



BIOMEDICAL GRADE GRAPHITES

Suitable for US FDA Class II and III applications

Overview

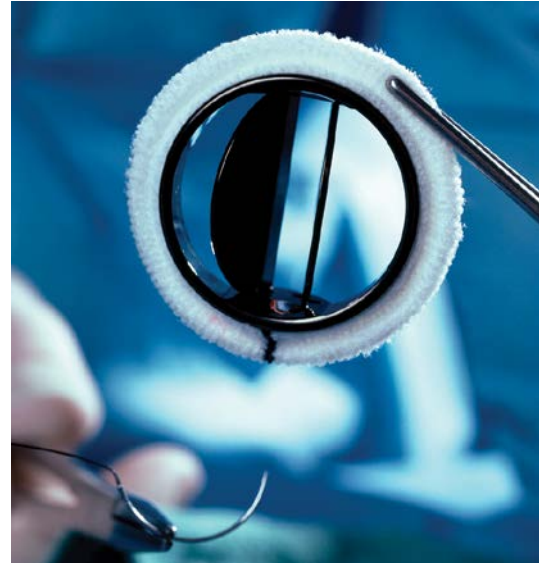
Entegris' POCO® materials are ideal for mechanical components in medical devices. These graphite grades are suitable as a base substrate for Pryo carbon coatings, used in high wear internal medical applications. The consistent particle size and microstructure along with high strengths produce a material that is easily machined into precision parts.

Post synthesis modifications have been developed to make POCO graphites more suitable to specific medical applications. As a producer of highly technical, specialty materials, Entegris also offers design engineering support, precision machining and extensive material testing.

Biomedical Applications

For many years, the proven biocompatibility, safety and efficacy of graphite allow Entegris implantable biomaterials to be used for U.S. FDA Class II and III applications such as mechanical heart valves, orthopedic prosthetics and cancer treatments. Entegris' POCO graphites offer a unique combination of thermal expansion, uniformity, high strength and machinability to meet the stringent requirements set for critical materials in the biomedical market. The compatibility of carbon and graphite with human tissues and bodily fluids allows POCO materials to be used in a variety of implantable applications.

For ultrasonic applications, the proven performance of fine grain graphite allows Entegris POCO materials to be used in next-generation probes. Providing unique acoustic properties, Entegris graphite ensures that your equipment delivers the performance for your most demanding customers.



Features

- High purity
- Compatible with human body
- High strength
- Precision machinable
- High temperature applications

Tungsten Graphite

For internal medical applications, Entegris produces a specialty blended material: POCO AXF-5Q10W. This material combines high strength premium graphite with tungsten to produce a material which is both strong and visible under x-ray. AFX-5Q10W is currently in use worldwide as a substrate material for numerous FDA approved artificial heart valves and finger and elbow joint replacements. Entegris complies with the strict demands of CFR 21, Subchapter H, for regulation of medical device manufactures and has implemented the certification and inspection procedures to satisfy these federal requirements.

Biomedical Typical Properties

Property	AXF-5Q	AXF-5Q10W	AXF-5Q20W	
Particle size:	5 μm	5 μm	5 μm	
	200 μin	200 μin	200 μin	
Apparent density:	1.78 g/cm^3	1.95 g/cm^3	2.1 g/cm^3	
	0.0641 lb/in^3	0.0702 lb/in^3	0.0759 lb/in^3	
Compressive strength:	145 N/mm^2	145 N/mm^2	145 N/mm^2	
	20,000 psi	20,000 psi	20,000 psi	
Flexural strength:	90 N/mm^2	75 N/mm^2	68 N/mm^2	
	12,500 psi	11,000 psi	10,000 psi	
Shore hardness:	74	72	72	
Electrical resistivity:	580 $\mu\Omega\text{-cm}$	600 $\mu\Omega\text{-cm}$	610 $\mu\Omega\text{-cm}$	
	1470 $\mu\Omega\text{-in}$	1500 $\mu\Omega\text{-in}$	1550 $\mu\Omega\text{-in}$	
Coefficient of thermal expansion:	7.9 $\mu\text{m}/\text{m}^\circ\text{C}$	7.7 $\mu\text{m}/\text{m}^\circ\text{C}$	7.7 $\mu\text{m}/\text{m}^\circ\text{C}$	
	4.4 $\mu\text{in}/\text{in}^\circ\text{F}$	4.3 $\mu\text{in}/\text{in}^\circ\text{F}$	4.3 $\mu\text{in}/\text{in}^\circ\text{F}$	
Thermal conductivity:				
	W/m-K	95	130 ¹	150 ¹
	(BTU-ft/hr/ft ² °F)	55	75 ¹	90 ¹

¹ Estimated values

For More Information

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