

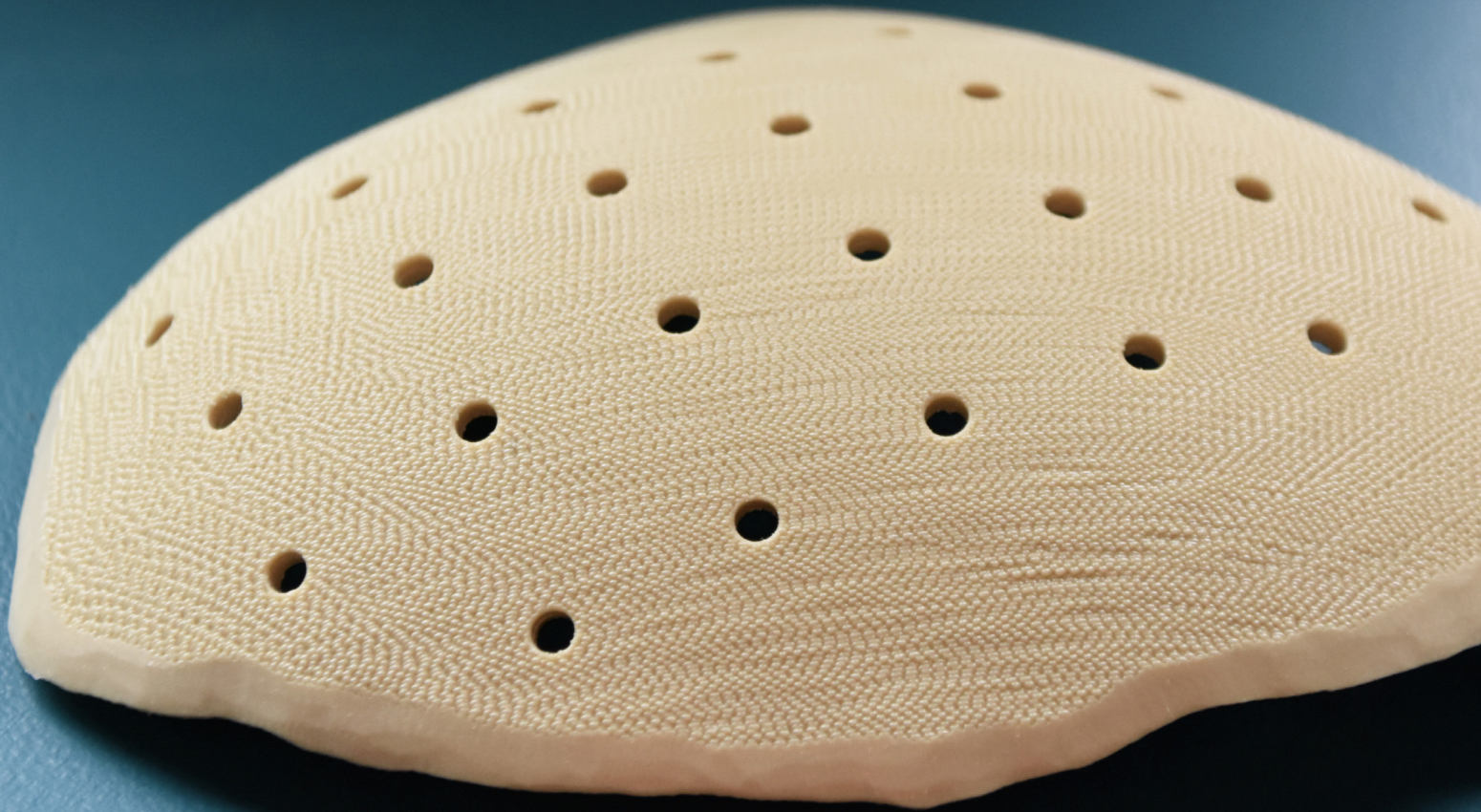
# SEQENS

CONTINUUM OF PROGRESS

## IMPEKK™

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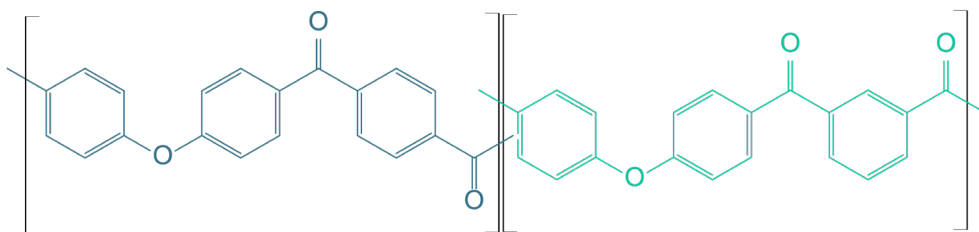
Implantable Poly-Ether-Ketone-Ketone Polymer



# IMPEKK™

PEKK produced by Seqens "IMPEKK™ polymer" is a high performance thermoplastic designed for permanent surgical implants such as spinal, cranial, orthopedics and dental implants. Its tailored crystallization speed enables IMPEKK™ polymer to be perfectly suited for Additive Manufacturing.

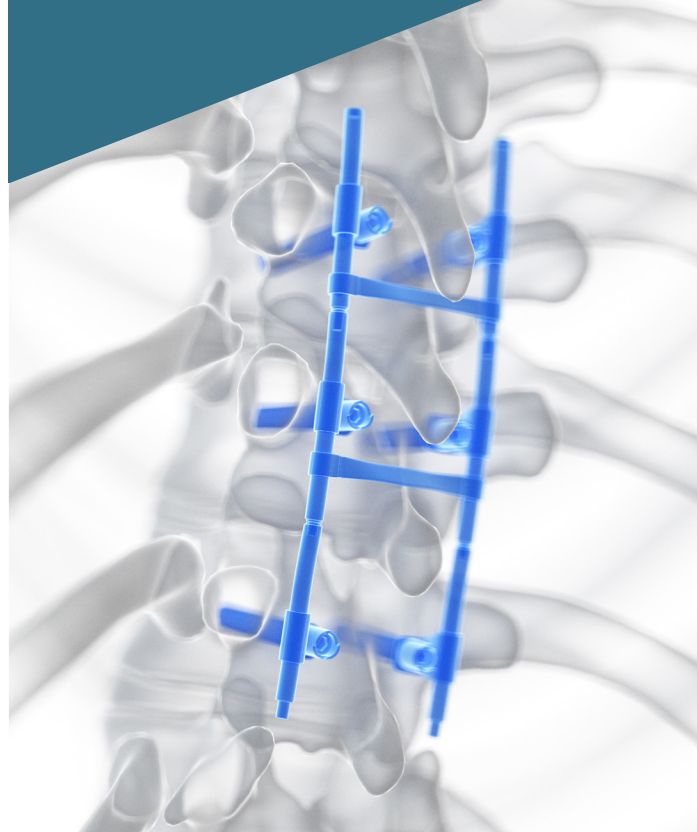
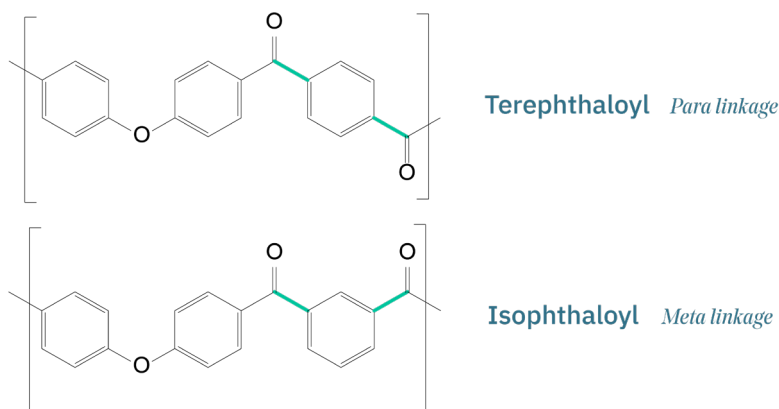
## Chemical structure of Poly-Ether-Ketone-Ketone (PEKK)



## Key properties

The presence of 2 ketone groups compared to other PAEK polymers (Poly-Aryl-Ether-Ketone) gives IMPEKK™ polymer **greater polarity** and allows for better acceptance of functional fillers, providing a wide range of formulation choices for implantable medical device manufacturers. IMPEKK™ polymer is composed of ether (flexibilizing) and ketone (rigidifying) groups. The more ketone groups there are, the higher the Tg (Glass Transition temperature) and the better the mechanical properties. IMPEKK™ is a **copolymer** that includes terephthaloyl and isophthaloyl units. This **modularity** allows fine tuning of crystallization rate and Melting point temperature (Tm).

- Elastic modulus close to cortical bone
- X-ray translucency
- Chemical inertness
- Outstanding compressive strength
- High Tg
- Excellent tribological properties
- Excellent barrier properties
- Toughness
- Sterilizable





## Applications

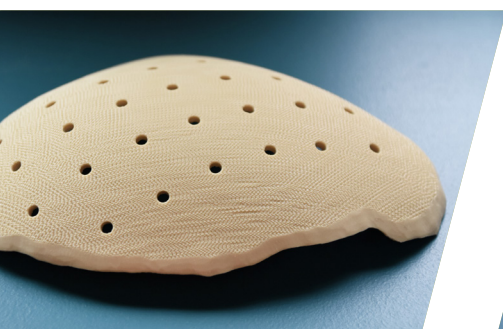
Amenable to all polymers processing techniques (Injection Molding/Extrusion): **IMPEKK™ 1G-T** (granules for Testing and Development)

	Norm	IMPEKK™ 1G-T
Appearance	/	Golden Yellow or White to cream solid
Polymer type	/	Semi-crystalline
Melting range/point (°C)	DSC DIN EN ISO 11357	345-375/358
Glass Transition (°C)	DSC DIN EN ISO 11357	160-170
Tensile test at Break (MPa)	DIN EN ISO 527-1	115
Tensile Modulus (GPa)	DIN EN ISO 527-1	3,7
Impact Strength	DIN EN ISO 179-1eU	180 kJ/m <sup>2</sup>
Impact Strength (notched)	DIN EN ISO 179-1eA	5,7 kJ/m <sup>2</sup>
Density	DIN EN ISO 1183	1,30 g/cm <sup>3</sup>
% Tere/Iso	/	80/20
Crystallization speed	/	Very fast
Processing temperature (°C)	/	385°C
Availability	/	Q3/22

Particularly suited for Additive Manufacturing: **IMPEKK™ 3D-F-T** (filaments for Testing and Development)

IMPEKK™ 3D can be printed both amorphous and semi-crystalline.

	IMPEKK™ 3D-F-T
Appearance	Golden Yellow or White to cream solid
Polymer type	Pseudo-amorphous
Diameter	1,75 mm
Packaging	500 g spool
Availability	Available



*PEKK-based Cranial Implant  
printed by Kumovis*



*PEKK-based Spinal Cage Implants  
printed by Kumovis*



*IMPEKK™ 3D-F-T Filament*

If you are interested in our IMPEKK™ for implantable medical application, please contact us for more information: [alexandra.ngawazenang@seqens.com](mailto:alexandra.ngawazenang@seqens.com)

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