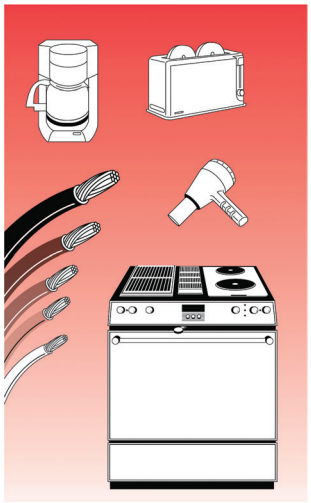
Tefzel™ ETFE 750

Fluoroplastic Resin

200 °C (392 °F)

Product Information



Tefzel™ fluoroplastic resin, a close relative of Teflon™ fluoroplastic resin, was introduced in 1972. It has been used to insulate many millions of feet of cable for aircraft and other aerospace vehicles, rapid transit cars, computers, automobiles, factories, heating piping systems, and nuclear power plants. Now, a special grade of Tefzel™ resin is available to provide this proven performance for 200 °C (392 °F) appliance wire.

UL and CSA Ratings

UL Subject 758 and CSA 210 rated at 200 °C (392 °F):

- UL Style 10109 for 300V
- UL Style 10086 for 600V

Styles 10109 and 10086 are UL-approved for bare copper conductors at 200 °C (392 °F), as long as the individual strand diameter is 15 mil and larger.

Advantages of Tefzel™ ETFE 750

- Easily stripped and terminated
- Unlike SF2 and SF1, it is so tough it doesn't need a protective glass braid. Eliminating the glass braid means:
  - No irritating glass fibers
  - No glass strands to make terminations unreliable
  - Less stripping die wear
  - No braid to damage; thus, spoiling wire
  - No lacquers to smoke, crack, or turn brown with heat aging
- Superior fire resistance, thermal stability, and resistance to aging
- Colorable, printable, and strippable
- A pure polymer; not a compound with inconsistent composition and performance

Cost-Effectiveness

- Single thin-wall extrusion, 40% smaller OD than SF2
- Compatible with bare copper conductor per UL requirement; expensive plated conductor not required

Tefzel™ ETFE 750 vs. Other Grades of Tefzel™ ETFE

- Tefzel™ ETFE 750 has 200 °C (392 °F) thermal rating for appliance wire, while all other grades are lower.
- Tefzel™ ETFE 750 is more flexible than the other grades; for example, flexural modulus for Tefzel™ ETFE 750 is 641.1 MPa (93,000 psi) vs. 1,171.9 MPa (170,000 psi) for Tefzel™ ETFE 200.

Chemours™

Performance Test Results

Cold Bend Test (4 hr at -35 °C [-31 °F])	No cracks
Flexibility After All Oven Aging	No cracks
Conductor Corrosion After All Oven Aging	None
Impact (15 mil)	2 ft lb
Insulation Resistance (UL62)	43,000 ohm·10^6
Horizontal Flame Test (UL62)	Complies
Vertical Flame Test (UL62)	Complies

Other Properties of Tefzel™ ETFE 750

Flexural Modulus (ASTM D790)	641.1 MPa (93,000 psi)
Specific Gravity (ASTM D792)	1.75–1.79
MIT Flex Life	120,000

Temperature	Tensile Strength (ASTM D1708)	Elongation (ASTM D1708)
23 °C (73 °F)	37.9 MPa (5,500 psi)	300%
140 °C (284 °F)	11.4 MPa (1,650 psi)	600%
160 °C (320 °F)	8.6 MPa (1,250 psi)	650%
180 °C (356 °F)	6.2 MPa (900 psi)	600%
200 °C (392 °F)	3.4 MPa (500 psi)	600%

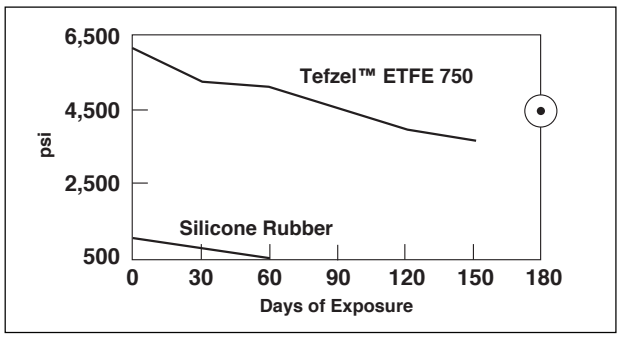
Tefzel™ ETFE 750 meets the requirements of ASTM D3159, Type II, Grade 1

Wire Harness Manufacturing Tips

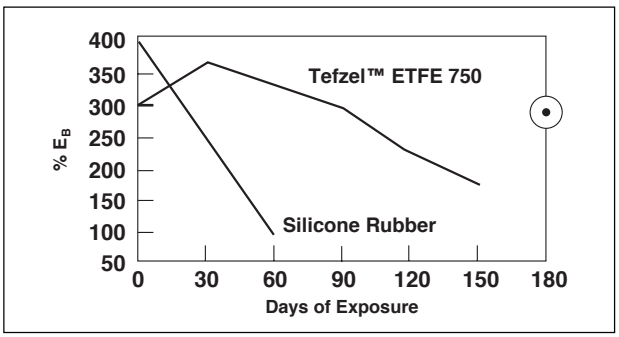
- Stripping: Use automated or manual machines with stripping die blades or with radial V-blades.
- Termination: AMP Inc. has designed Faston* terminals sized especially for Tefzel™ ETFE 750. Part numbers:
  61375-1 tin-plated brass (cold side)
  63688-1 nickel-plated steel (hot side)
  Terminals designed for silicone-coated wire can also be used.
- Hot Stamp Printing: Use printing foils designed for Tefzel™ resin, such as Kingsley Machine Inc. K-520 foil. Use temperatures between 163 °C (325 °F) and 204 °C (400 °F) with moderate dwell and pressure.
- Inks: Use inks recommended specifically for Tefzel™ resin. These are obtainable from many sources, including:
  Gem Gravure — Formulabs
  Colorant AB — Standard T Chemical
  American Can Co.
- Packaging: To prevent wire-curl and its associated handling problems, request put-ups in drums or spools with large diameter barrels (cores).

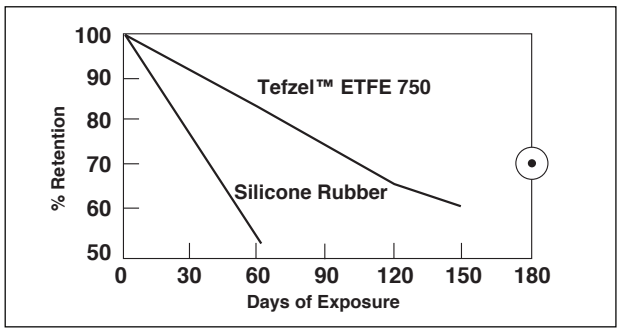
Tefzel™ ETFE 750—UL Thermal Studies, Style 10086—Exposure Temperature 210 °C (410 °F)

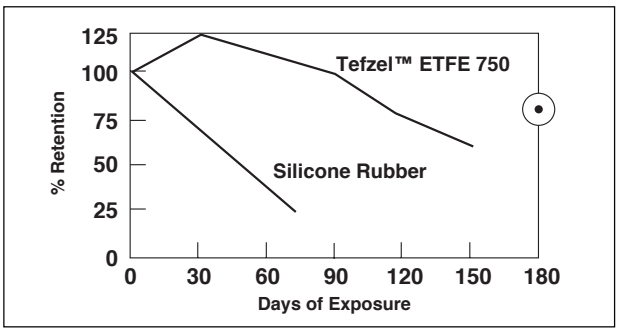
Tensile Strength, T_B



Elongation, E_B



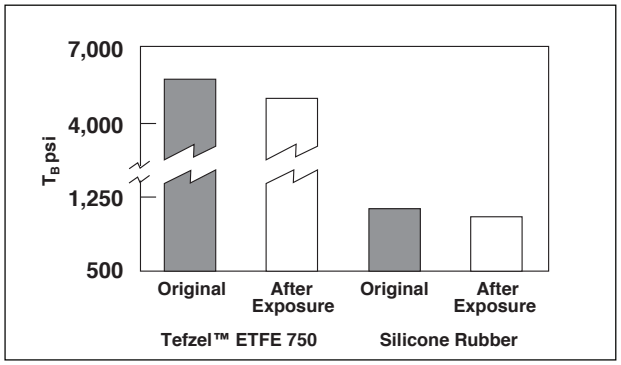




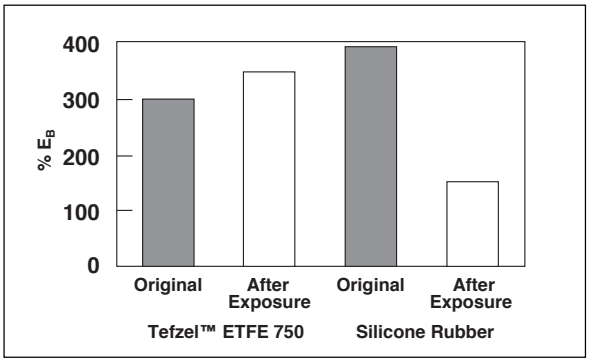
Silicone rubber—literature value 180-day data—Chemours tests

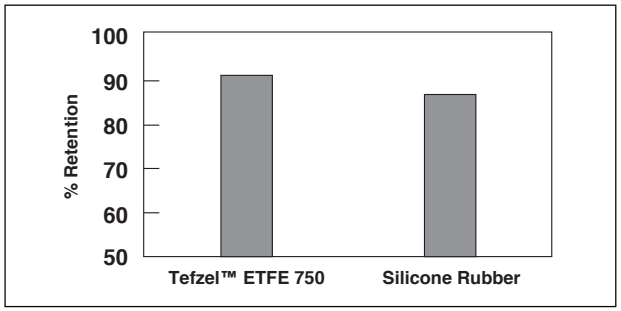
Tefzel™ ETFE 750—UL Thermal Studies, Style 10086—Exposure Temperature 232 °C (450° F), 7 Days

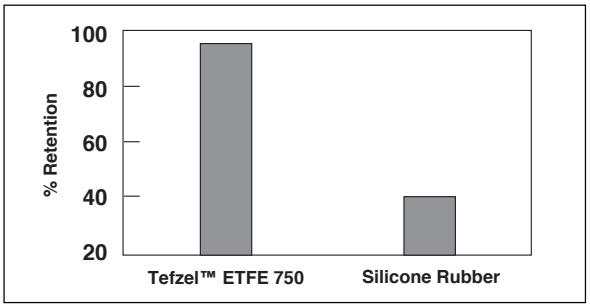
Tensile Strength, T_B



Elongation, E_B

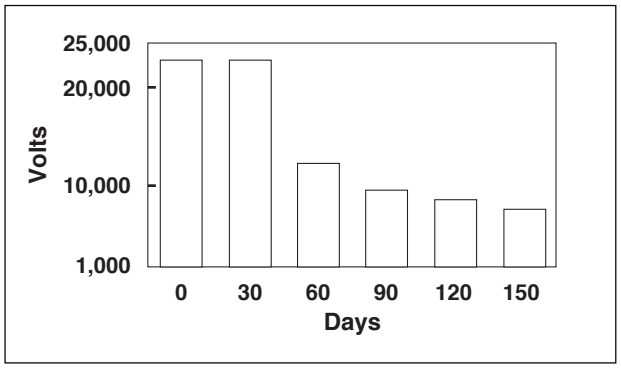


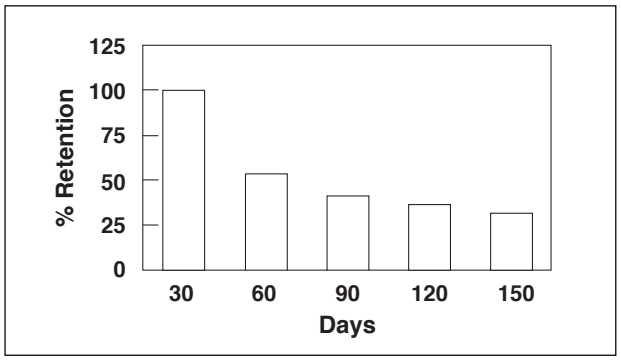




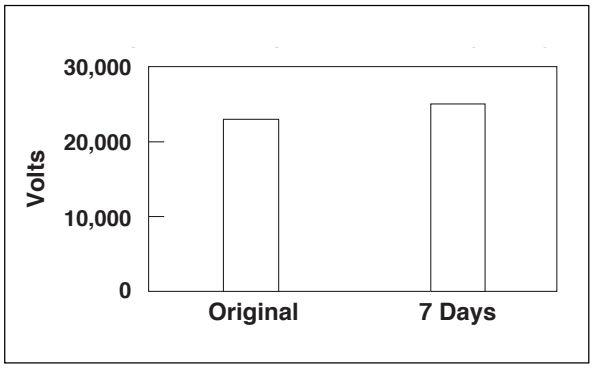
Tefzel™ ETFE 750—UL Thermal Studies, Style 10086—Dielectric Strength

Exposure Temperature, 210 °C (410 °F)





Exposure Temperature, 232 °C (450 °F)



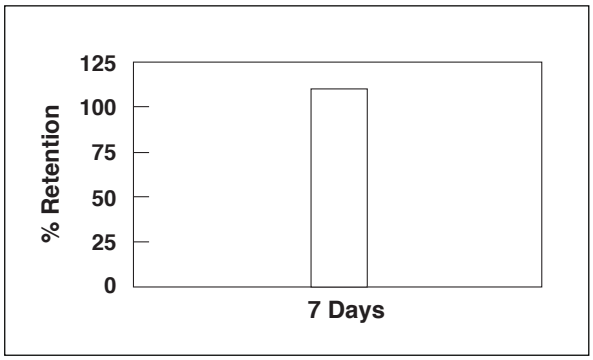


Table 1.Test Results for 18 Gauge Appliance Wire Construction with Various Insulation

Wire	Voltage	Nominal Insulation Thk., mm (mil)	Deformation, % 232 °C (450 °F), 1 hr, 1 kg Load UL-1581[a]	Crush, lb UL-44	Abrasion, Cycles kg Load, 0.026² Needle GE Scrape Abrader	Linear Coefficient of Expansion[b] cc/sec/°C
UL-10086 (TFZ 750)	600	0.254 (10)	95	1,172	3,625	—
PVC	600	0.813 (32)	—	775	2,160	—
XLPE 125 °C (257 °F)	600	0.813 (32)	—	886	2,070	11.5×10^{-4}
XLPE 150 °C (302 °F)	600	0.813 (32)	—	810	1,925	—
SF2	600	0.813 (32) + glass braid	98	1,248	85[c]	8.6×10^{-4}
UL-1330 (FEP)	600	0.533 (21)	98	1,926	3,290	—
UL-1332 (FEP)	300	0.330 (13)	97	973	2,670	—
UL-10109 (TFZ 750)	300	0.152 (6)	98	993	2,960	$13–14 \times 10^{-5}$

[a] UL-1581 requires 500 g load
[b] Published data
[c] Braid removed