BREATHABLE, ULTRA-LIGHTWEIGHT - ELECTROCONDUCTIVE FOAMS

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HINTERGRUND

Foams have a wide range of established applications, for example in building, automotive, air-filtration, upholstering and acoustic and thermal insulation. Adding a new material property like electric conductivity to foams opens up exciting technical possibilities. However, existing metallization methods have so far proven laborious and complex, and often failed to yield homogenous functionalization. The challenge therefore is to develop a simple, efficient method scalable to industrial application.

LÖSUNG

The present innovation, developed at the University of Bayreuth, includes a simple and easily scalable chemical process. Using e.g. copper or silver, a homogeneous, metallized foam material is produced, thereby combining the advantages of both foams and metals. Three-dimensional substrates in all shapes and sizes are amenable to the technique. The innovative foams show very good electric conductivities of up to 24'000 S/m and an electrical resistivity up to 10 A.

Advantages of the new high-tech foams are:

- Simple, scalable metallization process using finished foam materials
- High electric conductivity
- Open-cell structure, breathability & very low weight
- Heat emission at current flow
- Water repellency & antimicrobial properties
- Thermal and acoustic insulation
Lightweight electroconductive Foams for:

- Lightweight heaters (cars, construction)
- Flat electrodes (e.g. for lighting systems)
- Antistatic / antibacterial filters
- Fuel cell electrodes
- Catalysts
- High-performance capacitors
- Specific insulation / shielding