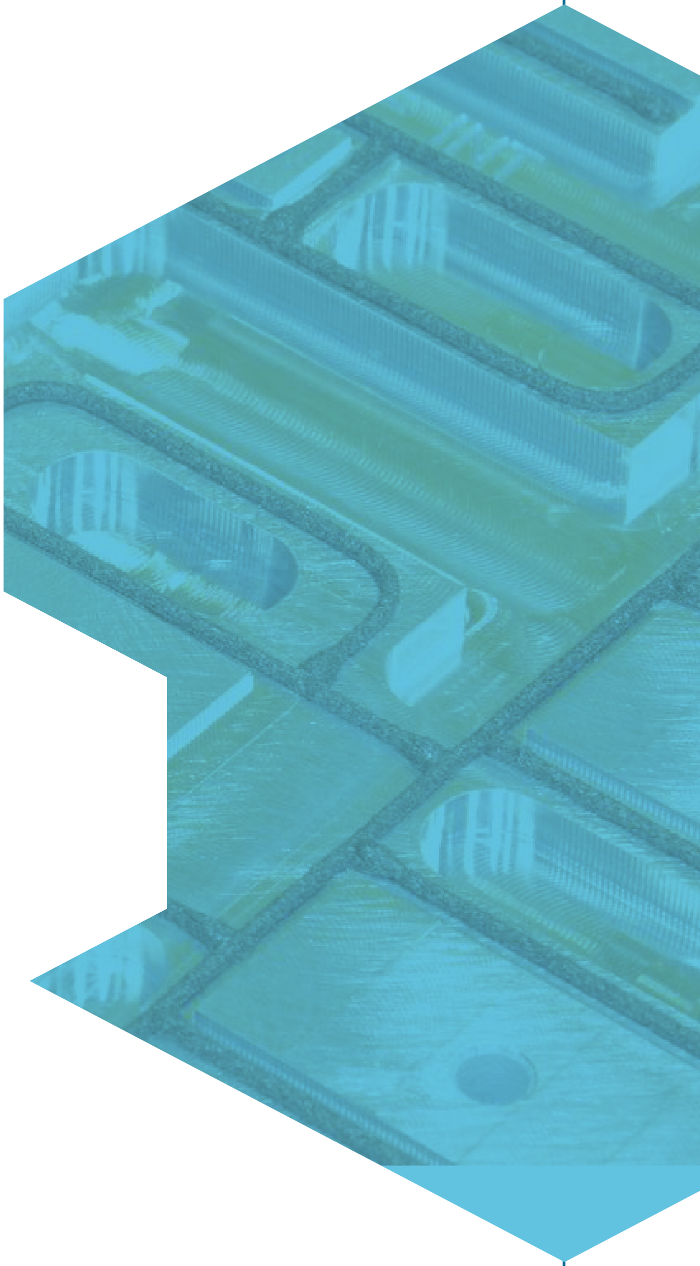
EMI GASKET DESIGN GUIDE

MODUS ENGINEERING TEAM



MODUS

IDEA TO IGNITION

Introduction | EMI Gasket Design Guide

You'd be hard-pressed to find an industry that doesn't utilize electromagnetic interference (EMI) shielding gaskets–they're everywhere. Despite their ubiquitous nature, designing an EMI gasket isn't for the faint of heart. It requires deep technical know-how and a serious love for problem-solving.

EMI gasket design is best done in concert with well-established professionals because a device that falls short of its intended purpose can have dire consequences. The expert engineering team here at Modus has the depth and breadth of EMI gasket knowledge essential to working alongside you through iterative design cycles.

To help you get off on the right foot, they've compiled their knowledge into the last guide you'll ever need for EMI gasket design.

So, without further ado...

To get expert design feedback, engineering guidance, and manufacturing help, contact us at Modus Advanced.

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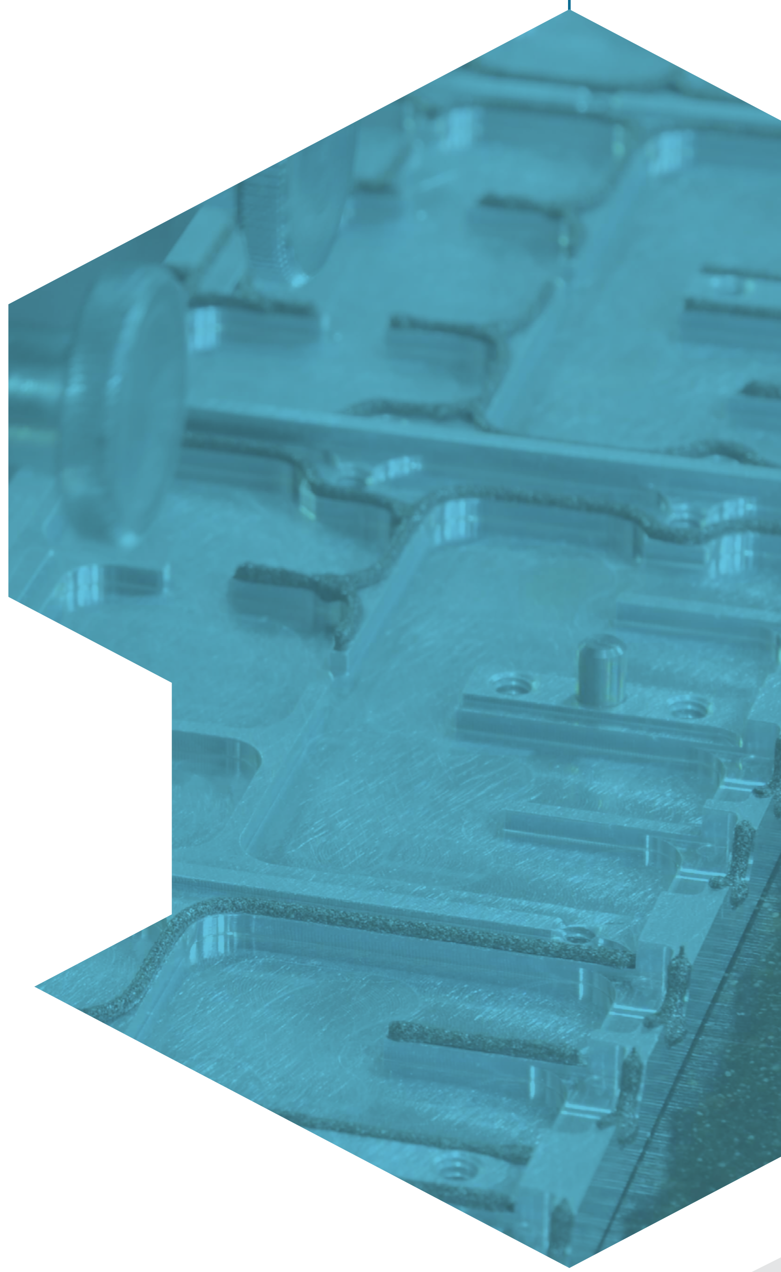
Chapter 1

What is an EMI Gasket?



Chapter 1 | What is an EMI Gasket?

EMI gaskets are electrically conductive materials that cover openings, doors, and seams in electronic devices to stop interfering signals from entering (or exiting) those devices. For product designers who need to meet a variety of sealing and insulation challenges, silicone filled with metal or metal-coated particles is the likely choice of materials, although there are many. This prevents interference with internal components that can receive or transmit electromagnetic signals.

EMI shielding gaskets were once relatively rare outside of defense and radio communication applications. However, with the explosion of consumer devices that utilize or can be affected by electromagnetic signals, EMI gaskets have experienced something of a renaissance in a wide variety of industries.

EMI vs. RFI Shielding

It's worth noting that in discussions of EMI and how to protect electronic devices from it, you often hear the term "RFI" thrown in as if it is interchangeable with EMI. The two terms refer to different types of signals that could interfere with sensitive electronic devices, but in most cases, if you need to protect a device from one, you need to protect that same device from the other.

RFI stands for "radio frequency interference." These signals are simply electrical signals that occupy some point in the range of frequencies used for radio transmission. In general, RFI signals are a form of EMI, and as a category, EMI encompasses a much larger range of signals than just RFI. The materials used to protect devices from EMI signals will, in most cases, cover RFI signals.

Where EMI Comes From

EMI can come from a large variety of sources. Many of those sources are the result of man-made devices, but some result from natural phenomena. The following are some common man-made sources of EMI:

Cellular networks	Cellular devices	Ignition systems	Power lines
WiFi networks	Microwave equipment	High-frequency devices	Computers and similar devices

The ubiquity of these man-made sources of EMI already makes these harmful signals a big problem for sensitive devices, but even before these technologies existed, natural events were emitting plenty of electromagnetic signals that can interfere with electronic devices. Here are some examples of those natural events:

- Lightning
- Auroras
- Solar flares

The sources of EMI may vary widely, but their effect on sensitive devices is often similar.

Conducted vs. Radiated EMI

Electromagnetic signals can reach a device in two key ways:

- Conduction
- Radiation

Conducted EMI

Conducted EMI passes through a conductive surface to reach a device connected to that surface. The most common conductive surfaces that promote conducted EMI are power and transmission lines.

However, poor grounding can contribute to the spread of conducted EMI. When a transmission line is poorly grounded, signals can leak out and reach alternating current (AC) lines. These signals can then travel to and interfere with devices connected to the AC line.

Radiated EMI

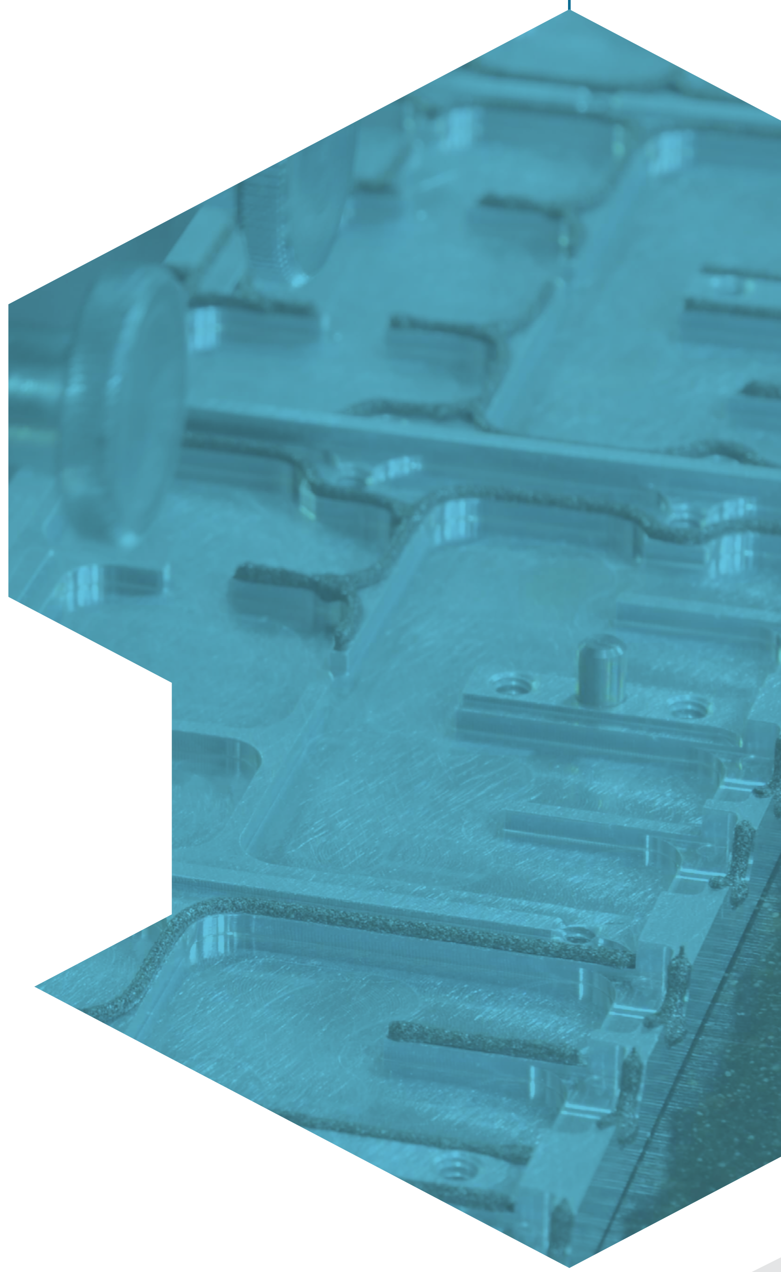
Radiated EMI reaches devices without the benefit of a clear path to follow to reach sensitive devices. An EMI source, such as a cellular network or lightning strike, wirelessly emits these signals, which travel through space to reach a victim's device.

Radiated EMI can occur on a large scale, across miles of space between disparate electronic sources, or on a small scale. An example of smaller-scale radiated EMI is a signal jumping from one wire to another inside a cable. This type of interference is usually the result of the magnetic field inherent in closed-loop circuits inducing a signal into a nearby circuit.

For purposes of EMI shielding gaskets, the discussion typically focuses on far-field interference, which involves the blocking of electromagnetic radio waves over longer distances.

Chapter 2

Applications for EMI Gaskets



As we mentioned in the beginning, you'd be hard-pressed to find an industry that doesn't have an EMI gasket lurking somewhere to its benefit.

Here at Modus, we service three particular industries that come with unique needs for precision-built EMI gaskets–read on.

Defense and Aerospace

In industries such as defense and aerospace, EMI shielding can quickly become a question of life and death. Using satellites and GPS beacons to, for example, locate survivors of natural disasters, warfare, and other deadly situations requires extreme precision. EMI is the killer of such precision.

Accidental malfunction due to EMI is only one part of the equation in aerospace and defense. Actors within these industries must also account for the potential of targeted EMI attacks on critical devices, such as satellites, fighter jets, and radar systems.

As if that weren't enough to consider, military and defense applications require their devices with EMI gaskets to operate under tremendously harsh conditions, using very specific materials that we'll cover later in the guide. Think rain, snow, sand, and heat... in all the worst ways. Aerospace applications are equally as harsh and require considerable design consideration.

Because of the severity of the effects of EMI-related malfunctions in these spaces, EMI gaskets have become a fixture on devices and vehicles for defense and aerospace applications.

One final word on EMI gasketing in the defense and aerospace industries. The U.S. Military has laid out dozens of specifications for materials and parts used in defense devices, from vehicles and weapons to satellites and wiring. One of those specifications is MIL-DTL-83528/MIL-G-83528.

This specification governs the requirements for electrically conductive gaskets that are meant to shield devices from EMI and radio frequency interference (RFI). It lays out requirements for both base and conductive filler materials, durometer, and other material characteristics.

If a gasket material is labeled with MIL-DTL-83528/MIL-G-83528, that means that the material meets this standard. Defense contractors must always use gasket materials within this spec or risk having their devices rejected.

Medical Applications

Many devices used in medical settings are susceptible to EMI. This realization and the resulting increase in federal oversight of medical devices' electromagnetic compatibility has led to expanded investment in EMI gasketing and shielding in healthcare.

One key example of the problems unmitigated EMI can cause in a medical setting is the cardiac pacemaker. This issue has been of concern since the 1960s, according to the U.S. Food and Drug Administration. When interference prevents a pacemaker from operating properly, the device may not signal the patient's heart to beat when it should, increasing the probability of a heart attack, stroke, or similar life-threatening cardiac issue.

EMI shielding is, of course, one of the key methods of preventing electromagnetic interference with critical medical devices.

Medical equipment is susceptible to EMI, too. Application-specific sources include:

- Electrical and electronic equipment in surgical units
- Life support devices such as ventilators and infusion pumps
- Patient telemetry and assistance equipment
- X-ray machines for diagnostics and therapeutics

Shielding devices and equipment from EMI comes with its own set of unique design challenges. As you likely know, the FDA regulates foods, drugs, and medical devices. It's a federal government agency, and many of its directives are encoded in the Code of Federal Regulations (CFR). It's in that lengthy tome that you will find CFR 177.2600, the statute that regulates the materials that can be used in medical devices intended for repeated use.

To simplify what is kind of a long read, any silicone you intend to use in a medical device must comply with CFR 177.2600. The regulation discusses the specific materials cleared for use in devices that are intended for medical use or that will touch food that will be consumed, including the properties of those approved materials.

Emerging Technologies

Emerging tech is a similarly unique space that allows us to flex our problem-solving skills and test our know-how on the manufacturing floor. We're talking about things like robotics, drones, augmented reality (AR), the Internet of Things (IoT), and artificial intelligence (AI) to name a few.

With new technology comes new challenges in mitigating and/or eliminating the EMI they produce, while simultaneously defending them from external EMI. We've barely scratched the surface when it comes to the needs and demands of these technologies. Iterative design cycles with our customers are something we truly enjoy and excel at.

This specification governs the requirements for electrically conductive gaskets that are meant to shield devices from EMI and radio frequency interference (RFI). It lays out requirements for both base and conductive filler materials, durometer, and other material characteristics.

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Industry Spotlight: Medical Devices

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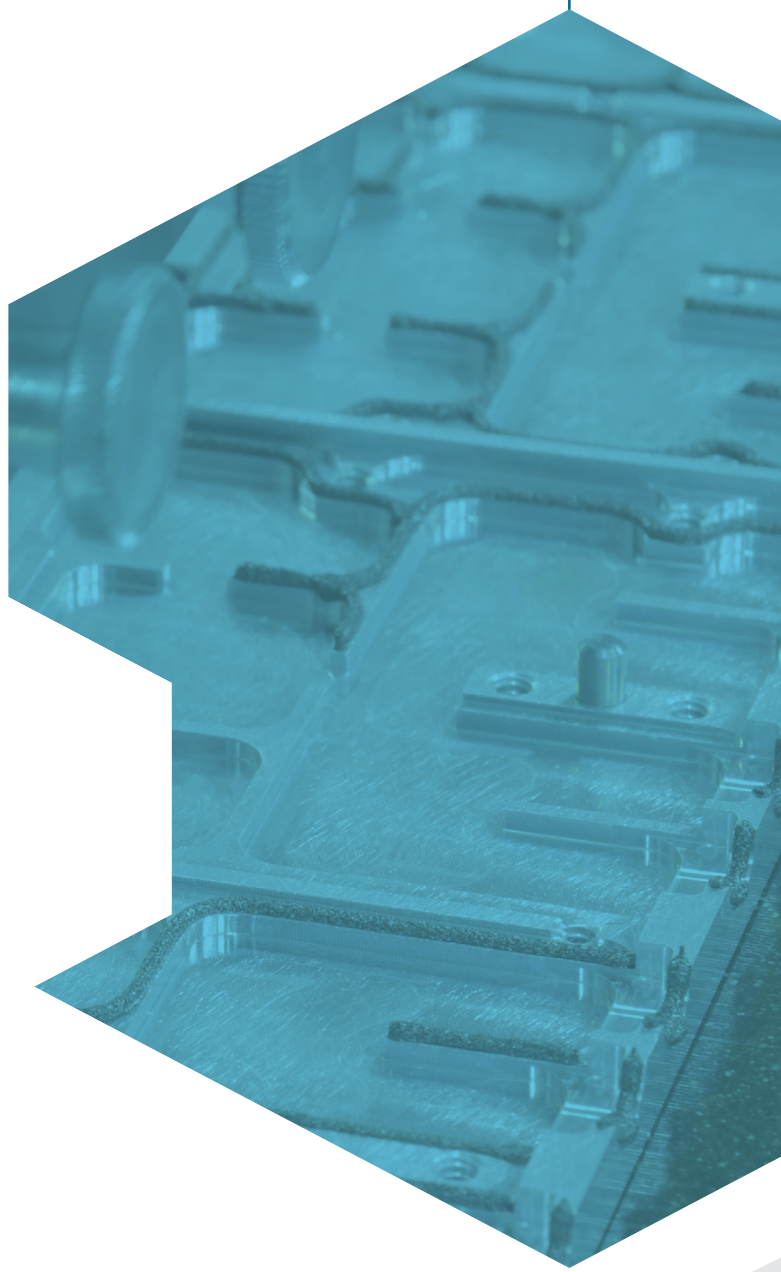
Chapter 3

EMI Gasket Design Considerations



Chapter 3 | EMI Gasket Design Considerations

As with all gaskets used to keep in what you want kept in, and to keep out what you want kept out, the design is always the most integral part of the gasketing phase. There are thousands of different materials to choose from and many detailed design decisions you must make in the process.

Understanding what factors to consider at a high level is a good starting point in ensuring that you get your design right the first time, and don't have to spend time or effort on costly redesigns down the road.

The 3 most important considerations for your EMI gasket are:

- Material properties
- Environment
- Gasket manufacturability and cost

EMI Gasket Material Properties

Getting your material right will be the hardest part of the design process, as there are thousands of materials, each with different properties and tolerances to choose from. Let's get started.

Base Materials

One major choice you will have to make when selecting materials for your EMI gasket involves the base of the gasket—the material that surrounds the filler and effectively plugs the opening you are trying to cover in your design. The materials used for EMI gaskets overlap with many of the common materials used with non-EMI shielding, standard gaskets.

Silicone

Silicone is a widely available, affordable, and common gasket material, and it's often found in EMI gaskets. Because of its high degree of flexibility and easy cutting, silicone can be used in a wide variety of gasket applications and is made conductive by an appropriate filler material.

However, exposure to oil, fuel, sunlight, and corrosive chemicals can degrade silicone relatively quickly. Degradation of the silicone in an EMI gasket can compromise the gasket's ability to shield its device from EMI, as well as reduce the sealing capabilities of the gasket as a whole.

For that reason, silicone EMI gaskets are most typically used in connector ports inside electronics or on circuit boards. Filler materials used in silicone EMI gaskets typically include silver, aluminum, nickel, and copper.

Fluorosilicone

Fluorosilicone solves many of the problems a silicone gasket might encounter in harsh conditions.

Although it is more resistant to harsh environments than silicone, fluorosilicone is still commonly found in internal circuit board applications. This material is often paired with the same fillers as silicone: silver, aluminum, nickel, and copper.

Ethylene Propylene Diene Monomer (EPDM)

EPDM is a synthetic rubber that brings high resistance to environmental factors. This material is much more resistant to caustic chemicals like acetones, hydrocarbons, and detergents.

This resistance to corrosion and chemical exposure is checked, however, by a lower resistance to high temperatures when compared to silicone and fluorosilicone, as well as poor resistance to oil exposure.

Foam and Fabric Over Foam

This type of gasket material departs from the standard method for introducing conductivity. Instead of filling the gasket with a conductive metal, engineers spray polyurethane foam with nickel or copper to make it conductive. In some cases, a foam-based EMI gasket will have a fabric or wire mesh placed over it.

This style of EMI gasket is only compatible with low closure force environments. Also, keep in mind that, while most EMI gaskets do not provide a strong environmental seal, this style may be particularly vulnerable to water and similar exposures.

Beryllium Copper

Beryllium copper is a high-performance metal that can be fabricated in a variety of shapes. If your design involves repetitive opening and closing of the opening the gasket will cover, beryllium copper may be a good option because it has a high compression set. This metal protects against a wide range of signal frequencies and does not require a filler material like silver or nickel graphite.

Filler Materials

Form-in-Place EMI gaskets ask you to make another material choice, should you choose that manufacturing method. You have to decide what your filler material should be.

This is one of the most important decisions you will make in the design process. The standard EMI gasket filler materials are as follows:

- Silver (defined as Type E in MIL-G-83528)
- Silver copper (defined as Type A (65A) and Type K (85A) in MIL-G-83528)
- Silver nickel (defined as Type L in MIL-G-83528)
- Silver aluminum (defined as Type B and Type D fluorosilicone in MIL-G-83528)
- Nickel graphite
- Nickel aluminum (one of the best choices to avoid corrosion)

Each filler material offers unique price points and characteristics, but they all serve to make the gasket conductive and resistant to EMI. To choose, begin by considering your budget. Silver tends to be the most expensive filler material, but it is high-quality and sometimes ideal for FIP EMI gasket projects with large budgets. Because the FIP gaskets manufacturing process produces so little material waste, your budget may be able to accommodate more expensive filler materials.

Nickel graphite tends to be the most affordable filler material. It might seem that you should default to the least expensive option, but you have to also consider the compatibility of the filler material with the materials on the part it will be in contact with. Corrosion can occur when certain metals come into contact with other metals or the environment, so your filler material choice has to take into account these factors.

Learn more about our CNC Machining Capabilities

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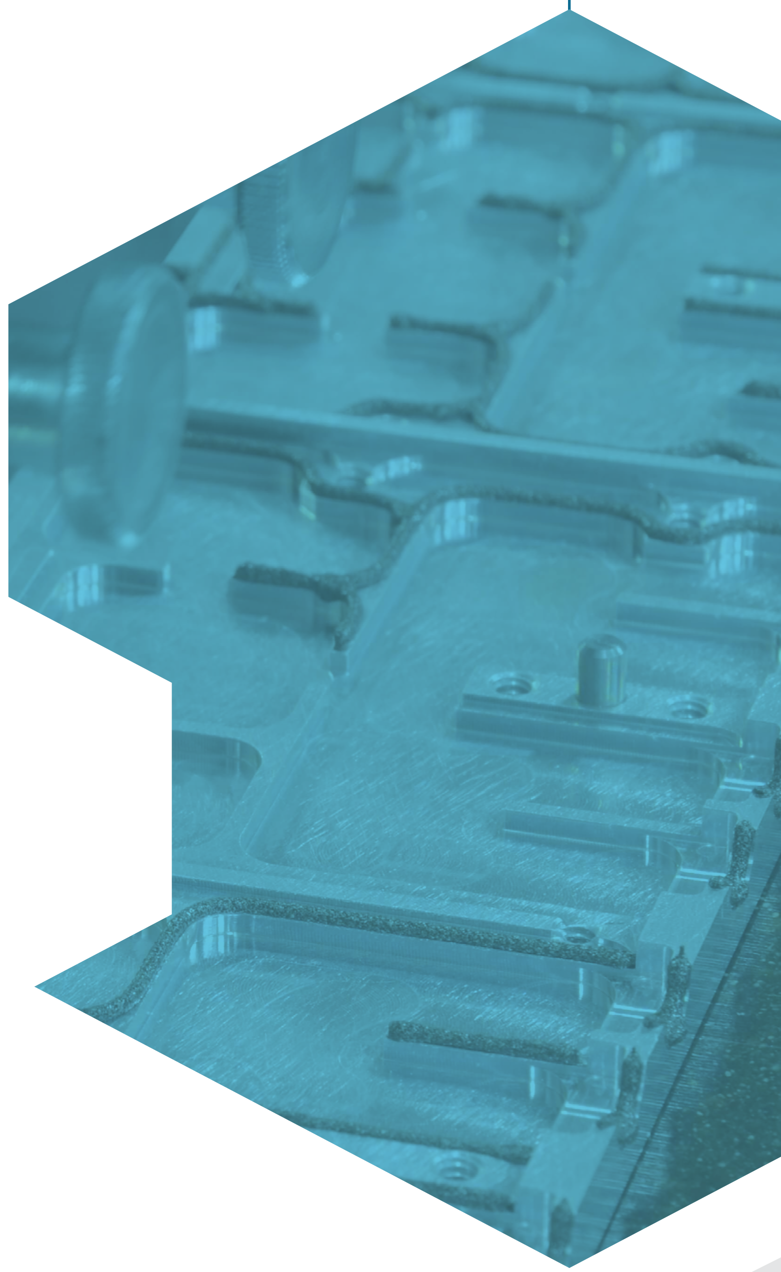
Chapter 4

Considerations for Selecting Conductive Elastomers



Chapter 4 | Selecting Conductive Materials

For many years, the filler material of choice for shielding silicones was silver-aluminum, however, with the fluctuating price of silver, it just became too expensive to be cost-effective. This opened the door to new EMI/RFI shielding elastomers which do not sacrifice shielding, corrosion resistance, or physical properties.

Conductive and Non-Conductive Silicone and Flourosilicone compounds are resistant to heat, cold, moisture, UV, ozone, galvanic corrosion, and pressure. Add electrically conductive filler such as silver, copper, nickel, aluminum, ferrite, and graphite particles and you now have an excellent seal for EMI/RFI shielding.

Nickel graphite-filled silicone performs at the shielding levels of silver-aluminum-filled products at a fraction of the cost.

If nickel graphite EMI shielding is good enough for the stringent requirements of the U.S. Military, it could also be a solid solution for your design. In addition to its high-performance shielding qualities, nickel graphite has excellent salt spray and corrosion resistance properties. This material is now used in commercial applications such as medical, automotive, and wireless technology and should be considered in your material selection.

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Environment

Up next for consideration is the environment into which the gasket will be placed. Will your gasket be in a dynamic or static environment? Will it be exposed to extreme temperatures? Knowing what kind of seal will be required and what stresses the gasket will be subjected to is incredibly important in the design.

Some examples of different types of seals that may be required include:

- Static seals: Static seals are classified as a joining of two surfaces that have no relative motion between each other. Static seals fall into two sub-categories: axial and radial static seals.
    - Axial static seals: Axial static seals are created by applying compression forces between the upper and lower surfaces being joined.
    - Radial static seals: Radial static seals are created by applying compression forces between the inner and outer surfaces being joined.
- Dynamic seals: Dynamic seals exist when there is motion between the surfaces being sealed. Dynamic seals fall into three sub-categories: reciprocating, rotary, and oscillating seals.
    - Reciprocating dynamic seals: Reciprocating dynamic seals are required when there is reciprocating motion along a single axis between inner and outer surfaces.
    - Rotary seals: Rotary seals are created when there is rotational motion between the surfaces being sealed.
    - Oscillating seals: Oscillating seals are created when a shaft rotates through a specific number of turns around an axis, ultimately causing oscillation.

In addition, you should consider if your gasket will need to be reused multiple times, or if it will be clamped into place once and then never moved.

Gasket Manufacturability and Cost

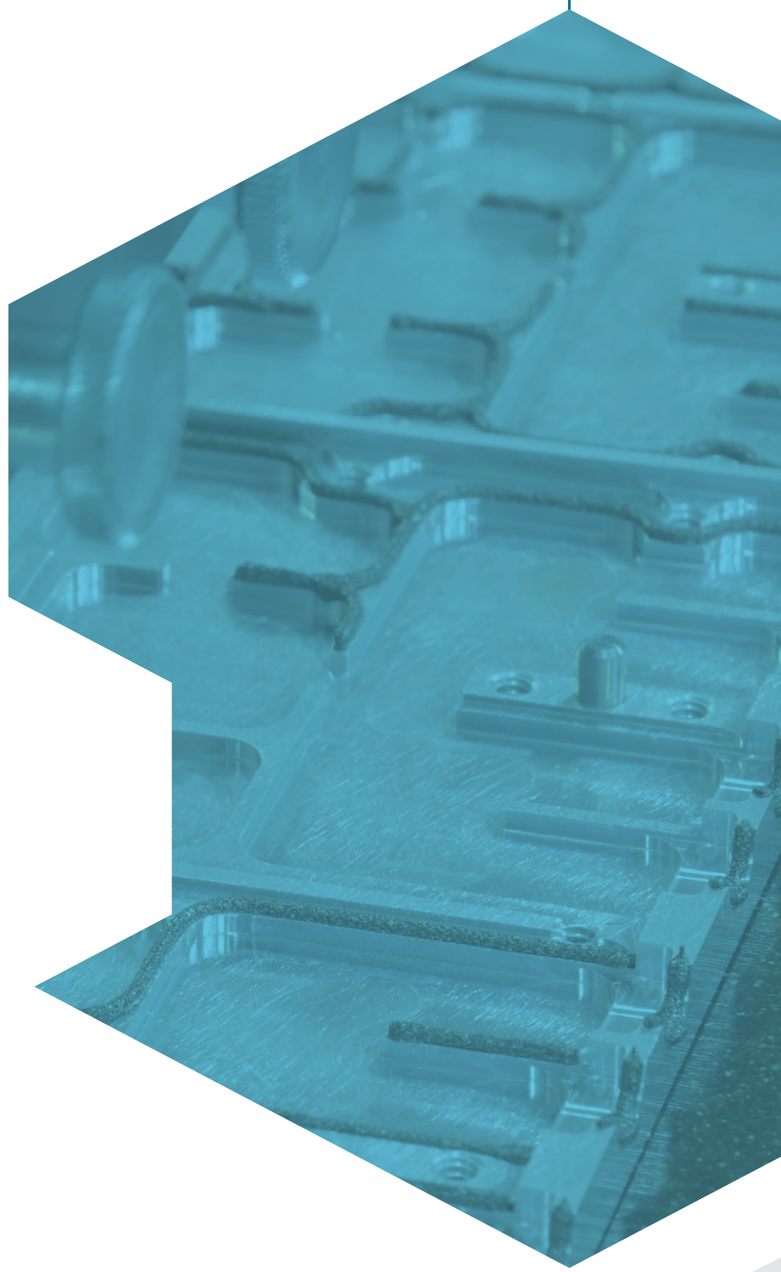
It's not uncommon for a design to look spectacular in theory, but then get the ax once it makes its way to a top-notch manufacturing partner. One of the most overlooked parts of the custom gasket design process is ensuring that you are designing for manufacturability.

Quantity also plays a large part in EMI gasket design. If you only need a few, then you are pretty free to design as you'd like. If you know you'll need your gaskets manufactured in large quantities, you'll also want to ensure that you are considering how they will be manufactured as you design.

Designing with manufacturability in mind will help you create a custom gasket that not only meets your specifications but can also be manufactured quickly and at the lowest possible cost.

Chapter 5

Choosing the Right Manufacturing Process for an Electrically Conductive Gasket



Chapter 5 | Choosing a Manufacturing Process

Creating an effective EMI gasket design requires that you select the most appropriate manufacturing process to get it done. While the material you select and the design requirements will ultimately dictate the process used, there are several manufacturing processes available to craft your custom electrically conductive gasket.

Waterjet Cutting

Waterjet cutting works by using a high-powered stream of water (90K psi!) to cut through some pretty tough materials. With additives like <.040” garnet into the stream and you can cut through 6” stainless steel. It’s incredible in action and is most often used for creating two dimensional gaskets out of thicker and/or harder materials.

This process is a form of computer numerically controlled equipment, it can cut very precise lines, smooth edges and corners. It also means there are no hard tooling requirement for using waterjet. It’s great for short lead time requirements and large parts, while simultaneously reducing material cost due to low material waste.

CNC Cutting

Computer numerically controlled (CNC) cutting, also called digital cutting, uses a precise knife to cut the selected material for your custom gasket.

There are two types of cutting implements that can be used: a drag knife and a pneumatic oscillating knife. A drag knife works by being inserted into the material and dragged across the cutting path to produce the part. The pneumatic oscillating knife works by moving up and down to cut through the material. The knife is pressed down through the material, lifted, shifted along the cutting path, and then pressed through again.

Short lead times, small or large part capacity, low material waste, rapid prototyping... the list of benefits for CNC cutting as your process of choice is pretty long.

Learn how Modus is redefining the RF Shield production and procurement process.

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Die-cutting

Your gasket manufacturer can die-cut extremely precise gaskets out of EMI silicone. From 5 to 500,000 gaskets, once you have the exact specifications set, die cutting is a great choice as a repeatable, quick solution with high shielding effectiveness.

Die-cutting supports nested parts in addition to punched holes or slots with specific radii for fasteners required in your design. Die-cut gaskets can also be supplied with a conductive pressure-sensitive adhesive backing (PSA), eliminating the need for difficult-to-control liquid adhesives on the assembly line. Another benefit is the ability to kiss-cut which dramatically reduces the time it takes assembly personnel to peel the release liner off the PSA.

Probably the two biggest benefits to using die-cut shielding gaskets are the worldwide availability and the shorter 2-4 week lead times. Die-cut conductive silicone gaskets are easily procured from companies like Chomerics, Laird, and Nolato Silikonteknik. All three companies have manufacturing facilities or manufacturing partners in the USA, China, Malaysia, Europe, and Mexico.

Extruded EMI Shielding Gaskets

Extruded gaskets are ideal for flange and groove applications. There is a range of standard or semi-standard profiles available: solid O, hollow O, D, P, E, U, solid square, and hollow square available from the manufacturers mentioned above. Chomerics offers a robust selection of extruded EMI gaskets which you can view in their product catalog.

Should you find your project requires an unusual extruded gasket shape, your gasket manufacturer can work with you to customize a unique gasket shape which in some cases could also include innovative anti-stretch and press-fit features.

After extrusion and curing, the gaskets may be cut and spliced to your exact specifications creating full EMI RFI shielding enclosure seals. Splicing is typically done on a small molding press, but the extrusions can also be cold bonded or glued if needed.

The biggest benefit of using an extrusion is the efficient use of expensive RF shielding materials. EMI shielding extrusions can be made with a thin outer layer of conductive silicone, thereby significantly reducing the volume of silver or nickel graphite.

Another benefit to using a custom-molded EMI shielding gasket is the speed and precision by which parts can be manufactured. The efficient molding process results in very little shielding material waste and can be automated in most cases, especially in volume applications.

Molded EMI Shielding Gaskets

Instead of trying to make a die-cut or extruded EMI gasket fit, why not create a custom-molded EMI shielding gasket that perfectly conforms to your design requirements? Custom molding an EMI gasket material is an effective way to reduce cost by eliminating the center drop waste typically associated with the die-cut process. Cost or budget is especially important when using electrically conductive silicone materials as those RFI shielding materials are more expensive than standard silicone gaskets.

Molded shielding gaskets can solve several issues die-cut or extruded gaskets can't address. Probably the most obvious benefit to using a custom-molded solution is the ability to conform to three-dimensional designs not suitable for flat or extruded gaskets. As you can imagine, flexibility in design comes at a price. Make sure your budget allows for significant tooling costs as well as longer lead times.

Form-in-Place Gaskets (FIP)

Dispensed or Form-in-Place gaskets are another way to address EMI shielding. The FIP process dispenses a precise string of electrically conductive silicone directly onto the substrate. This type of gasket can result in 30% lower compression force, less material consumption, and increased PCB area, in addition to excellent shielding properties.

When you consider the automated dispensing methods and efficient use of EMI material, Form-In-Place gaskets present an excellent solution for complex designs. Dispensing machines are programmed to place beads on thin gasket shelves thereby eliminating manual gasket placement and allowing for more compact designs.

A benefit of the FIP process is it easily accommodates densely populated electronic packaging where isolation and complex cross-section patterns are required. Additional benefits include superior flexibility for gap closure, no assembly is needed, results in very little scrap material, and adhesive is not required.

Depending on volume, dispensed gasket solutions are available directly from Chomerics, Laird, and Nolato worldwide. For smaller volumes or prototypes, all three manufacturers support specialized dispensing partners in several countries.

Chapter 6

Tips for Designing a Form-in-Place EMI Gasket

Chapter 6 | FIP EMI Gasket Design Tips

As your vertically integrated manufacturing partner, we are partial to the time-tested-and-true FIP EMI gasket. Why? For a large number of parts, a FIP EMI gasket is the right choice to meet the device requirements for defending against EMI.

With that in mind, we'll dig into a few key considerations when designing a FIP EMI gasket.

Compression Force Matters for FIP EMI Gaskets

More so than for other types of gaskets, conductive shielding gasket designs must take into consideration the compression force required for their materials. A FIP EMI gasket has to be compressed under the exact pressure that the manufacturer of the materials calls for, or else you risk a failure to create a seal.

Stay Out of Grooves for Form-in-Place EMI Gaskets

For the most part, you'll want to do everything you can to avoid having grooves in your FIP dispense path. Dispensing liquid gasket material into a narrow groove can cause the material to cure toward the walls of the groove rather than the center of it.

That can lead to improper sealing and spotty compression forces. The good news is that there's a quick fix for the groove problem: design compression stops where you would have put grooves.

Avoid Sloping Surfaces

FIP EMI gaskets can be pretty intricate, which makes them ideal for complex designs. However, if at all possible, you need to avoid slopes as you design the dispensing path. FIP conductive shielding gaskets are applied to their part as a liquid, and liquids move downward. This makes the dispensing process challenging, and the steeper the slope, the more challenging it becomes, ultimately increasing costs and lead times on your part.

Do I Design For A Groove In My RF Shield?

Grooves are common in the design of parts and are often required for the reliable sealing of the two mating pieces. They provide a solid gasket seat and are certainly necessary for O-rings, which may distort without the groove designed to accept the O-ring.

Know that the flexibility of FIP gaskets, with their adhesive capability, eliminates the need for a groove in your design. This is especially beneficial where the seal design is so intricate that applying the seal into a groove requires skilled hands for accurate placement–time and cost.

Chapter 6 | FIP EMI Gasket Design Tips

Material Selection

With advancements in technology, there is now a vast range of materials available for Form-In-Place gaskets with excellent shielding effectiveness, superior adhesion, heat and humidity resistance, and reliability in low-compression sets.

Tolerances

As you may expect, tolerances are critical to any good design. With FIP, height is probably the most important physical tolerance specification and it determines gasket width. The height is conditional and depends on the variation in the dimensions of the part and variations in the dispensing parameters. The width is dependent upon the height due to the free-forming process and the viscosity of the material. Both height, and consequently width, must be considered in your design.

When to Use a Conductive Fabric Gasket

There may be applications in which a conductive fabric gasket is your optimal choice in defending against EMI. These types of gaskets consist of metalized fabric over an elastomer core. If weight and space constraints are a concern, such as in electronic closures or doors of shielded rooms, consider these versatile gaskets. They are an incredibly cost-effective solution for EMI shielding.

Learn more about how we approach Partnership Accounts at Modus.

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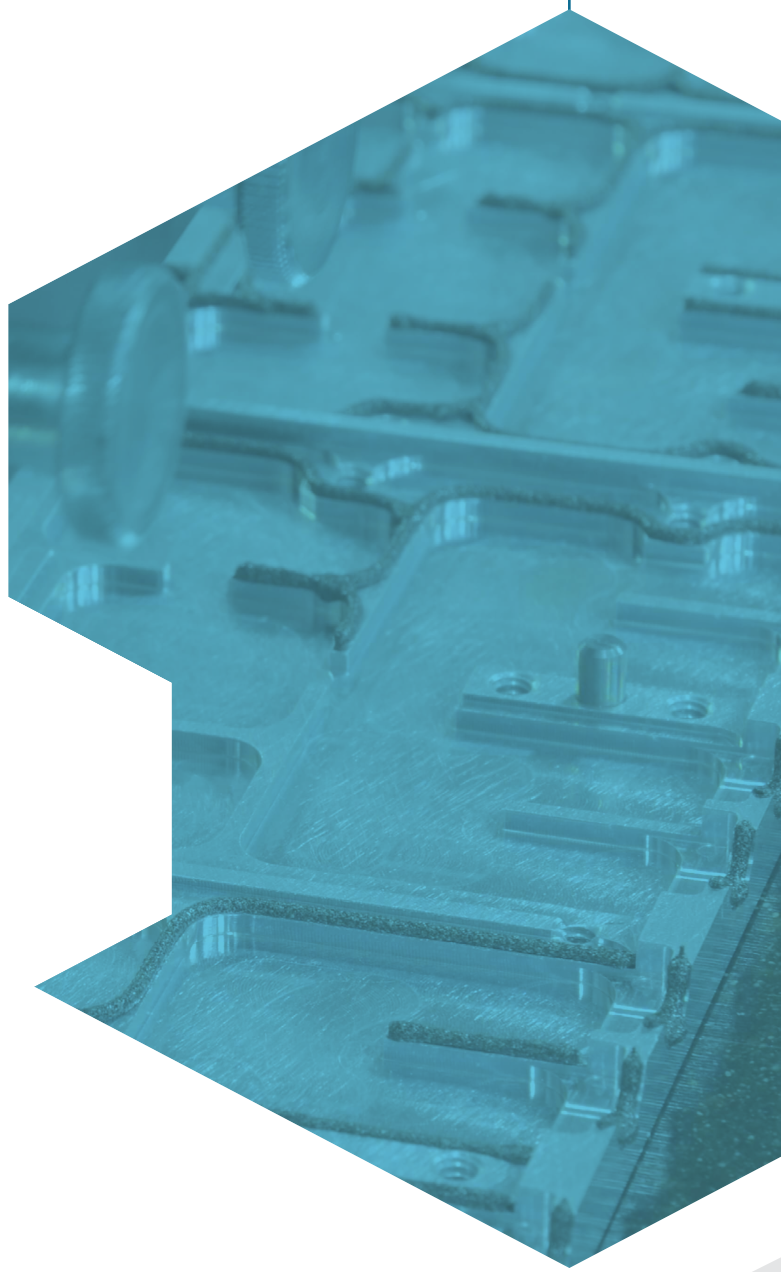
Chapter 7

Considerations for Selecting an EMI Shielding Gasket Manufacturer



Chapter 7 | Selecting a Manufacturer

Choosing an EMI shielding gasket manufacturer is an important decision–it can quite literally be the difference between a successful or failed device. Even though they all manufacture EMI gaskets, they each provide different skills, capabilities, processes, and values. The trouble becomes then, deciding what you value most in a manufacturing partner, and how to weed out the rest.

Read on for our list of key considerations for selecting an EMI gasket manufacturer.

Do They Use The Best EMI Shielding Materials?

You need a manufacturer that has access to the specific type of materials best suited for your project. At the same time, they should also have the expertise in-house to help you select the correct materials.

Are They Certified?

Certifications like ISO 9001 and AS9100 aren't necessarily required, but manufacturers that are certified in these take their jobs seriously to meet the needs of their customers. If you're in the aerospace and defense industries, you'll also want to look for ITAR registration and compliance, and CMMC compliance.

Do They Understand DfM?

Just because you've designed the most technically perfect EMI gasket doesn't mean that it will be straightforward to manufacture. You need a partner that offers design for manufacturability feedback–you'll save time, money, and a lot of headaches.

Quality Matters.

Make sure that your chosen manufacturing partner has quality control processes in place. But how do you assess quality in a manufacturer? Just ask–they'll be more than excited to tell you about it.

Vertical Integration Is Key.

Vertical integration is how you save money, time, and headaches associated with using multiple vendors. Find a partner that can complete your entire project in-house with speed and precision. (We're here when you're ready–contact us.)

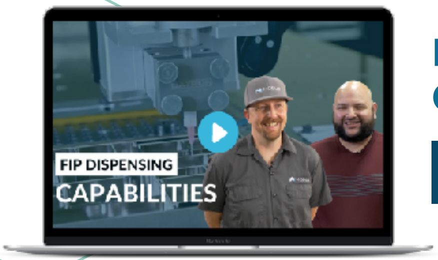
Do They Have Specialized EMI Shielding Expertise?

What kinds of industries have they built EMI gaskets for? What kind of volume have they handled? How often do they have manufacturing defects that make it onto the market? These are just a few of the questions they should be able to answer with ease.

Assess Their Security Measures.

As we've discussed, some industries require a more robust security level–aerospace and defense for example. Security is never something to compromise on, no matter what industry you're in.

Each of the above considerations can make or break your device, so it's important to take your time addressing each one with any EMI shielding gasket manufacturer you're considering.



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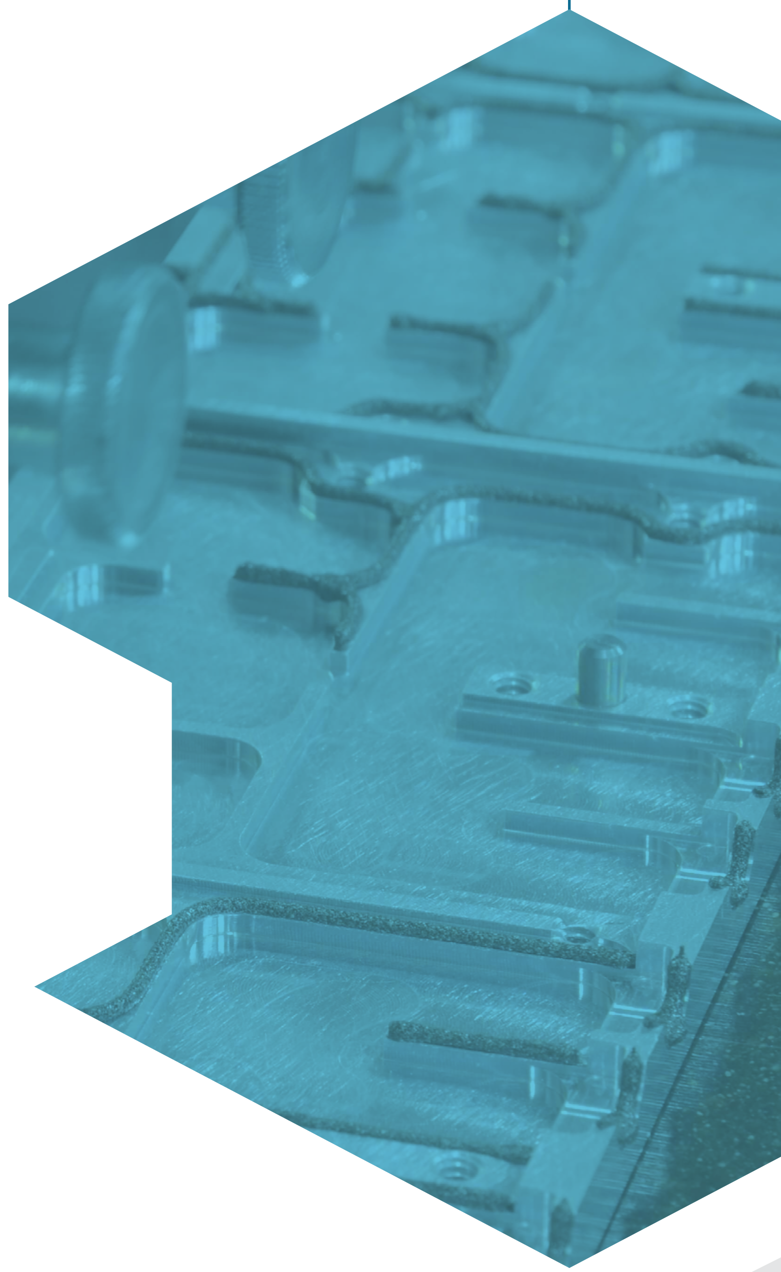
Chapter 8

Modus Advanced: Setting the Standard for EMI Shielding Gasket



Chapter 8 | Modus Advanced: Setting the Standard

As technology advances and electromagnetic signals become denser, the necessity of EMI gaskets will skyrocket. Now that we've covered the critical considerations for designing your EMI gasket, you're on your way to bringing life-changing and life-saving devices to market.

Modus Advanced is the chosen partner of organizations across a wide variety of industries. We are uniquely qualified to offer feedback and design guidance through the entire EMI gasket process. Coupled with our vertically integrated suite of manufacturing processes, your project will work as designed and will meet design requirements and budget.

If you're ready to move forward with a top-notch manufacturing partner to take your project from paper to prototype, reach out to our team today to get started.

Vertical Integration Alleviates Production Delays

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2772 Loker Ave West
Carlsbad CA 92010

1575 Greenville Road
Livermore, CA 94550

925-960-8700
sales@modusadvanced.com