

Barrier Coatings against Migration of O₂ and H₂

[H₂-O₂ Barrier Coatings]

ORMOCER® materials belong to the group of inorganic-organic hybrid materials and were developed at Fraunhofer ISC more than 30 years ago. They are constantly being optimized for many different applications and products, form a own class of materials and are manufactured using the sol-gel process. ORMOCER® materials combine the advantages of inorganic (glass or ceramic-like) and organic (polymer-like) materials in a new, hybrid material.

This allows them to be used, for example, as very resilient but also extremely flexible protective coatings. The scientists at Fraunhofer ISC are thus in a position to offer customized synthesis, as well as functionalization and further processing of the ORMOCER® materials according to customer-specific requirements.

When hydrogen is produced, for example by the electrolysis of water, it must be separated from oxygen in the water cycle to prevent an explosive reaction. In addition, gas-carrying containers and pipelines must be equipped in a way that the migration of the gases is reduced, so that on the one hand **pressure losses are minimized** and on the other hand **corrosion phenomena are avoided**. For this purpose, the base materials have to be equipped with new types of coatings. **Combined oxygen/hydrogen barrier layers** based on the ORMOCER® material are suitable for this. These are already being used successfully in other applications and enable an adaptable material solution for products and applications in the hydrogen sector.

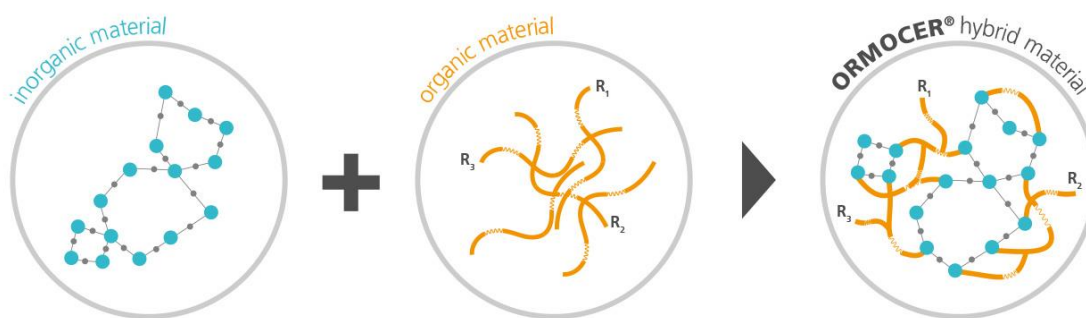
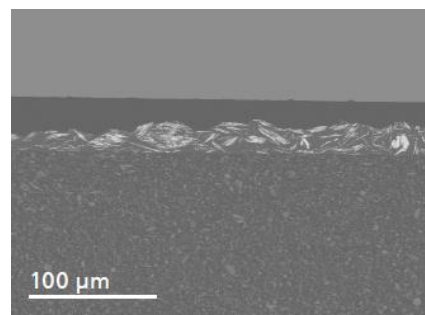


Image: ORMOCER® – an effective hybrid coating material.

Benefits of ORMOCER® Coatings :

- Highly effective
- Easily scalable
- Already tested in many areas for different applications
- Standard application procedure
- Inert material, chemical stable, mechanical durable
- Barrier can be **combined** with **hydrogen sensor**
- Conductibility can be integrated



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Thanks and Regards,

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