SYMALIT® PVDF 1000

QUADRANT
ENGINEERING PLASTIC PRODUCTS

PRODUCT DATA SHEET

SYMALIT PVDF 1000 is a highly crystalline unreinforced fluoropolymer combining good mechanical, thermal and electrical properties with excellent chemical resistance.
Its property profile makes SYMALIT PVDF 1000 a versatile engineering material, especially suitable for the manufacture of components for the petrochemical, chemical, metallurgical, pharmaceutical, food, paper, textile and nuclear industries.

Physical properties (indicative values•)

PROPERTIES	Test methods ISO/(IEC)	Units	VALUES
Colour	—	—	natural (white)
Density	1183	g/cm³	1.79
Water absorption:			
- after 24h/96h immersion in water of 23°C (1)	62	mg	1/3
	62	%	0.01/0.03
- at saturation in air of 23°C / 50% RH	—	%	0.05
- at saturation in water of 23°C	—	%	0.05
Thermal Properties			
Melting temperature	—	°C	175
Thermal conductivity at 23°C	—	W/(K·m)	0.19
Coefficient of linear thermal expansion:			
- average value between 23 and 100°C	—	m/(m·K)	$130 \cdot 10^{-6}$
- average value between 23 and 150°C	—	m/(m·K)	$145 \cdot 10^{-6}$
Temperature of deflection under load:			
- method A: 1.8 MPa	75	°C	105
Max. allowable service temperature in air:			
- for short periods (2)	—	°C	160
- continuously: for min. 20,000h (3)	—	°C	150
Flammability (4):			
- "Oxygen index"	4589	%	44
- according to UL 94 (1.5/3 mm thickness)	—	—	V-0/V-0
Mechanical Properties at 23°C			
Tension test (5):			
- tensile stress at yield (6)	527	MPa	50
- tensile strain at break (6)	527	%	> 20
- tensile modulus of elasticity (7)	527	MPa	2,300
Compression test (8):			
- compressive stress at 1% nominal strain (7)	604	MPa	17
- compressive stress at 2% nominal strain (7)	604	MPa	32
Charpy impact strength - Unnotched (9)	179/1eU	kJ/m²	no break
Charpy impact strength - Notched	179/1eA	kJ/m²	10
Ball indentation hardness (10)	2039-1	N/mm²	110
Rockwell hardness (10)	2039-2	–	M 75
Electrical Properties at 23°C			
Electric strength (11)	(60243)	kV/mm	18
Volume resistivity	(60093)	Ω·cm	$> 10^{14}$
Surface resistivity	(60093)	Ω	$> 10^{13}$
Relative permittivity ε_r : - at 100 Hz	(60250)	—	7.4
- at 1 MHz	(60250)	—	6.0
Dielectric dissipation factor tan δ : - at 100 Hz	(60250)	—	0.025
- at 1 MHz	(60250)	—	0.165
Comparative tracking index (CTI)	(60112)	—	600

Note: 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m

Legend

(1) According to method 1 of ISO 62 and done on discs Ø 50 x 3mm.
(2) Only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material.
(3) Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength of about 50% as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
(4) These mostly estimated ratings, derived from raw material supplier data, are not intended to reflect hazards presented by the materials under actual fire conditions. There is no UL yellow card available for SYMALIT PVDF 1000 stock shapes.
(5) Test specimens: Type 1 B.
(6) Test speed: 5 mm/min.
(7) Test speed: 1 mm/min.
(8) Test specimens: cylinders Ø 12 x 30 mm.
(9) Pendulum used: 4 J.
(10) 10 mm thick test specimens.
(11) 1 mm thick test specimens.

• This table is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. **However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.**

Availability

Round Rods: ∅ 10-250 mm - **Plates:** Thicknesses 8-100 mm