



Out of the Frying Pan and onto the Cable

Teflon® and Other Fluoropolymers

Teflon, a product developed by DuPont® and a common coating on cookware, is one of a group of compounds known as fluoropolymers. Fluoropolymers are fluorocarbon-based polymers with multiple strong carbon–fluorine bonds.

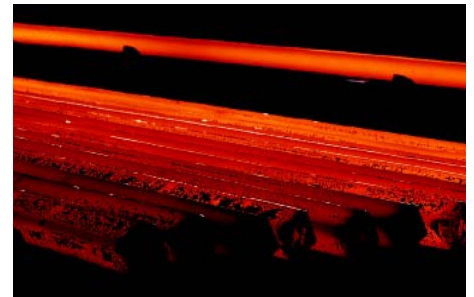
Teflon FEP—a different grade than the product used on cookware—and other fluoropolymers possess special electrical properties and have a high resistance to solvents, acids and bases. These and other characteristics make fluoropolymers ideal materials for use in the manufacture of wire and cable products.

Fluoropolymers

- Withstand temperature extremes
- Are highly resistant to attack from a wide range of chemicals
- Have excellent electrical characteristics, especially at high frequencies
- Are exceptionally water resistant
- Are extremely resilient against physical stress

Northwire uses melt-processable fluoropolymers that can run through an extruder for application to copper wire or be used in cable jackets. These fluoropolymers include:

- Teflon®** FEP
- Teflon PFA
- Tefzel®***
- Halar®*** ECTFE



Teflon FEP – insulator for thin walls

Teflon FEP is an electrical insulation component used to produce conductors of very thin wall dimensions. FEP has an excellent temperature range of use (-80°C to +200°C) and an extremely low dielectric constant—in the range of 2.1 for solid FEP. It also retains its outstanding electrical properties into the high-frequency RF spectrum.



Teflon PFA – insulator for temperature extremes

Teflon PFA is similar to FEP but withstands even greater temperature extremes (-200°C to +260°C). PFA also has a slightly lower dielectric constant — 2.06 in solid form.

Tefzel ETFE – robust jacketing material

Tefzel ETFE is a tough-as-nails plastic material useful for covering electrical wiring exposed to high-stress, low-fume toxicity and high-reliability applications. Tefzel's corrosion resistance has made it appropriate for aircraft wiring and as a laminate film for structural domes, such as the Water Cube at the 2008 Beijing Olympics.

Halar ECTFE – friction-resistant, stable insulator

Halar is an effective electrical insulator used to minimize wear in high-friction applications that require dimensional stability. Halar has high resistivity and a low dielectric constant. Typical applications include bearings, cams, valve seats and semiconductor tooling. Halar is expensive and, in most applications, Teflon or Tefzel are acceptable substitutes.



Other reference sources available for obtaining technical data on these compounds include a downloadable brochure available at www.northwire.com.

Remember fluoropolymer insulations and jacketing from Northwire when you face high or low temperature extremes or need special electrical properties. For personal service and expertise, contact Northwire, 1.800.468.1516, +1 715.294.2121 or cableinfo@northwire.com.

**Teflon is a registered trademark of DuPont. Northwire uses the name under license.*

***Tefzel is a registered trademark of DuPont.*

****Halar is a registered trademark of Solvay Solexis, Inc.*

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