

SYMALIT FEP 1000 is a semi-crystalline unreinforced fluoropolymer combining good mechanical, thermal and electrical properties with excellent chemical resistance. It also shows good resistance to high-energy radiation. In addition, the composition of the raw material used for the production of SYMALIT FEP 1000 products complies with the regulations of the European Union (Directive 2002/72/EC, as amended) and the United States of America (FDA) for plastic materials and articles intended to come into contact with foodstuffs. SYMALIT FEP 1000 is a versatile engineering material especially suitable for the manufacture of components for the petro-chemical, chemical, metallurgical, food, paper, textile, semiconductor, pharmaceutical and nuclear industries.

Physical properties (indicative values ■)

PROPERTIES	Test methods	Units	VALUES
Colour	-	-	natural (translucent)
Density	ASTM D 792	g/cm ³	2.1 - 2.2
Water absorption: - after 24 h immersion in water of 23°C	ASTM D 570	%	< 0.01
Thermal Properties			
Melting temperature	ASTM D 3418	°C	260 - 275
Glass transition temperature	DMTA	°C	-
Thermal conductivity at 23°C	ASTM D 433	W/(K.m)	0.25
Coefficient of linear thermal expansion: - average value between 23 and 100°C	ASTM D 696	m/(m.K)	9 - 11 x 10 ⁻⁵
Specific Heat Capacity	DSC	kJ/(kg.K)	1.12
Vicat Point B	DIN 53460/B	°C	70
Temperature of deflection under load: - method A: 1.82 MPa	ISO 75	°C	-
Max. allowable service temperature in air: - continuously : for min. 20,000 h	-	°C	205
Min. service temperature	-	°C	-190
Flammability: - Oxygen Index - according to UL 94	ASTM D 2863	%	95 V-0
Mechanical Properties at 23°C			
Tension test:			
- tensile stress at yield	ISO 527-1/-2	MPa	11 - 13
- tensile strength	ISO 527-1/-2	MPa	25 - 30
- tensile strain at break	ISO 527-1/-2	%	250 - 350
- tensile modulus of elasticity	ISO 527-1/-2	MPa	400 - 600
Flexural Modulus	ISO178	MPa	650 - 700
Compression test:			
- compressive stress	ASTM D 695	MPa	23
Izod impact strength - notched	ISO 180	J/m	No break
Hardness Shore D	ISO 868		55
Abrasion Resistance Taber	Taber CS 17/1 kg	mg/1000 rev.	3.5
Friction Coefficient:			
- static	ASTM D 1894		-
- dynamic	ASTM D 1894		0.2 - 0.24
Electrical Properties at 23 °C			
Dielectric strength	ASTM D 149	kV/mm	20 - 80
Volume resistivity	ASTM D 257	Ohm.cm	> 10 ¹⁶
Surface resistivity	ASTM D 257	Ohm	> 10 ¹⁶
Dielectric constant at 1 MHz	ASTM D 150	-	2.1
Dielectric dissipation factor tan δ at 1 MHz	ASTM D 150	-	0.0002 - 0.001

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

AVAILABILITY

Sheets and Plates: Thicknesses 1.5 - 2.3 mm - **Lining Laminates:** Thickness 1.5 - 2.3 mm

Pipes: Ø 32 - 110 mm - **Welding Rods:** Thicknesses 3 - 4 mm

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Legend:

All values are results of tests, made by raw material suppliers and Quadrant EPP AG and from literature. Most of the figures given in the table are results of tests made on extruded or injection molded sheets. Lining laminates can only be tested, if the fabric backing is removed carefully by machining. Otherwise the fabric backing influences the results. These values are average values and can vary depending on product, production method and specimen preparation.

All tests are done according to the standards mentioned in the table or equivalent standards of other organisations (ISO, ASTM, DIN).

- This table is a valuable help in the choice of a material. The data listed here fall within a 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.**