



SOLVAY

asking more from chemistry®

High Performance Polymers

for Additive Manufacturing

**SPECIALTY
POLYMERS**

The New Additive Manufacturing Solutions for Your Most Challenging Needs

Solvay's specialty polymers stand alone in meeting the critical requirements that engineers face daily in key industries such as Automotive, Aeronautics, Smart Devices, Healthcare, Chemical Processing and Energy Production.

Solvay aims at reinforcing this leadership position through the alignment of its world-class materials to the fast-rising industry of Additive Manufacturing (AM). By developing differentiated new materials from its unique portfolio, partnering with major equipment manufacturers, and building an ecosystem of open printers and service bureaus, Solvay aims to offer high performance AM solutions that enable previously impossible applications and designs.

Solvay Specialty Polymers' Solutions for Additive Manufacturing

Material	Technology	
	Fused Filament Fabrication (FFF)	Selective Laser Sintering (SLS)
KetaSpire® PEEK AM	●	–
Radel® PPSU AM	●	–
Solef® PVDF AM	●	–
NovaSpire™ PEKK AM	–	●
Ryton® PPS AM	–	●

● Commercially available ● Sample available

Starting with our introduction of tailor-made AM ready filaments and powders (based on KetaSpire® PEEK, Radel® PPSU, Solef® PVDF, NovaSpire™ PEKK and Ryton® PPS), we will continue to increase our range of AM solutions to include more high performance materials and services to optimise design, processing and part performance.

KetaSpire® PEEK AM Filament

Provides a unique combination of properties that will constantly perform at temperatures of up to 240 °C. Added to its exceptional chemical resilience, KetaSpire® PEEK can be used to replace metals in critical end-use environments such as Oil & Gas, Aerospace and Automotive.

KetaSpire® PEEK AM filament CF10 LS1 incorporates 10% carbon fiber reinforcement for increased strength.

Radel® PPSU AM Filament

Among our sulfone polymers, Radel® PPSU AM Filament delivers to the most elevated levels, with a superiority in both toughness and impact strength as well as proven outperformance in chemical resistance for both PSU and PEI destined to Healthcare, Smart Devices and Energy Storage applications.

Solef® PVDF AM Filament

Intrinsically of very high purity, Solef® PVDF provides long term performance up to 120 °C, including exceptional chemical resistance and outstanding UV, weathering and oxidation resistance. These features make it particularly suited for outdoor applications, and for harsh chemical environments, typically found in the Chemical Processing Industry, Semiconductor Industry, and Oil & Gas.

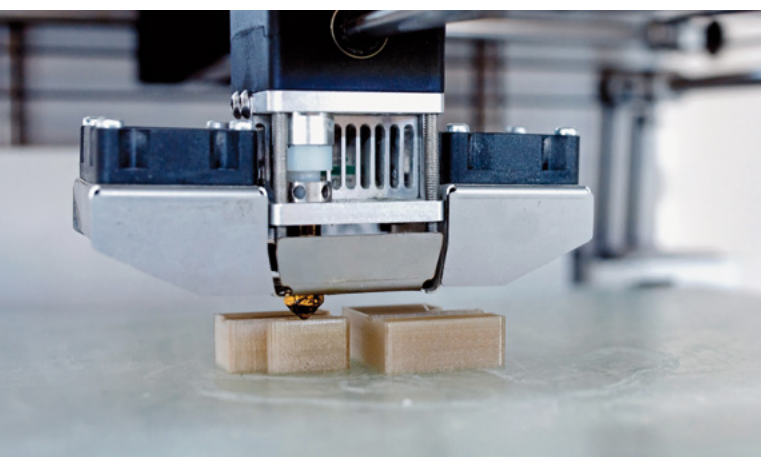
The print profile for Solef® PVDF AM filament is now available for free download at [Ultimaker's Marketplace](#).

NovaSpire™ PEKK AM Powder

With its faultless flame, smoke and toxicity performance as well as its optimum resistance to a wide range of fluid environments, NovaSpire™ PEKK AM powder is the perfect choice for Aircraft, Space and Transportation components.

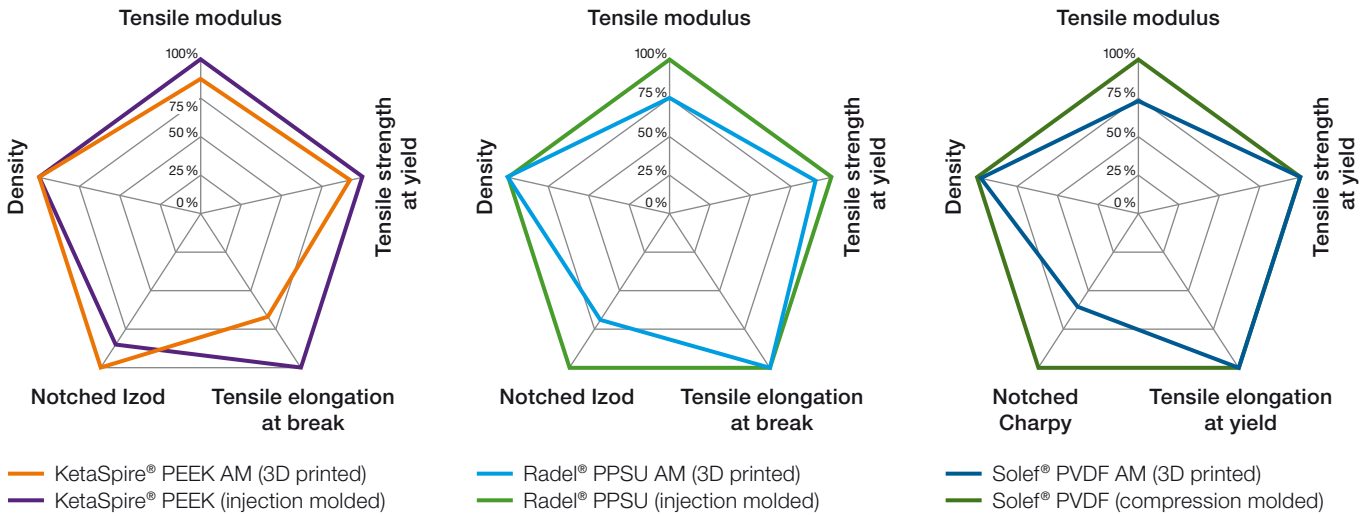
Ryton® PPS AM Powder

Ryton® PPS exhibits excellent thermal stability and chemical resistance. It is an ideal choice for automotive parts exposed to high temperatures, fluids, or mechanical stress. It is the best choice for under the hood components, brake systems, and electrical/electronic devices requiring high heat resistance, high dimensional stability, and corrosion resistance. Furthermore, Ryton® PPS offers superb value for electrical/electronic applications and in a variety of heavy industrial applications where it is exceptionally well suited to service in very hostile chemical environments.



Typical Properties

Difference in mechanical properties between injection/compression molded and 3D printed parts using Fused Filament Fabrication (FFF)



Typical Property	Unit	KetaSpire® PEEK AM	KetaSpire® PEEK AM CF	Radel® PPSU AM	Solef® PVDF AM	Test Method
General						
Filament diameter	mm	1.75	1.75	1.75	2.85	
Density	g/cm ³	1.29	1.33	1.29	1.72	ISO 1183
Mechanical						
Tensile modulus*	GPa	3.12	11.0	2.0	0.8	ASTM D638
Tensile strength at break*	MPa	48	140	42	25	ASTM D638
Tensile strength at yield*	MPa	85	–	62	30	ASTM D638
Tensile elongation at break*	%	26	1.7	21	50–250	ASTM D638
Tensile elongation at yield*	%	4.8	–	7.0	10	ASTM D638
Notched izod impact	J/m	81	89	482	–	ASTM D256
Thermal						
Melting temperature	°C	343	343	(T _g = 220)	148	ASTM D3418
Printing conditions						
Filament drying conditions: minimum temperature, 4h	°C	150	150	150–170	Not needed	
Extruder temperature	°C	390–450	390–450	380–400	225–235	
Bed temperature	°C	>200	>200	180–200	100	

* Test specimen parameters: Type V bars

For KetaSpire® PEEK AM and Radel® PPSU AM:
 1st layer: 0.3 mm thick,
 subsequent layers: 0.1 mm,
 100% infill, 3 shells,
 printing speed 18 mm/s
 printing tool path: Cross hatching in the XY plane

For KetaSpire® PEEK CF AM:
 1st layer: 0.3 mm thick,
 subsequent layers: 0.1 mm,
 100% infill, 3 shells,
 printing speed 18 mm/s
 printing tool path: 0°

For Solef® PVDF AM:
 Layer: 0.2 mm thick,
 100% infill, 3 shells,
 printing speed: 25 mm/s
 printing tool path: Cross hatching in the XY plane

Please reference our Processing Guide for handling and safety instructions. Adequate ventilation is required to prevent possible toxic fumes. Proper handling is essential.





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