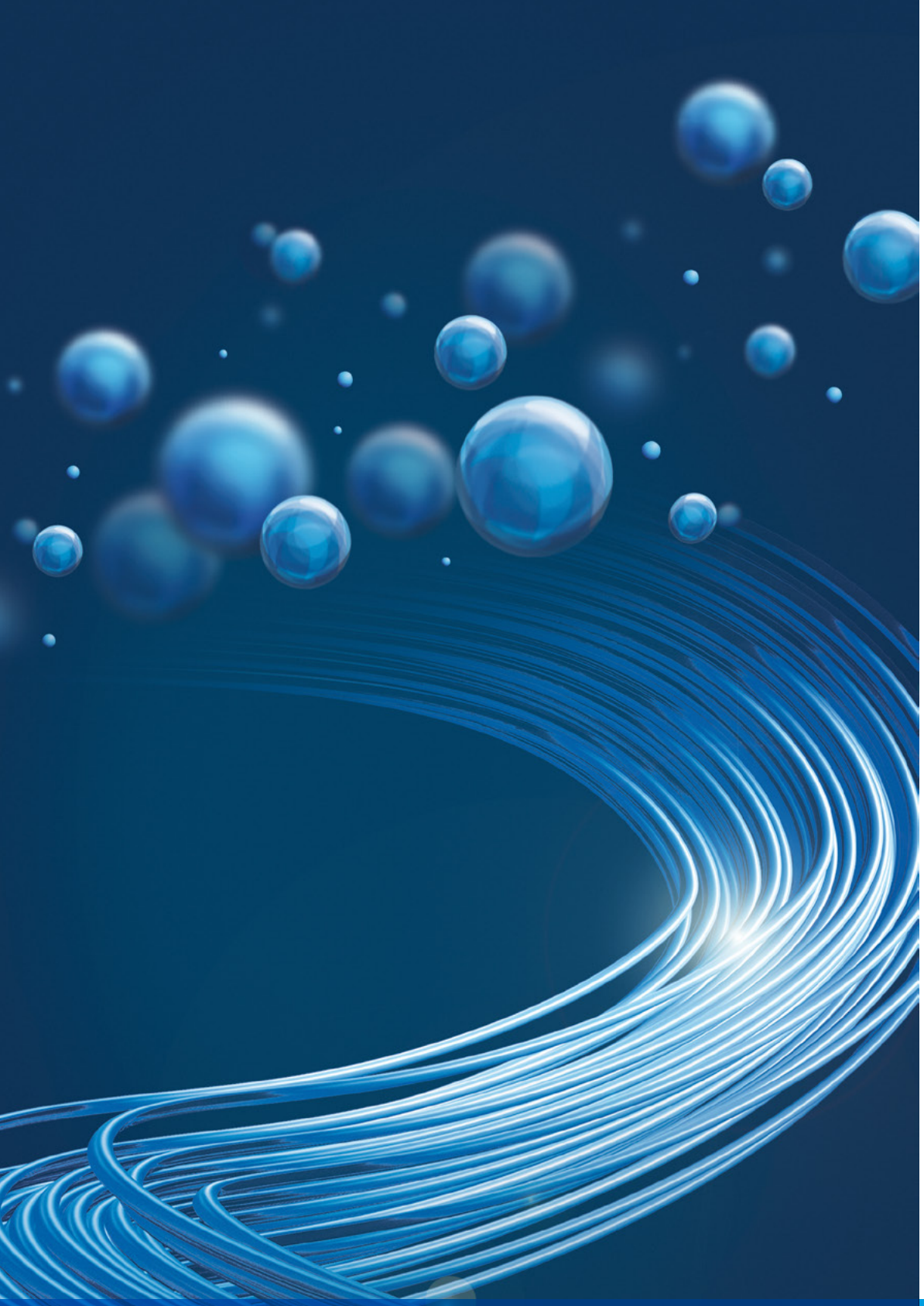


SOLVAY

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 and Energy Production.

Solvay reinforces its leadership position through the alignment of its world-class materials to the fast-rising trend of Additive Manufacturing (AM). By building new AM Research and Innovation laboratories in both Europe and US, and through the creation of a powerful network of solution providers spanning the entire value chain from Universities to equipment manufacturers, 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)	Technology: Selective Laser Sintering (SLS)
KetaSpire® PEEK AM	●	●
Radel® PPSU AM	●	–
NovaSpire™ PEKK AM	–	●

● *Commercially available*

● *Sample available*

Starting with our introduction of tailor-made AM ready filaments and powders (based on KetaSpire® PEEK, NovaSpire™ PEKK and Radel® PPSU), 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 and Powder

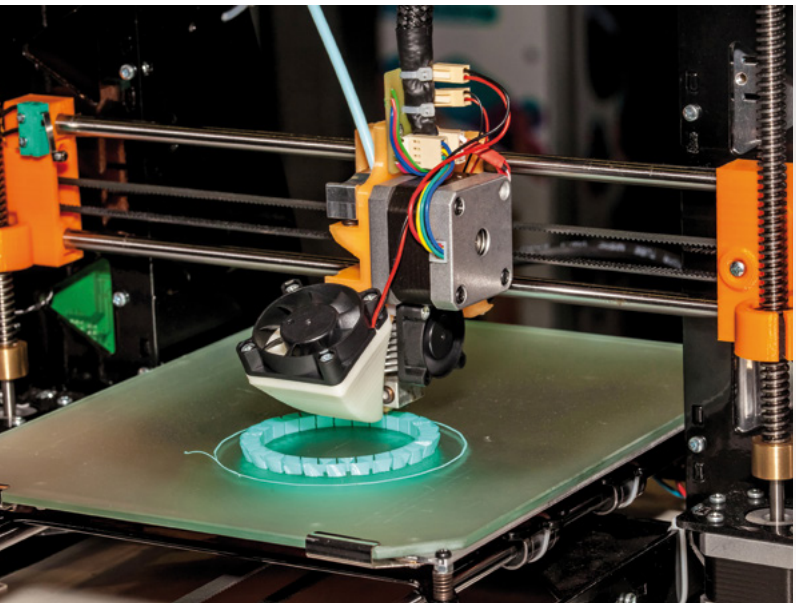
Provides a unique combination of properties that will constantly perform at temperatures of up to 240 °C. Added to its exceptional chemical resilience, KetaSpire® PEEK can be used to replace metals in critical end-use environments such as Oil & Gas, Aerospace and Automotive.

Radel® PPSU AM Filament

Among our sulfone polymers it 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.

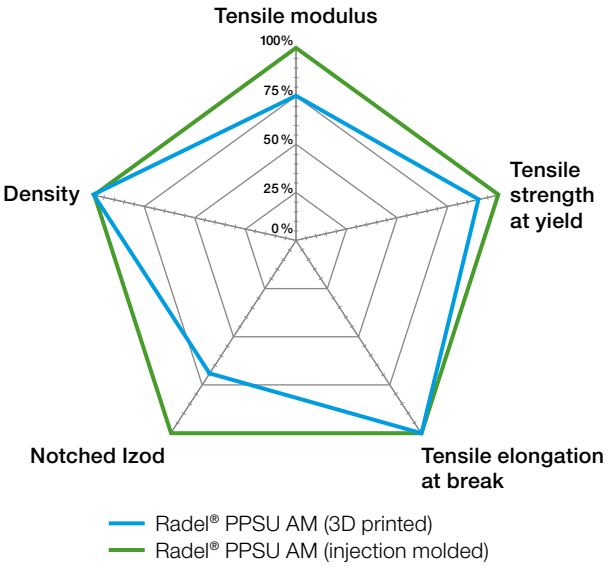
NovaSpire™ PEKK AM Powder

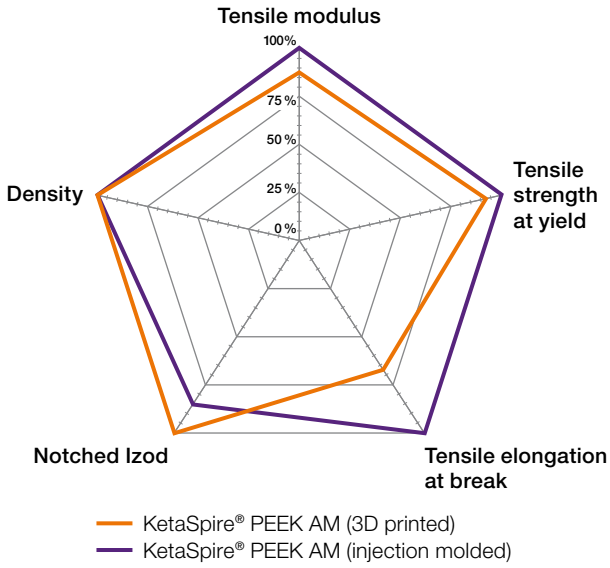
With its faultless flame, smoke and toxicity performance as well as its optimum resistance to a wide range of fluid environments, it is the perfect choice for Aircraft, Space and Transportation components.



Typical Properties

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





Typical Property	Unit	KetaSpire® PEEK AM	KetaSpire® CF PEEK AM	Radel® PPSU AM	Test Method
General					
Filament diameter	mm	1.75	1.75	1.75	
Density	g/cm³	1.29	1.33	1.29	ISO 1183
Mechanical					
Tensile modulus*	GPa	3.12	11.0	2.0	ASTM D638
Tensile strength at break*	MPa	48	140	42	ASTM D638
Tensile strength at yield*	MPa	85	–	62	ASTM D638
Tensile elongation at break*	%	26	1.7	21	ASTM D638
Tensile elongation at yield*	%	4.8	–	7.0	ASTM D638
Notched izod impact	J/m	81	89	482	ASTM D256
Thermal					
Melting temperature	°C	343	343	(T_g = 220)	ASTM D3418
Printing conditions					
Filament drying conditions: minimum temperature, 4h	°C	150	150	150 – 170	
Extruder temperature	°C	390 – 405	390 – 405	380 – 400	
Bed temperature	°C	> 200	> 200	180 – 200	
Printing tool path		Cross hatching in the XY plane	0°	Cross hatching in the XY plane	
Test specimen parameters		1st layer: 0.3 mm thick, subsequent layers: 0.1 mm; 100 % infill; 3 shells; printing speed 18 mm/s			

* Type V bars

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Specialty Polymers

Worldwide Headquarters
SpecialtyPolymers.EMEA@solvay.com
Viale Lombardia, 20
20021 Bollate (MI), Italy

Americas Headquarters
SpecialtyPolymers.Americas@solvay.com
4500 McGinnis Ferry Road
Alpharetta, GA 30005, USA

Asia Headquarters
SpecialtyPolymers.Asia@solvay.com
No.3966 Jindu Road
Shanghai, China 201108

www.solvay.com
www.solvayam.com

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