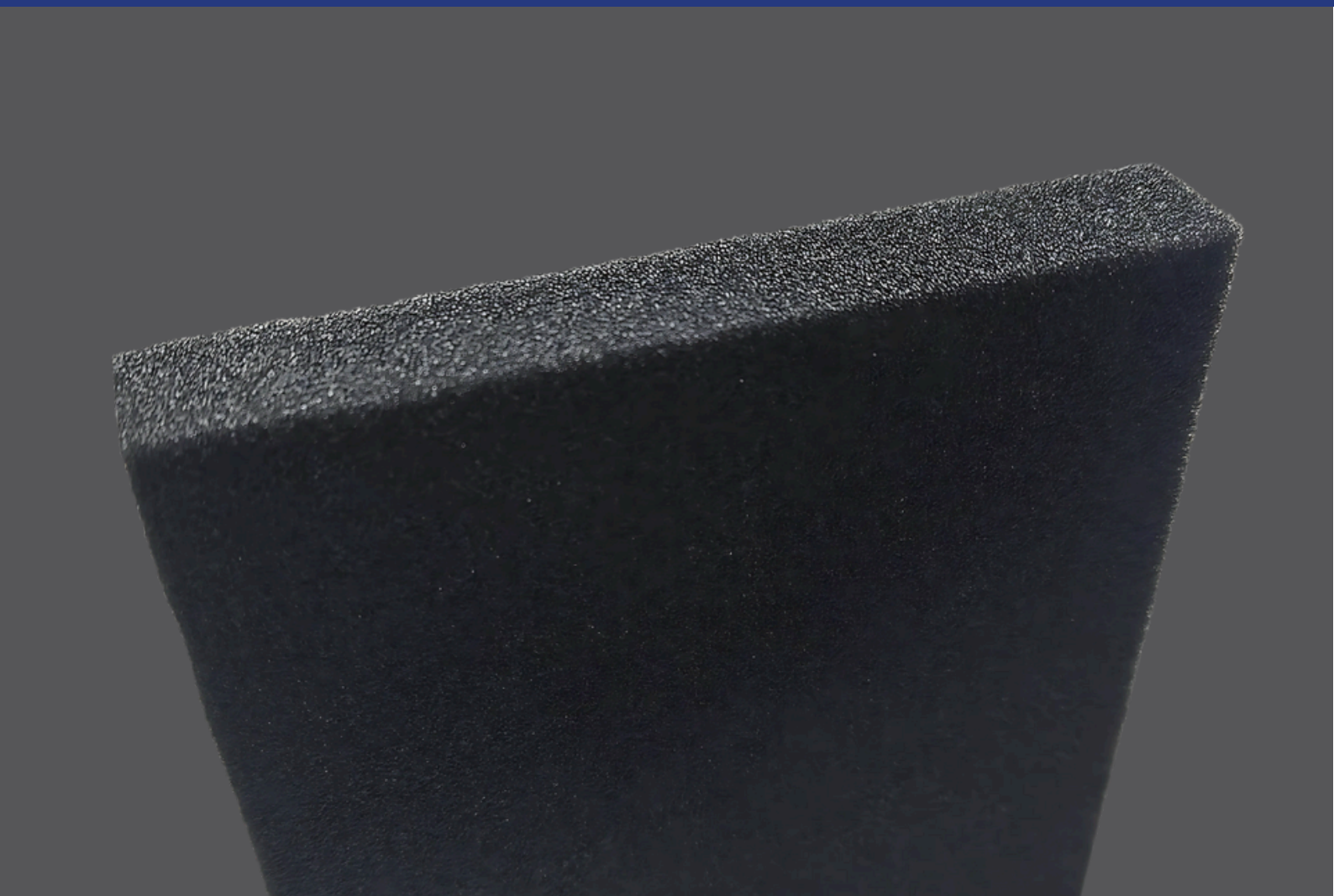
firefly energy

THE POWER OF CARBON FOAM

RVC Foam

TECHNICAL BROCHURE

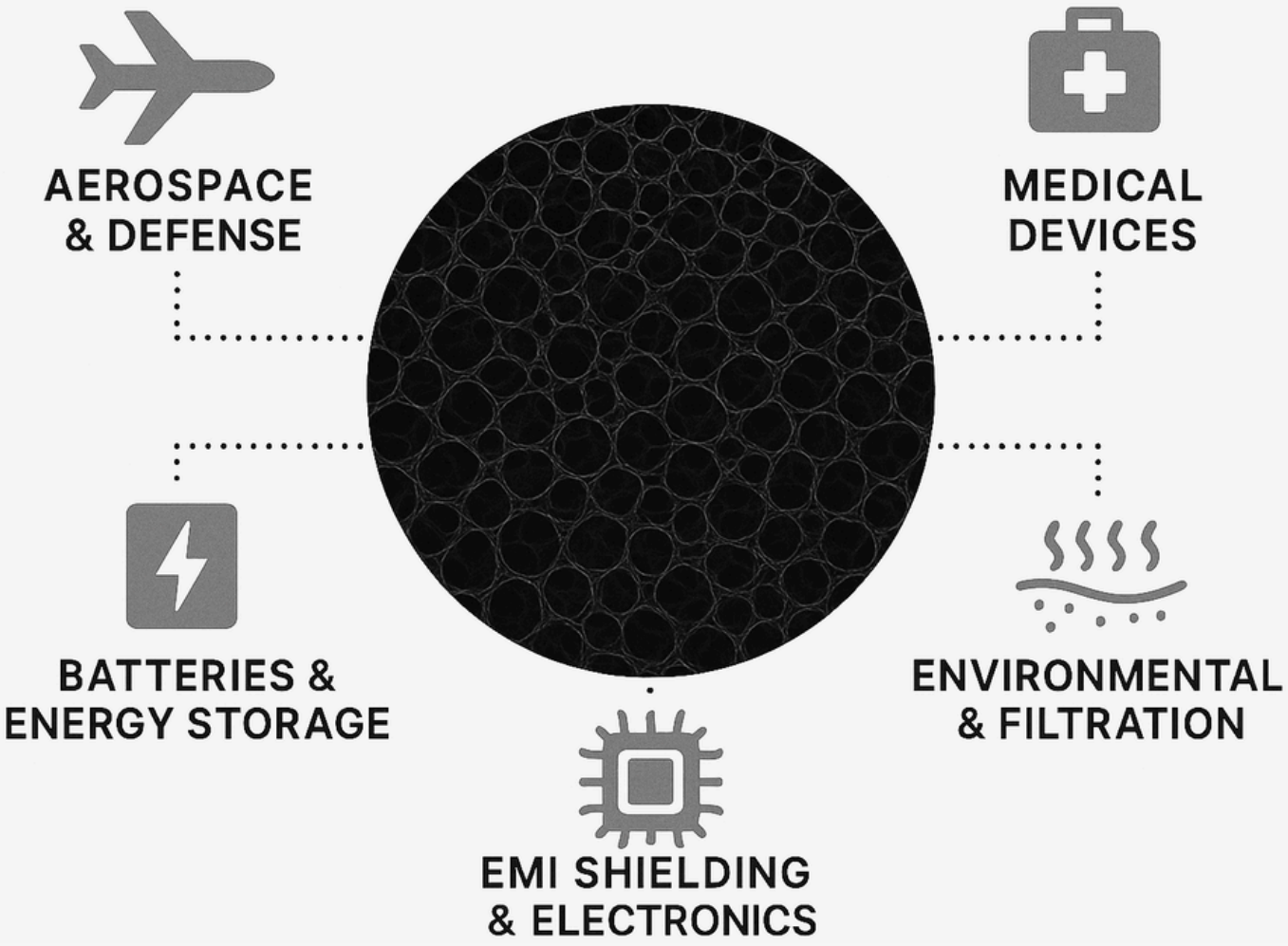


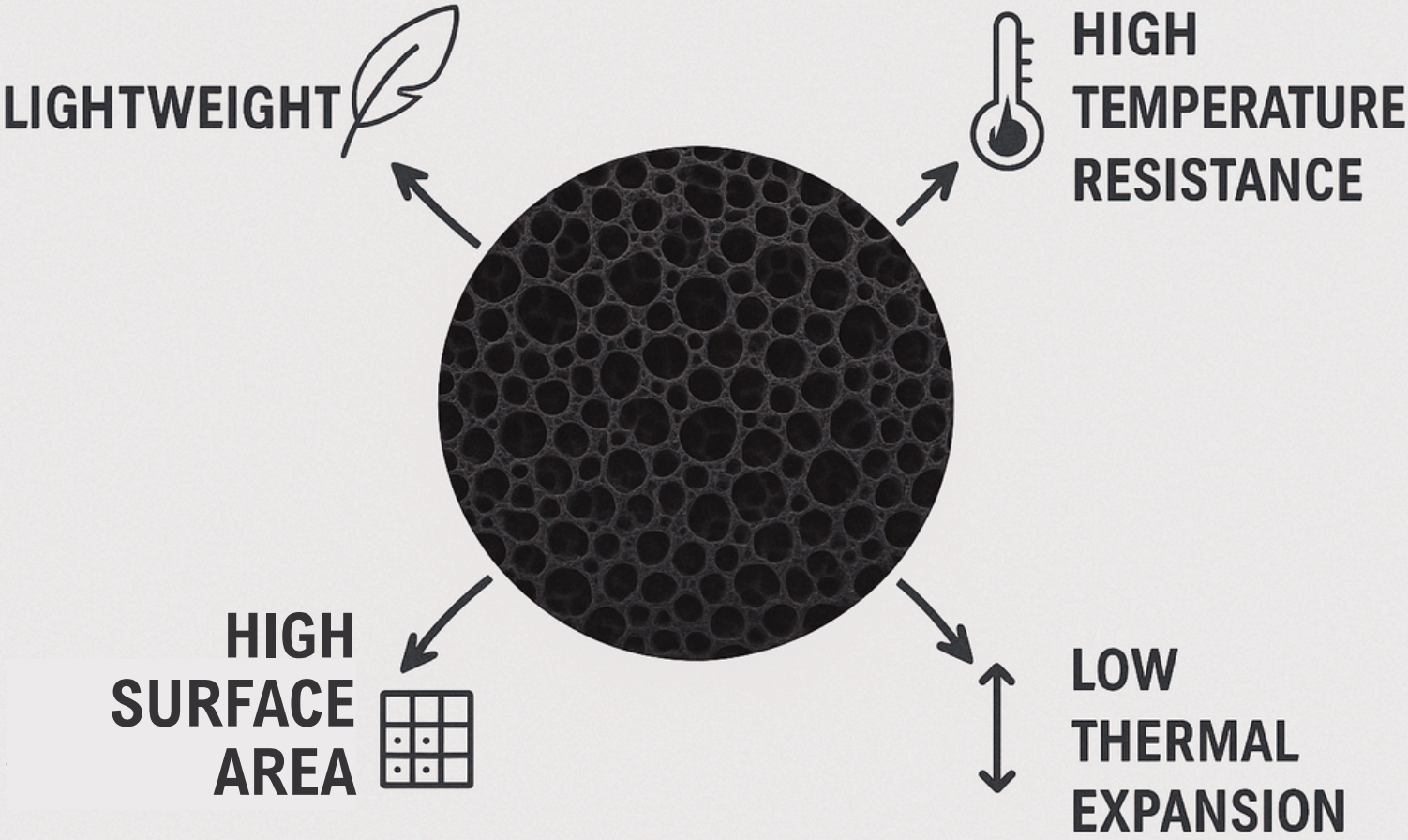
What is RVC Foam?

Reticulated Vitreous Carbon (RVC) foam is a highly porous, carbon-based foam with an interconnected network of carbon ligaments. Despite being extremely lightweight (~97% void), it is remarkably robust and rigid. Its open-cell structure allows fluids or gases to pass through easily, while the carbon composition provides excellent electrical conductivity and thermal stability.

Firefly International Energy Co. produces RVC foam as a next-generation material, originally developed for advanced battery technologies and now enabling innovations across industries.

Manufactured in India under Prandev Batteries Pvt Ltd.





Key Features of Firefly's RVC Foam

Ultra-Lightweight & Porous: Bulk density ~0.045 g/cm3 (~97% air by volume). Provides high surface area and easy fluid flow.

- High Strength-to-Weight Ratio: Compressive strength ~0.76 MPa; tensile strength ~0.69 MPa.

- Temperature Resistance: Up to 350 degC in air, 3500 degC in inert environments.

- Thermally Insulating & Low Expansion: Thermal conductivity 0.03 W/m.K (20 degC) to 0.88 W/m.K (950 degC); CTE ~1.15e-6 /degC.

- Electrically Conductive: Resistivity ~0.75 Ohm.cm, ideal for electrodes and EMI shielding.

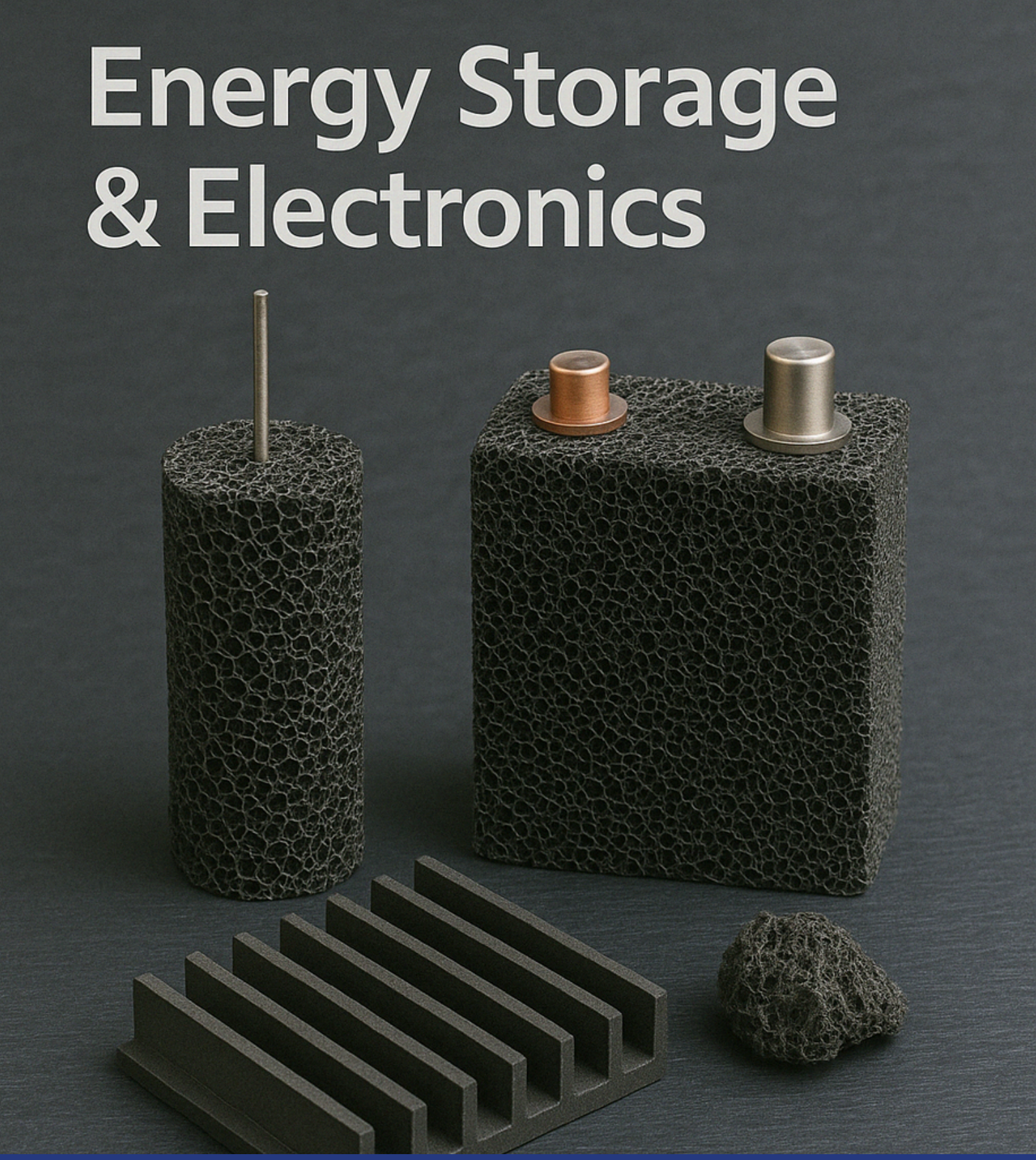
Chemically Inert & Pure: ~99.9% carbon; resists acids, alkalis, and solvents.

- Customizable Pore Structure: Available in 10-100 PPI for tailored flow and surface area.

Aerospace & Defense

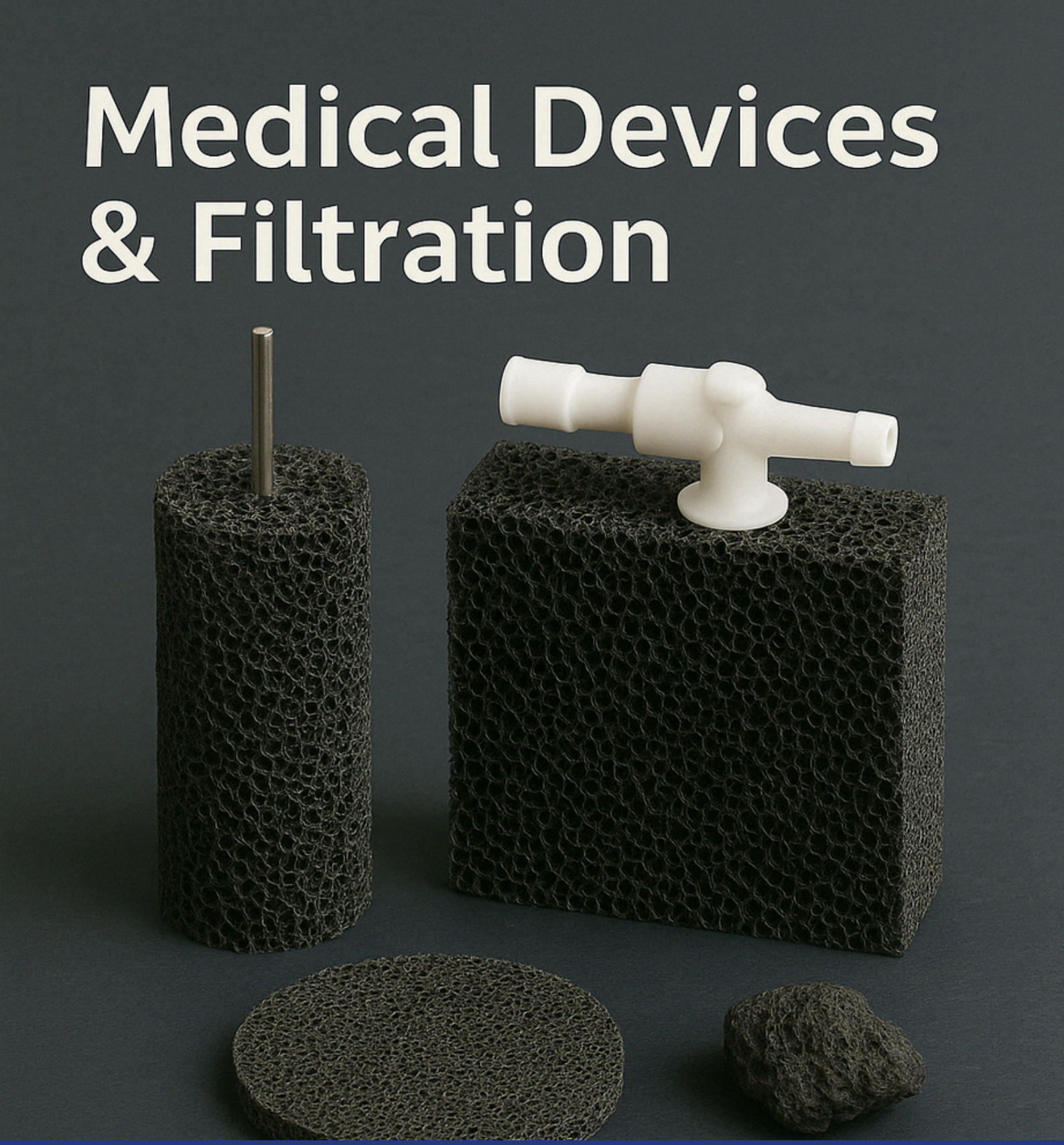
- Lightweight core in composite panels for aircraft and spacecraft.
- Thermal insulation and heat shields in jet engines and re-entry vehicles.
- EMI shielding and vibration damping in avionics and radar systems.
- Structural components in unmanned aerial vehicles for durability and weight reduction.

Energy Storage & Electronics



- Battery electrodes and current collectors in lead-acid and lithium-ion batteries.
- Ultracapacitor scaffolds for high power density and long cycle life.
- EMI/RFI shielding enclosures and gaskets for electronics.
- Thermal management fixtures for high-temperature electronics and precision equipment.

Medical Devices & Filtration



- Porous scaffolds for tissue engineering and implants; radiolucent and autoclavable.
- Non-magnetic supports in imaging equipment (MRI, CT) without scan artifacts.
- Durable filters for air and water purification in high-temperature and corrosive environments.
- Catalyst supports for chemical filtration and environmental remediation.

Carbon Foam Powder (RVC Foam)

Lightweight. Durable. Multifunctional.

What is Carbon Foam Powder?

Reticulated Vitreous Carbon (RVC) foam powder is an ultra-light, highly porous carbon material with up to 97% open porosity and density around 0.045 – 0.06 g/cm³. It offers exceptional thermal stability, chemical inertness, and electrical conductivity, making it ideal for cutting edge industrial applications.

Technical Specifications

- Average Particle Size: Typically, customisable from 5 to 100 microns
- Material Purity: >99.9% Carbon
- Thermal Stability: Up to 3500°C in inert atmospheres
- Electrical Resistivity: Approx. 0.3 Ω·cm
- Thermal Conductivity: Approx. 0.04 – 0.06 W/m·K
- Porosity: Up to 97% open cell structure

Current Applications

Aerospace & Transportation

Electronics & Energy Storage

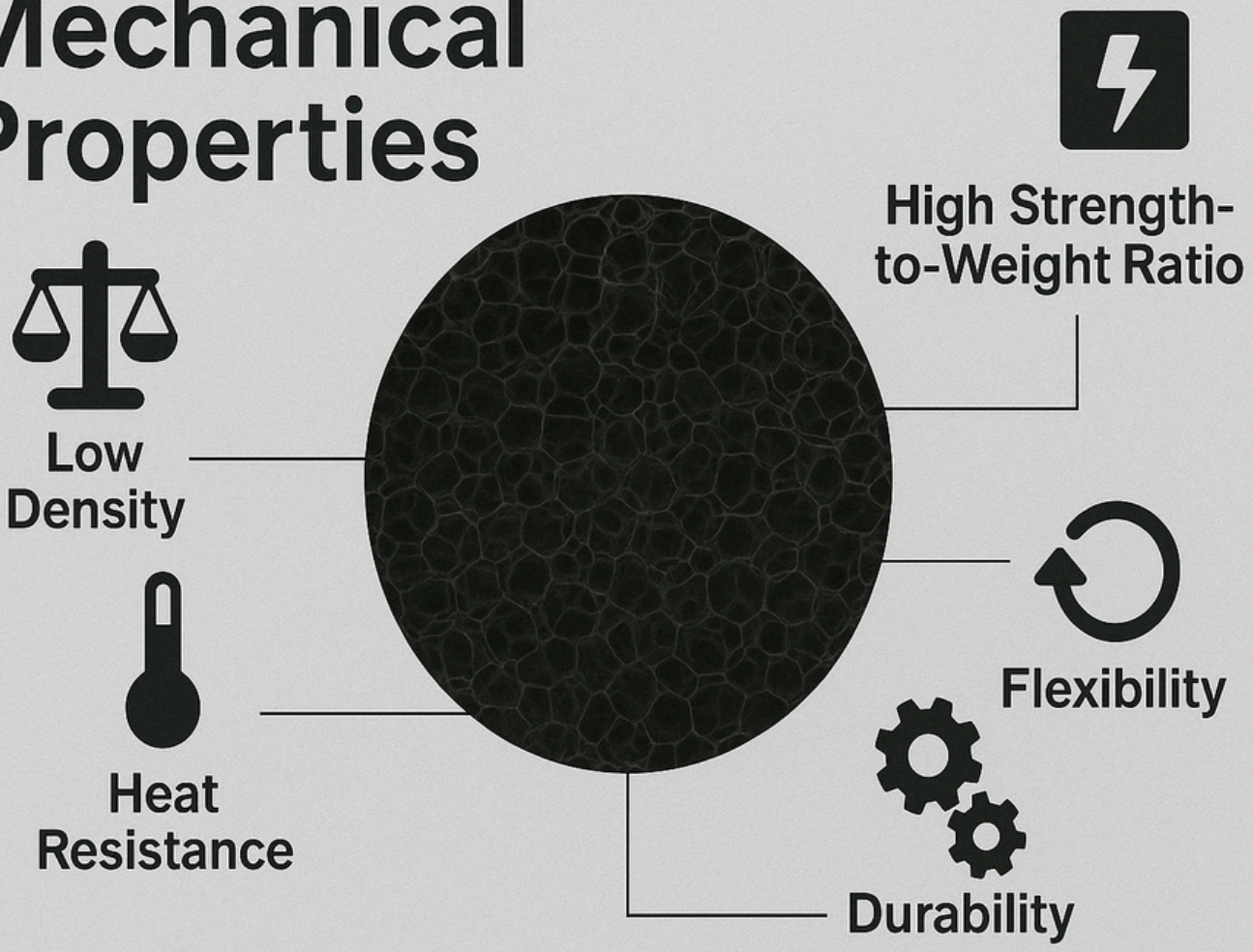
Textiles & Protective Gear

Manufacturing & Industrial Processes

Why Choose Firefly RVC Foam Powder?

- Ultra-lightweight material with customisable particle size and density
- Exceptional chemical and thermal stability for harsh environments
- Superior electrical and thermal properties to boost device performance
- Backed by Firefly’s industry expertise and reliable global supply chain

Mechanical Properties



- Bulk Density: 0.045 g/cm3
- Ligament Density: 1.538 g/cm3
- Resistivity: 0.75 Ohm.cm
- Specific Heat: 0.30 cal/g.degC
- Max Use Temp: 350 degC (air), 3500 degC (inert)
- Thermal Conductivity: 0.03 W/m.K (20 degC) to 0.88 W/m.K (950 degC)
- CTE: 1.15e-6 /degC (0-200), 1.65e-6 /degC (0-1000)
- Compressive Strength: 625 kPa (10% def), 763 kPa ultimate
- Tensile Strength: 690 kPa
- Flexural Strength: 690 kPa; Modulus: 58.6 MPa

THE POWER OF CARBON FOAM

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