Material Introduction

ECTFE Polymer

ECTFE – Ethylene Chlorotrifluoroethylene

Overview-

ECTFE, or ethylene chlorotrifluoroethylene, is a popular material selection for protecting wires and cables in automotive and aerospace applications. This fluoropolymer offers good performance at a competitive price. Excellent chemical and permeation resistance are noteworthy attributes of ECTFE.

Zeus produces ECTFE in extruded tubing and drawn fiber. The aerospace industry utilizes drawn fiber as it has good durability and a wide working temperature range of -70°C to 150 °C (-94 °F to 302 °F). Products made from ECTFE also have good impact resistance and dielectric strength.

**Halar® is a registered trademark of Solvay.*

*ECTFE (also known as *Halar®) is ideal for use in aerospace applications such as wire harness due to its cost-to-performance ratio.*

APPLICATIONS

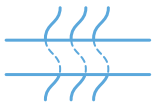
- Durable tubing for chemical transfer
- Drawn fiber for braiding provides excellent abrasion resistance
- Popular choice for applications requiring excellent barrier resistant properties

AVAILABLE PRODUCTS

- Extruded Tubing
- Drawn Fiber

QUICK SUMMARY OF PROPERTIES

- Low permeability
- Chemically resistant
- Gamma and e-beam sterilizable
- Superior durability
- Good impact resistance



GAS PERMEATION

CHEMICAL RESISTANCE

HARDNESS

ECTFE

The information presented in this publication is believed to be accurate and is not intended to constitute a specification. Property characteristics are dramatically impacted by geometry and processing method, thus properties of extruded parts may vary. In some instances, data may not be available for publication and will be notated as "na" where applicable.

These tables are meant to serve as a general guideline only. Users should evaluate the material to determine suitability for their own particular application.

PHYSICAL	ASTM	ECTFE
Density (g/cm^3)	D792	1.68
Water Absorption (%)	D570	< 0.1
Oxygen Index (%)	D2863	52

MECHANICAL	ASTM	ECTFE
Hardness, Shore D	D2240	75
Ultimate Tensile Strength (MPa)	D638	54
Elongation at Break (%)	D638	250
Modulus of Elasticity (MPa)	D638	1655
Flexural Modulus (MPa)	D790	1690
Coefficient of Friction	D1894	0.2

ELECTRICAL	ASTM	ECTFE
Volume Resistivity (Ω - cm)	D257	5.5 x 10^{16}
Dielectric Constant 1 MHz	DIN 53483	2.57
Dielectric Strength (V/mil)	D149	350

THERMAL	ASTM	ECTFE
Thermal Conductivity (W/m - K)	C177	0.15
Maximum Service Temp, Air (°C)	na	150
Melt Temp (°C)	D3418	242
Coefficient of Thermal Expansion, Linear 20° (µm/m-°C)	D696	100