

SYNERGY ANTIFOULING

ADVANCED FORMULA LONG LIFE ANTIFOULING

SYNERGY is a new long life copper antifouling that has taken four years to develop and perfect. It has all of the advantages of epoxy-copper antifouling but by using a new water born thermoset resin binder it avoids the problems of unreliable performance and occasional failures that beset all epoxy bound copper antifouling.

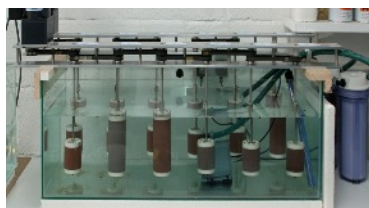
SYNERGY is unique because unlike epoxy resins its binder is inherently permeable. SYNERGY contains both hydrophilic and hydrophobic resins and by varying the proportions of each we can control the permeability of the coating and therefore the rate that copper leaches from it.

This is important because if the leaching rate is too low the coating will foul and if too high it will cause unnecessary pollution and the life of the coating will be reduced.

Epoxy coatings are inherently impermeable and all epoxy bound copper antifouling contain water soluble components that are intended to wash from the coating to leave them sufficiently porous for the copper to leach from them. However, because epoxy coatings cure to variable degrees according to the ambient temperature their performance varies. Epoxy bound antifouling are also susceptible to 'blushing or blooming' which can form an impermeable film on their surfaces affecting performance.



SYNERGY was still 'clean as a whistle' at the end of the 2013 season



SYNERGY has been laboratory tested to ensure that it is consistently effective

SYNERGY is more reliable because it fully cures within a couple of days of application, its copper leaching rate is not affected by the ambient temperature during curing nor is it affected by 'blushing or blooming'.

TESTING In order to ensure that SYNERGY's leaching rate and therefore its performance is constant whatever the application conditions we have tested numerous samples in our laboratory. It is one of the few in the country that is equipped to test the copper leaching rate of antifouling to BS ISO 15181-1:2007.

Synergy has also been tested on yachts and static panels to ensure reliability.

- Inherently permeable resin technology makes SYNERGY always effective, even in the most severe fouling conditions.
- Suitable for use in all waters of the world.
- High copper content produces a dry film containing 80% of pure copper. It does not contain additional biocides that would leach out in a year or two.
- Very long life - up to 10 years when correctly applied.
- Does not require abrading.
- Two modes of operation provide a self cleaning effect that prolongs service periods.
- Economical - provides the lowest long term cost of any antifouling system.
- Almost maintenance free - only requires pressure washing during haul out.
- Extends the period between slipping because SYNERGY's self-cleaning property helps it remain clean for longer than other products.
- Provides a very hard, tough and abrasion-resistant surface
- Can be polished if required when used on racing yachts.
- Easy to repair damaged areas.
- Can be applied in temperatures from 5°C to 40°C and up to 90% humidity.
- Approved by HSE No. 9779

SYNERGY How it works. When immersed in sea water copper ions leach to its surface and quickly react with oxygen in the water to form cuprous oxide, which is a powerful antifouling agent. Salt in the water converts the cuprous oxide to cupric hydrochloride, which does not adhere to the underlying cuprous oxide and easily washes away with any attached growth revealing fresh cuprous oxide. This self-cleaning action is unique to products that contain a very high content of metallic copper or copper nickel alloy. The process is facilitated by the permeable binder that allows a constant supply of copper ions to leach to the surface

SYNERGY is environmentally friendly. When SYNERGY is immersed in sea water its copper leaching rate is similar to that of conventional self eroding antifoulings which contain copper oxide. When the film of cupric hydroxychloride forms on SYNERGY, it reduces the rate that copper leaches from it. This is unlike self eroding antifoulings that work by slowly eroding away to continuously reveal a fresh surface with more biocide

The formation of a protective layer of cupric hydrochloride also extends the life of the coating. Also as SYNERGY does not require abrading its life is maximised and another source of environmental contamination is eliminated.

APPLICATION INSTRUCTIONS

SYNERGY is a three pack water born product that is virtually odourless. It consists of a tub of resin, a bottle of hardener and a bottle of copper powder. When mixed it forms a thick, creamy pseudoplastic liquid in which the copper does not settle. It is easy to apply with a brush or short pile roller because its viscosity is reduced by agitation which enables it to be spread easily and flow to a smooth finish.

HULL PREPARATION We recommend that all old antifoulings are removed from the hull before application of SYNERGY. The hull should be thoroughly sanded to a smooth, even finish.

APPLICATION CONDITIONS SYNERGY can be applied at any temperature above 5°C but as it is water born, the water must be able to dry from the coating before it cures. Therefore, the relative humidity should not be excessively high. A gentle breeze will help drying, especially in cold conditions. Generally if it can dry within two or three hours good results will be obtained.

PRIMER SYNERGY is permeable and must be applied to a coat of SAFEGUARD TC epoxy tie coat that has been allowed to cure for 24 hours. This is to ensure adequate adhesion to the substrate. SAFEGUARD TC should be applied thinly with a short pile roller to create a smooth film for the application of SYNERGY.

If protection from osmosis is desired, two to four coats of SAFEGUARD EA or TSF epoxy moisture barrier coatings can be applied before application of SYNERGY.

MIXING Pour the hardener into the tub of resin and stir thoroughly for several minutes before adding the copper powder. Slowly pour in the copper powder while continuing to stir the product. Continue stirring until a smooth, even consistency is achieved.

POT LIFE The pot life of SYNERGY depends on the temperature as shown in this table. The product will gradually thicken when the pot life has expired. If this occurs the product should be discarded.

TEMPERATURE °C	POT LIFE
5 - 10	1 hours
10 - 20	45 minutes
20 - 30	30 minutes

APPLICATION Apply SYNERGY with a short pile roller in 4 or 5 thin coats. SYNERGY is much quicker and easier to apply than epoxy based products and although more coats are required application will not require more time or effort. The first coat will look thin and uneven, this is normal. The copper powder in Synergy should not settle but it is advisable to stir the product occasionally to ensure an even distribution.

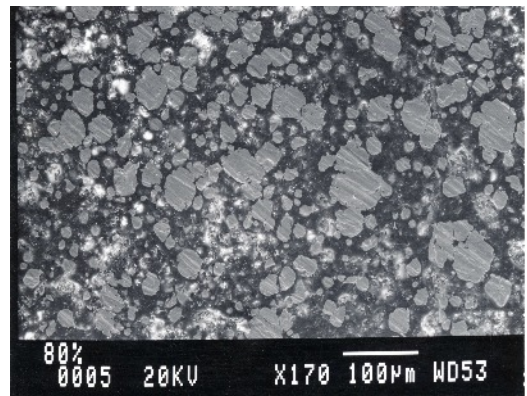
Apply successive coats when all of the water in the first coat has evaporated. As a general rule overcoat after twice the time has elapsed that it took for the previous coat to become touch dry.

e.g. If the first coat of SYNERGY is touch dry in 1 hour overcoat after a further hour.

LIFTING AND COATING OF PAD AREAS In most conditions Synergy will be sufficiently hard to be lifted in slings within 24 hours and launched after 48 hours.

CLEANING EQUIPMENT Wash equipment in water but do not allow copper to enter drains or the environment.

ABRADING SYNERGY has been developed to leach the optimum amount of copper to its surface to keep it free of fouling. We do not recommend abrading because it scores the surface of the coating with minute scratches that promote the attachment of fouling. Abrading also reduces coating thickness and causes pollution. A cleaner that will remove surface contamination before re-launching will be available soon



Abrading even with 600 grit paper causes scratches to which fouling, especially weed can attach.

HEALTH & SAFETY Always wear rubber gloves when using SYNERGY as it will adhere tenaciously to bare skin. Avoid inhalation of copper dust when mixing. If applying SYNERGY with spray equipment an air fed mask should be used. Do not allow SYNERGY to contaminate the environment.

HOW MUCH WILL YOU NEED?

1 LITRE of SYNERGY will cover approximately 3.4 square metres or 36 square feet with three coats.

The easiest method for calculating the amount of SYNERGY that you will require is to enter the dimensions of your craft into the form on our website at <http://www.reactiveresins.com/Boat-Bottom-Calculator.html>

Alternatively you can calculate the area of your craft with the following formula

Waterline length x (beam + draft) x the factor shown for your craft below.

- Bilge keel yacht 0.85
- Round bilge motor boat 0.8
- Long keel yacht 0.65
- Fin keel yacht 0.55

Synergy is available in pack sizes of 0.5, 1, 2.5 and 5 litres

SYNERGY PACK SIZE AND COVERAGE	
PACK SIZE Litres	COVERAGE STATED IS FOR COMPLETE TREATMENT OF FOUR COATS
0.5	1.7
1	3.4
2.5	8.5
5	17