

Technical Bulletin

RFI / EMI Shielding Coatings: Why Use them?

Why should you use EMI/RFI Shielding coatings?

Electronic devices and equipments need to be shielded for telecommunications, technological, and health reasons and are the basis for governmental, industrial, and commercial shielding requirements. These reasons are examined below.

Telecommunication and High Technology Risk Reasons

Signal quality is very important in telecommunications and high technology. Radars, radios, wireless routers, cell phones, televisions all receive or transmit signals in specific electromagnetic (EM) frequencies ranges. Receiving random frequencies in these same ranges creates static noises that can break down communication. In addition, noise can cause electronic devices to malfunction. This is because devices sometimes cannot tell apart noises from real signals.

Since we are in the information age, these offer strong economic reasons to protect telecommunication and technology signal quality by regulating EM noise. To these strong economical reasons, we must also add human health reasons.

Health Risk Reasons

Electromagnetic signals can impact our health because they are a form of energy. Gamma rays, x-rays, and ultraviolet are dangerous high-energy EM radiation. In contrast, visible light, radio waves, microwaves are lower energy and safer forms of EM radiation. The lower energy forms are usually not considered dangerous unless present in extreme quantities.

Health risk is always a balance between raw energy and the amount of EM radiation present. For example, nobody worries about normal quantities of visible light, which has a moderate energy. However, an extreme quantity of a visible light, like that produced by lasers, is often unsafe. As another example, microwaves are even lower in energy than visible light and are safely used transmit phone signals. However, local microwave concentration from cell phones means that cell phones may offer some low-probability health risks for their long-term users. In contrast, microwave ovens must be shielded because they produce very large amounts of microwave radiation in order to heat food.



No RFI / EMI Shielding



RFI / EMI Shielding applied

As a last example, Radio waves carry even less energy than microwave and are safest overall. Radio waves are rarely mentioned in any health risk context because it passes right through us without being absorbed. It would take a ridiculously large amount for any absorption to occur and become risky.

The health risks, therefore, are generally not huge compared to the benefits we get from EM technology. While the benefits generally outweigh the risks, health nonetheless is another very valid reason for government regulations for EM radiation shielding.

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