



**Ocean Coatings**  
HIGH PERFORMANCE COATINGS



# BIOFOULING TEST 2025

Conducted By:  
**ENDURES B.V.**

**F2**  
FOULING FREEDOM

# F2 ECO BIOFOULING TEST

## 2024 - 2025

**CONDUCTED BY: ENDURES B.V., THE NETHERLANDS**  
**DURATION: 7 MONTHS REAL-WORLD SEA EXPOSURE**  
**(JULY 2024 – FEBRUARY 2025)**  
**LOCATION: DEN HELDER HARBOUR (NORTH SEA)**

### INTRODUCTION

In 2024, Ocean Coatings Ltd commissioned an independent marine coating efficacy study through ENDURES B.V., a renowned maritime research facility in the Netherlands. The goal was to scientifically evaluate the real-world performance of the F2 ECO fouling-release coating across multiple colour variants (bronze, blue, grey, and black).

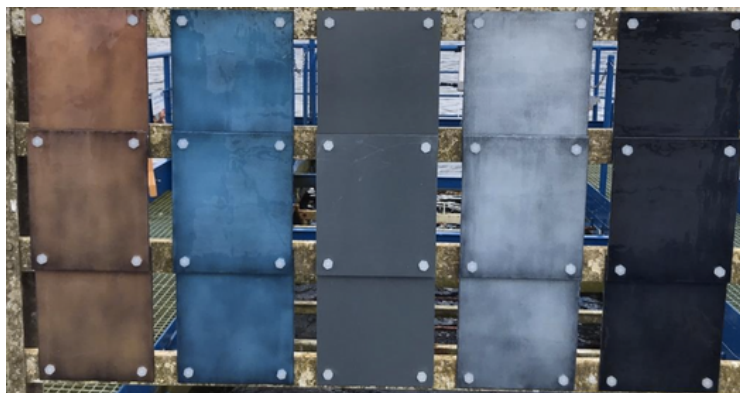
The test took place over 7 months in the Den Helder harbour, a dynamic and biologically active North Sea environment known for its challenging biofouling conditions. This region is representative of many global marine environments where vessels suffer from heavy marine organism build-up, making it an ideal testing ground for long-term performance evaluation.

### TESTING SCOPE

The study focused on two key performance areas:

- **Fouling Resistance (Raft Exposure Test):** Coated PVC panels were submerged and monitored regularly for biofouling attachment. Growth was assessed visually and quantitatively using international standards including ASTM D 6990 – 20 and guidance from the European Chemicals Agency (ECHA).
- **Ease of Cleaning (Cleaning Test):** After 18 weeks, a subset of the panels was gently cleaned with a soft cloth and seawater to assess how easily biofouling could be removed from the coating surface.

### THE EXPOSURE RAFT AND INSPECTION DATES



Inspection moment	Date	Total exposure time (weeks)
T0*	11-07-24	0
T1	08-08-24	4
T2	05-09-24	8
T3	03-10-24	12
T4	14-11-24	18
T5	10-01-25	26
T6	06-02-25	30

# A NOTE ON INDEPENDENT TESTING AND DATA TRANSPARENCY

At Ocean Coatings, we believe that trust is earned through openness, honesty, and scientific validation. That's why we actively pursue independent, third-party testing of our products — not only to prove performance, but to ensure our customers can rely on real-world, verified data when making decisions.

The F2 ECO coating was tested by ENDURES B.V., one of Europe's leading marine research institutes, to assess its long-term fouling resistance, cleanability, and overall performance. This type of third-party testing is critical because it provides objective, unbiased results from respected specialists who are completely independent from our business. Although we are not permitted to share the full ENDURES report publicly due to confidentiality clauses, we have carefully reformatted the results into a simplified summary. This summary includes all key findings from the original report, without modification, omission, or alteration. We've simply presented the data in a clearer, more accessible way to support easy understanding for both technical and non-technical readers.

We do not shy away from scrutiny — in fact, we welcome it. Ocean Coatings has always taken pride in being transparent about the performance of our products. We're committed to publishing clear, accurate, and honest information across all of our testing and research, whether conducted in-house or by independent labs.

If you are interested in viewing more detailed technical data or discussing the findings in greater depth, our team would be happy to assist. In certain cases, we may be able to share further documentation under a non-disclosure agreement (NDA), depending on the request.

## KEY RESULTS

### 1. Fouling Resistance

- F2 ECO coating demonstrated strong resistance to macrofouling over a 7-month test in challenging North Sea conditions.
- Macrofouling coverage remained under 10% across all colour variants, even at the final inspection.
- Compared to uncoated control panels (which were almost entirely covered in tunicates and other fouling), F2 ECO offered significantly improved protection.
- Biofouling organisms (such as barnacles and tunicates) often appeared semi-detached or loosely anchored to the surface, indicating the coating's low surface energy effectively disrupted long-term adhesion.
- No meaningful performance differences were observed between the four colours tested (bronze, blue, grey, black).

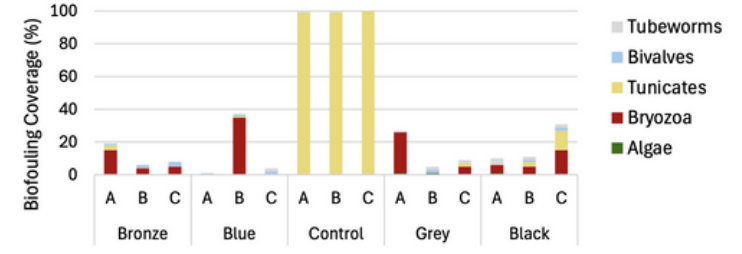
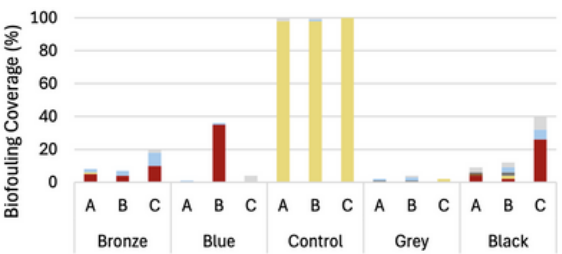
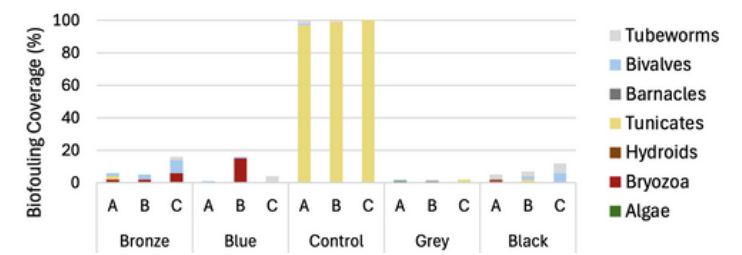
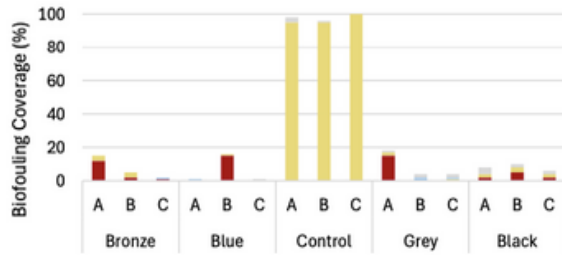
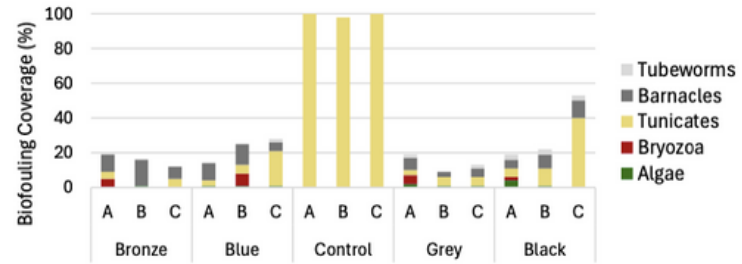
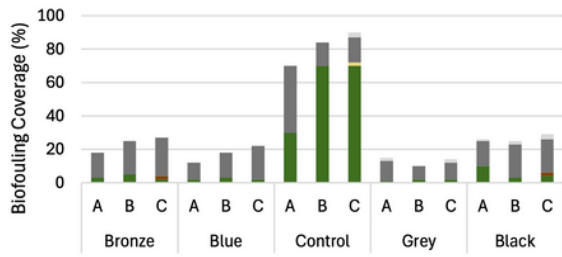
### 2. Cleaning Performance

- A manual cleaning test was conducted after 18 weeks using only a soft cloth and seawater.
- Biofilm and soft fouling taxa (algae, slime, tunicates) were easily removed across all coated panels.
- Hard fouling organisms (e.g. tubeworms and bryozoa) were more difficult to remove.
- Interestingly, barnacles — also classified as hard fouling — detached naturally from F2 ECO panels. This supports the coating's claim of fouling-release behaviour.
- The cleaned F2 ECO panels looked visibly clearer than the control panels, which retained stubborn growth.

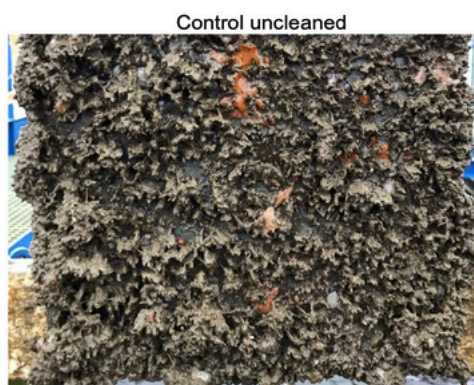
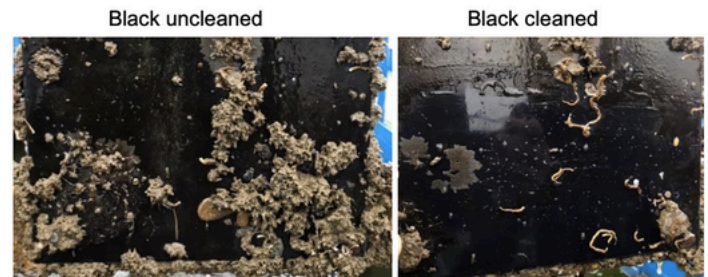
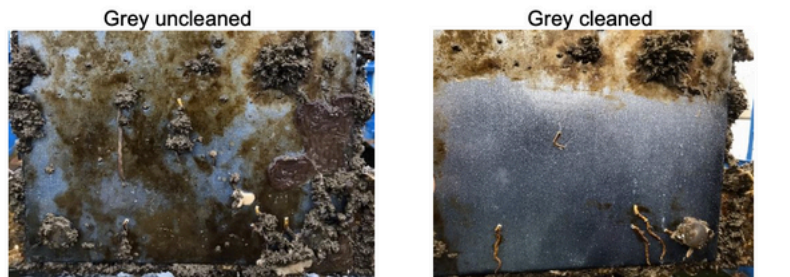
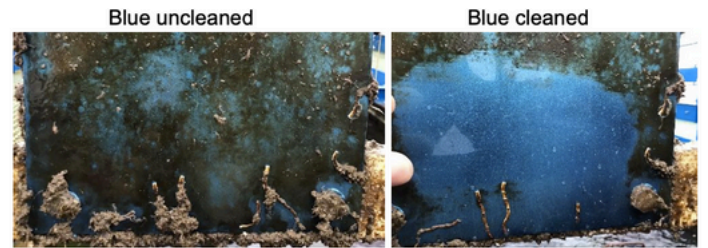
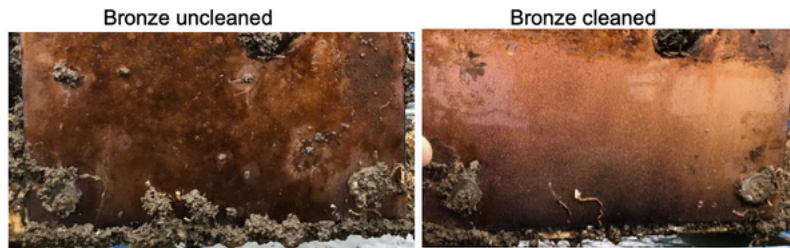
### 3. Seasonal Impact

- The test began during peak barnacle settlement season, yet F2 ECO still limited their long-term attachment.
- Over time, lower winter temperatures helped reduce overall fouling pressure — a trend observed in all panels.
- Dead or partially detached organisms were frequently seen on F2 ECO surfaces, suggesting that while settlement occurred, long-term adhesion was weak, and organisms either detached naturally or were unable to grow effectively.

# BIOFOULING GRAPHS DURING INSPECTIONS



# GENTLE CLEANING TEST WITH SOFT CLOTH



## CONCLUSION FROM OCEAN COATINGS

At Ocean Coatings, we're committed to delivering high-performance products that align with our environmental values. That's why we commissioned independent testing of our F2 ECO fouling-release coating through ENDURES B.V., one of Europe's most respected marine research institutes.

Our goal was to provide transparent, third-party-verified data on how F2 ECO performs in real-world marine conditions over an extended period — and we're proud to share the results:

- **Prevents heavy macrofouling build-up**, maintaining coverage below 10% over a 7-month test period.
- **Delivers consistent protection** across all colour variants tested.
- **Encourages natural detachment of marine growth**, including barnacles and tunicates.
- **Excels in cleanability tests**, where biofilm and soft growth were removed using only seawater and a soft cloth.
- **In practice, F2 ECO has proven even more resilient** — a simple power wash or firmer cleaning action removes all fouling without damaging the coating, as demonstrated on customer vessels since the product's release.

Because the F2 ECO surface prevents true adhesion of fouling organisms, the coating remains intact during cleaning, eliminating the need for frequent re-coating. The hull stays protected while reducing both time and cost associated with maintenance.

Most importantly, F2 ECO contains no harmful biocides or heavy metals, making it a safer and more sustainable solution for today's marine industry.

These results confirm what we've long seen in the field: F2 ECO provides durable, long-term hull protection, reduces maintenance, and supports cleaner oceans. It's a practical, future-ready solution for all vessel types — from leisure yachts to commercial fleets.

We believe in transparency and performance backed by science. If you'd like more information or access to the full technical report, our team is always happy to help.

*R. Rawlinson*

Robert Rawlinson  
Ocean Coatings CEO

*K. Macgregor*

Keith MacGregor  
Ocean Coatings Founder & Lead Scientist

