



# Electrically conductive plastics for EMI shielding

Your trusted compounding partner in innovating new material solutions for the most demanding material needs. Our mission is to improve the quality and standard of materials needed for safety applications.

**PREMIX**

## Why EMI shielding

Strong external electromagnetic interference (EMI) can cause harm in electronics by

- Jamming or distorting signals causing malfunction
- Sudden power outages or fluctuations causing malfunction, damage, and decreased life

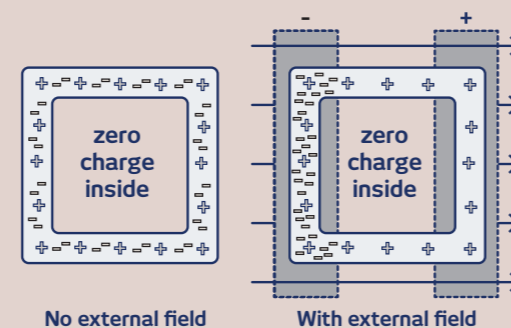
EMI shielding prevents electromagnetic radiation from entering or escaping electronic and electric equipment.

### How does EMI shielding work

When the target is covered with electrically conductive material, it can prevent external electrical and magnetic fields from entering or exiting the encapsulated space.

In the first picture, there's no external field, and there's no charge inside of the encapsulation.

In the second picture, there's an external field. The external field causes negatively charged particles of the conductive materials to move against the field direction. This causes negative charge on the opposite side of the field, and if the material is suitable and the encapsulation is thick enough, there's again no charge inside of the encapsulation.



## PRE-ELEC® electrically conductive plastics for EMI shielding

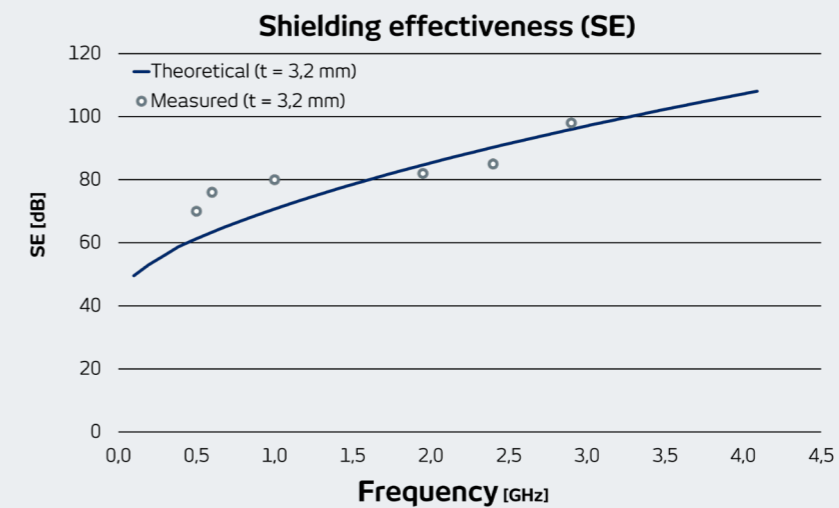
- Lightweight and corrosion resistant materials
- Good Shielding Effectiveness (SE)
- Uniform conductivity even in thin and complex shapes



Signal cable covered with a conductive plastic layer for EMI shielding



EMI box made of conductive plastic



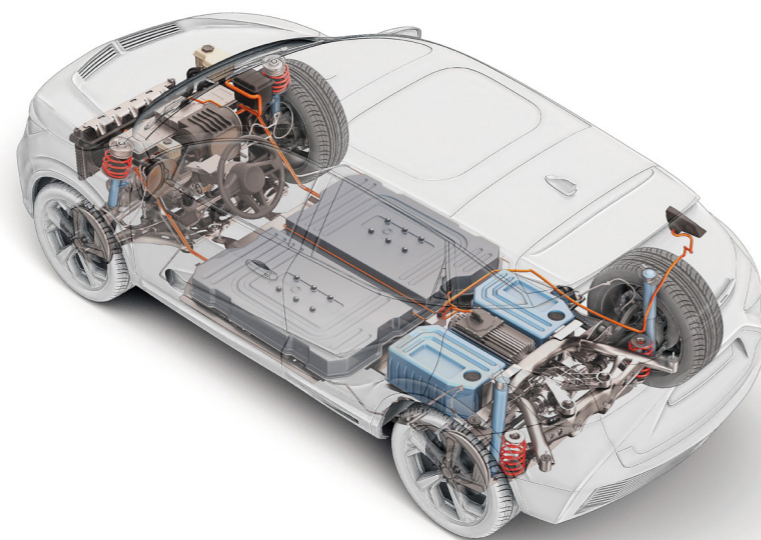
**Example:**  
Shielding effectiveness in function of frequency ranges with PRE-ELEC® PP17147

## Applications

EMI shielding is needed, e.g., in electric vehicles: signal cables, power cable connectors, in-vehicle electronics, driver assistance systems, and around the batteries.

Other typical application areas

- Electronics & sensitive devices
- Wires, cables, and their assembly covers
- Signal transmission
- Power electronics enclosures
- Gaskets (soft materials)



### PRE-ELEC® Grade Selection for EMI shielding applications

	Hardness ShD	VR Ωcm	SE (2 GHz, 3.2 mm) dB	Operating temperature °C	Base polymer	Flammability (UL94)	Elongation %	Suitable for
PRE-ELEC® PP17147	75	0.25	85	-20 to 130	PP	HB	1.5	Injection molding
PRE-ELEC® TP17499	79	0.4	64	-20 to 130	PP	V-0	1.5	Injection molding
PRE-ELEC® PP18147	58	0.6	54	-25 to 100	PP	HB	170	Extrusion



We are ready  
to create a new  
success story  
with you!

#### **ABOUT PREMIX**

With more than 40 years of industry experience, Premix's expertise lies in the formulation and production of functional plastic materials. Premix's materials are more than just traditional plastics – they play an active role in the product or process they are integrated into. Premix was one of the first companies to enter the market for electrically conductive plastics in the early stages, and it is now the world's leading specialist in the area. Today, we are a company that develops future solutions also for antimicrobial materials.

PRE-ELEC® is a registered trademark of Premix Oy.

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