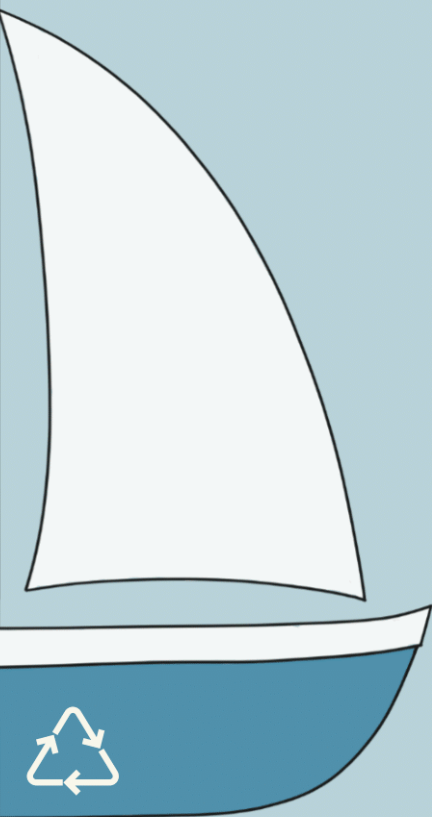


# FOULING



We are Accendo, the illuminated! Over the last two months, our four-member team has conducted academic research on how toxic antifouling affects the marine environment. We also interviewed boat owners and shipyard representatives to create, for the first time, an easily understandable infographic and informative report on sustainable antifouling for boats.

After hard work, we are happy to say that we can explain the present situation on antifouling and present the best sustainable alternatives that are available out there right now!

Caleb Agoha, Cristian Tomus, Eunjeong (Sally) Choi, Sabrina Liu



<sup>1</sup> Detty, M. R., Ciriminna, R., Bright, F. V., & Pagliaro, M. (2015). Xerogel Coatings Produced by the Sol-Gel Process as Anti-Fouling, Fouling-Release Surfaces: From Lab Bench to Commercial Reality. *ChemNanoMat*, 1(3), 148–154. <https://doi.org/10.1002/cnma.201500056>

<sup>2</sup> Dibke, C., Fischer, M., & Scholz-Böttcher, B. M. (2021). Microplastic Mass Concentrations and Distribution in German Bight Waters by Pyrolysis-Gas Chromatography-Mass Spectrometry/Thermochemolysis Reveal Potential Impact of Marine Coatings: Do Ships Leave Skid Marks? *Environmental Science & Technology*, 55(4), 2285–2295. <https://doi.org/10.1021/acs.est.0c04522>

<sup>3</sup> Almeida, E., Diamantino, T. C., & de Sousa, O. (2007). Marine paints: The particular case of antifouling paints. *Progress in Organic Coatings*, 59(1), 2–20. <https://doi.org/10.1016/j.porgcoat.2007.01.017>

<sup>4</sup> Gola, D., Kumar Tyagi, P., Arya, A., Chauhan, N., Agarwal, M., Singh, S. K., & Gola, S. (2021). The impact of microplastics on marine environment: A review. *Environmental Nanotechnology, Monitoring & Management*, 16, 100552. <https://doi.org/10.1016/j.enmm.2021.100552>

<sup>5</sup> Lebreton, L., Egger, M., & Slat, B. (2019). A global mass budget for positively buoyant macroplastic debris in the ocean. *Scientific Reports*, 9(1), Article 1. <https://doi.org/10.1038/s41598-019-49413-5>

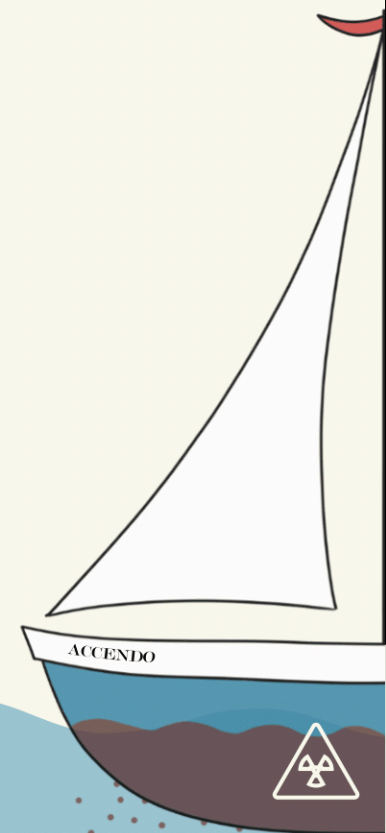
<sup>6</sup> Homepage—EN - Finsulate. (n.d.). Finsulate. Retrieved November 11, 2022, from <https://www.finsulate.com/en/>

<sup>7</sup> Sonihull ultrasonic anti-fouling systems. (n.d.). Sonihull. Retrieved November 11, 2022, from <https://sonihull.com/sonihull-systems/>

<sup>8</sup> Hempel's Ecopower Cruise 72460-72460. (n.d.). Retrieved December 1, 2022, from <https://www.hempelyacht.com/en-gb/products/hempels-ecopower-cruise-72460-72460>

<sup>9</sup> Globic 9500 Series—Hempel. (n.d.). Retrieved December 1, 2022, from <https://www.hempel.com/products/brand/globic/globic-9500>

# ANTIFO



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information sheet

# NON-SUSTAINABLE

Antifouling is a major source of marine pollution

**900 MILLION LITRES**  
of antifouling paints are used yearly<sup>1</sup>

**1194 TONNES**

of **microplastics** come from conventional antifouling paint annually<sup>2</sup>

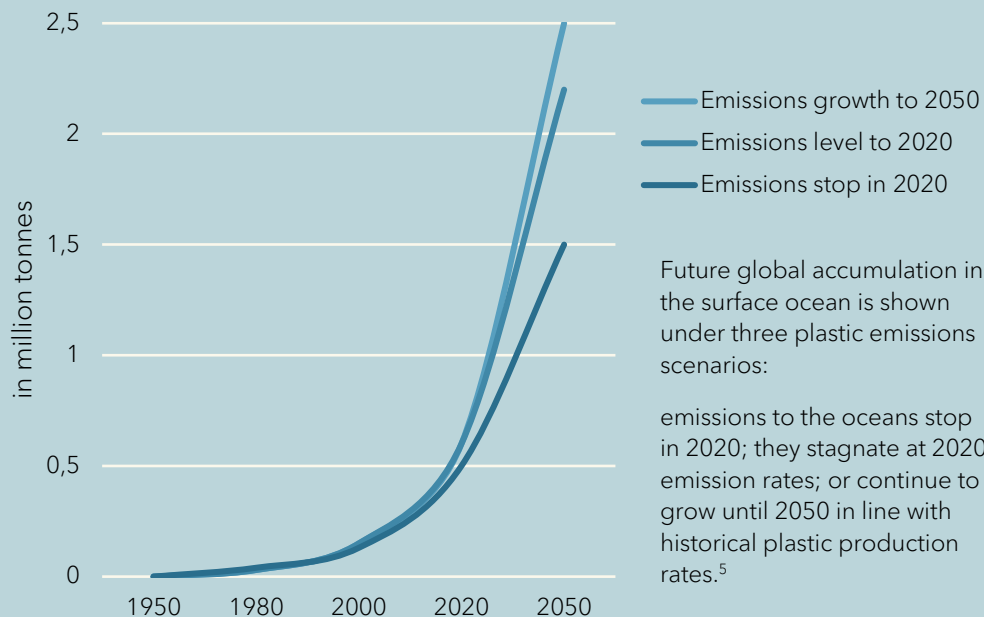
**3000 TONNES**

of **copper biocides** are released into the water every year<sup>3</sup>

Over time, conventional antifouling paints dissolve slowly into the water. While the paint dissolves, the biocides within are released, and the surrounding marine life is subsequently harmed.<sup>3</sup> The residue paint consists of microplastics that end up in the ocean.<sup>2</sup>

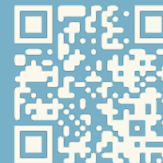
- 1 Fish consume **microplastics** and absorb **toxic elements** of the antifouling paint<sup>4</sup>
- 2 Humans eat fish, ingesting these elements as well<sup>4</sup>
- 3 This leads to **health risks** such as cancer, impaired immune systems & oxidative stress<sup>4</sup>

Microplastics in the surface ocean, 1950 to 2050



# SUSTAINABLE

Type of boat \ Type of water	Vessels	Yachts	Motorboats	Speedboats	Pleasure Crafts
Salt					
Brackish					
Fresh					



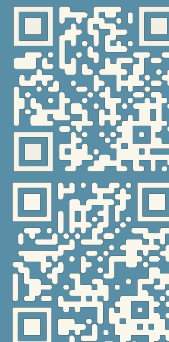
FINSULATE is a microfiber antifouling wrap that lasts up to 5 years. It can only be applied by certified companies but is easily maintained with a high-pressure water cleaner.<sup>6</sup>

FINSULATE



**SONIHULL**  
ULTRASONIC ANTI-FOULING SYSTEM

SONIHULL is an ultrasonic antifouling system that lasts a lifetime if properly maintained. It produces ultrasonic energy to prevent biofouling.<sup>7</sup>



HEMPEL'S ECOPOWER CRUISE is a biocide-free antifouling paint that can be easily applied and maintained just like you would with conventional antifouling paint.<sup>8</sup>

HEMPEL'S GLOBIC 9500 S/M is a sustainable antifouling paint that uses a nano acrylate technology with biocide additives as an alternative. It is designed for 60+ month docking intervals and can be easily applied and maintained.<sup>9</sup>

**HEMPEL**  
Trust is earned