt. squeeze bottle (0.95 liter) 12/case
WJ-128	1-gal. pail (3.78 liter) 4/case
WJ-640	5-gal. pail (18.9 liter)
WJ-55	½-gal. bag (1.9 liter) 6/case
WJ-110	½-gal. bag (1.9 liter) in a pail 10/pail
WJ-DRUM	55-gal. drum (208 liter)

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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