

KETRON® PEEK

Polyetheretherketone (PEEK)

Main Characteristics:

- Very high max. allowable service temperature in air (250°C continuously, up to 310°C for short periods).
- High mechanical strength, stiffness and creep resistance, also at elevated temperatures
- Excellent chemical and hydrolysis resistance
- Excellent wear and frictional behaviour (particularly KETRON® PEEK HPV and PEEK CA30)
- Very good dimensional stability
- Inherent low flammability and very low levels of smoke evolution during combustion
- Good electrical insulating and dielectric properties (except for KETRON® PEEK HPV and PEEK CA30)
- Excellent resistance to high energy radiation (gamma and X rays)

KETRON® PEEK GF30

(PEEK-GF30)

Colour: Natural (brownish grey)

This 30% Glass fibre reinforced grade offers higher stiffness and creep resistance than KETRON® PEEK 1000 and has much better dimensional stability. KETRON® PEEK GF30 is very appropriate for structural parts carrying high static loads for long periods of time at elevated temperatures. Its suitability for sliding parts, however, is to be carefully examined as the glass fibres tend to abrade the mating surface.

KETRON® PEEK CA30

(PEEK-CF30)

Colour: Black

This 30% carbon fibre reinforced grade combines even higher stiffness, mechanical strength and creep resistance than KETRON® PEEK GF30 with an optimum wear resistance. Moreover, the carbon fibres provide 3.5 times higher thermal conductivity than virgin PEEK, dissipating heat from the bearing surface faster.

The KETRON® PEEK family of materials is based on Polyetheretherketone resin. This semi-crystalline advanced material exhibits a unique combination of high mechanical properties, temperature resistance and excellent chemical resistance making it the most popular advanced plastics material.

All four KETRON® PEEK grades are based on VICTREX® PEEK™ Polymers:

KETRON® PEEK 1000

(PEEK)

Colours: Natural (brownish grey) and Black

KETRON® PEEK 1000 stock shapes are produced from virgin Polyetheretherketone resin and offer the highest toughness and impact strength of all KETRON® PEEK grades. The composition of the raw materials used for the production of the KETRON® PEEK 1000 natural stock shapes complies with the directives of the European Union and with the American FDA regulations concerning plastic materials intended to come into contact with foodstuffs. These features, added to its excellent sterilisability by means of steam, dry heat, ethylene oxide and gamma irradiation, make this grade very popular in medical*, pharmaceutical and food processing industries.

* No use for implants - Quadrant Engineering Plastic products does not allow, approve or support human implantable applications utilising its materials.

KETRON® PEEK HPV

(PEEK + CF + PTFE + graphite)

Colour: Black

The addition of carbon fibres, PTFE and graphite to virgin PEEK results in a KETRON® PEEK 'Bearing grade'. Its excellent tribological properties (low friction, long wear and high Pressure-Velocity capabilities) make this grade especially suited for bearing and wear applications.

KETRON® PEEK 1000 Polyetheretherketone (Peek)

The physical properties of KETRON® PEEK 1000 make it an outstanding advanced material. It can be used for a wide variety of demanding applications, where excellent mechanical performance under extreme conditions is required.

- Excellent chemical resistance
- Excellent hydrolysis resistance
- High flammability rating
- Excellent dimensional stability
- Wide operating range (-60°C to +250°C)
- Excellent resistance against high energy radiation
- Excellent mechanical strength / stiffness
- Good electrical insulating properties

Common Applications:

Pump components; Valve seats; Bearings; Rollers; Gears; High temperature insulation; Components in boiling water or steam.

Delivery Programme

	min	max
Rod 500mm long diameter (mm)	60	200
Rod 1m long diameter (mm)	3.0	200
Rod 3m long diameter (mm)	3.0	60
Plate widths (mm)	500 & 1000	
thickness (mm)	5.0	25
lengths (mm)	500 / 1000 / 3000	
Plate widths (mm)	300 & 615	
thickness (mm)	30	100
lengths (mm)	500 / 1000 / 3000	
Colour:	Beige	

Technical Specification

Property	ISO Method	Units	Values
Specific gravity	1183	g/cm ³	1.31
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	0.20
• Saturation in water (23°C)	~	%	0.45
Tensile strength* ¹	527	N/mm ²	110
Tensile modulus of elasticity* ¹	527	N/mm ²	4400
Elongation at break* ¹	527	%	20
Impact - Charpy* ¹	179/1eU	kJ/m ²	no break
Impact - Charpy notched* ¹	179/1eA	kJ/m ²	3.5
Hardness	Rockwell	~	M105
	Shore D	~	~
Melt point	~	°C	340
Max allowable service temperature in air			
• for short periods	~	°C	310
• continuously for 20,000 hrs	~	°C	250
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	5.0
Thermal conductivity	~	W/(K.m)	0.25
Flammability* ² (6mm thickness)	~	~	V-0
Volume resistivity* ¹	IEC93	Ω.cm	>10 ¹⁶
Dielectric strength* ¹	IEC243	kV/mm	24
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	A
Alkalis - strong (pH>11)	~	~	A
Chlorinated hydrocarbons	~	~	A
Hot water	~	~	A

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

*¹ - Measured on dry test specimens (where applicable)

*² - Tests completed by DSM EPP using UL test methods

KETRON® HPV

Bearing Grade Polyetheretherketone (PeeK+Carbon+Graphite+PTFE)

The addition of carbon fibres, graphite and PTFE to virgin PEEK results in a 'Bearing grade' KETRON® PEEK. Its excellent tribological properties (low friction, long wear and high Pressure-Velocity capabilities) make this grade especially suited for bearing and wear applications.

- Excellent chemical resistance
- Excellent hydrolysis resistance
- Inherent low flammability
- Outstanding dimensional stability
- Wide operating range (-30°C to +250°C)
- Excellent resistance against high energy radiation
- Excellent mechanical strength / stiffness
- Exceptional wear resistance

Common Applications:

Pump components; Valve seats; Bearings; Rollers; Gears; High temperature insulation; Components in boiling water or steam.

Delivery Programme

	min	max
Rod 500mm long diameter (mm)	60	100
Rod 1m long diameter (mm)	6.0	100
Rod 3m long diameter (mm)	6.0	60
Tube 1m & 3m long outer diameter (mm)	50	200
inner diameter (mm)	30	160
Plate width (mm)	525	
thickness (mm)	5.0	8.0
lengths (mm) 500 / 1000 / 3000		
Plate widths (mm)	305 & 625	
thickness (mm)	10	60
lengths (mm) 500 & 1000		
Plate widths (mm)	305 & 625	
thickness (mm)	10	25
length (mm) 3000		

Colour: Black

Technical Specification

Property	ISO Method	Units	Values
Specific gravity	1183	g/cm ³	1.45
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	0.14
• Saturation in water (23°C)	~	%	0.30
Tensile strength* ¹	527	N/mm ²	75
Tensile modulus of elasticity* ¹	527	N/mm ²	5900
Elongation at break* ¹	527	%	5
Impact - Charpy* ¹	179/1eU	kJ/m ²	25
Impact - Charpy notched* ¹	179/1eA	kJ/m ²	2.5
Hardness	Rockwell	~	M85
	Shore D	~	~
Melt point	~	°C	340
Max allowable service temperature in air			
• for short periods	~	°C	310
• continuously for 20,000 hrs	~	°C	250
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	3.0
Thermal conductivity	~	W/(K.m)	0.24
Flammability* ² (6mm thickness)	~	~	V-0
Volume resistivity* ¹	IEC93	Ω.cm	~
Dielectric strength* ¹	IEC243	kV/mm	~
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	A
Alkalis - strong (pH>11)	~	~	A
Chlorinated hydrocarbons	~	~	A
Hot water	~	~	A

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

*¹ - Measured on dry test specimens (where applicable)

*² - Tests completed by DSM EPP using UL test methods

KETRON® GF30

Polyetheretherketone GF30 (Peek+30% Glass Fibre)

This 30% Glass fibre reinforced grade offers higher stiffness and creep resistance than KETRON® PEEK 1000 and has much better dimensional stability. KETRON® PEEK GF30 is very appropriate for structural parts carrying high static loads for long periods of time at elevated temperatures. Its suitability for sliding parts, however, is to be carefully examined as the glass fibres tend to abrade the mating surface.

- Excellent chemical resistance
- Excellent hydrolysis resistance
- High flammability rating
- Excellent dimensional stability
- Wide operating range (-20°C to +250°C)
- Excellent resistance against high energy radiation
- Excellent mechanical strength / stiffness
- Good electrical insulating properties

Common Applications:

Pump components; Valve seats; Bearings; Rollers; Gears; High temperature insulation; Components in boiling water or steam.

Delivery Programme

	min	max
Rod 500mm long diameter (mm)	60	100
Rod 1m long diameter (mm)	6.0	100
Rod 3m long diameter (mm)	6.0	60
Tube 1m & 3m long outer diameter (mm)	50	200
inner diameter (mm)	30	160
Plate width (mm)	525	
thickness (mm)	5.0	8.0
lengths (mm) 500 / 1000 / 3000		
Plate widths (mm)	305 & 625	
thickness (mm)	10	60
lengths (mm) 500 & 1000		
Plate widths (mm)	305 & 625	
thickness (mm)	10	25
length (mm) 3000		

Colour: Brown grey

Technical Specification

Property	ISO Method	Units	Values
Specific gravity	1183	g/cm ³	1.51
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	0.14
• Saturation in water (23°C)	~	%	0.30
Tensile strength* ¹	527	N/mm ²	90
Tensile modulus of elasticity* ¹	527	N/mm ²	6300
Elongation at break* ¹	527	%	5
Impact - Charpy* ¹	179/1eU	kJ/m ²	35
Impact - Charpy notched* ¹	179/1eA	kJ/m ²	4
Hardness	Rockwell	~	M99
	Shore D	~	~
Melt point	~	°C	340
Max allowable service temperature in air			
• for short periods	~	°C	310
• continuously for 20,000 hrs	~	°C	250
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	3.0
Thermal conductivity	~	W/(K.m)	0.43
Flammability* ² (6mm thickness)	~	~	V-0
Volume resistivity* ¹	IEC93	Ω.cm	>10 ¹⁵
Dielectric strength* ¹	IEC243	kV/mm	24
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	A
Alkalis - strong (pH>11)	~	~	A
Chlorinated hydrocarbons	~	~	A
Hot water	~	~	A

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

*¹ - Measured on dry test specimens (where applicable)

*² - Tests completed by DSM EPP using UL test methods

KETRON® CA30 Polyetheretherketone CA30 (Peek+30% Carbon)

KETRON® PEEK CA30 offers higher stiffness and strength than both KETRON® PEEK 1000 and KETRON® PEEK HPV. In addition it has superior long term creep properties at elevated temperatures of up to 250°C. These features make KETRON® PEEK CA30 ideal for applications involving high static loads.

- Excellent chemical resistance
- Excellent hydrolysis resistance
- High flammability rating
- Outstanding dimensional stability
- Wide operating range (-20°C to +250°C)
- Electrostatic dissipative properties
- Excellent mechanical strength / stiffness
- Exceptional wear resistance

Common Applications:

Pump components; Valve seats; Bearings; Rollers; Gears; High temperature insulation; Components in boiling water or steam.

Delivery Programme

	min	max
Rod 500mm long diameter (mm)	60	80
Rod 1m long diameter (mm)	6.0	80
Rod 3m long diameter (mm)	6.0	60
Tube 1m & 3m long outer diameter (mm)	50	200
inner diameter (mm)	30	160
Plate width (mm)	525	
thickness (mm)	5.0	8.0
lengths (mm) 500 / 1000 / 3000		
Plate widths (mm)	305 & 625	
thickness (mm)	10	60
lengths (mm) 500 & 1000		
Plate widths (mm)	305 & 625	
thickness (mm)	10	25
length (mm) 3000		

Colour: Black

Technical Specification

Property	ISO Method	Units	Values
Specific gravity	1183	g/cm ³	1.41
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	0.14
• Saturation in water (23°C)	~	%	0.30
Tensile strength* ¹	527	N/mm ²	130
Tensile modulus of elasticity* ¹	527	N/mm ²	7700
Elongation at break* ¹	527	%	5
Impact - Charpy* ¹	179/1eU	kJ/m ²	35
Impact - Charpy notched* ¹	179/1eA	kJ/m ²	4
Hardness	Rockwell	~	M102
	Shore D	~	~
Melt point	~	°C	340
Max allowable service temperature in air			
• for short periods	~	°C	310
• continuously for 20,000 hrs	~	°C	250
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	2.5
Thermal conductivity	~	W/(K.m)	0.92
Flammability* ² (6mm thickness)	~	~	V-0
Volume resistivity* ¹	IEC93	Ω.cm	>10 ⁵
Dielectric strength* ¹	IEC243	kV/mm	~
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	A
Alkalis - strong (pH>11)	~	~	A
Chlorinated hydrocarbons	~	~	A
Hot water	~	~	A

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

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*² - Tests completed by DSM EPP using UL test methods