

# antifoulings



AKZO NOBEL



**International**  
yachtpaint.com

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# Understanding the antifouling challenge

# Understanding the antifouling challenge



# The negative effects of fouling – to be avoided!

- Fouling creates drag, decreases the boat's manoeuvrability and can damage the hull. It also increases fuel costs.



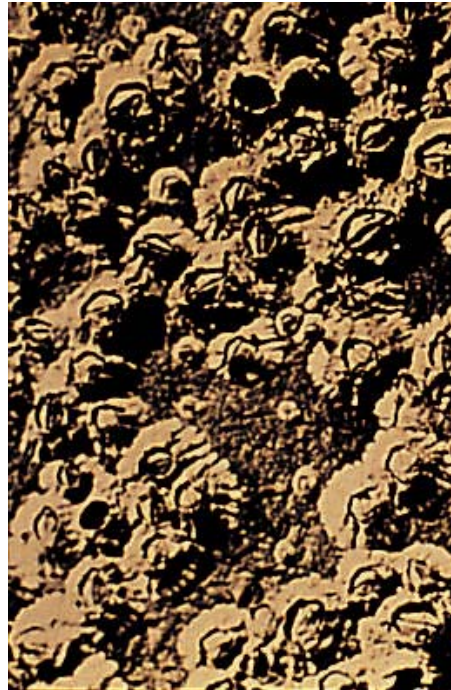
# What exactly is fouling?

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- Marine fouling falls into three main categories:



Weeds



Animal



Slime

# The characteristics of fouling

Weeds	Animal	Slime
Exist in a variety of forms	Barnacles attach themselves to hulls seasonally using cement secreted from their shells	Caused by billions of single-celled algae
Some are more tenacious than others	This cement has considerable adhesive strength	Once established, provides a settling ground for more algae
Brown weeds are most resilient	Most boats are ideal as prospective 'homes'	Slime is not detached by boat moving through water

# What is an antifouling?

# What is an antifouling? – *in a few words*

- A coating which is formulated to inhibit the growth of marine organisms on the below water surface area of vessels by the release of biocides.



# The correct equipment for the job

# Safety is paramount



# Antifoulings and personal safety

- Antifoulings are totally safe if handled properly.
- Before opening the tin and beginning work always read the label carefully and follow the health and safety advice on it.
- If misused, antifoulings can be harmful to human health and/or the environment.
- Always wear a cartridge-type respirator and safety glasses when abrading old antifoulings. Do not wet-sand antifoulings.

# Antifoulings and personal safety

- Antifoulings should always be applied in well ventilated conditions.
- A full-face, air-fed respirator (complying to BS2092) should be worn if spraying.
- Protective gloves and overalls should always be worn, as should safety glasses if not using full-face respirators.
- Barrier cream should be applied to hands and forearms.

# Equipment for this job



Personal safety:  
gloves and overalls



# Equipment for this job

**NOTE:**

Even if the antifouling is exhausted, the dust and fumes given off during dry sanding will still be toxic.



Preparation/brush painting:  
safety glasses and cartridge type respirator

# Equipment for this job



Wet & dry paper

# Equipment for this job



Full-face, airline-fed breathing mask  
(to BS2092) for paint spraying

# Equipment for this job



Siphon feed spray gun

# Equipment for this job



Paint brush and roller

# Equipment for this job



Don't forget:  
dust sheet, paint tin and stirrer...

## Equipment for this job



...and antifouling paint!

# The antifouling application process

# The antifouling application process



# Application of antifoulings

- The effectiveness of an antifouling's biocide release process depends upon the correct thickness being applied.
- Applying insufficient coats or thinning the paint unnecessarily are false economies that will result in reduced performance.
- Antifoulings do not prevent moisture ingress or corrosion and they have poor adhesion to most substrates.
- Therefore a suitable priming scheme must be applied before a new boat is antifouled for the first time.

# Antifouling compatibility

- There are three simple ways to verify the compatibility of a previous antifouling scheme:
  1. If the existing paint on the hull is known, use the International Compatibility Chart on [yachtpaint.com](http://yachtpaint.com).
  2. If the old antifouling is unknown, apply Primocon as a tie coat primer over the old paint.

Then overcoat with the International Antifouling of choice (do not use Primocon with VC 17m).



# Antifouling compatibility

3. If the old antifouling is in poor condition, remove the old paint, either mechanically by sanding, or chemically by stripping and start with a fresh surface.

Interstrip is GRP compatible and can remove several coats of most antifouling paints in one application.

After stripping you are ready to prime and paint.



# Applying antifoulings to existing antifouling schemes

- This is a simple process if existing scheme is in sound condition **AND** verified compatible:
  - **Cleaning:**  
The old antifouling should be scrubbed with clean water.
  - **Mechanical abrasion:**  
Wet-sanding with 180-grit 'wet or dry' paper to remove dirt and fouling deposits and to provide key for new antifouling.
  - **Masking:**  
As well as masking along the waterline, echo sounders, sacrificial anodes and radio earthing plates should all be well protected as antifouling paint can cause their rapid corrosion.

# Application techniques



Wear safety glasses  
and overalls!

# Application techniques

- **Roller**

- Use a lambswool roller, together with a 2 inch brush for difficult areas.
- Apply at least two full, consistent coats.
- With polishing antifoulings, a third coat should be applied to leading edges, rudder and waterline.



# Application techniques

- **Brush**

- Use a wide (5 inch) brush for speed and convenience.
- To produce a smoother, 'racing finish', hard racing-type antifoulings can be brush applied and then burnished by wet-sanding with 1000-grit 'wet or dry' paper a week later.



## In conclusion...

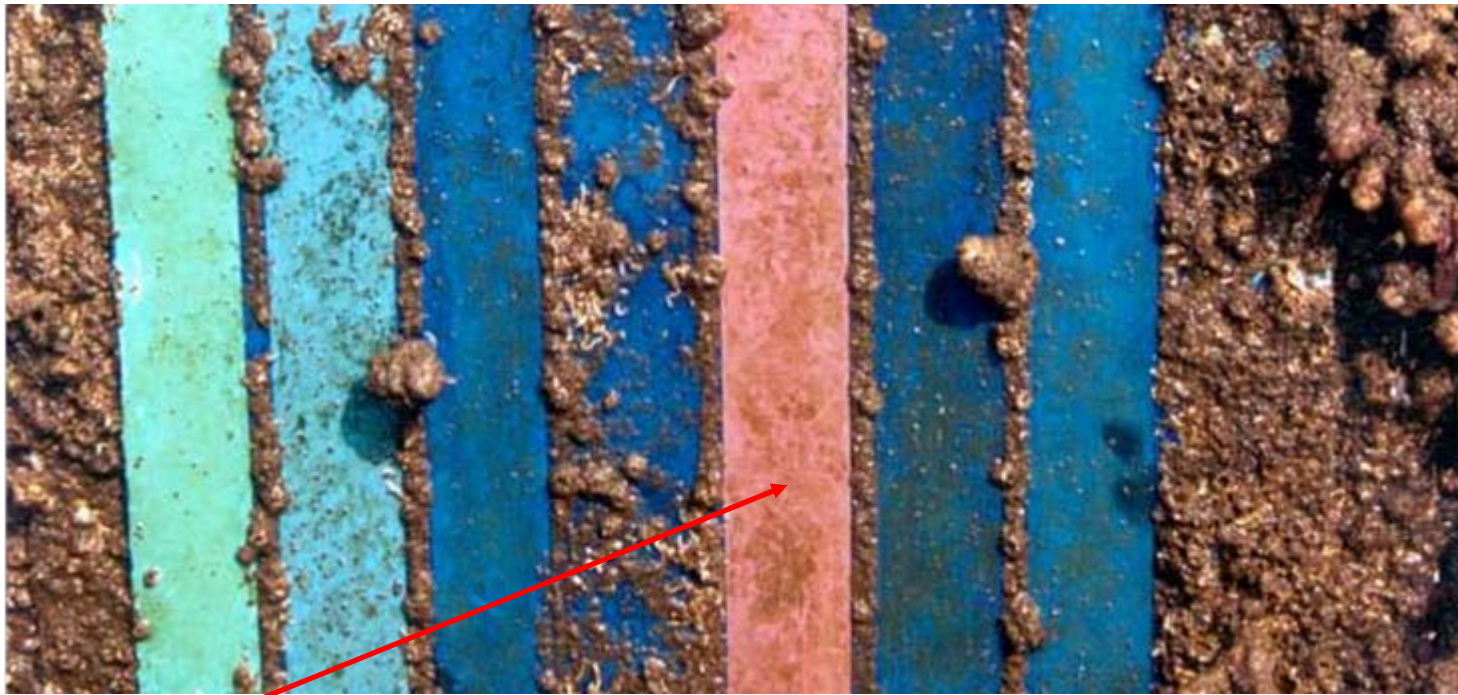
- Choose the right antifouling for your boat and it's use
- Make sure surface is well prepared, clean and dry
- Apply the correct amount of paint for your vessel's under water surface area
- Remember high wear areas
- Don't over-thin antifoulings – it reduces their life
- Protect yourself with overalls, goggles and gloves

# International's antifouling range

# What is an antifouling?

## – *a detailed explanation*

- It takes five years of research, in different locations around the world, before an International antifouling is ready to be launched onto the market.



Micron Extra –  
12 months immersion in Brazil

# The composition of International antifoulings

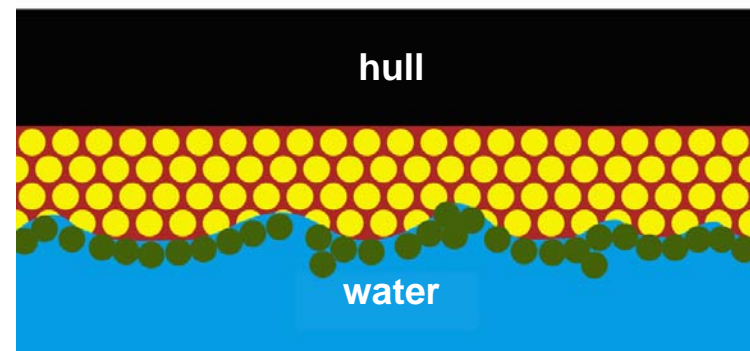
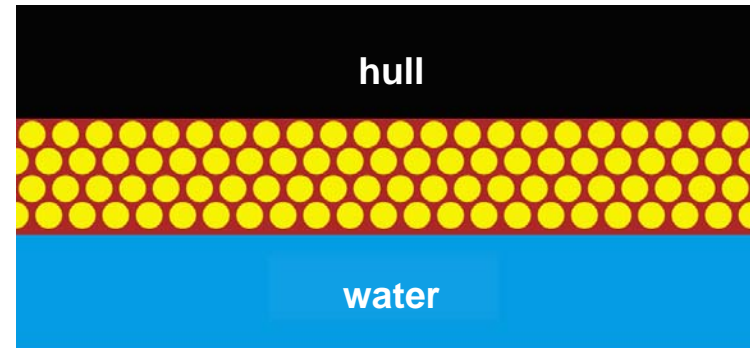
- 4 principle ingredients:
  - **Biocides**
    - The active components which repel fouling growth
    - The most widely used now is copper oxide
  - **Resins**
    - Hold the product together forming the coating film and control the release of the biocide package
  - **Solvents**
    - Allow the user to spread the paint evenly over the boat
  - **Pigments**
    - Provide the colour tone

# Resins – ‘the delivery system’

- Conventional resin systems:
  - **Hard**
    - Scrubbable
    - Vinyl
  - **Self-polishing**
    - Copolymers
    - Soft
  - **Performance systems**
    - Teflon
    - Thin film
    - Ultra low friction

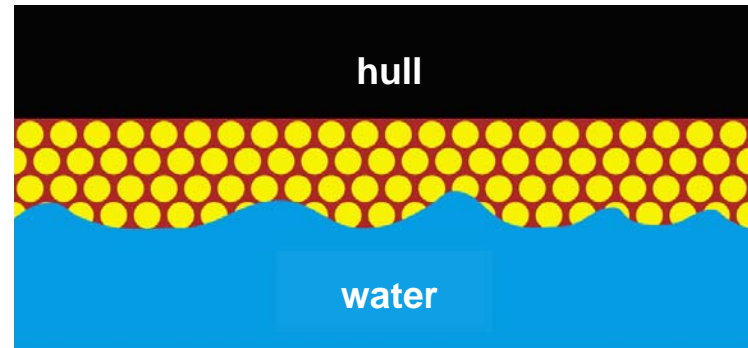
# Hard (or contact leaching) antifoulings

- Large amounts of sparingly soluble biocide are bound in a 'hard' resin system which is virtually insoluble in water
- Particle of biocide are gradually dissolved throughout the season until they are completely exhausted

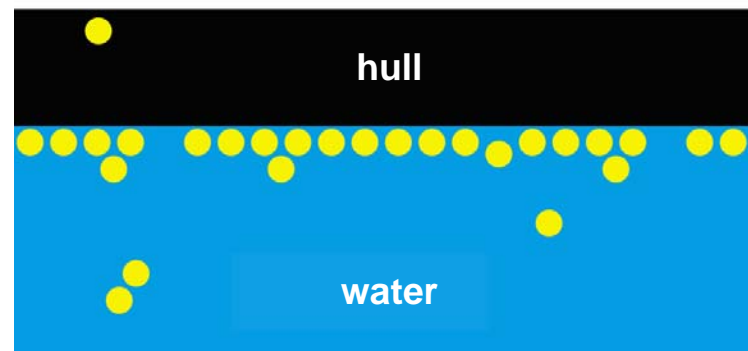


# Self-polishing / controlled solubility antifoulings

- Controlled release of sparingly soluble biocide in water. Gradual erosion gives season long consistent antifouling performance

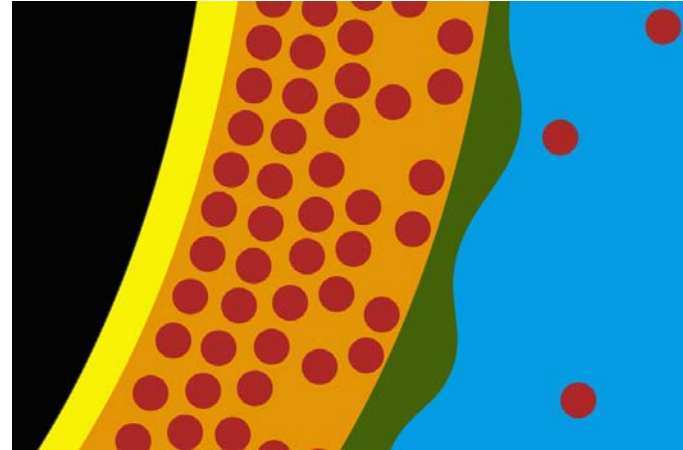


- By season's end, most of antifouling has eroded, avoiding unwanted build-up of spent material



# The Biolux<sup>®</sup> resin delivery system

- Standard paint-water interface becomes blocked with slime and algae
- Biocide release, principally copper, is restricted.
- This:
  - Reduces coating efficacy
  - Reduces coating life
  - Requires higher biocide loading overall
  - Is unsightly and requires maintenance



# The Biolux<sup>®</sup> resin delivery system

- With Biolux<sup>®</sup> technology, the paint surface stays cleaner allowing a greater release of copper
- The special delivery system then gives a more even release of the copper
- This:
  - Improves coating efficiency
  - Extends coating life
  - Requires a lower biocide level
  - Looks attractive and requires little, if any, maintenance



# The Teflon® advantage

- Teflon® has a coefficient of friction lower than ice.
- Low friction surfaces and excellent heat resistance – used extensively by NASA.
- **The advantages to the boat owner are:**
  - Smooth, low friction surface for minimum drag:
    - ***Improved fuel consumption***
  - Slick, slippery surface that fouling has difficulty attaching to:
    - ***Ease of maintenance***
  - Hard, durable & scrubbable film – ideal for fast powerboats and craft on dry moorings:
    - ***Increased speed***



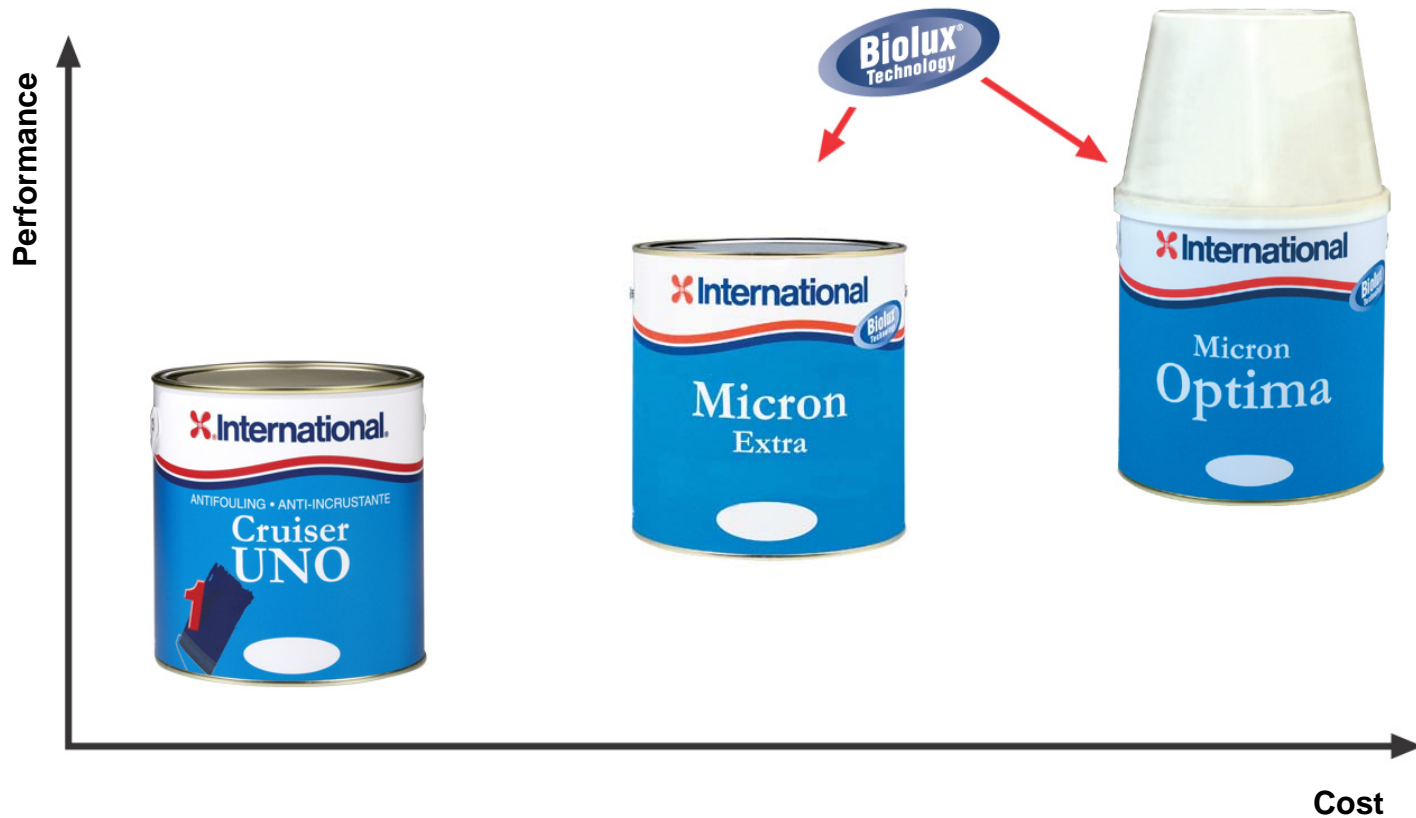
# The future of antifoulings

- **Tremendous activity driven by:**
  - Regulatory environment
  - Customer performance requirements
- **Four avenues of development:**
  - Active biocides
  - Biocide mix
  - Resin/delivery systems
  - Biocide-free solutions
- All four are integral to effective coating solutions

# International's antifouling products

- **Polishing antifoulings:**
  - Micron<sup>®</sup> Optima, Micron<sup>®</sup> Extra, New Cruiser<sup>®</sup> UNO
- **Hard antifoulings:**
  - Interspeed<sup>®</sup> Ultra, Trilux<sup>™</sup>,
- **Thin film / performance antifoulings:**
  - VC Offshore<sup>™</sup>, VC17M<sup>®</sup> Extra, VC Prop-O-Drev<sup>™</sup>

# Antifouling range: polishing antifoulings



# Micron<sup>®</sup> Optima

- Revolutionary 'Activated Biolux<sup>®</sup> Technology' system giving ultimate protection
- The highest standard in clean hulls over a full season
- Water-based technology – easy clean-up, low odour
- Suitable for the harshest fouling conditions
- No need to clean mid-season



# Micron<sup>®</sup> Extra

- 24 months protection from one application (3-4 coats) even in the highest fouling conditions
- Includes Biolux<sup>®</sup> Technology
- Haul and re-launch without repainting
- Controlled wear avoids paint build-up



# Cruiser<sup>®</sup> Uno

- Provides a fast, simple solution to the antifouling process
- Formulated for both power and sailing boats
- One coat antifouling
- One season's protection
- Application and immersion within 24 hours



# Antifouling range: hard antifoulings



# Interspeed® Ultra

- Ultra strong, hard antifouling for the highest fouling areas
- Ideal for high speed craft or crafts on dry moorings
- Includes Biolux® Technology
- Can be burnished



# Antifouling range: thin film antifouling



# VC Offshore™ with Teflon®

- Ideal for racing, sailing and powerboats
- Super, low-friction Teflon® formulation
- Applies as an exceptionally smooth, even film
- Can be burnished to a very smooth profile



# VC 17M<sup>®</sup> Extra

- Thin film application, to a smooth, even finish
- Short overcoating and launch times
- Super, low-friction Teflon<sup>®</sup> formulation
- Reduced maintenance - minimal build-up reduces preparation time
- Ideal for racing and cruising boats



# VC Prop-O-Drev™

- Aerosol application for difficult to reach areas
- Compatible with both aluminium and steel application
- Teflon® formulation minimises drag



# yachtpaint.com – Interactive assistance

For further information on any of the topics dealt with in this presentation or for detailed product information on International® products, please visit our website:

## yachtpaint.com



# Thank you for your attention

