

PVDF (Polyvinylidene Fluoride) Material Properties Data Sheet

Comprehensive Technical Data for PVDF Fluoropolymer

Introduction

This technical data sheet provides comprehensive physical, mechanical, thermal, and electrical properties of PVDF (Polyvinylidene Fluoride). PVDF is a highly crystalline fluoropolymer known for its excellent chemical resistance, UV stability, and piezoelectric properties. It offers a unique combination of properties that make it suitable for diverse applications in chemical processing, electronics, architecture, and water treatment.

Material Properties

Property	Typical Value
Density (g/cm ³)	1.75-1.80
Melting Point (°C)	165-175
Glass Transition Temperature (°C)	-35 to -45
Operating Temperature Range (°C)	-40 to +150
Tensile Strength (MPa)	35-55
Tensile Modulus (GPa)	1.2-2.0
Elongation at Break (%)	150-400
Flexural Strength (MPa)	50-80
Flexural Modulus (GPa)	1.5-2.5
IZOD Impact Strength (kJ/m ²)	8-15 (notched)
Coefficient of Friction	0.3-0.4
Dielectric Constant (@1MHz)	8-12
Dielectric Strength (kV/mm)	20-25
Volume Resistivity (Ω·cm)	>10 ¹⁶
Linear Coefficient of Thermal Expansion (10 ⁻⁴ /°C)	1.0-1.5
Thermal Conductivity (W/m·K)	0.15-0.20
Water Absorption (%)	0.04-0.1 (24 hrs)
Refractive Index	1.42-1.44

Key Characteristics

- Excellent chemical resistance to acids, bases, and solvents
- Good UV and weather resistance
- Piezoelectric and pyroelectric properties
- Good mechanical strength and flexibility
- Low density compared to other fluoropolymers
- Excellent dielectric properties
- Good processability by extrusion, injection molding, and casting
- Resistance to microbial attack
- Fire resistant with low smoke emission

Typical Applications

- Chemical processing equipment and piping
- Water treatment membranes and filtration systems
- Architectural coating films and panels
- Lithium-ion battery binders and separators
- Piezoelectric sensors and transducers
- Photovoltaic backsheet films
- Wire and cable insulation
- Food and beverage processing equipment

(内容由 AI 生成, 仅供参考)