



Innovative Vacuum Coating Processes

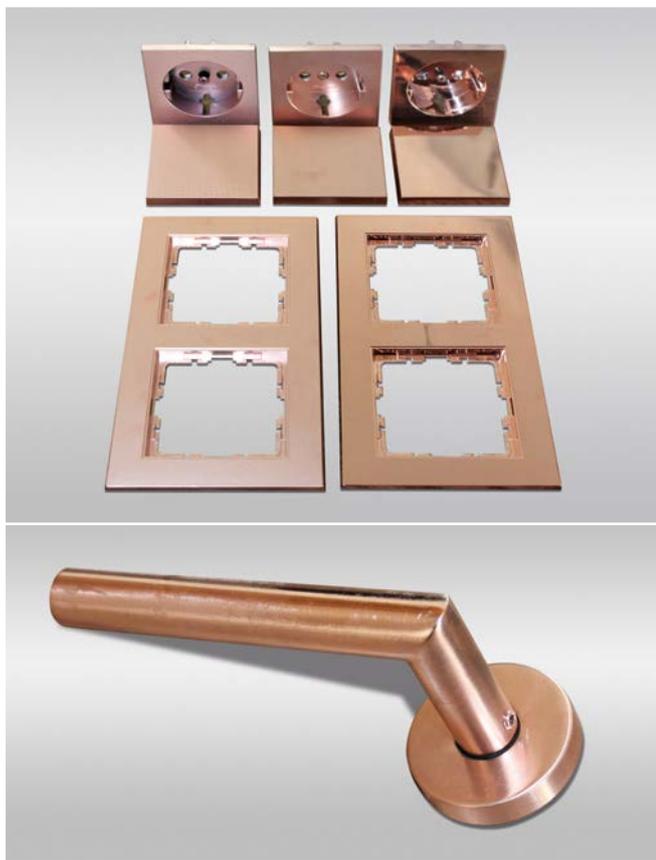
Antibacterial Functional Layers Minimize the Risk of Infection

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Metallic copper surfaces not only have a permanent antimicrobial effectiveness against a large number of Gram-negative and -positive bacteria as well as against viruses, but can also effectively kill microorganisms with a high infectious risk potential.

Copper surfaces inactivate a variety of bacteria, viruses and fungi in a process known as contact killing. Copper does not harm human or animal health cells, because they contain an enzyme that converts copper ions and uses it to its own advantage.

Copper-containing alloys are ideal for surfaces and objects that are frequently touched, as copper is also able to greatly reduce MRSA bacteria between regular cleanings. The copper alloy applied in a vacuum makes use of a natural interaction between the cell wall membrane and simple organisms such as viruses or bacteria. The contact leads to the formation of cracks in the cell wall membrane. Due to the cracks in the outer membrane the cell loses vital nutrients and water, causing it to weaken in general. Eventually the cell dies.



Antibacterial Functional Layers in Everyday Life

The highest standards of hygiene are essential in healthcare facilities. Despite daily cleaning, however, certain frequently used surfaces such as door handles, elevator buttons, shopping trolley handrails and light switches pose a considerable risk of transmission of bacteria, viruses and fungal cultures. One way to reduce the risk of infection - for example by MRSA (methicillin-resistant Staphylococcus aureus, so-called "hospital bacteria") and E. coli bacteria - lies in the use of specially coated products with a permanently antibacterial and antiviral surface.

New, Environmentally Friendly and Cost-effective Coating Process

In order to apply the copper functional layers in a vacuum, SINGULUS TECHNOLOGIES offers a fully automated production line with appropriate throughput. The basis of such a production line is the vacuum coating machine POLYCOATER, which works on the principle of cathode sputtering. The complete production line under the name DECOLINE II integrates vacuum metallization and automatically transports the parts to defined transfer positions. In combination with basecoats, the coating is used for the additional finishing of two- or three-dimensional components of different characteristics. Rotationally symmetric components with a diameter of up to 68 mm and a size of up to 135 mm are easily treatable. In order to achieve sufficient scaling possibilities for the part sizes and numbers, SINGULUS TECHNOLOGIES relies on the machine concept of a universal component carrier with 18 slots, on which by means of individually formed plastic adapters, different workpieces can be placed on. The cycle time per carrier is only six seconds. Alternatively, for approximately two-dimensional components the complete coating space can be used. This is currently 480 mm x 130 mm. Further expansion stages with larger usable component sizes are being worked on. All types of surfaces such as plastics, glass and metal can be treated.

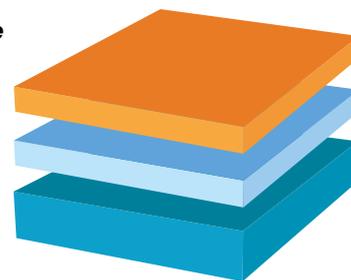
Through the use of UV lacquers and the ability to recycle these, the output of environmentally-burdening emissions is minimized. The environmentally friendly, flexible process thus offers a real alternative to batch processes.

Potential Layer Structure

Copper Alloy

Base Coat (optional)

Base Substrate
- Plastics
- Glass
- Metal



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