

Coatings for Maritime Techniques:

“Ceramic-Polymer SF/LF-SRB” for splash zone of CNOOC oil platform – coating with fouling blocker is suitable for offshore applications

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Why is it necessary to protect the splash zone of the pillar construction with a suitable coating? Within the intertidal zone and splash zone, the oxygen content of the sea water is increased due to currents and waves. Hence, the corrosion process is enormously accelerated by constantly moving water. In addition, severe mechanical abrasion results from flowing water. Therefore, it is essential to protect this section with a suitable coating system. Within the deep water sacrificial anodes usually provide an adequate cathodic protection against corrosion damages.



There is a high corrosion risk within the splash zone of offshore constructions. For the durable corrosion protection our coating product “Ceramic-Polymer SF/LF-SRB” was applied directly on the steel substrate.



Product advantages and properties of “Ceramic-Polymer SF/LF-SRB”:

- Excellent sea water resistance
- High abrasion resistance
- Fouling-blocking effect due to chemical integration of special biocide crystals – Patent-No. EP 2448415 B1
- Easiest application by airless spraying methods
- 100 % solvent-free
- Simple to clean
- ISO 20340 – Performance requirements for protective coating systems for offshore and related structures.
- Fish acute toxicity test according to GB 18420.1+2-2009 – Chinese Standard

Technical Information:

Project: New building of drilling platform, type WC13-6 (J275)
Owner: CNOOC Ltd., Zhanjiang / China
Engineering and construction of the platform:
Shenzhen CSE, Shekou Shenzhen / China

Application of the coating:
Shen Zhen Yue Yang Company, Shenzhen / China
Completion: August 2013



Our Partner in China

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Our SRB series: Limitation of fouling by specifically integrated biocide capsules!

The biocidal active component of this special product series is tightly encapsulated in the polymer matrix (patent pending method). Firstly, the coated surface is not antiseptically active and therefore physiologically harmless and environmentally safe. During strong bonding of marine organisms the special biocide capsules in the coating are activated and develop a local toxic effect. The protective coating is not being damaged by the ingress of the organisms. The fouling is being reduced and occurs just superficial. "Ceramic-Polymer SF/LF-SRB" provides a smooth and nonporous surface which can be cleaned easily and efficient with common equipment.

"Ceramic-Polymer SF/LF-SRB" fulfills Chinese Standard - Toxicity test according to GB 18420.1+2-2009

- Institute: South sea branch of National oceanic administration
- Coating of the test beaker: "Ceramic-Polymer SF/LF-SRB" – 1 layer, 500 µm
- Test fishes: Comb Gobies + Brine Shrimps
- Test method: Monitoring of 20 test fishes in 5 differently coated test beakers with 25 °C warm sea water. The test periods were 96 hours (Gobies) and 72 hours (Brine Shrimps).
- Result: The coating has no influence on the lifetime of the fishes and crustaceans. No hazardous substances are released into the water.

Offshore applications with Ceramic Polymer products - 4 coating systems passed extensive test according to ISO 20340!

One of the most important standards for offshore corrosion protection is the ISO 20340 (Performance requirements for protective paint systems for offshore and related structures).

Our tested products

- Ceramic-Polymer SF/LF
- Ceramic-Polymer SF/LF-3
- Proguard CN 200
- Proguard CN 100 iso

Test procedure according to ISO 20340

- 25 week cycles (over 6 months!) as per following pattern:
- 3 days of "simulated weathering", i.e. UV radiation and condensation with water in 4-hour-runs
 - 3 days of permanent sprinkling with salt spray (5% sodium chloride solution) at 35 °C
 - 1 day extreme thermal shock in cold chamber at -20°C!

Only supremely resistant coating products can pass this demanding analysis. The "simulation of maritime weather conditions" with UV radiation, permanent humidity and the salt spray sets abnormally high requirements to the coating material. But the main difficulty is the extreme temperature shock. The remaining water freezes within the test scratch. In most cases it blasts off the edges of the coating.

The Ceramic Polymer coatings did not show any defects such as blistering, crack formation or flaking off. All 4 coating products provided excellent adhesion. No (!) corrosion creep at all occurred between the coating and the steel substrate. Excellent results were also achieved in specific "pull-off-tests" and "cathodic disbondment analyses".