



BIOMEDICAL GRADE GRAPHITES

Suitable for US FDA Class II and III applications

Overview

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, POCO 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 POCO implantable biomaterials to be used for U.S. FDA Class II and III applications such as mechanical heart valves, orthopedic prosthetics and cancer treatments. 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 POCO materials to be used in next-generation probes. Providing unique acoustic properties, POCO 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, POCO produces a specialty blended material: AXF-5Q10W. This material combines high strength premium graphite with tungsten to produce a material which is both strong and visible under x-ray. AXF-5Q10W is currently in use worldwide as a substrate material for numerous FDA approved artificial heart valves and finger and elbow joint replacements. POCO 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 Graphite 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 $\mu\text{m/m}^\circ\text{C}$ | 7.7 $\mu\text{m/m}^\circ\text{C}$ | 7.7 $\mu\text{m/m}^\circ\text{C}$ |
| | 4.4 $\mu\text{in/in}^\circ\text{F}$ | 4.3 $\mu\text{in/in}^\circ\text{F}$ | 4.3 $\mu\text{in/in}^\circ\text{F}$ |
| Thermal conductivity: | 95 | 130* | 150* |
| | ($\text{Btu}\text{-ft/hr/ft}^2\text{ }^\circ\text{F}$) | 55 | 75* |

* Estimated values

For More Information

Please call your Regional Customer Service Center today to learn what POCO can do for you. Visit www.poco.com and select the Contact Us link for the center nearest you.

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