

Kosti Rämö, Business Manager

11.9.2019 Centria-ammattikorkeakoulu

An aerial photograph showing a dense green forest on the left and a dark blue river on the right. The river reflects the sky, which is filled with white clouds. The text is overlaid on the image, centered horizontally and slightly lower vertically.

**“Creating a safe and ultra-
connected society with
functional plastics”**



Roland

ZONY.12

MELECTRONIC

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VOLTEX-R

RECORDOMAX

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PREMIX

This is Premix!

Premix Oy is a European market leader and global forerunner both in Electrically Conductive Plastics and RF Materials. Strong focus in developing future material solutions.

Family owned, independent company.
Established 1980, located in Rajamäki,
Uusimaa, Finland

100 employees (Premix Group and joint
ventures in total 350)

Sales revenue 37 M€ (2018)

Production capacity 23.000 MT/a



Agenda

Controlling static electricity:
Electrically Conductive Plastics

Creating an ultra-connected society:
Radio Frequency (RF) Materials

Industries and applications for functionalized plastics

PHENOMENA

Controlling static electricity



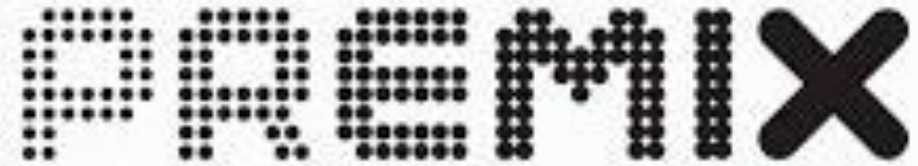
<https://youtu.be/hzCi0Xn1dio>

BUILDING BLOCKS OF AN EXPLOSION



FLAMMABLE ATMOSPHERES





Mastering static discharges
with electrically conductive plastics.

Story of
MR. PREMIX and **MR. STATIX**



<https://youtu.be/eTcjCz6NXjs>

Controlling static electricity

Protecting people, products and processes

Control of dust and electrostatic attraction (ESA)

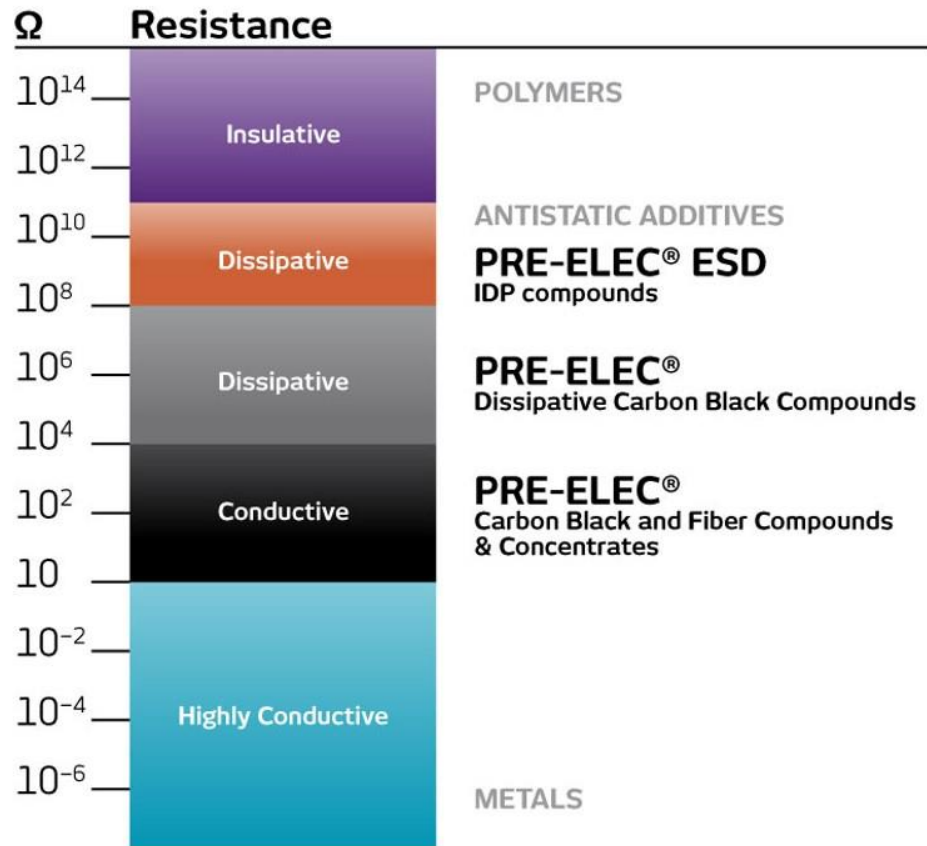
Fire and explosion safety

ESD and EMI protection

Sensors, conductors and signal transmission



PRE-ELEC[®] material classifications



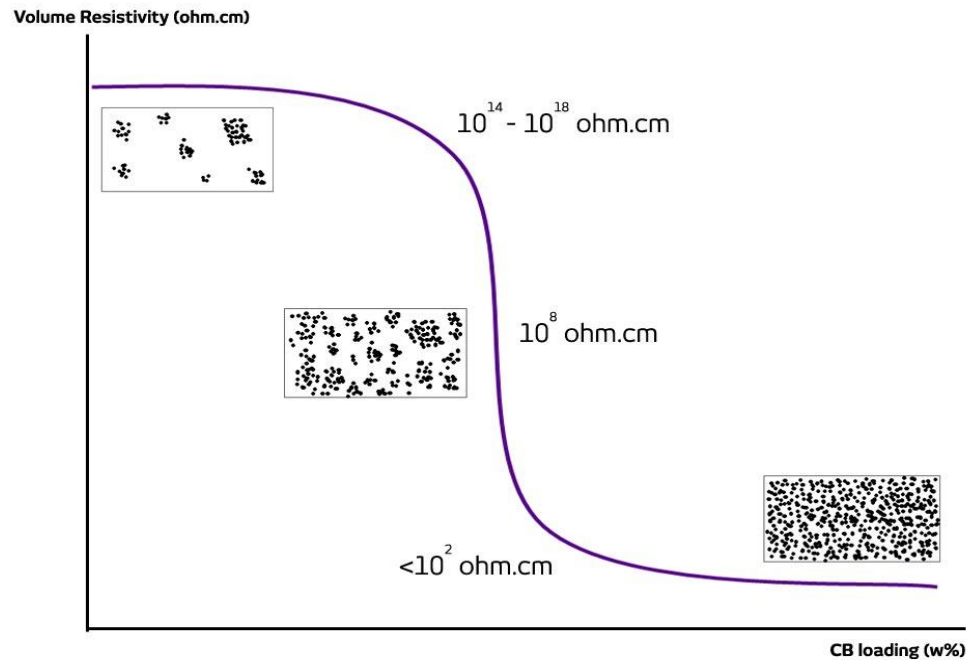
No universal classifications for conductivity levels

May depend on the used source

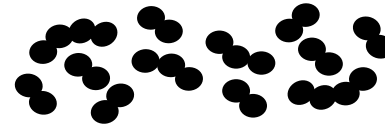
Carbon black effect on conductivity

Percolation

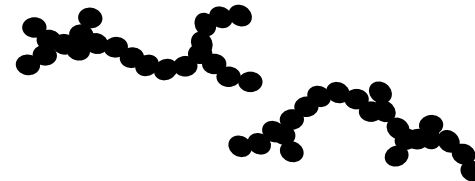
- making a conductive paths across the volume of the material along carbon black particles touching
- depends on carbon black structure, particle size and amount



Low structure carbon black (P-carbon blacks)



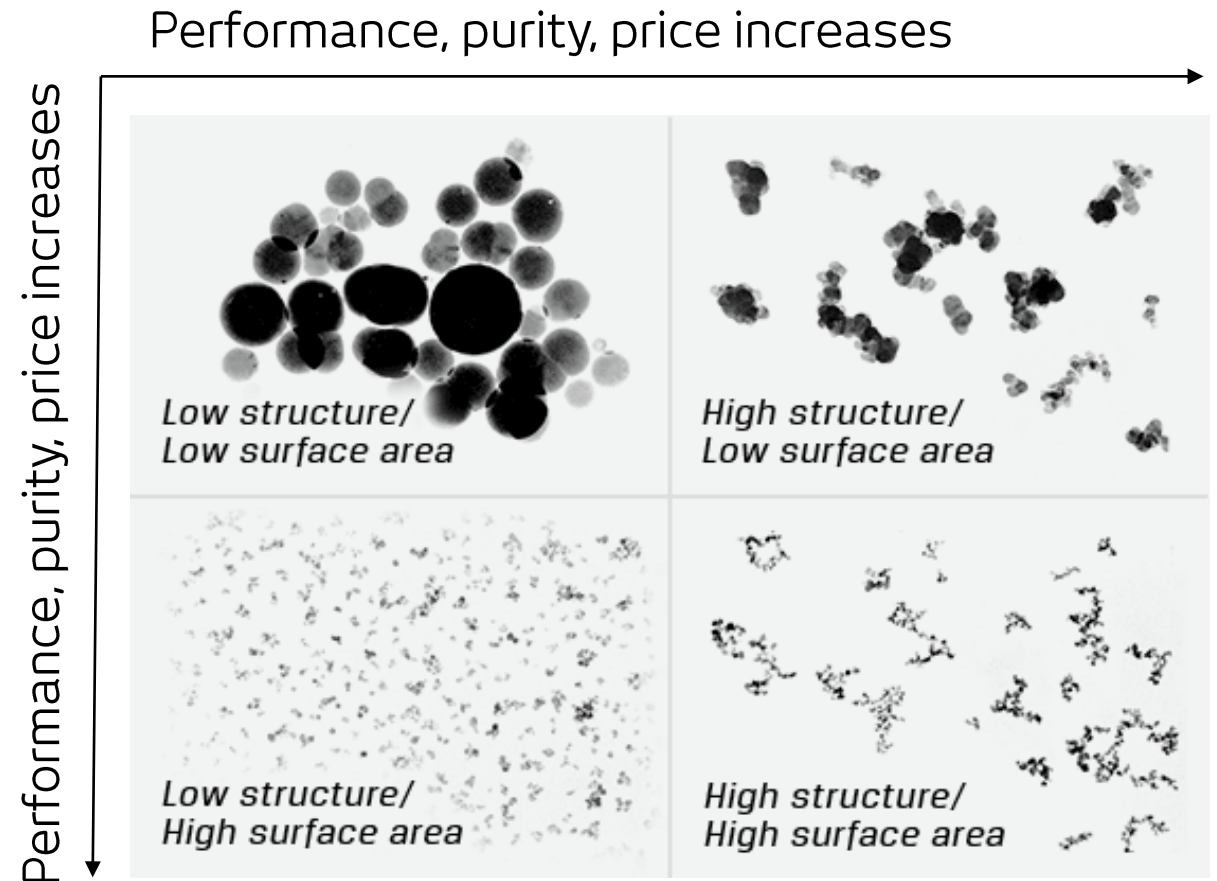
High structure carbon blacks (HPFB)



Carbon black type effect on conductivity

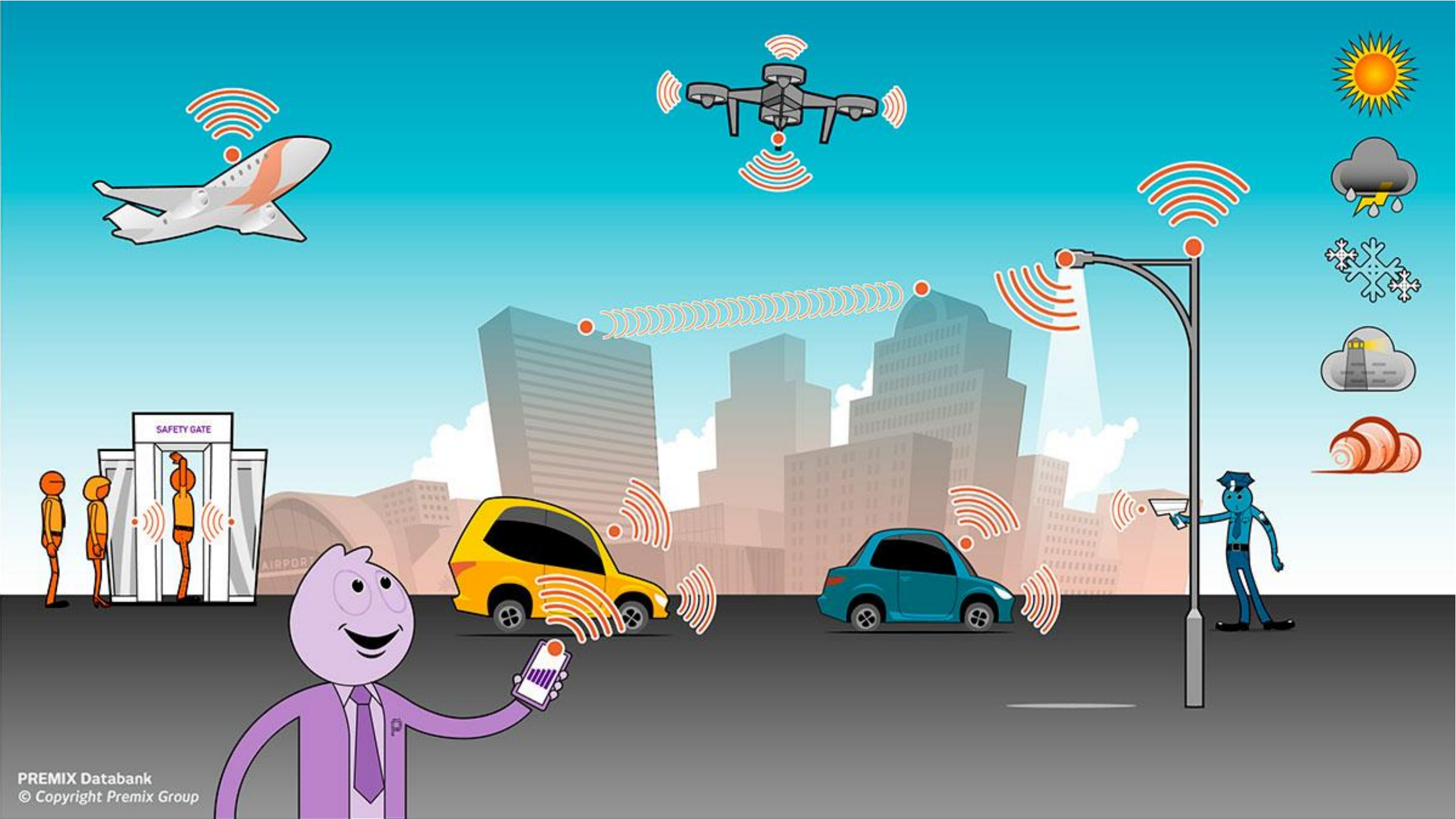
The greater the surface area and structure, the less carbon black is required

Optimal price/performance of carbon black needs to be selected based on final application



PHENOMENA

Radio signals in our society





Story of
MR. PREMIX and **MR. TECHNIX**



RF-designers with different mindsets.

<https://youtu.be/hGPM-GbSlvc>

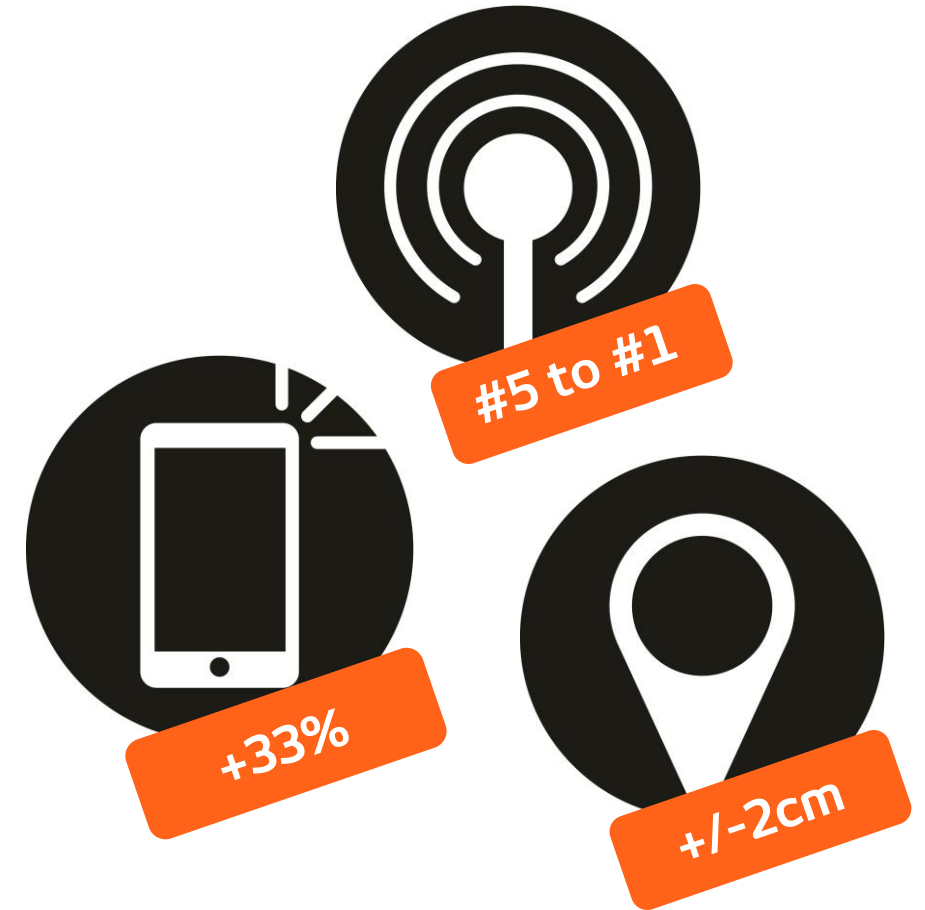
Best performance with PREPERM[®] materials

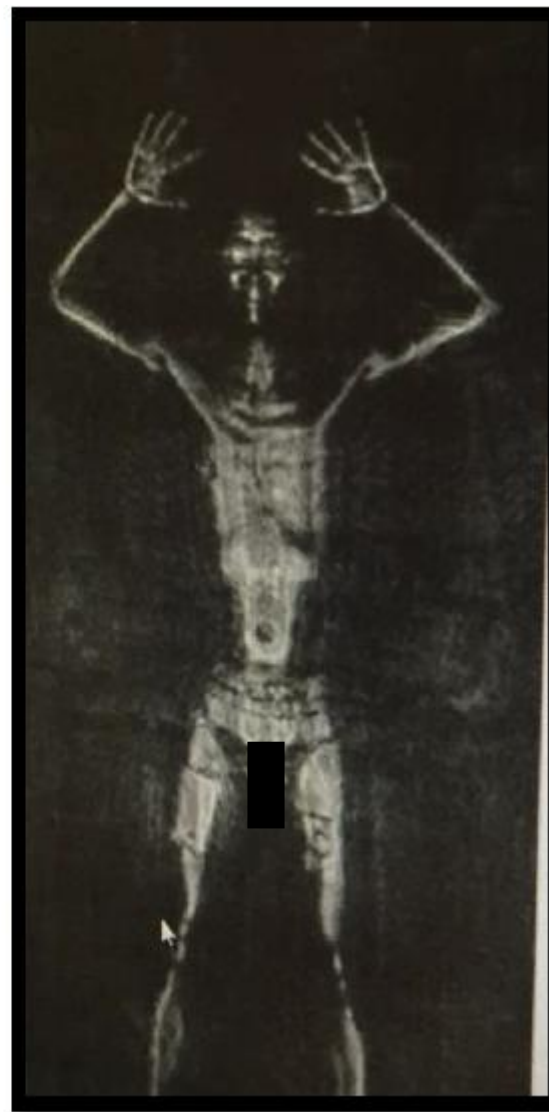
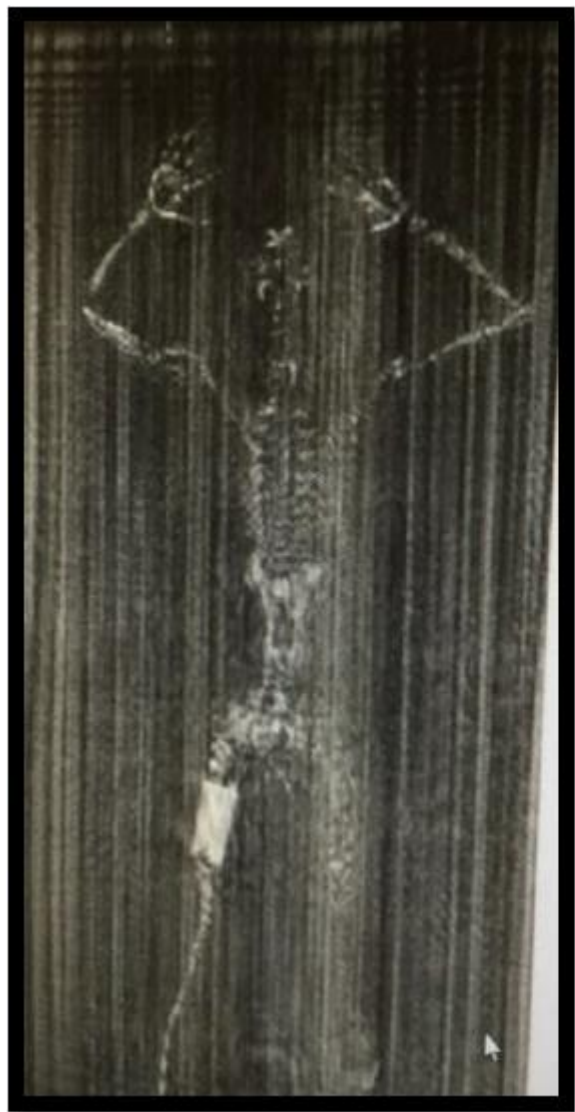
Low signal loss

- Increase in data capacity (e.g. 4G, 5G)
- Longer battery life
- Longer distance in car radar performance

More accurate signal focus

- Better sensitivity in GPS
- Higher strictness in parking sensors



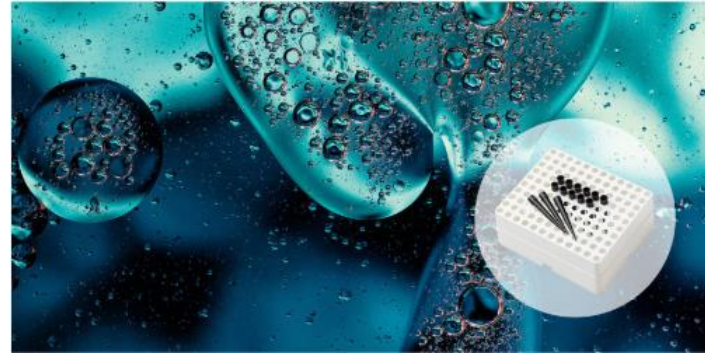


INDUSTRIES AND APPLICATIONS FOR Electrically Conductive Compounds RF Materials

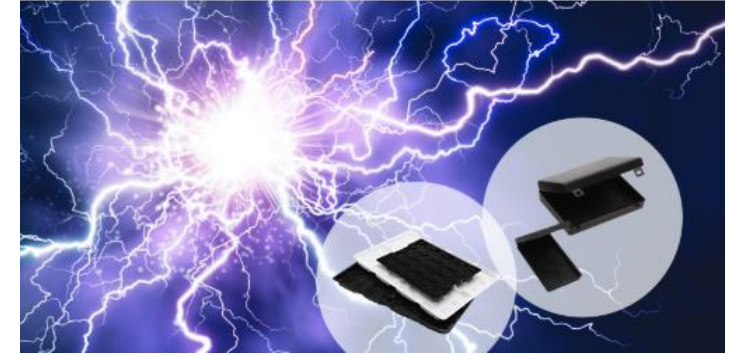
Premix's functional plastic materials create a safe and ultra connected society in



Automotive & Smart Driving



Diagnostics



Electronics Packaging



Healthcare and Wellbeing



Industrial applications



Wireless Communications

Automotive

Smart driving and safe fuel handling



PREPERM® RF-materials
for automotive and industrial
radars.



Ensure safe fuel handling with
electrically conductive PRE-ELEC®
compounds for fuel filler systems.



Diagnostics

Enabling correct analysis. Every time.



Electrically conductive PRE-ELEC® materials are widely used in in vitro diagnostics ensuring precise measurements.

Today, we set the material quality standard for the whole industry.

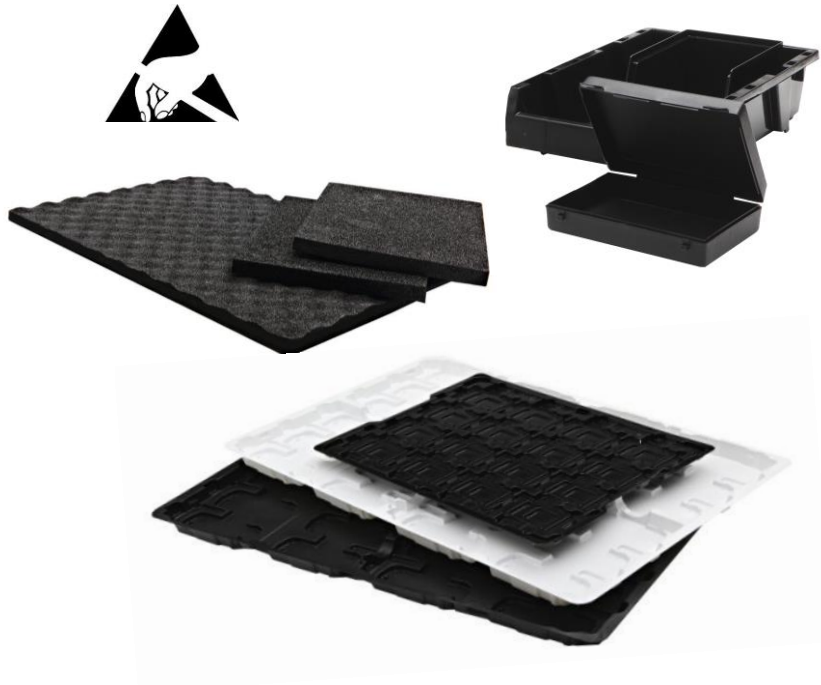
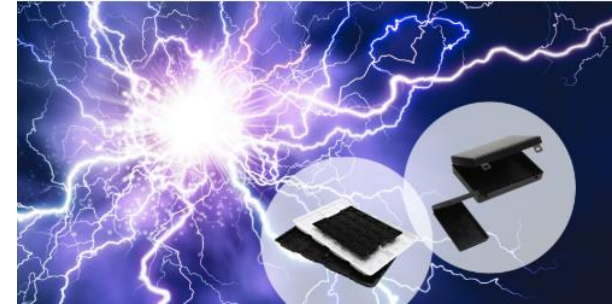
Industry forerunner & reference
– homologated with most of the key OEM´s

98% of the European market

Strong position in the US and China

Electronics packaging

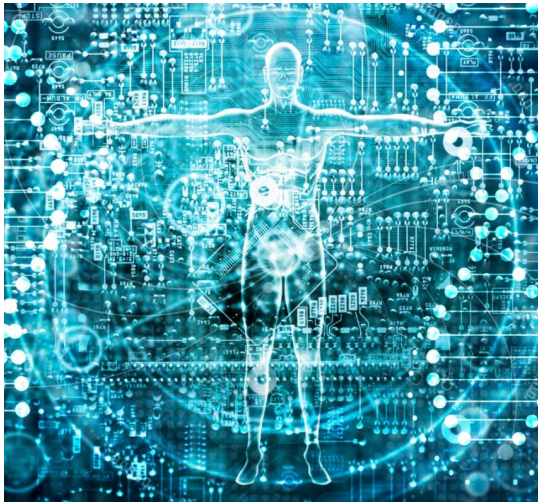
Safe handling of electronics components



Electrically conductive and static dissipative PRE-ELEC® materials protect components from uncontrolled static discharges (ESD). This will reduce hidden failures and guarantee a longer operation life for electronic devices.

Healthcare and wellbeing

Improving the wellbeing of people



PREPERM® RF-materials for imaging systems and tumor detecting applications.



Highly conductive PRE-ELEC® compounds for body monitoring applications.

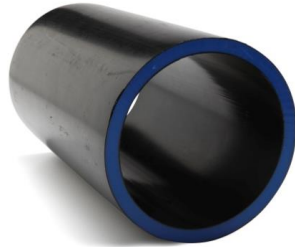


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PRE-ELEC® materials enhance the patient safety in healthcare facilities by controlling static electricity.

Industrial applications

Ensuring the safety in explosive atmospheres



Electrically conductive and static dissipative PRE-ELEC[®] materials ensure a safe handling of dusts, powders and liquids also in EX-environments and other explosive atmospheres. Light and corrosion resistant plastics are used for metal replacement, since their processing is easy and cost-efficient.

Wireless communications

Are you ready for the future? We are.



PREPERM[®] solutions enable faster, safer and more reliable connections in future smart cities.



PREPERM[®] RF solutions for SatCom applications. Enabling stable data transfer in moving vehicles.

Wireless communications

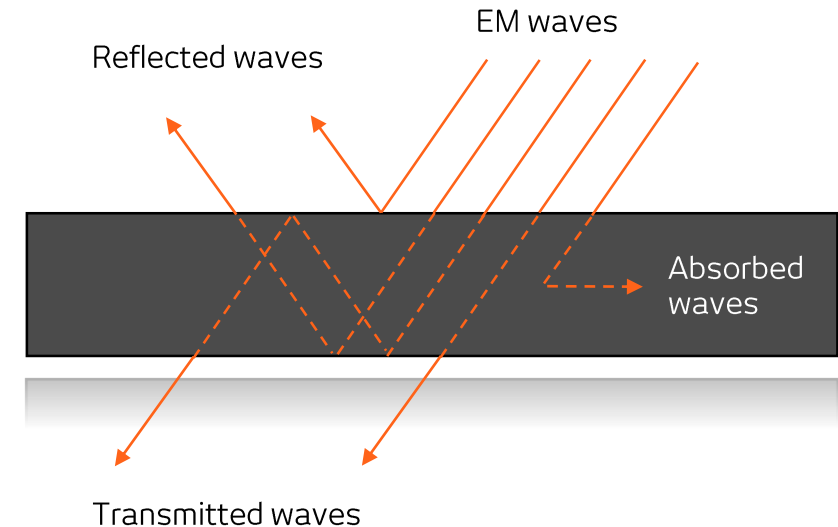
EMI shielding with PRE-ELEC[®] materials



	Relative attenuation (dBm)			
Sample	100 MHz	200 MHz	500 MHz	1 GHz
PRE-ELEC [®] PP 1380	-38	-36	-61	-53
PRE-ELEC [®] TP 17147	-66	-59	-83	-72
Steel reference	-93	-87	-86	-86

Highly filled PRE-ELEC[®] materials for EMI shielding

- Simplified production for electronics EMI casing
- Relatively high attenuation level



LET'S MAKE
A GOOD MIX

www.premixgroup.com

Questions?

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