



PEEK VMX FG

Type of plastics: Semi-crystalline thermoplastic, PEEK, modified (Visual, Metal detectable & X-ray) Area of application: Food

	Mat.	Test methods	Unit	Value
Physical properties (indicative values)				
Colour				blue
Density		ISO 1183-1	g/cm ³	1.44
Water absorption				
• after 24/96h in water of +23°C (1)		ISO 62	mg	N/T
			%	N/T
• at saturation in air of +23°C / 50% RH		ISO 62	%	N/T
• at saturation in water of +23°C		ISO 62	%	N/T
Thermal properties (2)				
Melting temperature (DSC, +10 °C/min)		ISO 11357-1/-3	°C	340
Thermal conductivity at +23°C			W/(K.m)	0.25
Coefficient of linear thermal expansion				
• average value between +23°C and +100°C			m/(m.K)	45E-6
• average value between +23°C and +150°C			m/(m.K)	50E-6
• average value over +150°C			m/(m.K)	75E-6
Temperature of deflection under load				
• method A: 1.8 MPa	+	ISO 75-1/-2	°C	N/T
Max. allowable service temperature in air				
• for short periods (a few hours) (4)			°C	310
• continuously 20.000 h (5)			°C	250
Min. service temperature (6)				
			°C	-
Flammability (7)				
• "Oxygen Index"		ISO 4589-1/-2	%	40
• according to UL 94 (1.5 / 3 mm thickness)				IV-0
Mechanical properties at +23°C (8)				
Tension test (9)				
• tensile stress at yield / tensile stress at break (10)	+	ISO 527-11-21	MPa	114/-
• tensile strength (10)	+	ISO 527-1/-2	MPa	114
• tensile strain at yield (10)	+	ISO 527-1/-2	%	4
• tensile strain at break (10)	+	ISO 527-1/-2	%	5
• tensile modulus of elasticity (11)	+	ISO 527-1/-2	MPa	4900
Compression test (12)				
• compressive stress at 1 / 2 / 5 % nominal strain (11)	+	ISO 604	MPa	45/86/144
Charpy impact strength-unnotched (13)	+	ISO 179-1/1eU	kJ/m ²	45
Charpy impact strength-notched	+	ISO 179-1/1eA	kJ/m ²	3.2
Ball indentation hardness (14)	+	ISO 2039-1	N/mm ²	250
Rockwell hardness (14)	+	ISO 2039-2		M106
Electrical properties at +23°C				
Electric strength (15)	+	IEC 60093	Ohm.cm	-
Volume resistivity	+	IEC 60093	Ohm	-
Surface resistivity	+	IEC 60250		-
Relative permittivity ϵ_r	• at 100 Hz	+	IEC 60250	-
	• at 1 MHz	+	IEC 60250	-
Electric loss $\tan \delta$	• at 100 Hz	+	IEC 60250	-
	• at 1 MHz	+	IEC 60112	-
Comparative tracking index (CTI)	+	IEC 60112		-

N/T= not tested

Values are based on manufacturer data and are not binding.
Differences in values may occur

The material meets the EU regulation 10/2011 regarding materials and plastics intended to come into contact with food. Declaration of materials can be obtained on request.

Legend:

+ : values referring to dry material

++ : values referring to material in equilibrium with the standard atmosphere 23°C / 50% RH (mostly derived from literature)

(1) According to method 1 of ISO 62 and done on discs Ø50 mm x 3 mm.

(2) The figures given for these properties are for the most part derived from raw material supplier data and other publications.

(3) Values for this property are only given here for amorphous materials and **not for semi-crystalline ones**.

(4) Only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material.

(5) Temperature resistance over a period of 5.000 / 20.000 hours. After these periods of time, there is a decrease in tensile strength – measured at 23°C – of about 50% as compared with the original value. The temperature values given here are 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.

(6) Impact strength decreasing with decreasing temperature, the minimum allowable service temperature is practically mainly determined by the extent to which the material is subjected to impact. The value given here is based on unfavourable impact conditions and may consequently not be considered as being the absolute practical limit.

(7) These estimated ratings, derived from raw material supplier data and other publications, are not intended to reflect hazards presented by the material under actual fire conditions.

(8) The figures given for the properties of dry material (+) are for the most part average values of tests run on test specimens machined out of rods Ø40-60 mm. Except for the hardness tests, the test specimens were then taken from an area mid between centre and outside diameter, with their length in longitudinal direction of the rod.

(9) Test specimens: Type 1 B

(10) Test speed: 50 mm/min chosen acc. to ISO 10350-1 as a function of the ductile behaviour of the material (tough or brittle)

(11) Test speed: 1 mm/min.

(12) Test specimens cylinders Ø8 x 16 mm

(13) Pendulum used: 4 J

(14) Measured on 10 mm thick test specimens (discs), mid between centre and outside diameter.

(15) Electrode configuration Ø25 / Ø75 mm coaxial cylinders in transformer oil according to IEC 60296; 1 mm thick specimens. The figure listed in the table refers to uncoloured material. The electric strength for black or coloured material can be considerably lower than the figure listed in the table.

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