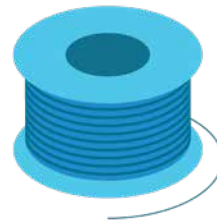


VICTREX AM™ 200 PAEK FILAMENT

NEW PERFORMANCE OPTIONS IN
3D PRINTING HIGH-PERFORMANCE POLYMERS



VICTREX AM™ 200 – PAEK PERFORMANCE DESIGNED FOR FILAMENT FUSION

PAEK (Polyaryletherketones) and PEEK (Polyetheretherketone) polymers in particular are regarded amongst the highest-performing thermoplastics in the world. VICTREX™ PAEK-based polymers have a track record of 40+ years in replacing metals and other materials in the most demanding applications.

The excellent mechanical properties of PAEK are in demand for high-performance parts. However, until now they were difficult to be fully realised in 3D printed parts with existing choices such as PEEK and PEKK designed for traditional manufacturing, such as machining or injection moulding. For example injection moulding PEEK into filament fusion additive manufacturing typically results in weak parts because of poor interlayer bonding.

EASIER PRINTING, LESS WARP, STRONGER PARTS

VICTREX AM™ 200 filament has been specifically developed by Victrex for use in additive manufacturing with the approach to redesign the polymer at a molecular level, achieving better prints without using additives or plasticisers. This new material is designed to improve the 3D printing results of PAEK for stronger, more stable parts compared to PEEK.



Lower printing temperatures

melt temperature of 303°C versus 343°C allowing printing at lower processing temperatures



Easier flow

lower viscosity polymer allowing easier flow through the nozzle and superior filament deposition in the part



Less warpage

due to the optimised crystallisation control, rheology and inter-layer adhesion



Wider operating window

slower crystallisation rate allows to print crystalline and amorphous according to printing settings - and higher dimensional stability during printing



Stronger parts

higher interlayer adhesion improving tensile strength along the z axis



Design flexibility

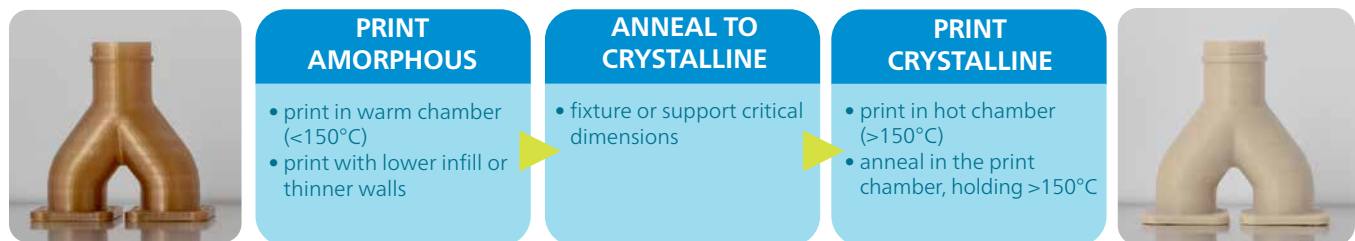
supporting economic value, rapid prototyping and on-demand production



AMORPHOUS OR CRYSTALLINE PRINTING

VICTREX AM™ 200 filament may be printed amorphous or crystalline, depending upon the specifications of the printer and the process settings. Similar to other PAEK polymers, VICTREX AM 200 is a semi-crystalline polymer. Increasing the crystallinity of the part improves properties such as chemical resistance, mechanical performance and thermal stability above 150°C.

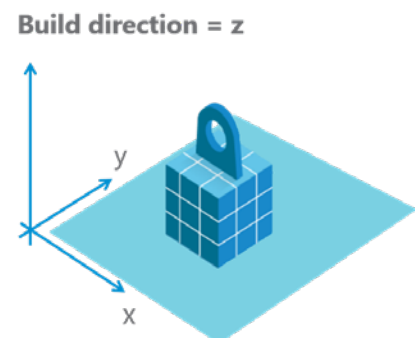
However, printing with semi-crystalline polymers can be difficult. VICTREX AM 200 provides the flexibility for you to choose which method works best for your application and equipment: print amorphous and leave it amorphous, print amorphous and post anneal to increase crystallinity, or directly print crystalline with certain printers with chamber temperatures higher than 150°C.



MATERIAL COMPARISON

VICTREX AM 200 filament was designed to solve the challenges with printing PEEK polymers such as VICTREX 450G, where the fast crystallisation and high melt temperatures causes problems with interlayer bonding and dimensional stability.

The new filament may also be an easy processing alternative to PEKK, or may be considered as an alternative to polyetherimide (PEI), polysulfone (PSU), polyphenylsulfone (PPSU), specialty nylons (PA-11, PA-12, PA-6), polyphenylenesulfide (PPS), and other high-performance polymers in high-performance additive manufactured parts.



TYPICAL KEY PROPERTIES

	Injection-moulded VICTREX PEEK 450G™ benchmark	Typical filament fusion of VICTREX PEEK 450G™ *	Observed filament fusion of new VICTREX AM 200 PAEK
Tensile Strength XY	98 MPa	60-70 MPa	60-90 MPa*
Tensile Strength ZX	98 MPa	10-30 MPa	40-70 MPa*
Tensile Modulus XY	4 GPa	3 GPa	3.1 GPa
Elongation to Break XY	45%	2-10%	12%

* machine dependent

Whilst Victrex continues to further optimise the new PAEK products, the new 1.75mm filament VICTREX AM 200 FIL is available through selected value resellers.

To learn more about VICTREX PAEK capabilities in additive manufacturing, you are welcome to contact our team directly at VictrexAM@victrex.com, or visit the [Victrex Website](#) to see if additive manufacturing with PAEK polymer is right for you.

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in Polymers, Forms and Parts

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VICTREX™ PEEK is regarded as one of the highest performing engineering thermoplastics in the world, and is used by leading companies to develop fuel-efficient automobiles and aeroplanes, advanced medical devices, next generation technology and tools for the harshest environments.

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