

**Technical Data: PEEK (Polyether Ether Ketone)**

**Product Description**

**Define and Grades**

Polyether Ether Ketone (PEEK) is a high-performance thermoplastic known for its exceptional heat resistance, mechanical strength, and chemical resistance. It's widely used in engineering applications, particularly where extreme conditions demand reliability.

Common Grades of PEEK for Injection Molding:

- PEEK 450G
- PEEK 450GL30
- PEEK 450CA30
- PEEK 450FC30
- PEEK 450GUV
- PEEK 450GRC
- PEEK 450CA40
- PEEK 450GC30
- PEEK 450GFR30



**Features and Applications**

Grade	Features	Applications
PEEK 450G	High chemical resistance, excellent dimensional stability	Aerospace components, medical devices
PEEK 450GL30	Enhanced strength and stiffness with 30% glass fibers	Automotive parts, electrical connectors
PEEK 450CA30	High wear resistance with 30% carbon fibers	Bearings, bushings, seals
PEEK 450FC30	Improved friction and wear properties	Gears, thrust washers, pump components
PEEK 450GUV	UV stabilized for outdoor applications	Outdoor equipment, electrical insulators
PEEK 450GRC	Reinforced with carbon fibers for increased strength	Aerospace components, structural parts
PEEK 450CA40	High carbon fiber content for enhanced stiffness	High-performance bearings, wear-resistant parts
PEEK 450GC30	Glass-reinforced for a balance of strength and weight	Automotive components, electrical connectors
PEEK 450GFR30	Flame-retardant with 30% glass fibers	Aerospace interiors, electrical enclosures

**Note**

The above data are reference material science data. This data reference is not binding and is not considered as authoritative test data. If your material requirements are extremely precise, please contact our material engineers. Tel | +86 18926788217 | Web | [www.newayprecision.com](http://www.newayprecision.com) | Contact Neway



# PEEK Injection Molding

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## Physical and Mechanical

Property	Density	Tensile Strength	Tensile Elongation	Flexural Modulus	Flexural Strength	Izod Impact Strength	Heat Deflection Temp.	Shrinkage	Hardness
Units	(g/cm <sup>3</sup> )	(Mpa)	(%)	(MPa)	(MPa)	(J/m)	(°C)	(%)	(Rockwell R)
PEEK 450G	1.32	100	50	3.8	170	35	160	1	97
PEEK 450GL30	1.47	150	2	10	200	50	260	0.5	110
PEEK 450CA30	1.43	160	2.5	11.5	220	70	280	0.5	115
PEEK 450FC30	1.47	120	1.5	5.5	160	35	250	0.5	105
PEEK 450GUV	1.32	95	45	3.5	160	30	160	1	95
PEEK 450GRC	1.45	180	1.5	11	240	40	280	0.5	120
PEEK 450CA40	1.46	200	2	13	250	50	290	0.5	125
PEEK 450GC30	1.45	130	2	7.5	180	40	270	0.5	110
PEEK 450GFR30	1.47	140	2	8	190	30	250	0.5	105

## Benefits of Material Grades

### PEEK 450G

**High Tensile Strength:** PEEK 450G exhibits a high tensile strength of 100 MPa, making it suitable for structural components in aerospace and automotive applications.

**Excellent Chemical Resistance:** PEEK 450G is commonly used in chemical processing equipment and medical devices due to its excellent resistance to chemicals and solvents.

**Good Creep Resistance:** PEEK 450G has good creep resistance, making it ideal for applications where prolonged stress or load is applied, such as seals and bearings.



### PEEK 450GL30



**Enhanced Rigidity:** With a high flexural modulus of 10.0 GPa, PEEK 450GL30 is well-suited for applications requiring rigidity, such as electrical connectors and insulators.

**Reinforced with Glass Fibers:** The addition of 30% glass fibers increases strength and stiffness, making it suitable for structural parts in the aerospace and automotive industries.

**Dimensional Stability:** PEEK 450GL30 offers excellent dimensional stability, making it ideal for precision components like gears and bushings.

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## Benefits of Material Grades

### PEEK 450CA30

**Improved Heat Resistance:** PEEK 450CA30 has a high heat deflection temperature of 280°C, making it suitable for high-temperature applications like electrical connectors and industrial machinery.

**Enhanced Creep Resistance:** This grade exhibits improved creep resistance, ensuring long-term stability in applications with sustained loads, such as pump components and valve seats.

**Glass Fiber Reinforcement:** Adding 30% glass fibers enhances its mechanical properties, increasing strength and stiffness.



### PEEK 450GUV



**UV Resistance:** PEEK 450GUV is formulated to withstand ultraviolet (UV) radiation without significant degradation. This makes it appropriate for outdoor applications such as aerospace and automotive components exposed to sunlight.

**High Thermal Stability:** It maintains PEEK's excellent thermal stability, making it suitable for high-temperature environments where UV exposure is a concern.

**Electrical Insulation:** PEEK 450GUV is often used in electrical and electronic applications due to its UV resistance and insulating properties.

### PEEK 450GRC

**Reinforced with Carbon Fibers:** PEEK 450GRC is reinforced with carbon fibers, providing exceptional strength and stiffness. It is commonly used in applications requiring lightweight but robust materials, such as sporting goods and aerospace.

**High Thermal Conductivity:** The carbon fibers also enhance thermal conductivity, making them useful in applications requiring efficient heat dissipation.

**Dimensional Stability:** PEEK 450GRC maintains excellent dimensional stability, even under varying temperature conditions.



### PEEK 450CA40



**Enhanced Heat Resistance:** PEEK 450CA40 is designed for high-temperature applications, with a heat deflection temperature of 310°C. It suits aerospace, automotive, and industrial components exposed to extreme heat.

**Chemical Resistance:** It retains PEEK's chemical resistance, making it a choice for applications exposed to aggressive chemicals.

**Glass Fiber Reinforcement:** Adding 40% glass fibers balances strength, stiffness, and heat resistance.

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## Benefits of Material Grades

### PEEK 450GC30

**Glass-Carbon Hybrid:** PEEK 450GC30 combines the properties of glass fibers and carbon fibers, offering a unique blend of strength, stiffness, and dimensional stability. It is often used in structural and precision components.

**Low Coefficient of Thermal Expansion:** This grade has a lower coefficient of thermal expansion, making it suitable for applications where minimal dimensional changes due to temperature variations are critical.

**High Chemical Resistance:** PEEK 450GC30 maintains excellent chemical resistance, expanding its use in chemical and petrochemical applications.



### PEEK 450GFR30



**Flame Retardancy:** PEEK 450GFR30 is formulated to meet flame retardancy standards, making it suitable for applications where fire safety is paramount, such as aerospace interiors and electrical enclosures.

**High Mechanical Performance:** Despite its flame-retardant properties, it maintains good mechanical properties, including strength and stiffness.

**Chemical Resistance:** Like other PEEK grades, it offers excellent chemical resistance, expanding its utility in chemically demanding environments.

### PEEK 450FC30

**Low Friction Coefficient:** PEEK 450FC30 is formulated with a solid lubricant, reducing its friction coefficient. This property is valuable in applications like bearings and bushings.

**Excellent Wear Resistance:** The combination of PTFE and carbon fiber reinforcement enhances its wear resistance, making it suitable for moving and sliding components.

**Chemical Compatibility:** It retains PEEK's chemical resistance, making it suitable for chemically harsh environments like the chemical processing industry.



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