

# WEST SYSTEM EPOXY IN ACTION

Many boat builders use WEST SYSTEM® epoxy to coat wooden and GRP components. In the table below, we show who uses which of our products:

Boat builder	Coating product
Walsteds Boatyard	WEST SYSTEM 105 Epoxy Resin® with WEST SYSTEM 205 Fast Hardener®, WEST SYSTEM 206 Slow Hardener® and WEST SYSTEM 207 Special Coating Hardener™
Henwood & Dean	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener and WEST SYSTEM 207 Special Coating Hardener
North Quay Marine	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener, WEST SYSTEM 206 Slow Hardener and WEST SYSTEM 207 Special Coating Hardener
Jamie Clay Boatbuilding	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener and WEST SYSTEM 207 Special Coating Hardener
Ralph Springett	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener, WEST SYSTEM 206 Slow Hardener and WEST SYSTEM 207 Special Coating Hardener
Aldeburgh Boatyard	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener and WEST SYSTEM 206 Slow Hardener
RF Upson & Co	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener
Swallowtail Boatyard	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener and WEST SYSTEM 207 Special Coating Hardener
Rice & Cole Boatyard	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener, WEST SYSTEM 422 Barrier Coat Additive™ and WEST SYSTEM 207 Special Coating Hardener
Woodrolfe Brokerage (Tollesbury Marina)	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener and WEST SYSTEM 422 Barrier Coat Additive
Suffolk Yacht Harbour	WEST SYSTEM 105 Epoxy Resin with WEST SYSTEM 205 Fast Hardener and WEST SYSTEM 422 Barrier Coat Additive

## CASE STUDY: PROTECTING CAROLINA IV FOR FUTURE GENERATIONS

Luxury cruising sloop Carolina IV is an iconic yacht built by Walsteds Boatyard in Denmark in 2000. Although Carolina IV is a rework of a classic Sparkman & Stephens design, she was built from top to bottom using modern epoxy construction techniques – making her one of a kind.

To finish the boat to the highest standards of quality and durability, WEST SYSTEM epoxy was used to coat the yacht's hull. Henning Bøgh, master boat builder and Head of Workshop at Walsteds Boatyard, says, "We wanted to give the client years of trouble-free sailing in a wide variety of settings and climates, from the Baltic to Barbados. WEST SYSTEM offers lasting protection from abrasion and water ingress, which is what we were looking for."

Fast-forward to 2015 and Carolina IV has sailed thousands of miles around the world, from the icy Baltic seas of Scandinavia, to the West Indies and North America. Although she has seen all climates and all conditions, she still looks like a new classic sloop which has just left the yard.

"We have Carolina IV over-wintering here at the moment out of the water and I went to have a look at her," says Henning. "It's quite remarkable: she still looks like a brand new boat; it's amazing actually."

As part of her routine maintenance, Carolina IV gets a new coat of varnish every two sailing seasons – that's all. "The fact that we've never had to do anything to Carolina IV other than routine maintenance is testament to the strength and durability of coating with WEST SYSTEM epoxy," says Henning. "It's quite simply the best way to protect a wooden hull and Carolina IV is the proof."

Because Carolina IV was built with WEST SYSTEM epoxy, she is stronger, stiffer and, crucially, more durable than other boats that use traditional materials and techniques. She's become a modern classic and with only routine maintenance, she will be around for decades for future generations to enjoy.



To find out how WEST SYSTEM® epoxy, hardeners and additives can help boat builders create durable, waterproof wooden and GRP components, contact us today.

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Application Brochure  
**COATING**

**WEST  
SYSTEM.**

**PRO-SET.**

## APPLYING WEST SYSTEM EPOXY FOR THE MOST DURABLE, WATER RESISTANT COATING

How boat yards and boat builders can coat wooden and GRP components with WEST SYSTEM® epoxy to extend the lifetime of their work and minimise maintenance



Photo: Walsteds Boatyard







# WEST SYSTEM EPOXY: THE MARKET LEADER FOR COATING

Photo: Williams Marine

A single chink in a boat's armour is enough to allow water into underlying substrates, whether they are made from timber, fibreglass or other boat building materials. The damage caused can threaten the structural integrity of the boat, requiring expensive repair work to resolve the issue.

To minimise the risk of water ingress and associated damage, boat builders need coatings that have superior adhesion, as well as being extremely strong and highly water resistant. The main challenge is that many materials used for coating are susceptible to moisture ingress, both above and below the waterline.

Polyester and vinyl-ester resins, commonly used for manufacturing GRP components, are typically around 65% effective in resisting moisture ingress. At the same time, traditional varnishes, which are the frequent choice for coating wooden components, are typically between 50% to 55% effective.

The fact that many coating materials offer only limited protection against moisture ingress can cause problems throughout a boat's life. If water penetrates the outer coating, severe problems can arise: typically rot in wood and osmosis in GRP boats, often resulting in expensive repair work.

## Using epoxy coatings to protect boats from the elements

To avoid these issues and deliver the most durable, moisture-resistant boats for customers, leading boat builders and manufacturers use epoxy for coatings. In sharp contrast to other coating materials – even other epoxy coatings – specialist marine-grade epoxies will offer far superior moisture resistance, protecting components above and below the waterline for longer.

## Coating with WEST SYSTEM epoxy

The market leading marine-grade epoxy is WEST SYSTEM® epoxy, first developed by Gougeon Brothers,

Inc. (GBI) almost 50 years ago. Over decades of development and testing, GBI's original epoxy system has been perfected and is manufactured for Europe, the Middle East, Africa and India by West System International.

WEST SYSTEM epoxy adheres tenaciously to both GRP and wooden components, creating uniquely strong bonds with underlying substrates. In addition, WEST SYSTEM epoxy can be used in conjunction with specialist coating additives that increase resistance to moisture ingress to over 98%.

## THE BENEFITS OF WEST SYSTEM EPOXY FOR COATING

WEST SYSTEM® epoxy enables boat builders and repair yards to create wooden and composite components that are far more resistant to moisture ingress than polyester gel coats or traditional varnishes.

Used in conjunction with appropriate finishing systems, such as two-part polyurethane varnishes or paints, WEST SYSTEM epoxy provides the best available protection against moisture damage throughout a boat's life.

Key benefits of WEST SYSTEM epoxy for coating include:

- Excellent barrier coating**  
 Barrier coats created with WEST SYSTEM epoxy offer around 97% moisture resistance. This can be increased still further by adding a specialist coating additive. WEST SYSTEM 422 Barrier Coat Additive™, which uses aligned aluminium and mineral flakes to create one of the best moisture barriers available on the market today.

- Excellent adhesion to most boat building materials including GRP and wood**  
 WEST SYSTEM epoxy bonds extremely well to both composite and wood surfaces, increasing moisture resistance and providing a stable base for additional coating and finish systems.

- Improved durability for finish coats**  
 By providing a stable base coat, WEST SYSTEM epoxy extends the life of final finish coatings, whether they are high-quality, two-component paint, or UV resistant clear varnish coatings. WEST SYSTEM epoxy is effective for preparing surfaces for varnish or final finishing, as well as providing limited UV resistance and barrier coatings. Together, epoxy barrier coats and finish coats provide a protective system for wooden and GRP components that is far more durable than either coating by itself.

- Suitable for coating jobs of all sizes**  
 With WEST SYSTEM products, boat builders can choose slow or fast hardeners to ensure that the epoxy is still tacky when it's time to apply the next coat of epoxy – reducing requirements for sanding and surface preparation.

- Lower energy costs**  
 WEST SYSTEM epoxy cures to full strength at room temperature, eliminating costly post-cure requirements and speeding up the production process.

- Valuable technical support**  
 West System International provides detailed product selection guides to help manufacturers and repair yards achieve the best results with our products. In addition, we provide unparalleled, personalised technical support that helps our customers increase efficiency and effectively protect wooden and GRP components against water damage for longer.



Photo: Waisteds Boatyard

## CREATING A BARRIER COAT WITH WEST SYSTEM EPOXY: TECHNICAL OVERVIEW

At least three coats of WEST SYSTEM® epoxy are required for an effective moisture barrier. Additional coats, up to a total of six, will increase the moisture resistance of the coating for further protection of a polyester GRP hull that has been repaired due to damage from osmotic blistering. In this instance, the first coat would be WEST SYSTEM epoxy; the following five coats of WEST SYSTEM epoxy would have the addition of WEST SYSTEM 422 Barrier Coat Additive™ to further improve the moisture protection.

Each coat of WEST SYSTEM epoxy should be applied with thin urethane foam rollers, such as WEST SYSTEM 800 Foam Roller Covers, which provide excellent control of film thickness. In addition, since the roller covers have

a 3mm foam sleeve, they "hold" the correct amount of mixed epoxy to optimise working times.

Rollers can be cut down to narrow widths to reach difficult areas or for application where space is limited, such as the areas between stringers or frames. A disposable brush can be used for smaller areas, provided that the bristles are stiff enough to spread the epoxy in an even film.

Boat manufacturers should complete all sheathing and fairing before beginning the final coating. Always allow the temperature of porous surfaces to stabilise before the initial coating. This enhances the epoxy's ability to displace air in the porous substrate, preventing air bubbles from forming in the cured coating.

## WEST SYSTEM COATING PRODUCTS

For coating, WEST SYSTEM 105 Epoxy Resin® can be used with a range of hardeners, including WEST SYSTEM 205 Fast Hardener® (working time of 60 to 70 minutes), WEST SYSTEM 206 Slow Hardener® (working time of 90 to 110 minutes) and WEST SYSTEM 209 Extra Slow Hardener™ (working time of 3 to 4 hours). These working times apply when the ambient temperature is approximately 18°C.

To maintain the natural appearance of wood, whilst enjoying the toughness and moisture resistance the epoxy can offer, WEST SYSTEM 207 Special Coating Hardener™ can be used in conjunction with WEST SYSTEM 105 Epoxy Resin. However, this coating offers a limited degree of UV protection.

If the epoxy coating will be exposed to high levels of sunlight, it should always be protected with a good quality two-component clear polyurethane varnish. It is worth noting that the UV inhibitor creates a slight amber tint to the finish on light coloured woods, yet is undetectable on darker woods. Always qualify the best solution for your requirements by testing.

The natural appearance of woodgrain can also be maintained with a glass sheathing – however the clarity is diminished with woven cloths over 300g/m².

WEST SYSTEM 207 Special Coating Hardener used in conjunction with WEST SYSTEM 105 Epoxy Resin is an excellent choice for sheathing components such as rudder blades and dinghy foils. For more information, see our application brochure on sheathing.



West System International offers a range of additives to maximise the resistance to moisture ingress of barrier coats. These include:

**WEST SYSTEM 420 Aluminium Powder**  
 This powder additive provides additional abrasion resistance as well as temporary UV resistance.

**WEST SYSTEM 422 Barrier Coat Additive™**  
 This specifically formulated powder additive uses both aluminium and mineral flakes to maximise resistance to moisture ingress of the final epoxy coating.

**WEST SYSTEM 423 Graphite Powder**  
 This powder additive can be added to minimise friction and abrasion and to bear loads (only in combination with WEST SYSTEM fillers).

**WEST SYSTEM 501-505 Pigments**  
 A selection of coloured epoxy pigment pastes that can be added to the final coat of WEST SYSTEM epoxy to create an ideal base for painting (available in white, black, grey and blue). These pigments only tint the mixed epoxy and do not impart additional UV stability.

