



The Standard For Complete Performance

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SEAFLO NEO CFZ

Copper free

Slime free

Fuel saving

SEAFLO NEO CFZ

Copper free / Slime free / Fuel saving

Features

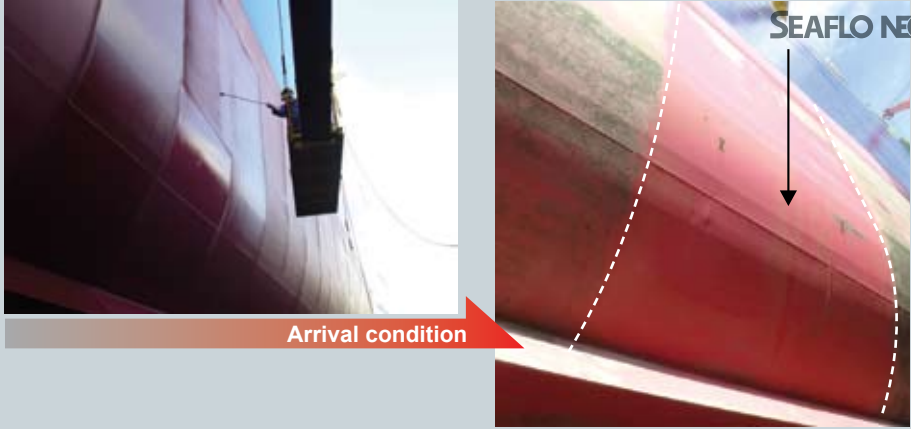
- Slime & Barnacle free
- Environmentally friendly
- Stable hydrolysis reaction
- No discoloration
- Fuel saving performance

8000TEU Container Carrier



Arrival condition

LNG Tanker



Arrival condition

SEAFLO NEO CFZ

VLCC



Results after long anchorage period

Port inspection result: 1 month anchorage
 ▶ Drydock (without hull cleaning) ▶ 1.5 months anchorage

SEAFLO NEO CFZ



CMP's Experiences of Copper Free Antifouling

Copper free antifouling "SEA GRANDPRIX CF-10", launched in 2004, has been applied to approx. 2000 new buildings and repair vessels. Further, "SEAFLO NEO CF Z", reinforced by the improvement of polymer used and introduction of new biocide technology, provides excellent anti slime and anti barnacle performance for extended idle period.

Container Carrier 4,578TEU
After 60 months



LNG Tanker
After 29 months



VLCC
After 35 months



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Fuel saving

A New Dimension to Fuel Saving Antifouling

SEAFLO NEO products have been proven fuel saving performance worldwide since 2010. In the development all SEAFLO NEO products derive from copper based antifouling technology. A new product: SEAFLO NEO CF Z which includes the new biocide, enhancing CMP's antifouling technology has been introduced. A crosslinking zinc acrylate polymer is utilised in the SEAFLO NEO CF Z, providing an excellent self-polishing property supported by the hydrolysis reaction, delivering not only stable antifouling performance in service but also in combination with the new biocide provides excellent performance even for extended layup periods.



Feature
1

Slime & barnacle free

CMP provides excellent antifouling performance against slime and barnacles even for low activity vessels and those experiencing long static periods.

**Conventional AF
(Copper free)**

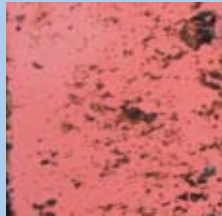


SEAFLO NEO CFZ



Immersion test (static) in the Seto Inland Sea
After 2 months in summer

**Conventional
copper type AF**



SEAFLO NEO CFZ



Dynamic antifouling test / After 60 months



Antifouling product for domestic vessels, using the same polymer and biocide technology of SEAFLO NEO CF Z. Coated area shows good antifouling performance in contrast to uncoated area covered by barnacles.

Trading course: Okinawa, Japan
Result after 12 months





Feature
2

Environmentally friendly

All active ingredients are registered in BPR

*BPR (Biocidal Products Regulation, in Europe)

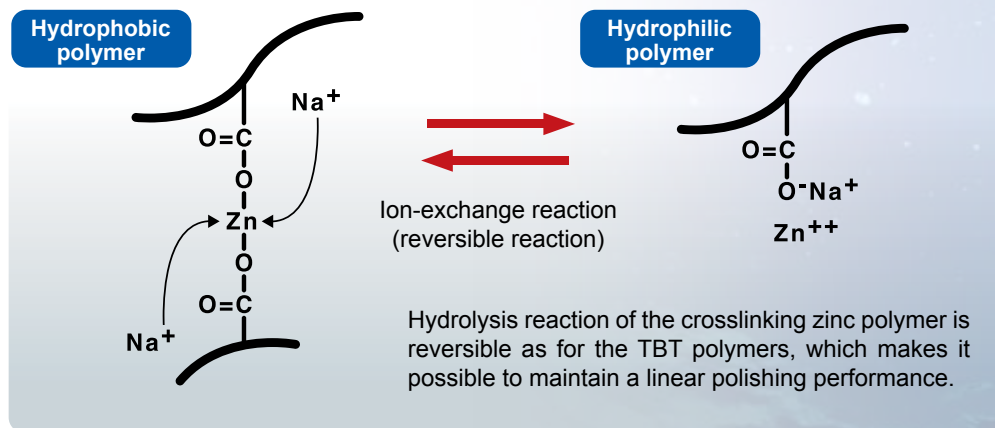
Feature
3

Stable hydrolysis reaction

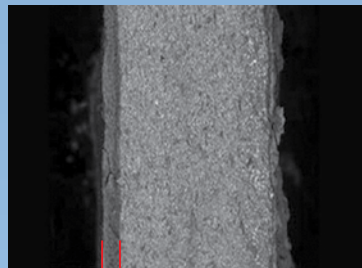
A new crosslinking zinc polymer* provides a stable hydrolysis reaction

*Patent technology

Hydrolysis reaction of Crosslinking Zinc Polymer



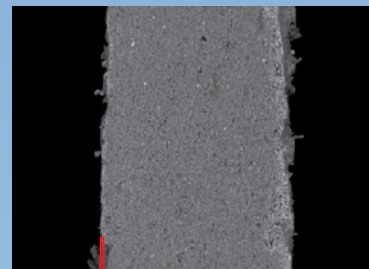
Thick Leach Layer



Leached layer: 62.7µm

Under various conditions like e.g. slow steaming and long idling, a polishing is retarded and a thick leach layer is grown at the antifouling surface.

Crosslinking Zinc Polymer



Leached layer: under 1µm

A new crosslinking zinc polymer maintains a very thin leach layer on the surface, providing the best condition to release biocides.



No discoloration

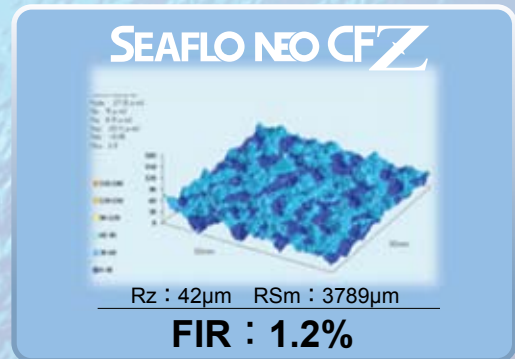
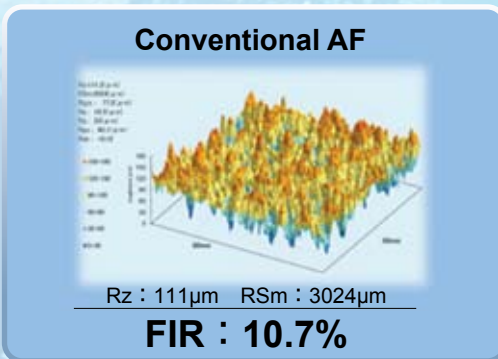
The bright colour of a copper free antifouling is provided in service.



Fuel saving performance

SEAFLO NEO CF Z is designed to provide fuel saving performance compared to conventional antifoulings by low FIR enabling an ultra smooth surface.

Fuel saving **5~8%**
(With ultra low friction anti corrosive coating)



Accurate method for fuel efficiency evaluation

FIR Friction Increase Ratio **THEORY**

Low FIR

= Higher Fuel Savings

Technical Development Support Project by the MLIT (Ministry of Land, Infrastructure, Transport and Tourism, Japan).

CMP developed, (New) FIR Theory/Portable 3D hull roughness analyzer/Ultra smooth surface antifouling, in a project (Development of the hull paint system which forms ultra-low surface roughness and the frictional resistance prediction methodology for vessels in service by using surface roughness parameters) supported by MLIT's "Next-generation marine environment-related technology development support program" and a joint research theme with Nippon Kaiji Kyokai (ClassNK). CMP also developed software that can calculate the power reduction rate arising from roughness difference based on the results of a 14-meter flat plate test in a 400-meter towing tank conducted by the National Institute of Maritime, Port and Aviation Technology and the National Maritime Research Institute (NMRI). The ship performance prediction results given by the NMRI's software "HOPE Light" and the measurement value of both roughness and wavelength parameters. A power reduction of between 5% - 8% from the paint film roughness variation is estimated by the software.

We appreciate your understanding that conditions, vessel type, operating conditions in the actual marine environment may influence the fuel saving performance, and that CMP conducts various tests assuming marine environment.

SEAFLO NEO CFZ

Copper free Slime free Fuel saving

CHUGOKU MARINE PAINTS, LTD.

HEADQUARTERS

Tokyo Club Building, 2-6, Kasumigaseki 3-chome, Chiyoda-ku, Tokyo, 100-0013, Japan TEL : 81-(3)3506-3971 FAX : 81-(3)5511-8542

Website: <http://www.cmp.co.jp/global>

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