antifoulings

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AKZO NOBEL

contents

Understanding the antifouling challenge

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The negative effects of fouling – to be avoided!

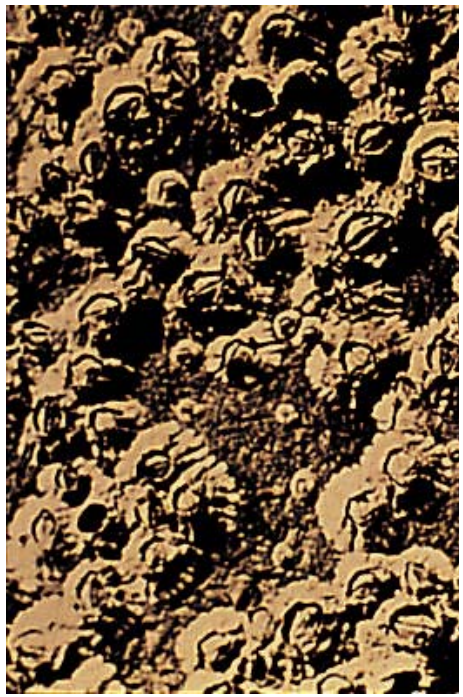
- Fouling creates drag, decreases the boat's manoeuvrability and can damage the hull. It also increases fuel costs.

What exactly is fouling?

What exactly is fouling?

- 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…

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Equipment for this job

…and antifouling paint!

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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.

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).

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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.

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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.

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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
- Use antifouling paints safely – always read the label and product information before use.

International's antifouling range

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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

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The composition of International antifoulings

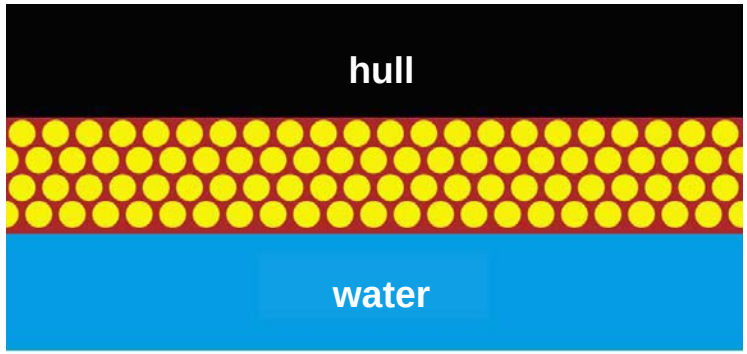
- 4 principle ingredients:
  - **Biocides**
    - The active components which repel fouling growth
    - The most widely used now is copper oxide
  - **Resins**
    - Hold the product together forming the coating film and control the release of the biocide package
  - **Solvents**
    - Allow the user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

Resins – ‘the delivery system’

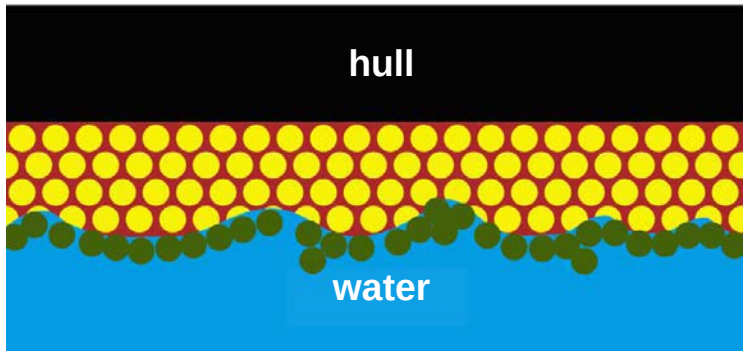
- Conventional resin systems:
  - **Hard**
    - Scrubbable
    - Vinyl
  - **Self-polishing**
    - Copolymers
    - Soft
  - **Performance systems**
    - Teflon
    - Thin film
    - Ultra low friction

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



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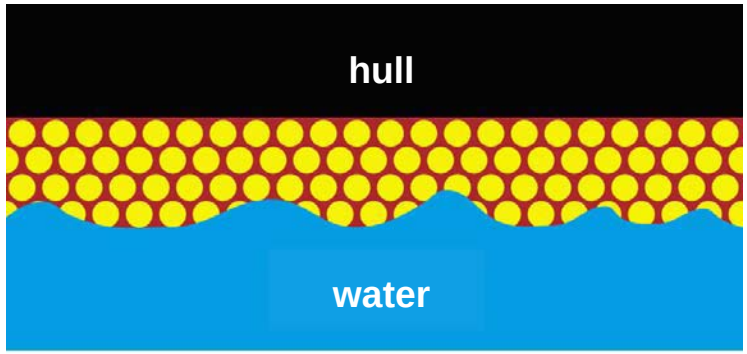
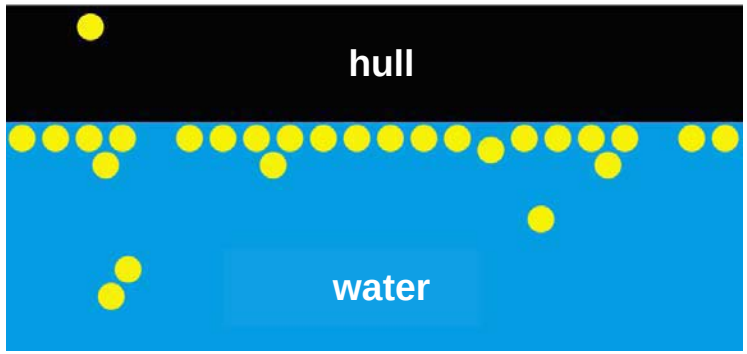
Self-polishing / controlled solubility antifoulings

- 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



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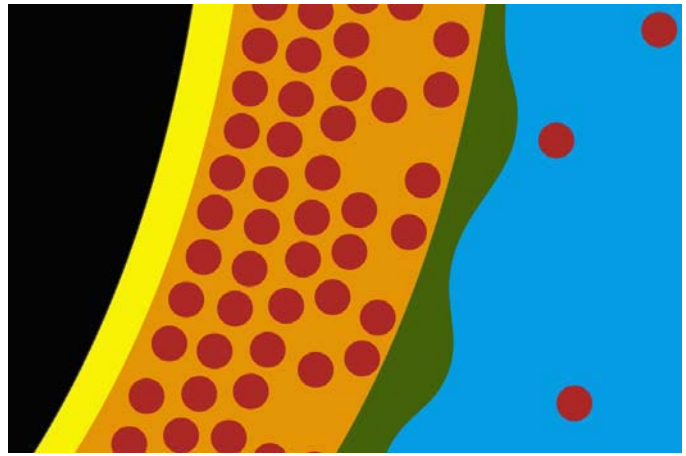
The Biolux® resin delivery system

- 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



Biolux® Technology

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The Biolux® resin delivery system

- With Biolux® 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

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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***

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The future of antifoulings

- **Tremendous activity driven by:**
  - Regulatory environment
  - Customer performance requirements

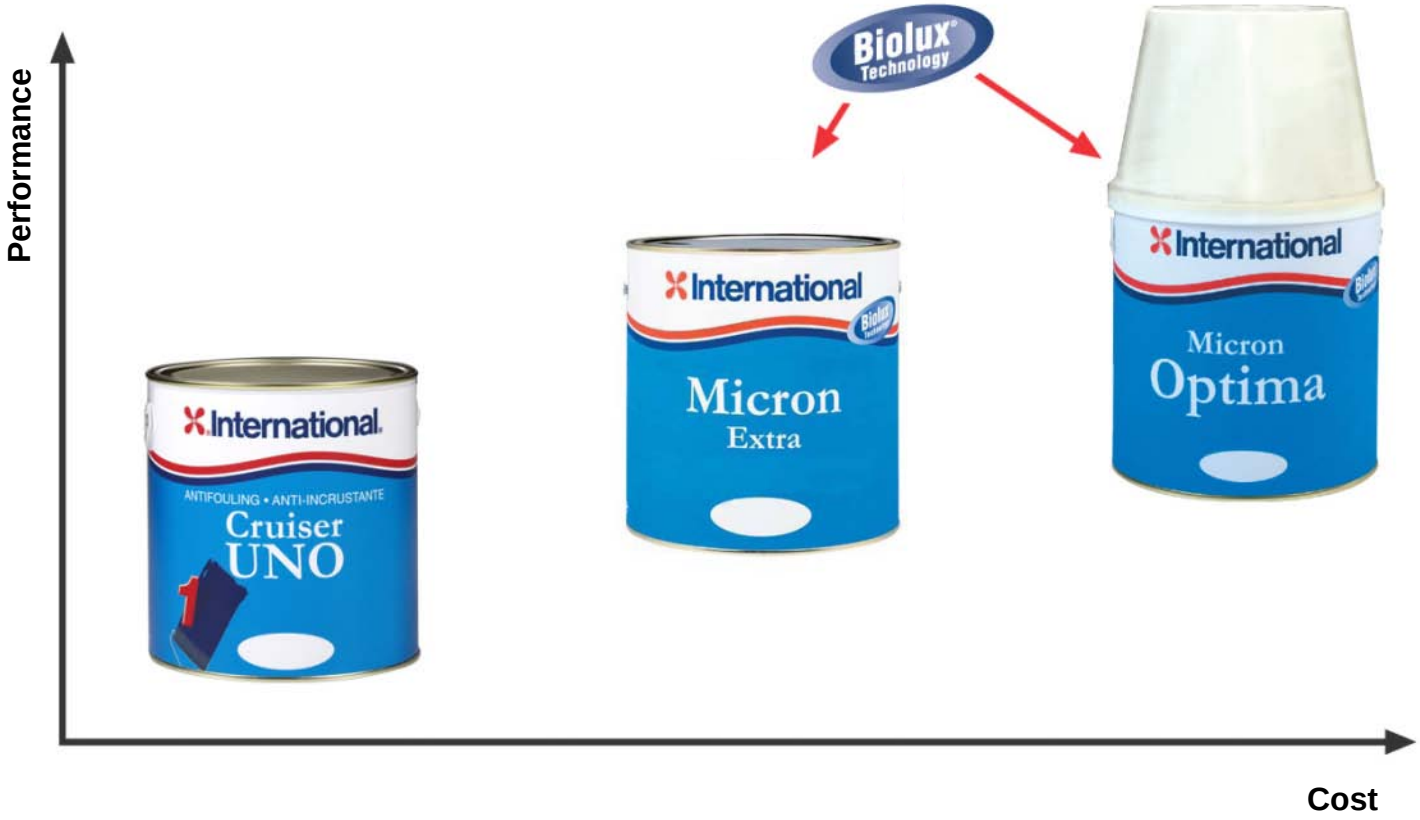
- **Four avenues of development:**
  - Active biocides
  - Biocide mix
  - Resin/delivery systems
  - Biocide-free solutions

- All four are integral to effective coating solutions

International's antifouling products

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

Antifouling range: polishing antifoulings



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Micron® Optima

- Revolutionary ‘Activated Biolux® 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

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Micron® Extra

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

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Cruiser® 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

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Antifouling range: hard antifoulings

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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

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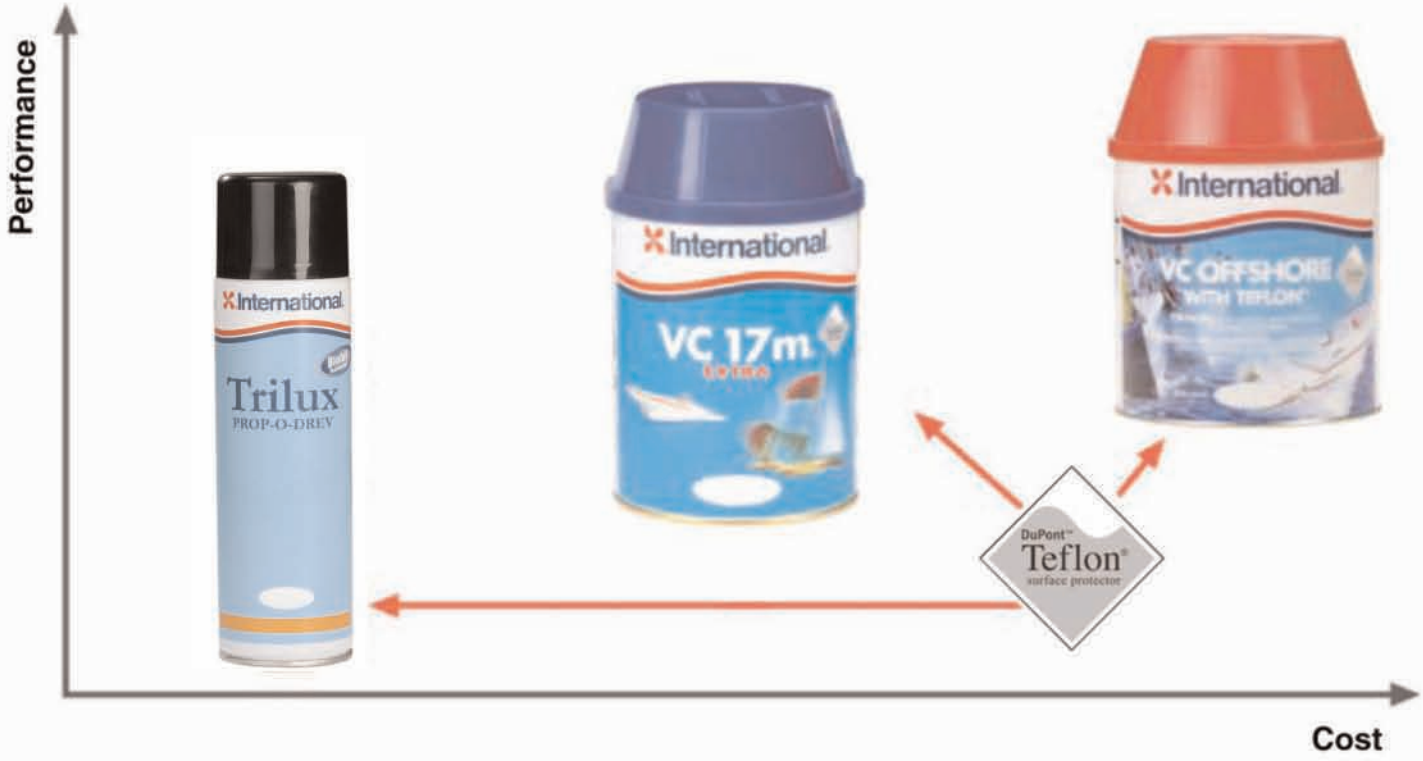
Antifouling range: thin film antifoulings



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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

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VC 17M® Extra

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

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Trilux® Prop-O-Drev™

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

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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:

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Thank you for your attention

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