

Insulator layer of Al₂O₃ manufactured with Coldab®

Challenge To deposit an electrically insulating support material on steel for sensors (temperature, pressure, strain, etc.) which are to be embedded in the surface of industrial tools. Structures may be both 2D and 3D.

Solution Al₂O₃ (alumina) deposited on stainless steel (AISI 440B, hardness 54 HRC) with Coldab® laser deposition technology.

Results

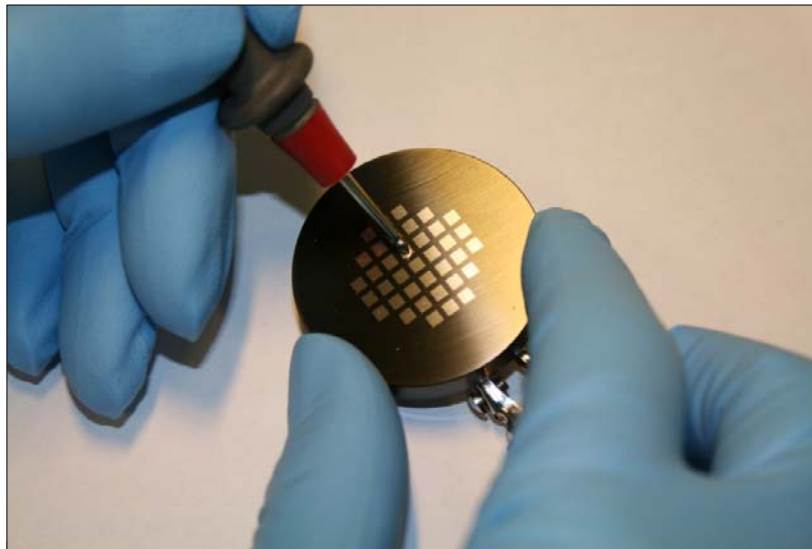
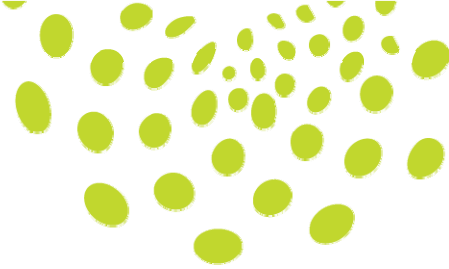


Figure 1. Sensor with Al₂O₃ insulator on stainless steel. The layer, with a thickness of 5 µm, showed a resistance of 84 MΩ, which was within the specification for the device. (Measurements courtesy of VTT)

The adhesion of the films was tested using a pull-out test for epoxy-glued pins, and adhesion was higher than the strength of the glue, about 20 MPa.



Coldab® advantages

1. Uniform deposition on 2D and 3D structures
2. Smooth surface morphology of deposited layers
3. Excellent insulating properties
4. Superior adhesion
5. High deposition rate, enabling industrial scale use

Fields of use

Electronic applications where an insulator is needed for use in a corrosive atmosphere and shows good wear-resistance.

Picodeon's patented Coldab® laser deposition technology offers the unique benefit of being able to deposit virtually any type of layer on any type of material. We can now do what was impossible before. Layers include diverse functional thin films and coatings with strong adhesion to heat-sensitive materials like plastic and paper. In addition, Coldab® promotes cost-effective and environmentally friendly production through shorter cycle time, energy-saving, low vacuum and expanding surface production from pinhead size to large sheets.

When it comes to surfaces, you now have the freedom to do what you want. Contact us to see how we can help you with your particular coating application.