

The biocide-free alternative to Antifouling

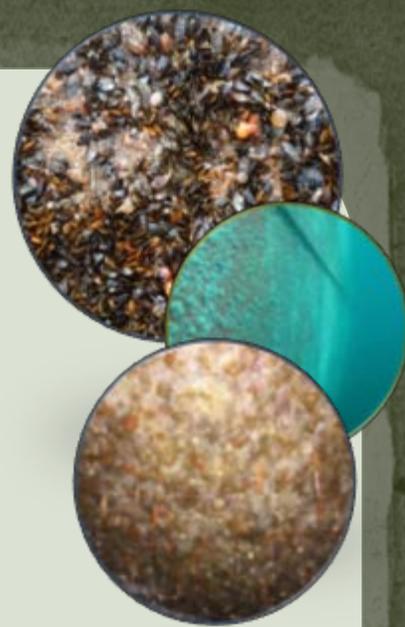


Hull coating CSPC

for all boat types and waters

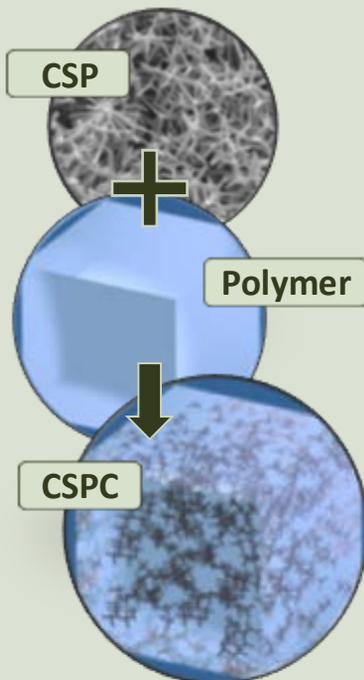
Problem: Fouling of ship hulls

The growth of organisms on ship hulls (**fouling**) causes enormous ecologic and economic drawbacks within the marine sector. Additional fuel consumption of up to 40 % accompanied by increased emission of greenhouse-gases is only one of the negative aspects. To counteract, ship-hulls are protected by **antifouling-coatings**. Here, usually biocides are utilized which are continuously released from the coating, thereby killing marine organisms.



After the prohibition of the biocide TBT in 2008, currently a variety of biocides is utilized whose negative consequences on the oceans get more and more into focus. Regulations like e.g. at the Lake Constance, where the utilization of antifouling coatings is completely forbidden, are to be expected also at other places. Another important upcoming landmark is the **EU-biocide regulation** which will become **valid in 2019**. This regulation involves the prohibition of almost all substances available at the market as well as the prohibition to land in EU harbours with applied biocide-containing coatings.

Due to these reasons, the demand for biocide-free alternatives strongly increased in the maritime society as well as in science within the last years.



Solution: Biocide- & solvent-free CSPC

In close cooperation with the faculty of engineering of the Christian-Albrechts-University of Kiel, Phi-Stone AG has developed a **biocide-free alternative**. This coating is equipped with an **extremely smooth and highly robust surface**, which impedes growth, enables simple cleaning and protects the hull from biocorrosion.

As base material, a solvent-free two-component polymer system (**Polymer**) is utilized which is mechanically reinforced by specially shaped ceramic additives (**CSP**). This composite (**CSPC**) can be applied by rolling or spraying.



Biocide-free alternative to antifouling



Test-ship „African Forest“

In order to investigate the long-term stability of the CSPC-coating under natural conditions, the shipping company Rörd Braren offered test areas on their multi purpose vessels „African Forest“, „African Wind“ and „African River“. These ships frequented a route between Antwerpen, Belgium and Gabon, Africa.

After two years of operation, a slight growth of barnacles was observed on the test areas which could be **removed residue-free** with a simple brush. The underlying coating was completely intact and **did not show any damage or signs of biocorrosion**.

Testyacht „Polaris“

The coating of a complete hull was demonstrated on the sailing yacht „Polaris“, which was equipped with a **grey CSPC-variant**. Promising cleaning results were obtained after the first year of operation and based on these results, an additional improvement of the coating parameters was achieved.

During the second season, the ship was three times manually cleaned by a diver, whereby the hull was almost residue-free by the end of the season.



CSPC – the eco-friendly alternative to antifouling

The CSPC-coating depicts an **optimal alternative** to the present biocide-containing antifouling systems.

With the CSPC-coating you provide a **contribution to the conservation of the environment** and you protect your hull from osmosis and biocorrosion. When keeping the cleaning-intervals, a residue-free removal of growth is easily possible.



Biocide-free alternative to antifouling

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For further information please contact:

Phi-Stone AG
Kaiserstr. 2
24143 Kiel
Germany

Tel.: +49 431 7054186
Email: info@phi-stone.de
Web: www.phi-stone.de