

Description:

ZFUZE™ advanced biomaterial is formulated from PEEK and negatively charged ceramic zeolites. The unique composite combines the attributes of PEEK and titanium that are most beneficial for bone attachment, growth and healing in long-term implantable medical devices.

How ZFUZE™ Biomaterial Works

- Zeolites change the surface of PEEK from inert to hydrophilic and negatively charged, like that of titanium implants.
- This creates an ideal electrostatic substrate for bonding positively charged RGD peptides.
- Zeolites also enable controlled release of Metallic Ion Therapeutic Agents (MITAs).
- The resultant bioactive interface recruits bone-forming cells to the surface of implants and accelerates osseointegration.

ZFUZE™ Advanced PEEK Properties & Biocompatibility Tests

PROPERTIES ¹ (EXTRUDED ROD)	TEST METHOD	TYPICAL VALUES ²
Density	ASTM D792	1.36 g/cm ³
Flexural Strength	ASTM D790	172 MPa
Flexural Modulus	ASTM D790	4.6 GPa
Tensile Strength @ yield	ASTM D638	102 MPa
Elongation @ yield @ break	ASTM D638	4% 15%
Glass Transition Temp. (T _g) (softening point)	ASTM D3418	150°C

ISO 10993 BIOCOMPATIBILITY TESTS ¹	ISO 10993 METHOD
Chemical Characterization (comprehensive extractions)	ISO 10993-18
Cytotoxicity	ISO 10993-5
Dermal Sensitization	ISO 10993-10
Intracutaneous Reactivity	ISO 10993-10
Acute Systemic Toxicity	ISO 10993-11
Material-Mediated Pyrogenicity	ISO 10993-11
Genotoxicity	ISO 10993-3
Brain Implant Study	ISO 10993-6
Hemolysis	ISO 10993-4
Bacterial Reverse Mutation	ISO 10993-3
Toxicological Evaluation	ISO 10993-17

¹ Source: DiFusion Technologies, Inc.

² Typical values are based on testing standard ASTM test bars machined from ZFUZE PEEK rod extruded by Genesis. Because properties may vary due to processing methods and/or the application environment, users are advised to validate performance of parts and devices made from ZFUZE PEEK by testing under actual end-use conditions.