



**SEA THE
DIFFERENCE**

NanoPhos
*Marine Pioneering
Nanotechnology* 



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Nanotechnology*



WHAT IS NANOTECHNOLOGY?

Nanotechnology refers to the scientific field, which deals with very small structures, usually sized below 100nm. More precisely, one nanometer (nm) is one billionth of a meter (10^{-9}m). It is so small that if earth were one meter in diameter, then one nanometer would have been the size of an apple. Nanosized materials reveal unique properties compared to ordinary bulk materials or even molecules.

WHY NANOTECHNOLOGY FOR MARINE INDUSTRY?

Nanotechnology driven formulations exhibit unique properties and functionality comparing to conventional products. Antifouling coatings with no metal oxide biocides, thermal insulating paints or even self-cleaning protection are only few among the benefits that the nano-world can offer.



NANOPHOS MARINE

NanoPhos Marine is established to bring innovative solutions to the Marine Industry. By taking advantage of the unique properties of nanotechnology, NanoPhos Marine invents clever materials to solve common problems, such as fouling growth, sea water corrosion, incident heat radiation and accumulation of salt deposits. Inspired by the vision of “tuning the nanoworld to serve the macroworld”, NanoPhos Marine scales-up laboratory achievements in production and, subsequently, commercialization. Its product portfolio includes 23 products focusing on maintenance, cleaning, hull protection and anti-fouling.

CORE BENEFITS OF NANOPHOS MARINE PRODUCTS

LONG-TERM PERFORMANCE
(IN VARIOUS MARINE ENVIRONMENTS & TEMPERATURES)

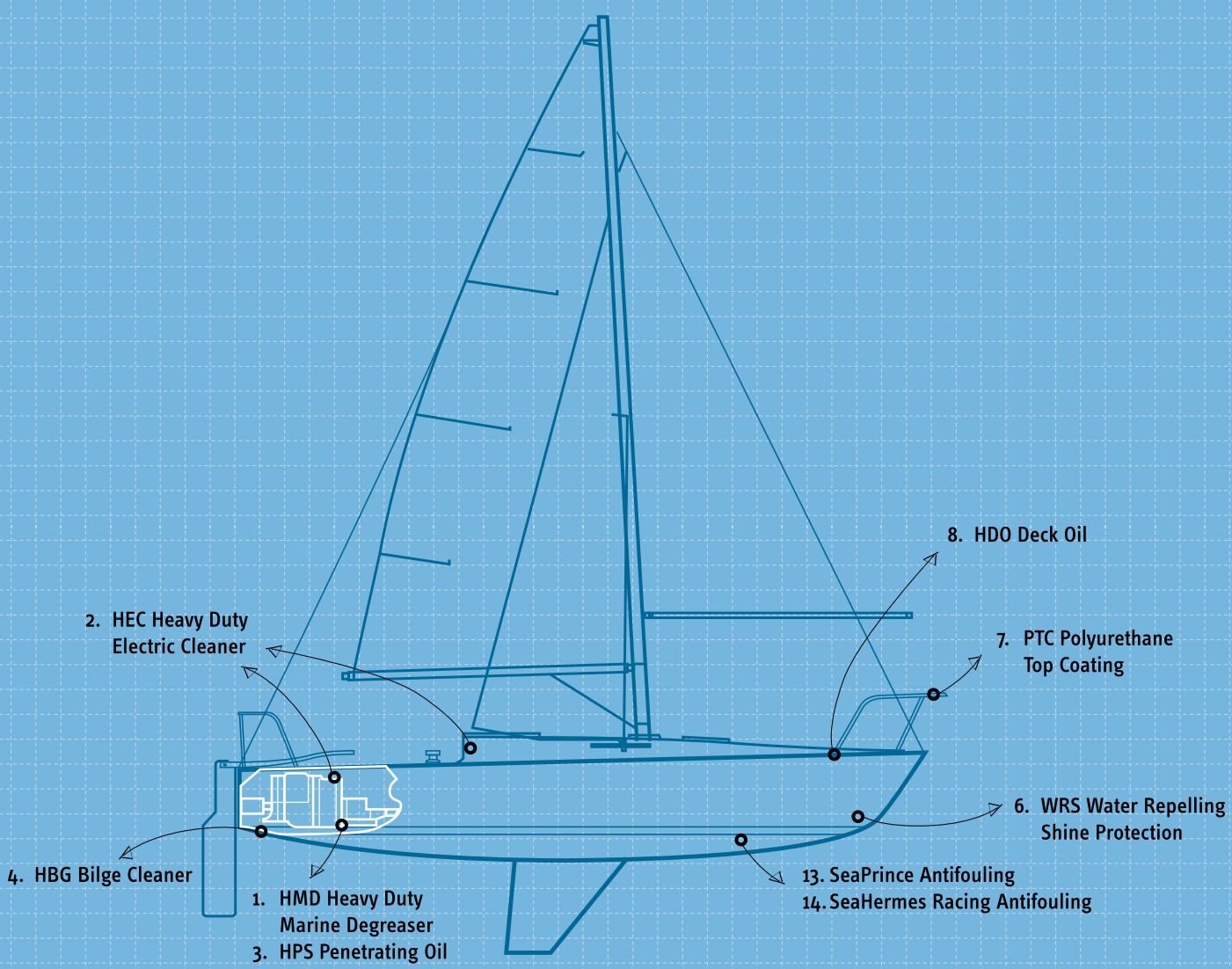
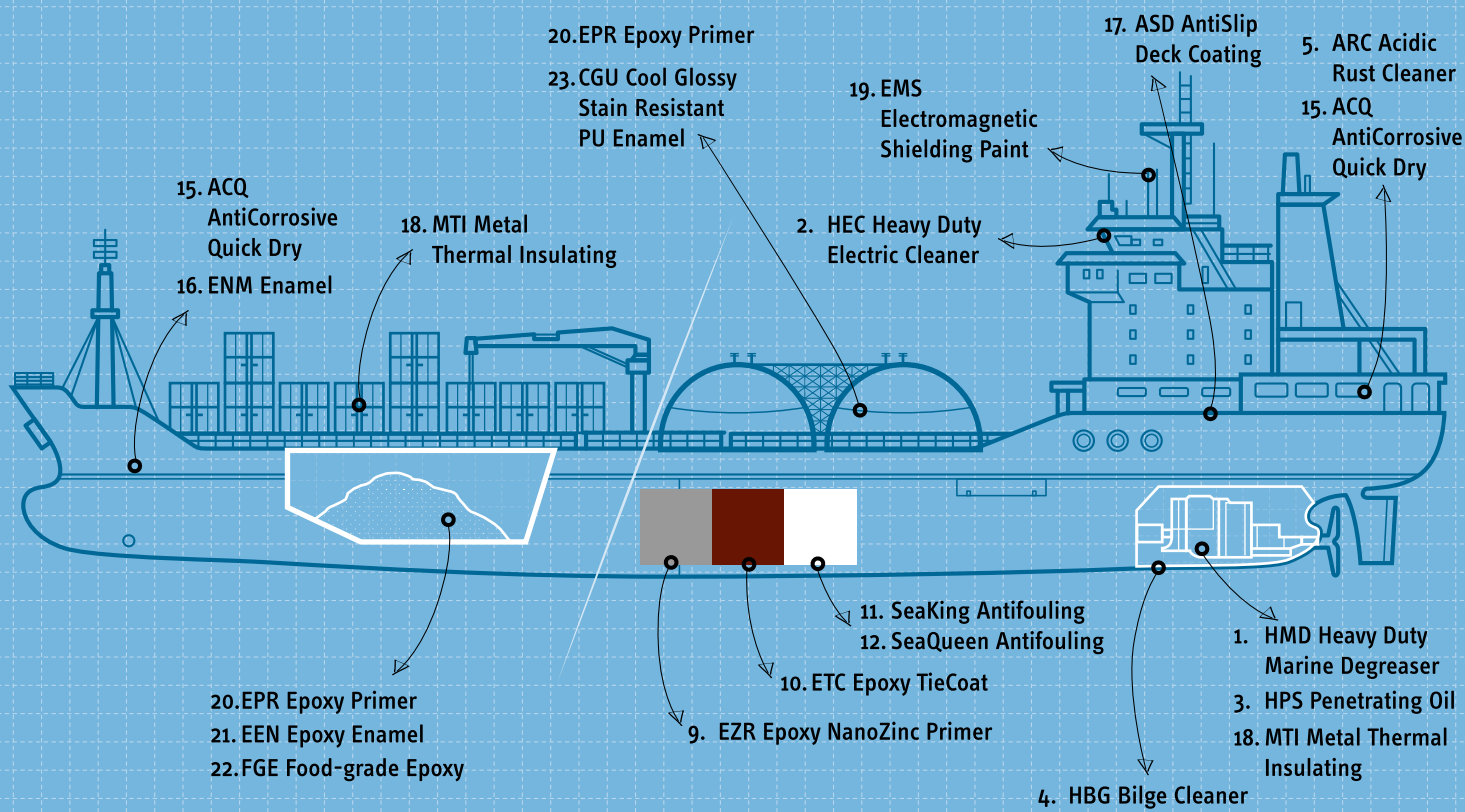
ECO - FRIENDLY
(BIOCIDES-FREE)



COST-EFFICIENCY

FUEL-SAVING

REDUCTION OF DRY-DOCKING INTERVALS



NANOPHOS MARINE PRODUCTS

APPLICATION MARKET SYMBOLS KEY



DRY DOCKING



MARINE SUPPLIES



OFFSHORE



YACHTING/SAILING

A. MAINTENANCE, CLEANING AND CARE

1. HMD Heavy Duty Marine Degreaser



Biodegradable, solvent-based, heavy-duty degreaser that easily cuts through, emulsifies and removes oil, grease and grime. Cleans and dissolves heavy soils on inboard & outboard motors, engine, machinery and dock equipment. Will not generate acid components.

2. HEC Heavy Duty Electric Cleaner



High performance cleaner for electric components that suffer from dirt built-up. It can dislodge foreign elements and clean components. Prevents electric contact failure. It does leave no residues. Quick-drying formulation. Use on any exposed sensitive electronic components and contacts (engine controls, data sensors and wiring).

3. HPS Penetrating Oil



HPS Penetrating Oil is designed to pierce inside metal threads and free rusted or frozen parts. Additionally, this heavy-duty formulation provides corrosion resistance and lubrication for a long period of time.

4. HBG Bilge Cleaner



HBG Bilge Cleaner formulation is a biodegradable, heavy-duty bilge cleaner. It disperses sludge and grime in the bilge so it can be pumped out (follow local disposal guidelines and legislation). It effectively emulsifies fuel or grease residues. Leaves bilge clean and odor-free. It contains no phosphates and has a refreshing odor.

5. ARC Acidic Rust & Desposits Cleaner



ARC is an acidic, hydrochloric/phosphoric acid free, heavy-duty rust, salt deposits and iron scales cleaner. Its low toxicity and ecotoxicity make it suitable for use in marine environment. ARC efficiently removes rust from surfaces to prepare them for modification (e.g. priming – painting). It contains flash rust inhibitors to protect early corrosion effects.

6. WRS Water Repelling Shine Protection



WRS is a nano-engineered product to preserve the shine of polished and wax treated yachting hulls. It prevents the adhesion of salt deposits by repelling seawater. Thus, the deteriorating action of salts is eliminated and the shiny appearance of a hull is preserved for long.

7. PTC Polyurethane Top Coating



A high-gloss protective, film-forming coating for the application on bare metal or inox surfaces. Prevents the accumulation of salt deposits and makes it easier to clean. Does not yellow or flake, even after prolonged exposure to UV and marine environment. Can be applied on wooden surfaces as well, with reduced abrasion resistance.

COLOR | Transparent

8. HDO Deck Oil



Unlike conventional teak oil, HDO is a penetrating protecting formulation, ideal for marine hardwood surfaces, like decks. The deep penetrating formula feeds wood, restoring the natural oils lost through weathering. It penetrates the wood leaving a natural looking finish and the deck both nourished and protected. Scuff resistant formula. HDO prevents water ingress and reduces “silvering” due to UV action.

COLOR | Transparent

B. BELOW WATERLINE HULL PROTECTION & ANTIFOULING

9. EZR Epoxy NanoZinc Primer



A two component, zinc rich, epoxy primer. High levels of Zinc Dust & adhesion of Epoxy Polyamide binder results in excellent cathodic protection against rust and undercutting. Contains approximately 90% wt. Zinc Dust in the dry film. Nanostructured zinc particles exhibit high surface area to promote cathodic protection. Ideal primer in combination with advanced coating systems for below or above the waterline protection.

COLOR | Grey 

10. ETC Epoxy TieCoat



A two component, tar free, epoxy tie coat. For use as a tie coat between anti-corrosive EZR primer and epoxy antifouling top coatings to ensure maximum system adhesion and performance.

COLOR | Reddish Brown 

11. SeaKing Antifouling



The ultimate epoxy antifouling coating. Low friction, superior anti-fouling and long-lasting (60M) nanotechnology driven coating. Contains no tin (IV) or copper (I) compounds. Based on PolyDiMethylSiloxane modified epoxies, as the latest advance in marine coatings. Apart to their amphiphilic behavior and enhanced durability, they are coupled with glycol units to finely tune surface tension values that repel proteins or microorganism biological anchors. Saves fuel costs by reducing drag coefficient.

COLOR | Reddish Brown  Black  Blue 

12. SeaQueen Antifouling



Vinyl based, tin (IV) free and cuprous oxide free antifouling top coat. Nano-engineered formulation for long-term antifouling performance (36M). Conforming to the strictest IMO regulations, SeaQueen prevents biological growth regardless marine environment, temperature or salinity. Ideal for both stationary and slow/fast-moving vessels. Protects for approximately 30-36 months when two coats (75micron DFT each) of the antifouling coating are applied. Recommended for use on barges, ships and drilling vessels. Suitable for steel, wood and fiber glass substrates.

COLOR | Reddish Brown  Black  Blue 

13. SeaPrince Antifouling



Transparent, glossy epoxy antifouling. Low friction, superior anti-fouling and long-lasting (60M) nanotechnology driven coating. Contains no tin (IV) or copper (I) compounds. Ideal for fast moving vessels like yachts, sailing or rib boats. Improves speed performance and saves fuel by reducing drag.

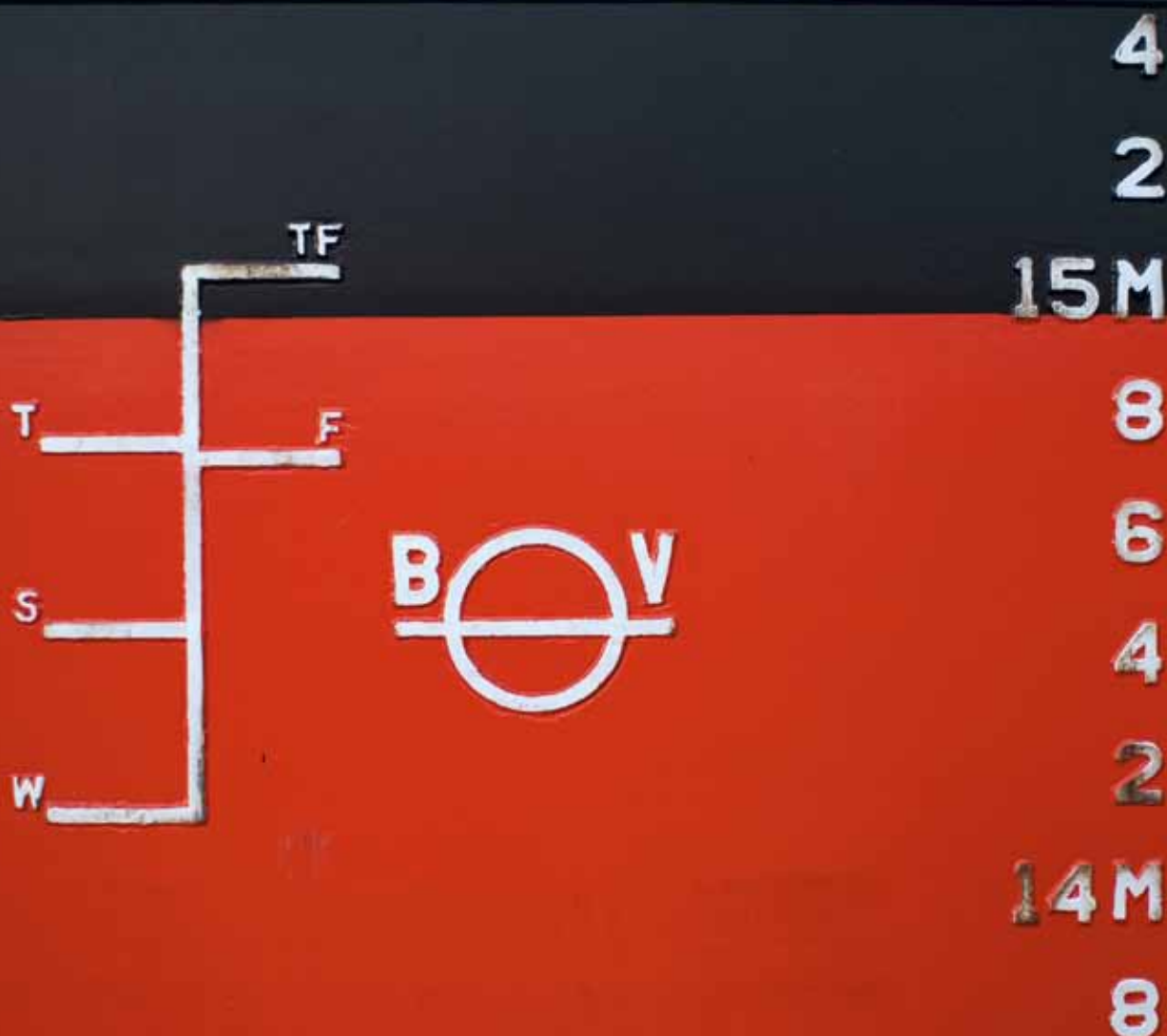
COLOR | Transparent

14. SeaHermes Racing Antifouling



Super-hydrophilic, transparent coating, based on titanium dioxide nanoparticles. It creates a short living (6M) but extremely low surface tension coating to reduce boundary effect and boost speed performance. Apart from surface tension, nanoparticles shape a unique micro-roughness to reduce friction or drag coefficient. Ideal for application on fiberglass gel-coat whenever a split of a second makes a difference.

COLOR | Transparent



C. ABOVE WATERLINE

DECK, HOLDS, ENGINE ROOM & SUPERSTRUCTURE PROTECTION

15. ACQ AntiCorrosive Quick Dry



Single component corrosion inhibitive, high quality primer for steel exposed to a marine or industrial corrosive environment. Quick drying, easily applied, without dust creating. It presents excellent adhesion, flexibility and high anti-corrosive protection due to its special anticorrosive pigments of zinc phosphate and zinc oxide. It contains no lead compounds. Non-toxic, highly weathering resistant. Excellent for priming storage tanks, industrial plants, machinery, and other metal subjected to heavy industrial use and exterior exposure.

COLOR | Reddish Brown 

16. ENM Enamel



ENM Enamel is a gloss alkyd finish coating possessing excellent color stability and gloss retention for interior and exterior applications. Ideal for outside hull, exterior application. Engineered for application over alkyd primers. ENM offers long-lasting performance and anticorrosion protection. Optimized rheology makes it easy to apply on vertical surfaces, even in presence of high moisture levels. Excellent adhesion to most conventional top-coatings. White color option is an excellent cool paint for thermal insulation, through heat (infrared) reflection.

COLOR | Grey  Reddish Brown  Black  White  Blue 

17. ASD AntiSlip Deck Coating



Slip resistant, single component deck coating. Exhibits high wearing resistance and near zero gloss. Fast drying and low-dirt pickup. Does not yellow or flake, even in harsh weathering conditions. Protects against corrosion. Applicable in adverse environmental conditions.

COLOR | White  Blue  Reddish Brown  Yellow  Green 

18. MTI Metal Thermal Insulating



MTI is a solvent-based paint that can be directly applied on metal surfaces for thermal insulation and corrosion prevention. Ideal for engine rooms, heat exchangers and pipes to reduce heat losses and improve energy efficiency. Additionally, it makes hot surfaces safer by reducing their temperature. Resistant up to 250°C substrate temperature. MTI provides significant reduction in thermal conductivity and high reflectance of thermal radiation (infrared).

COLOR | White  Reddish Brown  Green 


19. EMS Electromagnetic Shielding and Electrostatic Discharge Prevention Conductive Paint

EMS is a conductive paint, ideal for EMI/RFI shielding and electrostatic discharge (ESD) prevention. Conductive paint is sprayed onto the surface using an air atomizer or airless spray equipment. Conductivity achieved by multi-wall carbon nanotubes (MWCNTs) to ensure a wide range of RF covered.

COLOR | Grey  Black 

20. EPR Epoxy Primer

Two component, metal epoxy primer. Durable primer for the application in non-immersed metal surfaces. It contains anti-corrosive pigments. Ideal for cargo holds and off-shore platforms. Eco-friendly formulation. Ideally combined with EEN Epoxy Enamel.

COLOR | Reddish Brown 


21. EEN Epoxy Enamel

EEN Epoxy Enamel is ideal for the marine corrosive environment, especially where high-chemical resistance is required. It results in a glossy finish. Ideal for offshore platforms or vessel holds. Easily applicable on vertical and horizontal surfaces.

COLOR | Grey  Reddish Brown  Black  White  Blue  Green 

22. FGE Food-grade Epoxy

Two component, high performance, food safe, epoxy coating. Ideally formulated for application in a vessel's holds for bulk transportation of food sensitive cargo (e.g. grains). Zero migration of food contaminants. FGE can be applied on top of tie coat protective coating to ensure food safety standards.

COLOR | White  Grey 

23. CGU Cool Glossy Stain Resistant PU Enamel

A two components, high solids Acrylic / Aliphatic polyurethane finish, which cures to a very hard, high gloss, flexible coating with outstanding color retention. This coating has exceptional resistance to weathering, staining and corrosive environment. Use for exterior or interior applications wherever a superior gloss and color retention finish is desired, such as storage tanks, structural steel, pipelines, production equipment and offshore platforms etc. Special nanostructured ingredients reflect incident heat radiation to enhance thermal insulation and provide cool properties.

COLOR | White  Red  Orange  Buff Yellow 



Systems

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