

### Description of the result

mRefFerro represents the valorisation of steel industry based refractory waste. It is characterised by resistivity  $\sim 0.02 \Omega m$ , making it suitable for antistatic, conductive, and EMI-shielding applications. The material passport provides full chemical, structural, thermal, and electrical mapping, ensuring compatibility with multiple matrices (epoxy, HDPE, PP, etc).



mRefFerro

### Problem addressed

Fine, mixed refractory waste is usually landfilled. Lack of detailed characterisation limits reuse. The mRefFerro passport enables industrial adoption by proving consistent properties and application suitability, reducing landfill and replacing virgin conductive fillers.





Funded by  
the European Union



### Main features & benefits

The mRefFerro material passport delivers a detailed characterisation of electrically conductive refractory waste streams (SCL\_1), enabling their reuse as high-value fillers. Chemical analysis confirmed MgO, graphite, and spinel phases along with excellent electrical conductivity and low thermal conductivity. Optimised milling ( $<10 \mu m$  D50), AI-guided processing, and surface functionalisation (silane) allowed successful integration into polymer composites, thermosets, and coatings. The approach supports circular economy by transforming waste into sustainable functional fillers.

## Contact & Further Information

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This project is funded by the European Union's Horizon Europe Framework Program (HORIZON) under the Grant Agreement Number: 101058310



Consortium:



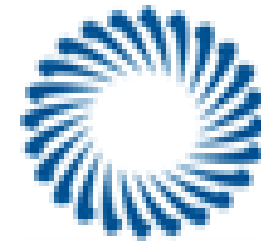


### Target users /stakeholders

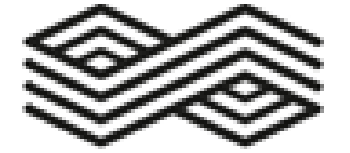
Polymer and composite manufacturers, coating formulators, automotive/electronics industries, researchers in circular economy, recyclers.



### Who is leading the development?



cpi



RHI MAGNESITA



### Exploitation potential

Commercial potential in conductive polymer composites, antistatic coatings, EMI-shielding systems, and functional fillers for construction and automotive markets. Provides cost-effective, sustainable alternatives to virgin carbon black and graphite fillers.





mRefFerro



### Technical facts

Particle size:  $D_{50} < 10 \mu\text{m}$   
 Electrical resistivity:  $\sim 0.02 \Omega\text{m}$   
 Thermal conductivity:  $0.2\text{--}0.6 \text{ W/mK}$   
 Compatible with epoxy, HDPE,  
 PP & coating formulation (after silane treatment)

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