Unleashing the Power of Conformity and Cavity-to-Cavity EMI Shielding

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In engineering, finding solutions that perfectly balance functionality, versatility, and efficiency is a constant pursuit. When it comes to EMI shielding and electrical conductivity, engineers often face the challenge of selecting materials that offer optimal performance across a range of requirements. Schlegel Electronic Materials (SEM) provides a conductive foam that delivers conformity, cavity-to-cavity EMI shielding, conductivity at low compression forces, and exceptional effectiveness at very high frequencies. Here we explore the features, benefits, and applications of SEM's conductive foam, unraveling its immense potential for engineers across diverse industries.

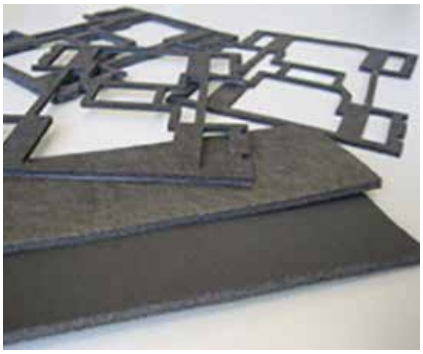

FIGURE 1

SEM's Conductive Foam Features:
SEM offers a line of EMI foam, CF Conductive Foam, a highly resilient Nickel-Copper polyurethane foam sandwiched between our knitted and non-woven fabrics to form die-cut gaskets (Fig. 1).

Key features include:

1. Conformity: One of the standout features of our Conductive foam is its remarkable conformity. Unlike rigid materials, our conductive foam possesses inherent flexibility, allowing it to conform to various shapes and contours. This unique property enables engineers to achieve excellent contact and coverage, even in complex and irregular geometries. By conforming to intricate designs, our Conductive foam ensures consistent EMI shielding and electrical conductivity across different surfaces and cavities.

2. Cavity-to-Cavity EMI Shielding: SEM Conductive foam excels in providing EMI shielding, particularly in scenarios where multiple cavities or compartments must be shielded independently. Its inherent ability to conform to different spaces and its conductive properties allow for effective sealing and isolation of individual cavities. This feature is particularly valuable in electronic devices with multiple components, ensuring electromagnetic interference is contained within each specific compartment.

3. Conductivity at Low Compression Forces: SEM's Conductive foam can maintain conductivity even at low compression forces. Unlike traditional gaskets or seals that require high compression forces to achieve effective conductivity, SEM conductive foam can maintain electrical connectivity with relatively low applied pressure. This feature simplifies the design and assembly process and minimizes the risk of damage to sensitive components during installation or operation.

4. Effectiveness at Very High Frequencies: Our Conductive foam excels when shielding effectiveness at very high frequencies. Its unique cellular structure and conductive additives enable it to attenuate and absorb electromagnetic waves, even in frequency ranges where other materials may struggle. This high-frequency capability is particularly advantageous in wireless communications, aerospace, and defense applications, where robust EMI shielding is vital.

Benefits of SEM's Conductive Foam:

1. Enhanced Design Flexibility: With its exceptional conformity, conductive foam offers engineers enhanced design flexibility. Its ability to mold and adapt to various geometries

empowers designers to create intricate and compact electronic systems without compromising EMI shielding effectiveness or electrical conductivity.

2. Improved Performance and Reliability: SEM's Conductive foam's reliable EMI shielding properties and conductivity at low compression forces contribute to enhanced performance and reliability of electronic devices. By mitigating electromagnetic interference and ensuring proper grounding, our conductive foam helps to minimize signal degradation, improve signal integrity, and reduce the risk of malfunctions or failures.

3. Simplified Assembly and Installation: Our Conductive foam helps simplify engineers' assembly and installation processes. Its flexibility and adaptability enable easy integration into complex designs, eliminating the need for additional assembly steps or customized solutions. The ability to achieve EMI shielding and conductivity with low compression forces further streamlines the manufacturing process, reducing costs and improving productivity.

Applications of Conductive Foam:

1. Electronics and Telecommunications: SEM's Conductive foam finds extensive applications in the electronics and telecommunications industries. It is utilized in devices such as smartphones, tablets, laptops, and servers, where EMI shielding and grounding are crucial for optimal performance and electromagnetic compatibility (EMC). Our Conductive foam's conformity ensures efficient shielding in densely packed electronic systems, reducing the risk of interference and crosstalk.

2. Medical Devices: In the medical field, where precise and reliable electronic equipment is paramount, conductive foam ensures EMI shielding and electromagnetic compatibility. It is used in MRI machines, defibrillators, pacemakers, and patient monitoring systems. Conductive foam's low compression force requirements and conformity make it ideal for delicate medical equipment, maintaining performance and patient safety.

3. Aerospace and Defense: Aerospace and defense applications demand stringent EMI shielding and conductive solutions. Conductive foam plays a vital role in aircraft avionics, radar systems, satellite communications, and military electronics. Its high-frequency effectiveness, cavity-to-cavity shielding, and ability to conform to complex structures make it an invaluable asset in these critical applications.

SEM's conductive foam emerges as a game-changer for engineers seeking effective EMI shielding and electrical conductivity solutions. Its remarkable conformity, cavity-to-cavity shielding capabilities, conductivity at low compression forces, and high-frequency effectiveness offer numerous benefits across diverse industries. From electronics to healthcare and aerospace, conductive foam empowers engineers to design and manufacture reliable, high-performance systems that excel in the face of electromagnetic challenges.

Unlocking the Power of ORS II Broadband Gaskets: High-Performance Grounding and Shielding Results

Achieving effective grounding and shielding results across a broad frequency range is a constant challenge for design engineers. When it comes to broadband applications, engineers need reliable solutions that can address the diverse needs of low and high-frequency environments. Schlegel Electronic Materials (SEM) offers ORS II gaskets designed for broadband applications and are equipped with features like nickel-copper plated conductive foam and nickel-copper flexible fabric cladding (Fig. 2). Here, we explore the features, benefits, and applications of these advanced gaskets, ensuring minimal surface resistance for superior grounding and shielding performance at low and high frequencies. Additionally, we will delve into the significance of Z-conductivity in closing cavities and ensuring optimal shielding performance at high frequencies.

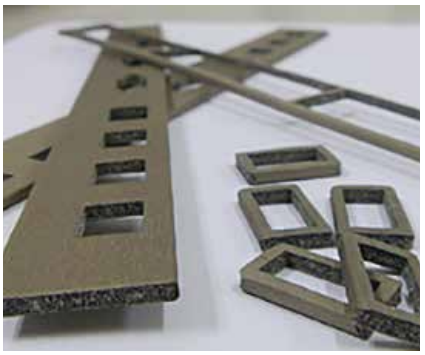

FIGURE 2

Features of ORS II Gaskets:

1. Nickel-Copper Plated Conductive Foam: ORS II gaskets incorporate nickel-copper-plated conductive foam, known for its excellent electrical conductivity and EMI shielding properties. The conductive foam's unique cellular structure and plating ensure minimal surface resistance, allowing efficient grounding and shielding across a broad frequency spectrum. This feature is crucial for preventing signal degradation and interference in sensitive electronic systems.

2. Nickel-Copper Flexible Fabric Cladding: Integrating nickel-copper flexible fabric cladding in the ORS II gaskets adds an extra layer of functionality. This cladding further enhances the gasket's shielding capabilities, especially at lower frequencies. The flexibility of the fabric cladding allows it to conform to various surface irregularities, ensuring effective sealing and reducing the risk of EMI leakage.

3. Z-Conductivity: To achieve optimal shielding performance at high frequencies, ORS II is available in a variety of thicknesses, which are die-cut to customer specifications for a durable, highly conductive product in all X-Y-Z axes (Z-Conductivity). This feature ensures the closure of cavities in chassis openings, preventing the propagation of electromagnetic waves and minimizing the risk of signal leakage. Z-conductivity is particularly important in applications where maintaining a controlled electromagnetic environment, such as aerospace, telecommunications, and defense systems, is critical.

Benefits of ORS II Gaskets:

1. Superior Grounding and Shielding: Providing excellent grounding and shielding performance across a wide frequency range. The combination of nickel-copper-plated conductive foam and flexible fabric cladding ensures minimal surface resistance, reducing the risk of signal loss and EMI leakage.

This translates into enhanced performance and reliability of electronic systems, with minimized interference and improved signal integrity.

2. Broadband Compatibility: ORS II is compatible with a wide range of frequencies. Unlike specialized gaskets designed for specific frequency bands, ORS II offers a versatile solution that can address the needs of both low and high-frequency applications. This versatility simplifies the selection and procurement process, allowing engineers to achieve optimal grounding and shielding across diverse projects.

3. Design Flexibility and Easy Installation: ORS II offers design flexibility and easy installation, making them ideal for various electronic systems. Their conformability and flexibility allow easy integration into complex designs, ensuring effective sealing and shielding even in challenging geometries. The ease of installation reduces assembly time and effort, contributing to streamlined production processes.

Applications for ORS II Broadband Gaskets:

1. Telecommunications and Networking: There are extensive applications in telecommunications and networking equipment. They are used in devices such as routers, switches, base stations, and data centers, where reliable grounding and shielding are crucial to maintaining signal integrity and minimizing interference. ORS II gaskets ensure optimal performance in these high-frequency environments, ensuring uninterrupted data transmission and communication.

2. Aerospace and Defense Systems: Aerospace and defense industries demand robust EMI shielding and grounding solutions. ORS II gaskets shield sensitive electronic components in aircraft avionics, radar systems, satellites, and military equipment. Their Z-conductivity feature ensures effective shielding at high frequencies, safeguarding critical systems from electromagnetic interference.

3. Medical and Industrial Electronics: ORS II gaskets provide essential EMI shielding and grounding for various equipment in the medical and industrial sectors. They are used in medical devices, industrial control systems, power electronics, and more. ORS II gaskets help ensure the reliability and safety of these systems, protecting sensitive components from EMI and maintaining stable operation.

ORS II gaskets, equipped with nickel-copper plated conductive foam, nickel-copper flexible fabric cladding, and Z-conductivity, provide engineers with a powerful tool to achieve superior grounding and shielding results across a broad frequency range. These advanced gaskets offer enhanced performance, broadband compatibility, design flexibility, and easy installation. From telecommunications to aerospace and medical electronics, broadband gaskets find applications in diverse industries, ensuring reliable operation and mitigating the risks associated with electromagnetic interference.

Visit https://www.schlegelemi.com/ors-ii/ to learn more and unlock the full potential of your engineering projects.

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