

Kerite PILC Replacement Cable

Background

Most large North American urban centers still contain some form of paper insulated, lead covered (PILC) cables in their underground network power system. The introduction of these types of cables goes back to the early 1900s, making some of the first cables installed over 90 years old.



The EPA has been encouraging utilities to get PILC cable out of the ground as soon as possible. There are many problems to be dealt with when deciding to remove PILC type cables. Often the original ducts have shifted, or been crushed or misaligned, and the cable is jammed inside. The cable may have bends within the ducting, which will not easily straighten out when being

pulled. Most often the PILC cable diameter is such that even with removal from the duct, many replacement cables are too large to be installed in the old duct. This is because most of the PILC cable is compact, three-conductor sectored cable where a three-conductor round cable, even of the same conductor size, is larger in diameter.

However, because of the high cost of duct replacement in urban areas, most utilities try to use an existing duct where it is in good condition after removal of the PILC cable. In order to get the maximum current carrying cable in the minimum diameter, custom cable designs are required.

The Kerite Solution

Like all Kerite cable, our PILC replacement product offers excellent reliability and a proven track record. They are specifically designed for compatibility with 3, 3-1/2, 4 and 5-inch duct systems installed in the early 1900s. Because PILC cables represent some of the oldest cable installations and sectored conductor designs, they cannot always be replaced by standard designs. In order to get replacement cable in the existing ducts, it is frequently necessary that cable cross-sectional dimensions be reduced.

This is done by using compact copper conductor and flat-strap neutral wires. If this is not sufficient, the layers have to be reduced. Since installation is being made in old ducts that may be damaged

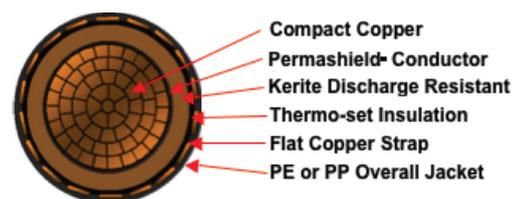
or have misaligned sections, reducing the jacket thickness could lead to cable damage on installation. The option is to reduce the insulation thickness. Because of the enhancement that Kerite's Permashield provides to the overall dielectric performance of the cable, we are able to reduce insulation thickness and still maintain cable performance.

Kerite Replacement Design

Kerite single-conductor and three-conductor compact round power cables are designed to be a direct replacement for PILC cables. Both Kerite single-conductor and three-conductor cable constructions start with a compact-round conductor that results in an 8 percent to 10 percent diameter reduction over full round conductors. The "Insulation System" is composed of the time-proven Permashield®, conductor stress control layer, and our exclusive Kerite EP discharge resistant primary insulation. This system allows for reduced insulation thickness (15kV - 140 mils, 25kV - 210 mils, 35kV - 278 mils).

The single conductor designs have a flat-strap concentric neutral and a linear low density polyethylene jacket. An optional high temperature polypropylene jacket is also offered. The three conductor cable design options are either three cabled singles or three cables with a 5 mil copper tape applied over the thermo-set insulation shield, cabled with optional neutrals and fillers, and an overall polyethylene jacket.

Typical single-conductor construction of Kerite PILC replacement cable:



Kerite PILC Replacement Cable Benefits

- No lead, no oil — Lead sleeve not required
- Labor savings — Standard line person skills required
- Installation — 30 percent lighter per foot (longer, easier pulls)
- Kerite system provides the same long life as the original PILC cable