MOTIS™ LV

Polyetheretherketone

Invibio Inc.

Message:

Combining versatility, strength, biocompatibility and superior material properties, MOTIS is a tool for innovation that drives device performance to the next level. At its core, MOTIS is an enhanced polyetheretherketone (PEEK) polymer with properties specifically developed for bearing applications against hard counterfaces, such as metal and ceramic. For device manufacturers, this means increased design flexibility and redefining what is possible.
Superior biomaterials, in form and function, are more important than ever before. Until now, arthroplasty device design and performance have been bound by the limitations of existing metals, ceramics, and polymers, due to inherent characteristics (e.g. strength, stiffness), processing requirements, or performance limitations (e.g. wear, creep and fatigue properties).
MOTIS overcomes many of these constraints - in both design and processing - by fundamentally redefining biomaterial properties and performance possibilities.
To meet the critical demands of orthopedic joint arthroplasty, MOTIS utilizes carbon fiber technology to modify the performance characteristics of natural PEEK. MOTIS provides an inherently strong bond between fibers and matrix, with a fiber-to-matrix interfacial bond strength at least an order of magnitude stronger than UHMWPE and carbon fibers. Additionally, MOTIS has shown to be highly resistant to creep with less than 0.4% of creep measured under loads of 50MPa, maintaining implant shape and contact area under constant stress.

General Information	
Features	Biocompatible
	Ethylene Oxide Sterilizable
	Fatigue Resistant
	Good Creep Resistance
	Good Dimensional Stability
	Good Flexibility
	Good Wear Resistance
	High Stiffness
	High Strength
	Radiation Sterilizable
	Radiotranslucent
	Steam Sterilizable
Uses	Body Implants
	Medical/Healthcare Applications
Agency Ratings	DMF Unspecified Rating
	FDA Unspecified Rating
Appearance	Black
Forms	Granules
Processing Method	Injection Molding
	Machining

Physical	Nominal Value	Unit	Test Method
Density	1.42	g/cm³	ISO 1183

Molding Shrinkage			
Across Flow : 210°C	0.90	%	
Flow : 210°C	0.10	%	
Water Absorption (23°C, 24 hr)	0.50	%	ISO 62
Hardness	**Nominal Value**	**Unit**	**Test Method**
Rockwell Hardness (M-Scale)	105		ASTM D785
Mechanical	**Nominal Value**	**Unit**	**Test Method**
Tensile Modulus	15000	MPa	ISO 527-2
Tensile Stress			ISO 527-2
Yield [1]	98.0	MPa	
Yield	155	MPa	
Tensile Strain			ISO 527-2
Break [2]	2.8	%	
Break	2.0	%	
Flexural Modulus			ISO 178
-- [3]	6400	MPa	
--	12500	MPa	
Flexural Stress			ISO 178
-- [4]	164	MPa	
--	230	MPa	
Compressive Modulus	12000	MPa	ISO 604
Compressive Stress	200	MPa	ISO 604
Shear Modulus	2200	MPa	ISO 15310
Shear Strength	94.0	MPa	ASTM D732
Poisson's Ratio	0.41		ASTM E132
Impact	**Nominal Value**	**Unit**	**Test Method**
Notched Izod Impact Strength	5.5	kJ/m^2	ISO 180
Unnotched Izod Impact Strength	30	kJ/m^2	ISO 180
Thermal	**Nominal Value**	**Unit**	**Test Method**
Melting Temperature	343	°C	
CLTE - Flow			ASTM D696
-- [5]	1.2E-5	cm/cm/°C	
-- [6]	1.5E-5	cm/cm/°C	
Fill Analysis	**Nominal Value**	**Unit**	**Test Method**
Melt Viscosity [7]	3.70E-4	MPa	Internal Method

NOTE	
1.	Rod
2.	Rod
3.	Rod
4.	Rod
5.	Below Tg
6.	Above Tg

7.	Capillary Rheometer

Recommended distributors for this material

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