PyroCore® Mesh

Engineered for High-Performance Pyrotechnic Actuators

KnitMesh® Technologies
Protecting People, Property and our Planet

PyroCore® is a high-performance knitted wire mesh designed for regulation, filtration, and protection in pyrotechnic safety and deployment devices.

Offering exceptional gas-flow, heat dissipation, and particulate capture, PyroCore® delivers consistent, predictable performance in the extreme conditions where conventional filter media and actuator elements fail.

Principles of Operation

PyroCore® knitted mesh elements are designed to control gas flow, filter particles, and manage heat during the activation of pyrotechnic devices. When the system actuates, the mesh regulates the shock wave, reduces temperature peaks, and captures solid particles to protect surrounding components.

In actuator systems, PyroCore® can also absorb and shape energy release, helping to control the speed and force of the deployment.

In airbag and inflator systems, the mesh ensures clean and stable inflation by removing particulates and reducing heat to protect the fabric.

The knitted mesh structure is strong, heat-resistant, and able to withstand shock and vibration. It can be produced from many grades of stainless steel so will not corrode and can be recycled after use. Other materials are available on request.

PyroCore® can be produced in a range of mesh densities to control flow regulation and filtration efficiency. Parts can be delivered as bespoke mesh pieces or as completed sub-assemblies ready for installation. Production can also scale from single pieces and prototypes through to automated full high-volume manufacturing.

Applications

PyroCore® is suitable for use where reliable, repeatable actuation, protection, and controlled gas-flow are essential. Typical applications include:

Automotive

- Airbag inflator filters
- Seatbelt pretensioner actuators
- Pedestrian protection hood-lift devices
- EV pyrotechnic fuses and safety devices

Aerospace

- Stage separation bolts and release mechanisms
- Payload clamp and fairing separation systems
- Parachute deployment and landing recovery devices

Defence and Military

- Ejection seat and canopy fracturing charges
- Munition separation and deployment sequencing
- Rapid-deploy blast and armour protection systems

Marine and Subsea

- Emergency life-raft and buoyancy device inflation
- Subsea release mechanisms

Industrial and Heavy Equipment

- Explosive bolts and release devices
- Emergency shutoffs and actuated valves

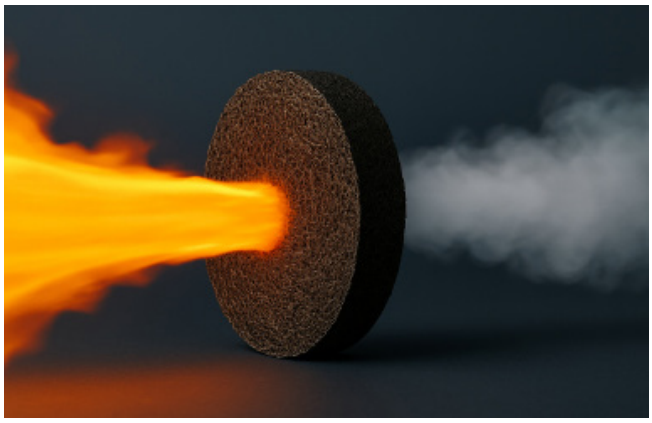
Features and Benefits

- **Precision Performance:** controlled gas flow and predictable pressure/time curves
- **Proven Reliability:** trusted globally across the automotive, aerospace, and defence sectors
- **High Filtration Efficiency:** 3D voids trap particulates and protects downstream components whilst minimising pressure drop
- **Thermal Management:** large surface area designed to dissipate heat and control combustion gas temperatures
- **Shock and Impact Resistant:** mesh construction withstands extreme actuation shock loads without failure
- **High-Temperature Resistant:** suitable for elevated thermal environments
- **Durability:** available in stainless steel, Inconel, copper, and specialty alloys to resist corrosion and oxidation
- **Scalable Supply:** ideal for prototype development through to low and high-volume production
- **No Minimum Volumes:** ideal for prototype, special, or low-volume production applications
- **Bespoke:** geometry, density, weld form, and assembly interfaces tailored to system requirements

Customisation Options

Material	Stainless Steel (304, 316, 430), Inconel, Hastelloy, Copper, Speciality Alloys, and Co-Knits
Operating Temperature	Typical 1100°C continuous, higher impulse
Wire Gauge	Up to 0.70mm
Compressed Density	50% - 85%
Damping Characteristics	To suit specific application requirements

Other materials and characteristics are available upon request.



Quality Assurance

KnitMesh Technologies is accredited to: ISO 9001, ISO 14001, ISO 45001, PAS 99, and IATF 16949.

Web: knitmeshtechnologies.com
Email: enquiries@knitmesh.com
Tel: +44 (0) 1352 717 640
Coast Road, Greenfield, Flintshire, CH8 9DP United Kingdom

KnitMesh® Technologies

Protecting People, Property and our Planet