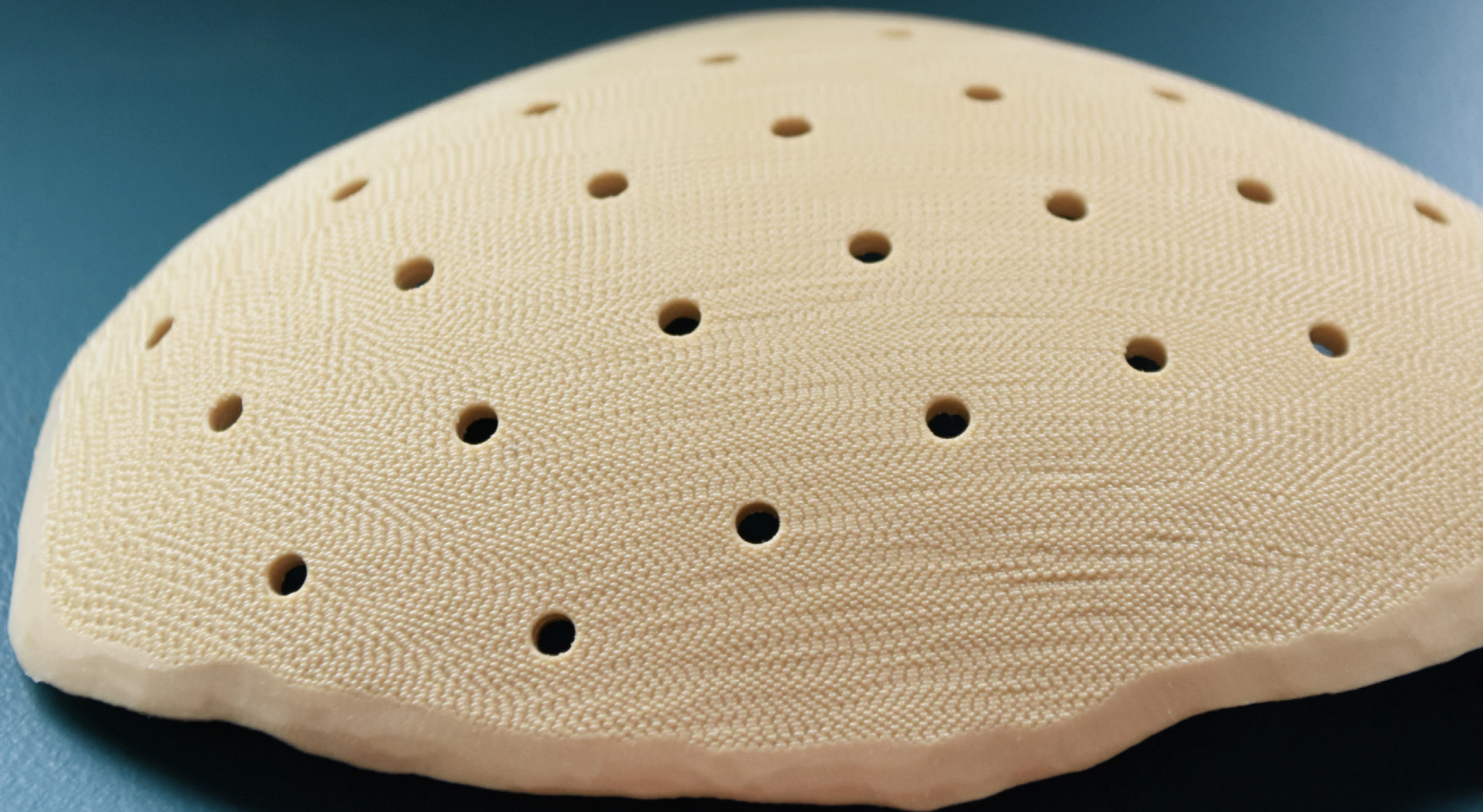


SEQENS

OUR SCIENCE FOR YOUR FUTURE

IMPEKK™

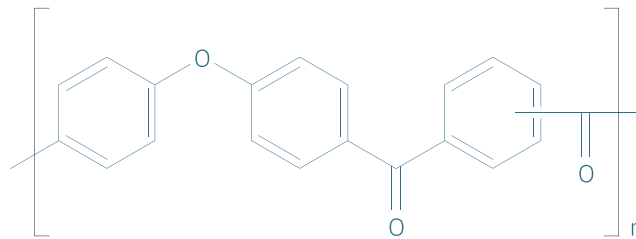
Implantable Poly-Ether-Ketone-Ketone Polymer



IMPEKK™

IMPEKK™ (IMplantable PEKK) is a high performance thermoplastic polymer produced by Seqens and designed for permanent surgical implants such as spinal, cranial, orthopedics and dental implants. Its tailored crystallization speed enables IMPEKK™ polymer to be processed by conventional technologies such as Injection Molding and extrusion and also be perfectly suited for Additive Manufacturing.

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

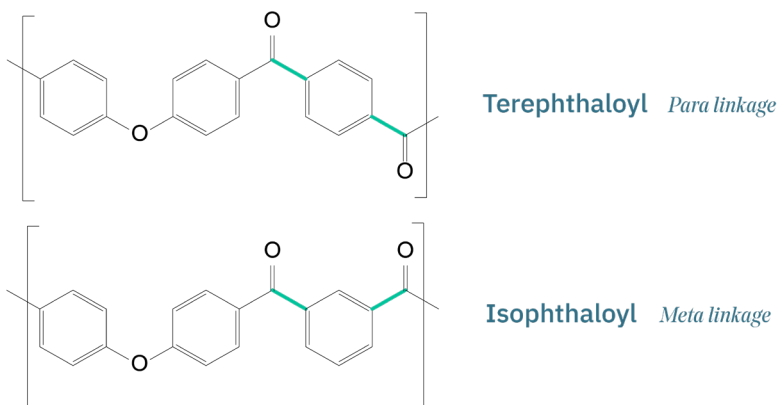


Key properties

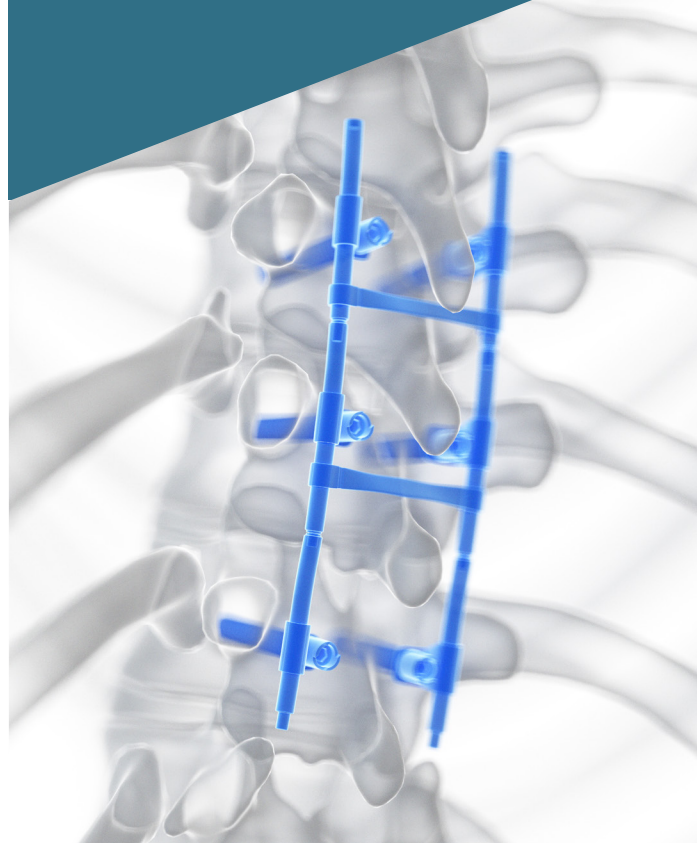
IMPEKK™ polymer is composed of ether (flexibilizing) and ketone (rigidifying) groups.

The presence of 2 ketone moieties by repeating unit 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. 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 similar to cortical bone one
- X-ray translucency
- Chemical inertness
- Outstanding compressive strength
- High Tg
- Excellent tribological properties
- Excellent barrier properties
- Toughness
- Sterilizable



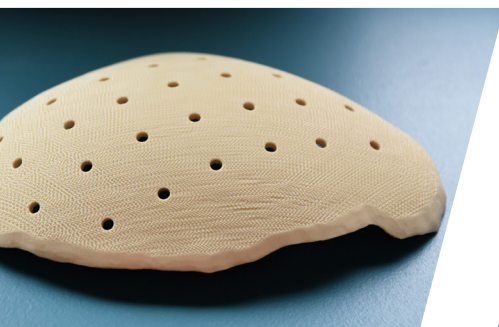
Applications

Amenable to all polymers processing techniques (Injection Molding/Extrusion): **IMPEKK™ 1G** (granules)

	Norm	IMPEKK™ 1G
Appearance	/	Golden Yellow or White to cream solid
Polymer type	/	Semi-crystalline
Dimensions	/	3 mm x 3 mm
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 ²
Impact Strength (notched)	DIN EN ISO 179-1eA	5,7 kJ/m ²
Density	DIN EN ISO 1183	1,30 g/cm ³
% Tere/Iso	/	80/20
Crystallization speed	/	Very fast
Processing temperature (°C)	/	385°C
Availability	/	Testing and development grade available Implantable grade available soon

Particularly suited for Additive Manufacturing: **IMPEKK™ 3D-F** (filaments)
IMPEKK™ 3D can be printed both amorphous and semi-crystalline.

	IMPEKK™ 3D-F
Appearance	Golden Yellow or White to cream solid
Polymer type	Pseudo-amorphous
Diameter	1,75 mm
Packaging	500 g spool
% Tere/Iso	60/40
Availability	Testing and development grade available Implantable grade available soon



PEKK-based Cranial Implant
printed by Kumovis (RI)



PEKK-based Spinal Cage Implants
printed by Kumovis (RI)



IMPEKK™ 3D-F Filament

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