

# **Hripa ehf**

# **Hripa Sweden AB**

BaSiliCoat® is an environmentally friendly antifouling coating for use on pleasure boats, ships and in marine aquaculture



# Antifouling Marine Coatings

## The Problem of Biofouling in Sea

At least 1.700 marine organisms, like algae, shells, worms, sponges and more, must glue themselves to surfaces to live. This is called biofouling.



## BaSiliCoat® - safe for the environment

Therefore methods and chemicals that prevent biofouling have been used for long time. Most antifouling products are based on chemicals which are toxic to life or bad for the environment.

International Convention on a far-reaching ban of TBT-based antifouling paints became effective on 1 January 2008

## The Market Opportunity

Biofouling causes corrosion and slows down sailing of boats up to 10% and can increase fuel consumption as much as 40% to keep the same speed.

There are about 3.5 million pleasure boats in the Baltic Sea. Almost 1 million boats in Sweden About 12 million boats in USA Annual sales of boats, marine products and services in USA is about \$50 billion



# The Problem - Biofouling

- Marine organisms grow on structures in the sea
- The growth makes ships and boats slower
- Aquaculture nets become closed and heavy
- Lower oxygen in cages decreases growth of fish
- Toxic biocides and copper are used now
- Harmful to life and marine environment
- Stricter regulations on use of antifouling paints both in Europe and USA and many other countries



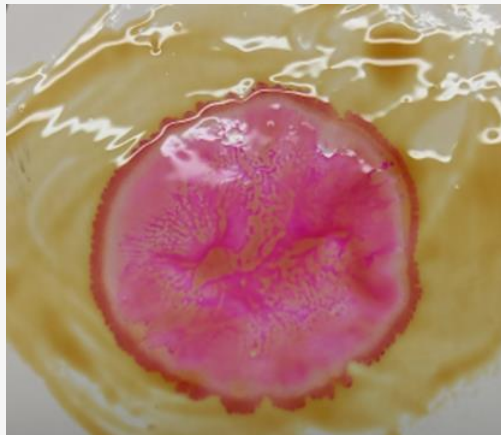
# **Our solution - BaSiliCoat®**

- Made of environmentally safe grease and alkaline silica
- Contains no toxic or environmentally damaging chemicals
- No biocides, heavy metals, silicones, or other non-biodegradable organic compounds normally found in standard antifouling paints
- Consistence is like thick lubricating oil
- Just painted on boats right before entering the Sea
- Becomes a neutral gel that forms glue in seawater



# BaSiliCoat® cures in seawater

- Works only in seawater and needs seawater to form strong silica gel that binds to surfaces
- Makes a slippery surface which prevents the gluing of shells and algae to hard surface
- Fully cured and neutralized after 1 day in seawater and is completely harmless to living organisms



Fresh coat at pH>12



After 1 day in sea pH<8.3

# Studies done in sea 2019-2022

- Test on cage nets were done at Arctic Fish aquaculture company in Dýrafjörður NW-Iceland
- Started in spring with small fiberglass plates and cage nets
- In mid-summer no mussels or barnacles had settled
- In October almost no growth on treated the fiberglass plates
- Substantial growth was on the untreated side and on the frames and ropes around the plates

# Studies done in sea 2019-2022

- Test on cage nets and fiberglass plates were done at Arctic Fish aquaculture company in Dýrafjörður NW-Iceland 2019-2021.
- Picture on right shows how aggressive the growth can be on untreated fiberglass plates after 8 months in the sea



# Plates after 5 months in sea

- All plates were treated on this side, except the one in the down-right hand corner
- The same plates as before, except here all were untreated on this side





# Nets after 5 months in sea

- Untreated net below



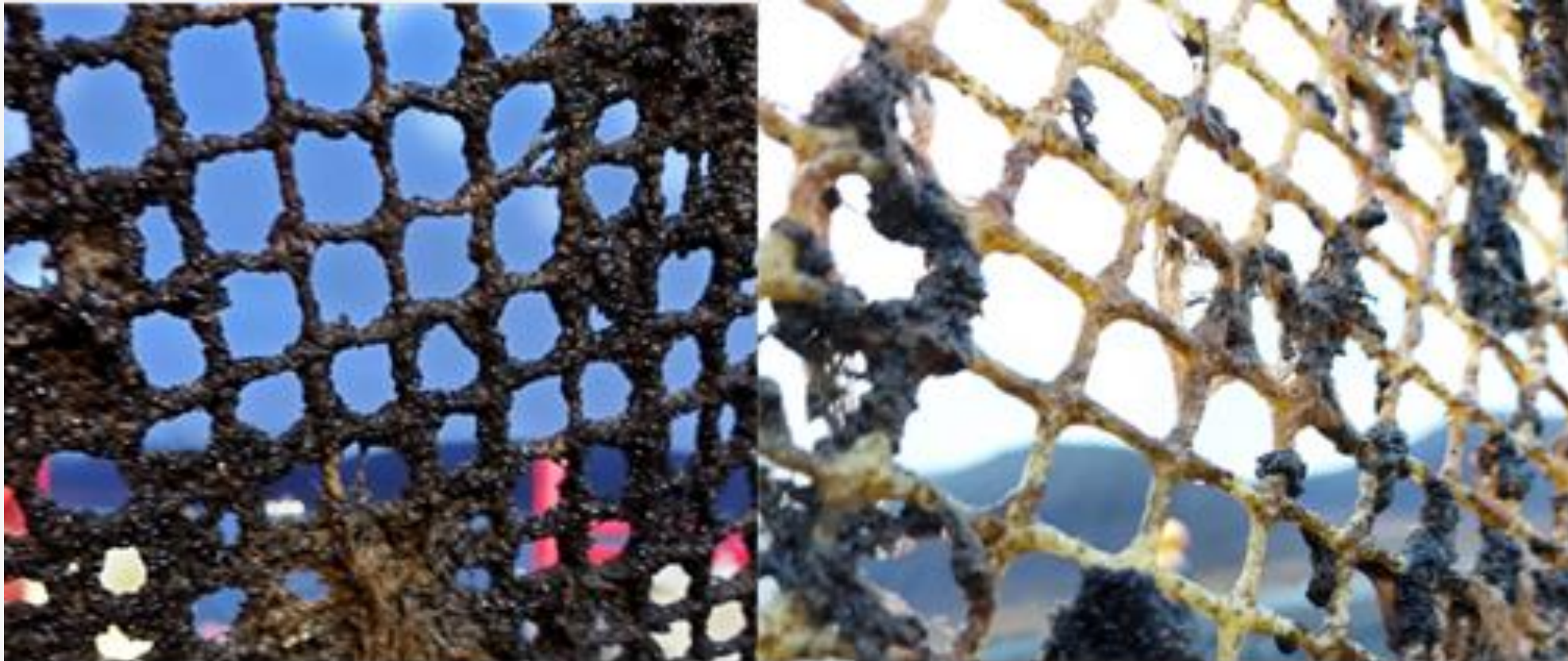
- Net treated with BaSiliCoat®



# Nets after 5 months in sea - closeup

- Untreated net below

- Net treated with BaSiliCoat®



# Treated boat was >1 year in sea

- The treated body was clean with no mussels or macroalgae
- Only few barnacles were seen that fell off by touching
- The untreated motor was covered with slime, many large barnacles and some stalks of macroalgae



# Test on 40 boats in Sweden 2022

- Pleasure boats harboured in the West-, South-, and East coast of Sweden used BaSiliCoat® in the summer
- The results were very promising and 80% of the boat owners were satisfied
- A product version made by a simpler method was used on some of the boats.
- This did not work well and it resulted in growth of barnacles on those boats
- All boats that were treated with original more complex product, returned clean after the summer season



# Sailboat checked on 12. sept. 2022

- After 5 months in sea near Göteborg, where growth is aggressive
- The bottom of the boat was clean and no fouling growth was seen

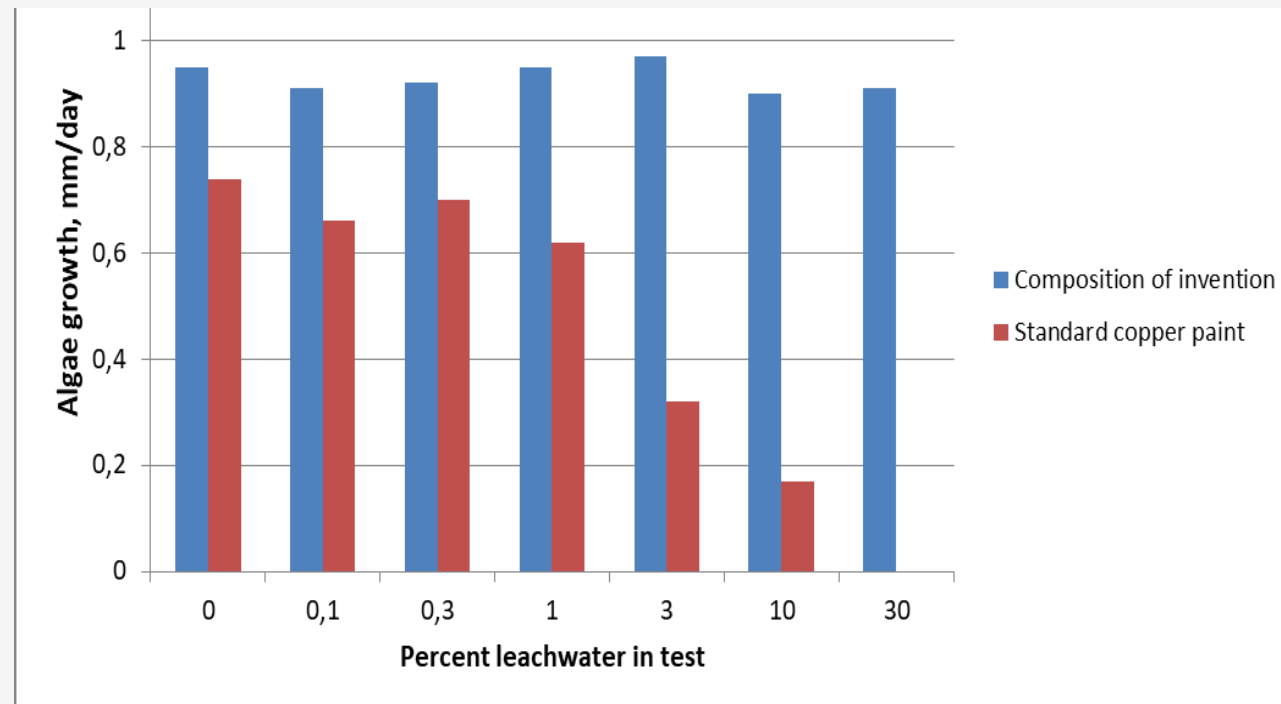


# Biosafety of antifouling paints

- Biosafety of antifouling paints is of major concern
- EU harmonized product approval process ECHA 2020
- Measure release of toxic compounds, effects on non-target organisms and environmental risk assessment
- If a product falls under EU Biocidal Product Regulation no 528/2012 - BPR it must only contain approved chemicals and must obtain a marketing permit for each product before selling in EU or EEA countries

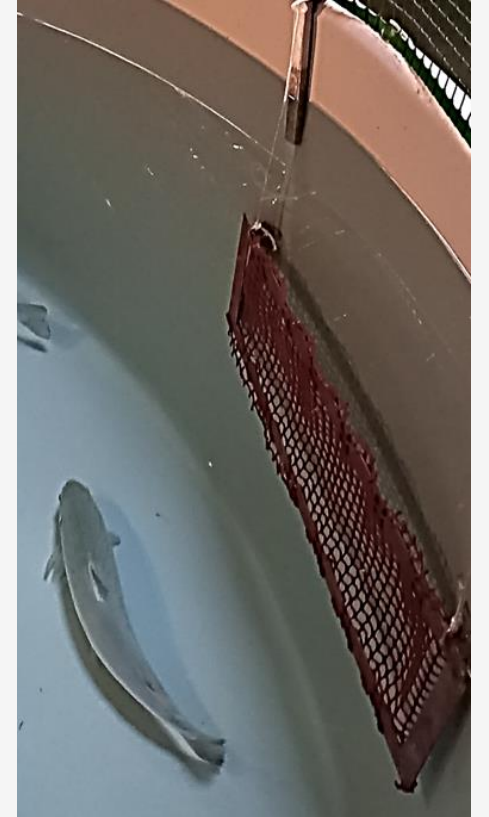
# BaSiliCoat® was tested by Chalmers

- Standard toxicity test on algae *Ceramium tenuicorne*
- No toxic effect of >30% BaSiliCoat® leach water
- Toxic effects by >1% of standard copper paint leach water



# Biosafety tests on salmon

- The Iceland Marine Research Institute tested effects of BaSiliCoat® on salmon growth
- About 175 fish with average start weight of 1.35 kg were divided in four cages
- Two each with treated and untreated nets
- Fish was weighed after 75 days at 10°C
- The weight gain was 66.5% in untreated cages
- The weight gain was 65.5% in treated cages
- Conclusion: BaSiliCoat® treatment has no effect on survival and growth of salmon





# IP protection

- Patent titled „Environmentally benign antifouling coating“ no EU9125 filed in Iceland on 13. sept. 2019
- Inventor is Hreggvidur Davidsson. All rights are assigned to Hripa ehf
- PCT for international protection no. WO2021048880 filed on 13. sept. 2020
- US no 17/753,667 filed 10. March 2022
- European national no EP20776242.8 filed 8. April 2022
- BaSiliCoat® trademark no VO126249 filed 8. June 2022



# BaSiliCoat® is biocide-free

- BaSiliCoat® has been evaluated by competent authorities in Sweden and Iceland
- Statement from the Swedish Chemicals Agency:
- “I can agree that one could consider the product as physically acting – in that case, you do not even need to apply for approval”
- Statement from the Environment Agency of Iceland:
- “Since the product is based on physical effects, it is not considered a biocidal product according to EU regulation 528/2012. The product can therefore be available on the Icelandic market without marketing restrictions”



# The Team

- Hreggviður Davíðsson, is the inventor of BaSiliCoat®. He has over 35 years of experience in novel products in painting, household cleaning and disinfection
- Jakob K. Kristjánsson is the CEO & CSO of Hripa and Hripa Sweden. He has over 35 years of experience in academic and industrial R&D, patenting and SME startups
- Ásgeir Kolbeinsson has over 20 years experience in restaurants and entertainment business, and as producer and host of TV and Radio shows
- Bo Elofsson is chairman of Hripa Sweden AB. He has extensive experience in banking and finance in Sweden
- Ragnar Ólafsson has over 35 years in business of fisheries and marine technology and disinfection solutions
- Örn Sigurbergsson has over 15 years experience in graphic and visual design



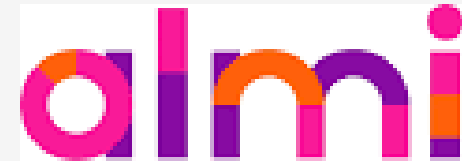
# The Opportunity - Summary

- Pressing need for more environmentally safe antifouling
- Our product contains no toxic or unsafe chemicals
- Proven technology and sound scientific background
- Documented evaluation and expert opinion from the Swedish Chemicals Agency and the Environment Agency of Iceland has been obtained
- Marketing authorization or permit is not required
- All ingredients are widely available commodity
- Patent pending in Europe and USA



# Thank you for your attention

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For further information go to our website; [hripa.se](http://hripa.se)

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