

SOLEF® 21216 / 1001PVDF Copolymer from Solvay (VF₂ - HFP)

Very high molecular weight - Lithium batteries.
Exclusively available as powder.

Physical properties

Physical properties	Standards	Units	
Density	ISO 1183	g/cm ³	1.78
Water absorption (24 h at 23°C)	ISO 62 (method 1)	%	< 0.04
Melt Flow Index	ASTM D 1238		
	230°C, 10 kg	g/10 min	1.3⁽¹⁾
	230°C, 5 kg	g/10 min	-
	230°C, 2.16 kg	g/10 min	-

Mechanical properties

Tensile	ASTM D 638		
Tensile stress at yield	23 °C, 50 mm/min	MPa	15 - 25
Tensile stress at break		MPa	25 - 45
Elongation at yield		%	15 - 18
Elongation at break		%	300 - 650
Modulus	23 °C, 1 mm/min	MPa	500
Flexion	ASTM D 790		
Maximum load	23 °C	MPa	-
Modulus	2 mm/min	MPa	400
IZOD impact (notched V 10 mm - at 23 °C - 4 mm thick)	ASTM D 256	J/m	-
Shore D Hardness (2 mm thick)	ASTM D 2240	-	-
Abrasion resistance	TABER CS 10/1 kg	mg/1000 rev	5 - 15
Friction coefficient: static dynamic	ASTM D 1894	-	0.2 - 0.4
		-	0.2 - 0.3

Thermal properties

Crystallinity by DSC	ASTM D 3418		
Melting point		°C	135
Heat of fusion (80 °C to end of melting)		J/g	26
Crystallizing point		°C	98
Crystallization heat		J/g	28
VICAT point (4 mm thick) load 1 kg	ISO 306	°C	131
Deflection temperature (4 mm thick) load 0.46 MPa	ASTM D 648 after annealing	°C	-
load 1.82 MPa		°C	39
Glass transition (Tg)	DMTA	°C	- 30
Brittleness temperature (on 2 mm pressed sheet)	ASTM D 746 A	°C	- 35

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Thermal properties (continuation)	Standards	Units	
Molding shrinkage		%	-
Thermal stability	TGA beginning- and at 1% weight loss in air	°C	330 - 350
Linear thermal expansion coefficient	ASTM D 696	10 ⁻⁶ K ⁻¹	160 - 180
Thermal conductance at 23°C	ASTM C 177	W/m.K	0.18
Specific heat	23 °C & 100 °C	J/g.K	1.2 - 1.6

Electrical properties

Surface resistivity	[ASTM D 257 DIN 53483	ohm/square	≥ 1.10 ¹⁴
Voltage < 1V, after 2 min - 500 V at 23 °C			
Volume resistivity	[ASTM D 257 DIN 53483	ohm.cm	≥ 1.10 ¹⁴
Intensity = 10 mA, after 2 min at 23 °C			
Dielectric constant at 1 MHz	ASTM D 150	-	7
Tg delta at 1 MHz	ASTM D 150	-	0.2

Fire resistance

UL-94 Flammability test	UL-94	Class	-
Limiting Oxygen Index (sheet 3 mm thick)	ASTM D 2863	%	44

(1) MFI under 21.6 kg/230°C. Intrinsic viscosity (25°C/DMF): 0,21 l/g.

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