

## Antimicrobial material

### Development status

#### Phase 3

**Technology validation and implementing it in real environment.** Testing the technology outside of the laboratory and its adjustment to external conditions.

### IP protection status

CZ Patent a Utility model in application phase. Nr. of Patent application 2022-359, nr. of Utility model application 2022-40181.

### Partnering strategy

*Collaboration, licensing*

### Institution

**University of South Bohemia in České Budějovice**

### Vlastník

**Jihočeská univerzita v Českých Budějovicích**

### Challenge

Hygiene products such as mouth masks and respirators are often a reservoir of viruses and harmful microbes. It is therefore advisable to use materials for these products that viruses and microbes themselves destroy. It is also an advantage to have such a material enriched, for example, air filters, when it is a preventive measure that ensures the penetration of harmful substances through these filters.

### Description

The solution is a substrate with an antimicrobial surface layer, designed especially for respiratory masks and air filters. This antimicrobial coating contains two electrically conductive materials that are in electrical contact with each other. The essence lies in the fact that the substrate is made of breathable material. The essence lies in the fact that the substrate is made of breathable material. This breathable material is permeable to water molecules. The substrate or antimicrobial surface layer is further provided with an electrolytic substance from the group salt, hydroxide, acid and/or a combination thereof. The first electrically conductive material in the presence of a second electrically conductive material and electrolyte, which can also be water or air moisture, is subject to galvanic corrosion, and therefore there is a release of ions of this material that have an antimicrobial effect. The acceleration of the release of substances with antimicrobial properties is due to the presence of salt, hydroxide, acid and/or a combination thereof, which, by dissolving in water or air moisture, significantly increase its electrolytic properties. Thanks to this, the amount of viruses or bacteria on the surface of air filters and respiratory face masks will be reduced, thereby achieving a number of microbes below the minimum infectious dose.

### Commercial opportunity

Substrate with antimicrobial surface layer, especially for respiratory masks and air filters, can be used mainly as part of the layer of respiratory face masks or as a surface treatment of air filters to eliminate a larger number of viruses and bacteria and minimize the retention time of viruses and bacteria on the surface of the respiratory

face mask or air filter. The substrate can also be used for medical textiles such as dressings and/or patches or for covering body implants.