

# Technical Talk

A PUBLICATION FOR ENGINEERS INVOLVED IN  
ELECTRICAL CABLE INSTALLATION

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## Wipe Away Live-Line Tool Performance Problems

### OSHA Regulations

OSHA Regulation 29 CFR Part 1910.269 "Electric Power Generation, Transmission, and Distribution" covers maintenance and testing procedures for live-line tool "rods, tubes, and poles", including hot sticks and non-conductive booms. The OSHA standard presents formal procedures for testing live-line tools and common sense procedures for maintaining them.

**OSHA Regulation  
29 CFR Part 1910.269**

### When "Non-Conductive" Isn't

How can a non-conductive fiberglass tool become conductive enough to pose an electrical hazard to the user? This can happen when there has been **physical damage** to the tool allowing water ingress and dielectric changes within the tool. This type of failure is not common, and is almost always indicated by clear signs of physical damage on the outside of the tool (cracked casing, deformed or popped rivet, etc.).

A more common cause of electrical failure is conductivity across the **surface** of the stick or boom. The surface can become conductive from a dirt and moisture film even when the tool itself is in satisfactory condition. The tool doesn't provide the electrical path, the contamination on the surface does.

### OSHA Inspection and Testing

To address the potential of tool damage resulting in an unsafe condition, the OSHA standard requires that the tool be removed from service and tested if any defect is found that could affect the "insulation qualities or mechanical integrity" of the tool. The burden of deciding when such a defect is present is placed on the user, who must **inspect the tool before use**. At a minimum, tools must be removed from service and tested electrically every two years.

## Daily Maintenance

### IEEE Guide for In-Service Maintenance and Electrical Testing of Live-Line Tools

To address the issue of dirt and surface contamination, the OSHA regulation requires that the tool be **wiped clean** (as well as inspected) each day before use. It's clearly the intent of this requirement that the cleaning wipe will remove any dirt, moisture, etc. What kind of cleaner will remove surface contamination, without damaging the tool or affecting its surface?

## Cleaners

Wiping a stick with a dry rag or a silicone-treated dry cloth doesn't really clean. It pushes around the surface dust, but does not dissolve and remove grease-like dirt. To thoroughly clean a stick or other tool requires a liquid cleaner designed to dissolve and lift grease and other dirt without affecting the gel coat or stick surface. Cleaners containing surfactants (like household cleaners) *should not* be used on live-line tools, since they can leave a surfactant residue unless thoroughly rinsed. Their residue actually causes water to wet out as a film on the stick! Abrasive or pumice cleaners are also not appropriate, and will destroy the surface gloss on the stick.

A number of medium strength, no-residue solvents have been found satisfactory for stick cleaning use. These cleaners include alcohols, other oxygenated solvents, paraffinic hydrocarbons, and mixtures of these materials.

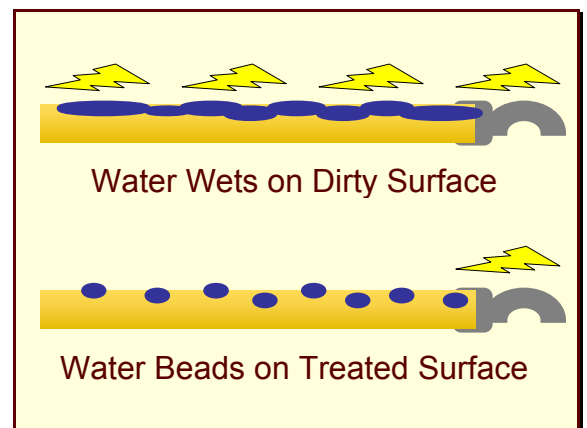
From a practical standpoint, the cleaner must **evaporate quickly** once the cleaning is done. It is not appropriate to use a tool while it is still "wet" with any cleaner. While high flash hydrocarbon solvents can be successfully used to clean sticks, it's often necessary to stand around and wait for the solvent to evaporate. The cleaner in American Polywater's **S-1 Hot Stick Wipe** is a fast-evaporating solvent that cleans the stick and quickly disappears.

### Too Clean?

But simply "cleaning" the tool is not the whole answer. To understand this, we must look at the real culprit in surface conductivity on these tools. It's water! When tested, dirty sticks rarely fail at the 75,000 volts/ft test condition when dry. **They fail when wet!** Besides attracting moisture, surface dirt provides a way for the water to wet out into a continuous film. It's the continuous film of water that causes the electrical failure.

So, with a good cleaning that removes all contaminants, we eliminate the problem, right? Not necessarily. An ultra clean surface will also "sheet" water, so even a clean stick can still conduct over its surface in wet conditions (drizzle, fog, etc.).

The fiberglass surface needs a water-repellent treatment, one that makes water bead up, so there is no continuous film to provide a tracking path. Wax, silicone, or fluorocarbon treatments have been repelling water on clothes, boots, autos and live-line tools for years. But two steps - first to clean and then to treat - are too slow for daily maintenance and can cause a buildup of wax or other treatment.



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## All In One Wipe



**Hot Stick Wipe (S-1)  
Cleans and Treats**

**American Polywater's Hot Stick Wipe (S-1)** is a true **dual-purpose** wipe. Besides cleaning with a fast evaporating cleaner, the S-1 Wipe also leaves a treatment on the surface that repels and beads water. A wipe with the S-1 cleans and treats at the same time, in only a few seconds. After a brief dry time, the stick is ready to use.

The S-1 is designed for daily use. The water-repellent treatment *does not* build up over time. The treatment *does not* leave an oily film to attract dirt, and *does not* require buffing or shining.

The use of the S-1 dual-purpose wipe is as easy as it sounds. For dirtier tools, it may take a few wipes and some "elbow grease" to get them clean. The wiping cloth is both durable and non-linting, and does not tear or shred.

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## Waxing Still Appropriate

The S-1 Wipe does not replace the occasional heavy-duty cleaning and waxing of a stick or boom. The daily wipe complements such waxing, and it's okay to wipe a waxed tool with the S-1. For easy waxing of a stick or boom, American Polywater makes the **W-1 Fiberglass Wax & Buff Kit**. This kit has everything ready to go. There's a lint free wipe saturated with a fast hazing, fiberglass wax plus a soft, lint-free towel for buffing the wax to a shine. The wax is easy to apply and is quickly buffed to a durable, water repellent surface. For larger jobs, the wax is also available in pints (cat # W-16).



**W-1 Fiberglass  
Wax & Buff Kit**

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## Boom and Fleet Maintenance



**Boom Wipe cleans many  
types of grimes.**

Boom Prewash is an effective cleaner for grease, tar, creosote, salt spray, hydraulic fluid, pine pitch and general road debris. Boom Prewash replaces acetone without the flammability. The cleaner is water soluble, and washes off during subsequent water rinsing. Boom Prewash does not adversely affect the gel coat on the boom. It is available in two convenient packages:

**Boom Prewash Towel:** A large, single prewash towel (24 X 24) in a convenient presaturated package. The towel material is a strong, non-linting material to last during extended cleaning and maintenance.



**Boom Prewash Multi-Wipe Canister.** This convenient package is *now available* for the Boom Prewash. The canister offers a less expensive alternative to the single towel for larger jobs or regular fleet maintenance.

Canister has pop-up convenience, and reseals for easy bench top storage. Each canister contains 72 heavy duty towels (10 X 12) with a textured side for scrubbing and removing grimes and a soft side for a finishing wipe.



**B-D72 Boom Canister  
contains 72 towels**

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### **Samples and Literature Available**

If you would like to receive literature or samples of any of these products, please call American Polywater's customer service at **1-800-328-9384** or **1-651-430-2270**.

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