

What are intelligent active corrosion protection coatings based on micro/nanocontainers?

The intelligent active corrosion protection coatings based on micro/nanocontainers are designed in recent years. The active substances are pre-loaded in the containers and then dispersed in the polymeric matrix. The micro/nanocontainers can respond to one or several stimuli from the environmental changes and give rapid feedback.

Are inorganic ceramic coatings safe for hydrogen transport pipelines?

However, inorganic ceramic coatings exhibit poor performance in corrosion resistance, brittleness, cracking susceptibility, and are prone to being corroded at the crack propagations, which is inappropriate for the long-term protection of hydrogen transport pipelines.

Are polymer-based hydrogen barrier coatings the future of hydrogen storage & transportation?

In recent years, benefiting from its excellent hydrogen barrier performance and wide application range, polymer-based hydrogen barrier composite coatings, membrane and films are expected to become an essential technology in promoting efficient hydrogen storage and transportation in the future.

How can magnetic-based micro/nanocontainers improve corrosion protection?

The use of magnetic-based micro/nanocontainers is a noteworthy improvement. By applying an external magnetic field, the location and orientation of these containers can be precisely controlled, ensuring more effective and targeted corrosion protection.

Do intelligent coatings provide a corrosion protection effect?

Overall, the intelligent and controlled release process of the encapsulated substances provides an active corrosion protection effect. On the other hand, the multifunctionality of the intelligent coatings mainly depends on the encapsulated active substance in the micro/nanocontainers.

What are BTA/tpa-1 encapsulation containers used for?

These containers were used to encapsulate benzotriazole (BTA) inhibitors, and when embedded into epoxy coatings, they significantly improved corrosion resistance. The BTA/TpPa-1 embedded epoxy coatings demonstrated exceptional durability with an impedance value of $6.45 \times 10^8 \Omega \cdot \text{cm}^2$ after 60 days.

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As an important part of human cultural heritage, earthen sites are subject to damage caused by a variety of environmental factors, such as cracking, weathering, and ...

In this work, a micron-scale spherical energy-storing $\text{WO}_3/\text{BiVO}_4$ composite was synthesized through a simple hydrothermal method to achieve photocathodic protection ...

Promat's thin and lightweight passive fire protection solutions help you mitigate the risks of battery storage, transportation and recycling. Our pre-installed solutions, such as walls, partitions, ceilings, floors, storage boxes and ...

Our automated assembly line applies protective zinc-rich primers post-shot-blasting, preventing rust in gaps created during container manufacturing. Precision Shot-Blasting: Prioritize welds and heat-sensitive ...

Thermal energy storage (TES) tanks are specialized containers designed to store thermal energy in the form of chilled water. As water possesses excellent thermal transfer ...

Healing Coatings to Thermal Energy Storage E. Shchukina, D. G. Shchukin* Stephenson Institute for Renewable Energy, Department of Chemistry, University of Liverpool,

Sol-gel ZrO_2 -3% molY_2O_3 coating deposited by means of a dip-coating application on P91 steel was statically tested at $500 \pm 176^\circ\text{C}$ in contact with Solar Salt (60% wt.% NaNO_3 /40 wt.% of KNO_3) for 1000 h.

Physical isolation of a substrate from its environment by the application of protective coatings is an efficient method of protecting metal from corrosion. Q3 What is a ...

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It faces corrosion, abrasion and many other types of industrial damage - and needs to be protected. At Hempel, we produce a full range of protective coatings for every container type, ...

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With the emerging market of various portable electronic devices, electric vehicles and hybrid electric vehicles, the rechargeable power system demands have also increased dramatically. 1 ...

MOFs are another example of organic/inorganic hybrid containers, known for their high surface area, stability, and adjustable morphology. They have been used in a variety of ...

protection and avoid coating decomposition. The protective performance of Na-montmorillonite (Na-MMT) intercalated with zinc cations (Zn-MMT), benzoimidazole (BIAMMT) and a mixture ...

Hollow fillers such as Perlite and Glass Bubbles from 3M (#1) are already used in cryogenic storage to fill the annular space and reduce boil off of container contents. 6,7 Knowing that hollow fillers such as glass bubbles

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