TEKNOR APEX

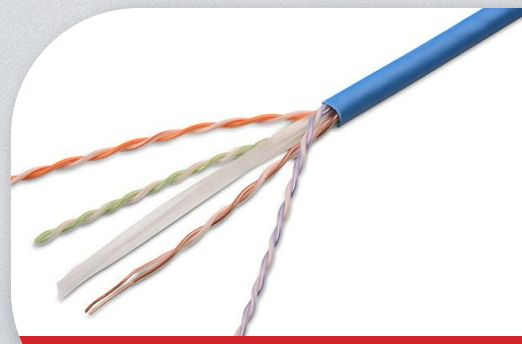
*Compounding Creativity with Technology*

# FireGUARD®

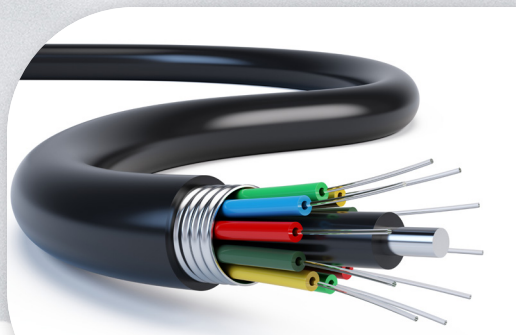
PLENUM CABLE COMPOUNDS

## Low Smoke, Flame Retardant Flexible PVC Compounds

with Dielectric Characteristics Suitable for High Speed Data Transmission

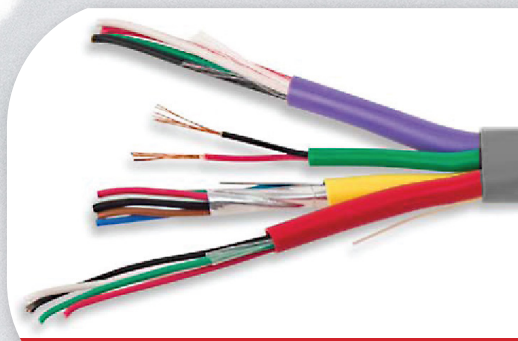


Copper Data Cables



Fiber Optic Cables

Specialty Cables



Security Cables

**FireGUARD compounds are cost-effective performance alternatives to fluoropolymers:**

- Up to 105°C rating
- Indoor/outdoor capable – sunlight and fungus resistant options available
- Designed to enable cables to comply with NFPA 262

# When you select a FireGUARD® compound, you get unparalleled performance for meeting plenum (air handling space) cable requirements.

These specialty compounds, developed as extremely cost-effective alternatives to fluoropolymers, provide low smoke generation and low flame propagation performance for cables subjected to large scale flame testing. Cables produced with FireGUARD® compounds have met and exceeded all applicable performance testing requirements of UL Subjects 13, 1424 and 444 including those of NFPA 262 for Flame Travel and Smoke.

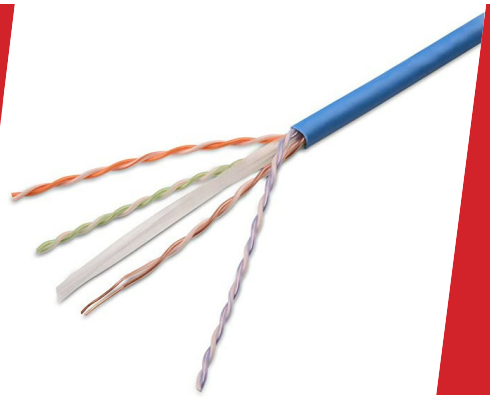
These cables are also more flexible than fluoropolymer jacketed cables due to the lower flexural modulus of FireGUARD® compounds when compared to fluoropolymers, making them the preferred choice of electricians as they are easier to install in tight plenum spaces. All FireGUARD® products are UL Recognized Plenum Cable Compounds under UL category QMTM2.

It is important to note that FireGUARD® compounds can be processed on standard PVC extrusion equipment, having been successfully extruded at speeds up to 900 meters per minute for insulation of Type CMP cables, at thicknesses as low as 0.15 mm and up to 450 meters per minute for fiber optic tight buffer of Type OFNP cables. These compounds have proven themselves to be extremely process worthy providing a broad operating window.

FireGUARD® compound jacketed cables are used in data centers, wireless infrastructure for buildings and campuses, 5G wireless connectivity infrastructure as well as security systems and various proprietary applications. They can be customized for outdoor applications to be sunlight and fungus resistant and provide better low temperature performance.

**When selecting a compound for plenum cable application, choose a state-of-the-art FireGUARD® compound from our extensive product portfolio!**

# COPPER DATA CABLES

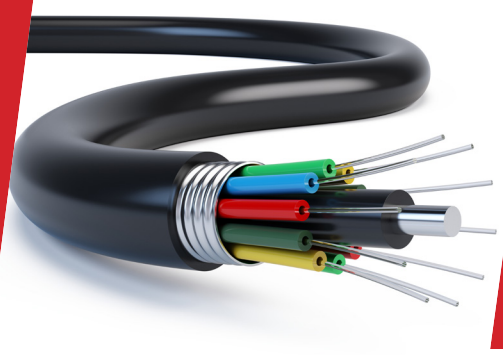


- Broad selection of jacket compounds which can be used over numerous cable core designs ranging from all pairs FEP insulation to 3 x 1, 2 x 2 and dual layer insulations as well as non-fluoropolymer 0 x 4 constructions
- Resists kinks and knuckling during installation

| Compound Property | Test Method | FG 910A-10-NL2 | FG 910A-20-NL | FG 910A-26-NL | FG 910A-34-NL |
|---|---|---|---|---|---|
| | | Cat 5/6 UTP | Cat 6/6A UTP | Cat 5/6 Hybrid UTP | Cat 6/6A Hybrid FTP |
| Temperature Rating, °C | ASTM D794 | 75 | 75 | 75 | 75 |
| Shore Hardness, delayed | ASTM D2240 | 87 C | 85 C | 89 C | 85 C |
| Specific Gravity | ASTM D792 | 1.59 | 1.61 | 1.63 | 1.66 |
| Tensile Strength, MPa | ASTM D638 | 17.9 | 15.9 | 16.6 | 18.4 |
| Tensile Elongation, % | ASTM D638 | 200 | 235 | 195 | 250 |
| Brittleness Temperature, °C | ASTM D746 | -4 | -10 | -11 | -6 |
| Oxygen Index, % | ASTM D2863 | 47 | 49 | 51 | 53 |
| Cone Calorimeter @ 75 kW/m$^2$ | ISO 5660 | | | | |
| Peak Heat Release Rate (kW/m$^2$) | | 108 | 111.3 | 114 | 139.2 |
| Average Heat Release Rate (kW/m$^2$) | | 65 | 62.1 | 70 | 63.6 |
| Average Heat of Combustion (MJ/kg) | | 10.2 | 11.8 | 12.0 | 11.6 |
| Peak Smoke (1/m) | | 2.5 | 1.63 | 1.6 | 1.50 |

| Compound Property | Test Method | FG 910A-47-NL | FG 910A-86-NL | FG 910A-93-NL | FG 910B-01-NL |
|---|---|---|---|---|---|
| | | Cat 6/6A Hybrid UTP | Cat 6/6A PoE | Cat 6/6A FEP core for increased flexibility | Cat 5/6 w/ bio content |
| Temperature Rating, °C | ASTM D794 | 90 | 105 | 90 | 75 |
| Shore Hardness, delayed | ASTM D2240 | 86 C | 60 C | 83 C | 84 C |
| Specific Gravity | ASTM D792 | 1.66 | 1.55 | 1.59 | 1.60 |
| Tensile Strength, MPa | ASTM D638 | 16.8 | 18.0 | 16.6 | 14.6 |
| Tensile Elongation, % | ASTM D638 | 190 | 370 | 250 | 250 |
| Brittleness Temperature, °C | ASTM D746 | -5 | -19 | -5 | -6 |
| Oxygen Index, % | ASTM D2863 | 54 | 41 | 51 | 48 |
| Cone Calorimeter @ 75 kW/m$^2$ | ISO 5660 | | | | |
| Peak Heat Release Rate (kW/m$^2$) | | 106 | 144.9 | 94.9 | 100.6 |
| Average Heat Release Rate (kW/m$^2$) | | 55 | 86.8 | 62.9 | 59.3 |
| Average Heat of Combustion (MJ/kg) | | 10.9 | 10.0 | 10.7 | 12.5 |
| Peak Smoke (1/m) | | 1.43 | 1.8 | 2.05 | 1.2 |

# FIBER OPTIC CABLES



- Suitable for use in a variety of cable designs starting with simplex and duplex to distribution and breakout cables which can contain tight buffered, loose tube, ribbonized or unbuffered optical fibers
- Enables easy stripping and terminating

| Compound Property | Test Method | FG 910A-18 NL | FG 910A-26 UVF-NL | FG 910A-34 UVF-NL | FG 910A-74 NL |
|---|---|---|---|---|---|
| | | Tight Buffer / Low Fiber Count Jacket | Breakout Cable | Loose Tube / Tight Buffer Indoor/Outdoor Jacket | Central Tube/Jacket over Armor |
| **Temperature Rating, °C** | ASTM D794 | 90 | 75 | 75 | 75 |
| **Shore Hardness, delayed** | ASTM D2240 | 85 C | 89 C | 83 C | 85 C |
| **Specific Gravity** | ASTM D792 | 1.60 | 1.61 | 1.66 | 1.65 |
| **Tensile Strength, MPa** | ASTM D638 | 15.2 | 16.6 | 15.2 | 14.4 |
| **Tensile Elongation, %** | ASTM D638 | 225 | 210 | 230 | 230 |
| **Brittleness Temperature, °C** | ASTM D746 | -11 | -6 | -5 | -13 |
| **Oxygen Index, %** | ASTM D2863 | 49 | 51 | 49 | 54 |
| **Cone Calorimeter @ 75 kW/m²** | ISO 5660 | | | | |
| Peak Heat Release Rate (kW/m²) | | 132.5 | 119.3 | 117.5 | 80.6 |
| Average Heat Release Rate (kW/m²) | | 68.4 | 59.3 | 62.5 | 41.2 |
| Average Heat of Combustion (MJ/kg) | | 11.7 | 10.9 | 11.0 | 9.4 |
| Peak Smoke (1/m) | | 2.3 | 1.6 | 1.54 | 0.78 |

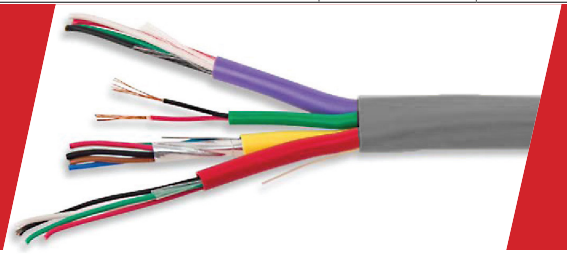
| Compound Property | Test Method | FG 910A-48 NL | FG 910A-62 NL | FG 910A-71 NL | FG 910A-80 UVF-NL |
|---|---|---|---|---|---|
| | | High Density Fiber Jacket for Data Centers | | | Loose Tube / Tight Buffer Indoor/Outdoor Jacket |
| **Temperature Rating, °C** | ASTM D794 | 75 | 75 | 75 | 75 |
| **Shore Hardness, delayed** | ASTM D2240 | 85 C | 81 C | 86 C | 82 C |
| **Specific Gravity** | ASTM D792 | 1.70 | 1.68 | 1.75 | 1.63 |
| **Tensile Strength, MPa** | ASTM D638 | 15.7 | 15.2 | 17.1 | 14.8 |
| **Tensile Elongation, %** | ASTM D638 | 230 | 220 | 260 | 210 |
| **Brittleness Temperature, °C** | ASTM D746 | -9 | -13 | -5 | -17 |
| **Oxygen Index, %** | ASTM D2863 | 51 | 60 | 60 | 52 |
| **Cone Calorimeter @ 75 kW/m²** | ISO 5660 | | | | |
| Peak Heat Release Rate (kW/m²) | | 101 | 70.2 | 43.8 | 118.0 |
| Average Heat Release Rate (kW/m²) | | 51.0 | 32.0 | 32.6 | 64.7 |
| Average Heat of Combustion (MJ/kg) | | 9.4 | 7.2 | 5.8 | 12.4 |
| Peak Smoke (1/m) | | 0.87 | 0.75 | 1.0 | 1.3 |

## SPECIALTY CABLES

- Breadth of the FireGUARD® portfolio of compounds enables use for diverse applications

| Compound Property | Test Method | FG 910A-12 NL | FG 910A-17 NL | FG 910A-20 UV-NL | FG 910A-60 NL |
|---|---|---|---|---|---|
| | | Audio/Video Cable | Class 4 Cable | Power Cable for Outdoor Signage | Coaxial Cable |
| **Temperature Rating, °C** | ASTM D794 | 75 | 75 | 90 | 75 |
| **Shore Hardness, delayed** | ASTM D2240 | 88 C | 85 C | 85 C | 85 C |
| **Specific Gravity** | ASTM D792 | 1.60 | 1.60 | 1.61 | 1.68 |
| **Tensile Strength, MPa** | ASTM D638 | 16.5 | 17.9 | 15.9 | 16.9 |
| **Tensile Elongation, %** | ASTM D638 | 240 | 160 | 240 | 230 |
| **Brittleness Temperature, °C** | ASTM D746 | -10 | -4 | -10 | -7 |
| **Oxygen Index, %** | ASTM D2863 | 48 | 49 | 49 | 53 |
| **Cone Calorimeter @ 75 kW/m²** | ISO 5660 | | | | |
| Peak Heat Release Rate (kW/m²) | | 109 | 115 | 111.3 | 102.6 |
| Average Heat Release Rate (kW/m²) | | 70 | 72 | 62.1 | 53.9 |
| Average Heat of Combustion (MJ/kg) | | 78 | 10.0 | 11.8 | 10.21 |
| Peak Smoke (1/m) | | 1.77 | 1.8 | 1.63 | 0.87 |

## SECURITY CABLES



- Lower flexural modulus of jacket compounds makes multi-component cables more flexible which are easier to install

| Compound Property | Test Method | FG 910A-12-NL | FG 910A-48-NL | FG 910A-17-NL |
|---|---|---|---|---|
| | | Access Control | | Fire Alarm |
| | | Inner Jacket | Outer Jacket | Insulation \| Jacket |
| **Temperature Rating, °C** | ASTM D794 | 75 | 75 | 75 |
| **Shore Hardness, delayed** | ASTM D2240 | 88 C | 85 C | 85 C |
| **Specific Gravity** | ASTM D792 | 1.60 | 1.70 | 1.60 |
| **Tensile Strength, MPa** | ASTM D638 | 16.5 | 15.7 | 17.9 |
| **Tensile Elongation, %** | ASTM D638 | 240 | 230 | 160 |
| **Brittleness Temperature, °C** | ASTM D746 | -10 | -9 | -4 |
| **Oxygen Index, %** | ASTM D2863 | 48 | 51 | 49 |
| **Cone Calorimeter @ 75 kW/m²** | ISO 5660 | | | |
| Peak Heat Release Rate (kW/m²) | | 109 | 101 | 115 |
| Average Heat Release Rate (kW/m²) | | 70 | 51 | 72 |
| Average Heat of Combustion (MJ/kg) | | 78 | 9.4 | 10.0 |
| Peak Smoke (1/m) | | 1.77 | 0.87 | 1.8 |

Vinyl Manufacturing Sites

## About Teknor Apex

The Teknor Apex Company, a privately-owned company founded in 1924, is one of the world's leading customer-specific plastic compounders. Teknor Apex produces flexible and rigid vinyl, thermoplastic elastomers, polyamides, specialty compounds, color masterbatches, chemicals and garden hoses.

The company is based in Pawtucket, RI, USA. It operates fourteen production plants worldwide: in the United States, Belgium, Germany, China and Singapore.

## Industries Served

BUILDING & CONSTRUCTION

CONSUMER PRODUCTS

ELECTRICAL & ELECTRONICS

INDUSTRIAL

MEDICAL

PACKAGING

TRANSPORTATION

## Contact Teknor Apex to begin customizing your solution today.


vinyl@teknorapex.com

800-554-9892

**www.teknorapex.com**

**Americas**
505 Central Avenue
Pawtucket
Rhode Island 02861
+1-401-725-8000

**Europe**
Umonderbaan 22
6167RD Geleen
Netherlands
+31-46-7020950

**Asia**
41 Shipyard Road
Singapore 628134
+65-6265-2544



The information and recommendations contained in this bulletin are, to the best of our knowledge, accurate and reliable but no guarantee of their accuracy is made. All products are sold upon conditions that purchasers shall make their own tests to determine the suitability of such products for their particular purposes and uses and purchaser assumes all risks and liability for the results of use of the products, including use in accordance with seller's recommendations. Nothing in this bulletin constitutes permission or a recommendation to practice or use any invention covered by any patent owned by this company or by others. There is no warranty of merchantability and there are no other warranties for the products described. For detailed Product Stewardship information, please contact us. Any product of Teknor Apex, including product names, shall not be used or tested in any medical or food contact application without the prior written acknowledgement of Teknor Apex as to the intended use. Please note that some products may not be available in one or more countries.

© **2022 Teknor Apex Company.** All rights are reserved.


TEKNOR APEX