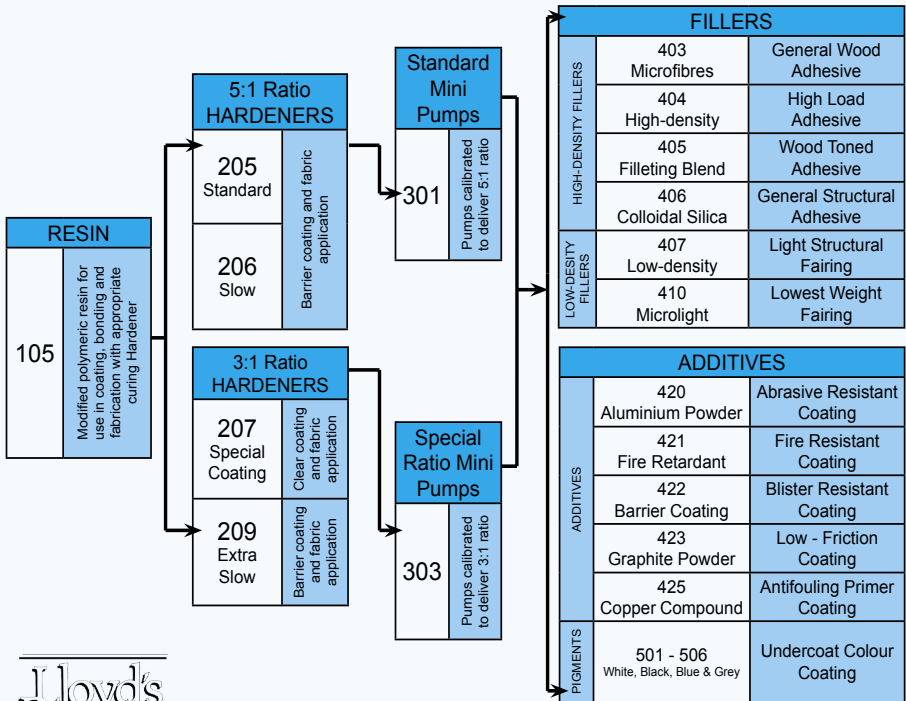


# 7. THE PRODUCTS

WEST SYSTEM brand epoxy cures to a high-strength plastic solid at room temperature by mixing specific proportions of liquid epoxy resin and hardener.

By using a simple 'cookbook' approach it is possible to tailor the handling characteristics and the physical properties of the cured epoxy to suit the working conditions and specific application of the project in hand.

1. Begin with 105 Epoxy Resin, the basic ingredient of all WEST SYSTEM epoxy compounds
2. Control the cure time or adjust to working temperature or working time required with one of four specially formulated WEST SYSTEM hardeners
3. Select the correct set of MINI PUMPS
4. Adjust the strength, weight, texture, sandability and colour of the cured epoxy with one of six WEST SYSTEM fillers. Adjust the viscosity of the resin/hardener mixture by the amount of filler added or provide specific coating properties with WEST SYSTEM additives



WEST SYSTEM 105 Resin with either 205 or 206 Hardener has received Lloyds Register Statement of Acceptance MATS/1773/1

WEST SYSTEM 105 Resin with 209 Tropical Hardener has received Lloyds Register Statement of Acceptance MATS/1772/1

## 8. PRODUCT GUIDE

### 8.1 WEST SYSTEM RESIN & HARDENERS

#### 105 Epoxy Resin

105 Resin is the base material of the WEST SYSTEM family of products on which all the possible compounds are built. The resin is a clear, light-amber, low-viscosity epoxy, which, when mixed with one of the WEST SYSTEM hardeners, is formulated to wet out wood fibre, fibreglass and a variety of metals. It can be cured in a wide temperature range to form a high strength solid with excellent moisture resistance. A superb adhesive, WEST SYSTEM epoxy will fill gaps and bridge voids when modified with WEST SYSTEM fillers and can be sanded and shaped afterwards. With roller application, it possesses excellent thin-film characteristics by flowing out and self-leveling without fisheyeing. The epoxy mix cures to a clear finish so that a natural wood finish may be achieved by coating with a two part varnish. The 105 Resin has a relatively high flash point, which makes it safer to work with than polyesters and is free from solvent odours and vapours. For each container size of resin, there is a corresponding sized container of hardener and mini pump size. When purchasing resin, hardener and mini pumps ensure that all items are labelled with the same pack size letter (i.e., A, B, C or E).



#### 205 Standard Hardener

205 Hardener is used in a majority of situations to produce a rapid cure and results in an epoxy which develops its physical properties quickly. When mixed in the ratio of five parts by weight of 105 Resin to one part by weight of 205 Hardener, the cured resin/hardener mixture yields a high-strength, rigid solid which has excellent cohesive properties and provides an outstanding moisture vapour barrier with excellent bonding and coating properties.

Pot Life at 25°C	10 to 15 minutes
Cure to Solid State at 21°C	5 to 7 hours
Cure to Maximum Strength at 21°C	5 to 7 days
Minimum Recommended Working Temperature	5°C
Pumps Required	(5:1 ratio) 301, 306, 309

## 206 Slow Hardener

When this low viscosity curing agent is combined with 105 Resin in the ratio of five parts by weight of resin to one part by weight of 206 Hardener, the cured resin/hardener mixture yields a high-strength, rigid, moisture-resistant solid, excellent for use as a coating and bonding adhesive. Can be used for extended assembly times when working in ideal conditions.

Pot Life at 25°C	20 to 30 minutes
Cure to Solid State at 21°C	9 to 12 hours
Cure to Maximum Strength at 21°C	5 to 7 days
Minimum Recommended Working Temperature	16°C
Pumps Required	(5:1 ratio) 301, 306, 309

## 207 Special Coating Hardener

207 Special Coating Hardener is formulated for use with WEST SYSTEM 105 Resin for coating applications where an extremely clear finish is desired. This hardener also provides excellent adhesion for bonding applications. 207 contains an ultraviolet inhibitor to protect the 105/207 mix against sunlight. However, the cured epoxy surface still requires long-term UV protection with a quality marine paint or a UV filtered two part varnish. **Note: Ratio 3:1 Resin:Hardener**

Pot Life at 25°C	20 to 30 minutes
Cure to Solid State at 21°C	9 to 12 hours
Cure to Maximum Strength at 21°C	5 to 7 days
Minimum Recommended Working Temperature	16°C
Pumps Required	(3:1 ratio) 303, 306-3, 309-3

## 209 Extra Slow Hardener

209 Extra Slow Hardener is formulated for use with 105 Resin in extremely warm and/or humid conditions for general bonding and coating applications or when extended working time is desired at room temperature.

A 105/209 mix provides approximately twice the pot life and working time of 206 Slow Hardener and adequate pot life up to 43°C. Forms a clear amber coloured solid with good physical properties and moisture resistance for bonding and coating applications. **Note: Ratio 3:1 Resin:Hardener**

Pot Life at 25°C	75 to 90 minutes
Pot Life at 35°C	20 to 30 minutes
Cure to Solid State at 21°C	20 to 24 hours
Cure to Solid State at 35°C	6 to 8 hours
Cure to Maximum Strength at 21°C	5 to 9 days
Minimum Recommended Working Temperature	18°C
Pumps Required	(3:1 ratio) 303, 306-3, 309-3

## 8.2 EPOXY DISPENSERS

### 301 Mini Pumps

Designed for convenient and accurate dispensing of WEST SYSTEM 105 Resin and 205 or 206 Hardeners. Mini pumps ensure accurate metering of the resin/hardener mix and eliminate the mess involved with hand proportioning. The pumps mount directly onto the resin and hardener containers and have been calibrated to deliver the correct working ratio of 5 parts by weight of resin to 1 part by weight of hardener with one stroke from each pump. When the resin and hardener are in continual use, the pumps can be left mounted on the containers. Order 301A Mini Pumps for 'A' Pack containers, 301B Mini Pumps for 'B' packs or 301C for 'C' Packs.

**Warning: do not use with 207 or 209 hardeners.**



### 303 Special Ratio Mini Pumps

Designed for use with WEST SYSTEM 207 and 209 Special Application Hardeners. The mini pumps mount directly onto the resin and hardener containers and have been calibrated to deliver the correct working ratio of 3.5 parts by weight of resin to 1 part by weight of hardener with one stroke from each pump. See *Dispensing with Mini Pumps*, page 8.

**Warning: do not use with 205 or 206 hardeners**

### 306 Model A dispensing Pump

Ideal for dispensing larger quantities of epoxy, approximately 15 grams of resin and hardener per stroke. For projects larger than a dinghy, a dispensing pump will soon pay for itself by reducing mixing time and waste. The pump is complete with carrying handle. Also available in 306-3 Special-ratio configuration for use with 207 or 209 Hardeners.

### 306-K Model A Pump Rebuild Kit

Includes seals, balls, gaskets, springs, high-rise tubes with ferrules and new resin and hardener reservoirs with lids.

### 309 High-Capacity Gear Pump

Designed and built by Gougeon Brothers. The home builder and professional alike will enjoy the efficiency of this pump. The resin/hardener mix is delivered with continuous rotation of the crank. Dispenses approximately 500g per minute, yet can dispense smaller quantities with partial crank rotation. A positive shut-off valve eliminates resin and hardener loss and dripping spouts. Reservoirs hold 10kg of resin, 5kg of hardener. Also available in 309-3 Special ratio configuration for use with 207 or 209 Hardeners.



## 8.3 REPAIR PACKS AND RESIN PACKS

### 101 Mini Pack

Contains a selected mix of materials used to complete smaller repairs around the boat, in the workshop or at home. Contents include: 250g 105 Resin, 50g 205 Hardener, 403 & 407 fillers, dispensing syringes, application tools, gloves and instructions.

### 104 Junior Pack

A 600g pack of WEST SYSTEM epoxy (105/205). Designed for the small users.

### 100 Support Pack

Ideal to complement the Junior Pack and, when combined with that pack, creates a kit capable of completing most small repair jobs. Contents include 403, 406 and 407 fillers, glue brushes, mixing sticks, graduated mixing pots, gloves, syringes and glass tape.

### G/5 Five-Minute Adhesive

An easy to use two part, fast setting resin/hardener system. This adhesive is ideal for quick repairs and general bonding around the boat and in the home, the workshop or garage. It is suited for spot applications to hold component parts in position whilst bonding is completed with WEST SYSTEM epoxy. G/5 will adhere to most prepared surfaces including wood, fibreglass and most metal and cures in 4-5 minutes.

## 8.4 WEST SYSTEM Packs

WEST SYSTEM resins and hardeners are available in these pack sizes.

PACK SIZE	RESIN QUANTITY	HARDENER QUANTITY	MIXED QUANTITY
Junior	500g	100g	600g
A	1kg	200g	1.2kg
B	5kg	1kg	6kg
C	25kg	5kg	30kg
E	225kg	45kg	270kg

### Storage/Shelf Life

Store at room temperature. Keep containers closed to prevent contamination. With proper storage, resin and hardeners will remain usable during the products shelf life. Over time, 105 Resin will thicken slightly and will therefore require extra care when mixing. Hardeners may darken with age, but physical properties are not affected by colour. Mini Pumps may be left in containers during storage. After a long storage, it is recommended to verify the metering accuracy of the pumps and mix a small test batch to assure proper curing. Repeated freeze/thaw cycles during storage may cause crystallization of 105 Resin. See *Cold weather storage* - page 33

## 8.5 FILLERS

### ADHESIVE FILLERS

#### 403 Microfibres

A blend of cellulose cotton fibres, used as a thickening additive for bonding applications. Epoxy thickened with microfibres provides good wetting out of the substrate and excellent gap-filling properties. Add 4% to 16% by weight of 403 to WEST SYSTEM epoxy mix. Colour: off-white



#### 404 High-Density Filler

A filler developed to maximise bond strength in hardware bonding where high cyclic loads are anticipated. It can also be used for filleting and gap-filling applications. May be added to the resin/hardener at a rate of 35% to 60% by weight, depending on the viscosity needed. Colour: off-white

#### 405 Filleting Blend

Consists of a mix of cellulose fibres and other fillers for use in filleting applications when a naturally finished interior is intended. Alcohol or waterbased stains may be added to adjust the colour. Add 15% to 25% by weight to the epoxy mix. Colour: tan

#### 406 Colloidal Silica

General purpose thickening additive suitable for bonding, gap-filling and filleting. It can be used to prevent resin flow on vertical and overhead surfaces and to control the viscosity of the epoxy. It is often used in combination with other fillers to control the working characteristics of an epoxy mix, e.g. improve the consistency of fairing compounds. Add 3% to 8% by weight to the resin/hardener mix. Colour: off-white.

### FAIRING FILLERS

#### 407 Low-Density Filler

A blended microballoon-based filler used to make fairing putties which are easy to sand but remain strong on a strength-to-weight basis. Add 20% to 40% by weight to mixed WEST SYSTEM epoxy. Cures to a dark reddish-brown colour.

#### 410 Microlight™

410 Microlight™ is the ideal low-density filler for creating a lightweight, easily worked fairing compound especially suited for large areas. Microlight is easily blended into the epoxy mix at additions between 7% to 16% by weight and when cured is easier to sand than any other filled system. Holds a feather edge and is more cost effective than other fillers. Not recommended for high temperature applications and should not be coated with dark colours. Cures to a tan colour.

## 8.6 ADDITIVES

### 420 Aluminium Powder

Add between 5% to 10% by volume to provide protection from ultraviolet light in areas which will not be protected with other coatings and as a base for subsequent painting. Will substantially increase the hardness of the coated surface.

### 421 Fire Retardant

A fine white powder added to the epoxy in the ratio of one to one by weight. The cured material is a fire retardant composition for use in engine or galley areas. 421 Fire Retardant will greatly increase the viscosity of the epoxy and the composition requires trowelling or squeegeeing into place.

### 422 Barrier Coat Additive

A proprietary blend designed to improve the moisture-exclusion effectiveness of WEST SYSTEM epoxy and to combat osmosis. It is an excellent additive for providing a barrier coating to overcome gelcoat blistering and also increases the abrasion resistance. Add 20% to 25% by weight of 422 to the mixed epoxy.

### 423 Graphite Powder

A fine black powder added to WEST SYSTEM epoxy (10% by volume) to produce a low-friction exterior coating with increased scuff resistance, durability and mar-resistance. Epoxy/graphite is commonly used as a coating on rudders and centreboards or on the bottoms of racing craft that are dry sailed. The epoxy/graphite mix can also be used in teak deck construction to simulate traditional seams in appearance and to protect the resin from sunlight.

### 425 Copper Compound

425 Copper Compound can be added to the mixed epoxy to provide a base coat for conventional antifouling paint. When added to epoxy at the rate of 80% by weight, the resultant hard surface increases the moisture exclusion effectiveness, abrasion resistance and provides some backup antifouling properties. It is ideal for coating any substrate that will be in contact with water and can be used when a harder surface is required, eg., coating moulds.

### 501/506 Colour Pigments

Can be added to the epoxy to provide a base colour for a final finish system. The coloured surfaces also tend to highlight flaws and imperfections. Pigments should be added at a rate of approximately 3%-5% by weight and should only be added to the final coat of epoxy because the increased viscosity of the mix will impair the ability of the epoxy to penetrate and seal surfaces. Available in white, black, blue and grey

#### Additives for special coating properties

Additives are mixed with the epoxy to alter the physical properties when used as a coating. Additives can be used to alter the colour, abrasion resistance or moisture resistance of cured epoxy.

## 8.7 Reinforcing Materials

### Episize™ Reinforcing Materials

Specifically treated with an amino-silane coupling agent for use with epoxy systems. When used with WEST SYSTEM epoxy, reinforcing materials exhibit significantly improved peel strength, flexural modulus and tensile and compressive load-carrying ability compared with other chemical finishing systems, especially those reinforcing materials manufactured for bonding with polyester resins.

All reinforcing materials sold under the Episize trademark are manufactured under strict quality control guidelines. Materials undergo periodic testing at Wessex Resins to ensure the materials selected for building or repair projects meet the highest possible standards.

#### 740-746 Episize™ Glass Fabrics

Episize™ Glass Fabrics are ideal for building composite laminates and for the repair of fibreglass structures. May also be used to provide an abrasion-resistant covering for wood structures. When thoroughly wetted with WEST SYSTEM epoxy, the lighter fabrics

become transparent, allowing a clear, natural wood finish. Weights available 135,190, 200, & 280g/m<sup>2</sup> in lengths of 5, 10, 25, 50 and 100 metre rolls.



#### 736-739 Episize™ Biaxial Glass Fabrics

These non-crimp fabrics combine two layers of unidirectional fibres  $\pm 45^\circ$  which are stitched together using a light thread. The result is an engineered biaxial fabric with predictable, repeatable properties. Weights available - 300, 445 & 610g/m<sup>2</sup> in lengths of 5, 10, 25 and 50 metre rolls.

#### 729-733 Episize™ Glass Tape

Versatile glass tapes are ideal for reinforcing chines, hull-deck corners and similar structural applications. When bonded with WEST SYSTEM epoxy, they provide additional tensile strength to resist hairline crack development and provide added abrasion resistance. Available in 25, 50, 75, 100 and 150 mm widths, weight 170g/m<sup>2</sup>.

#### 726-727 Biaxial Glass Tape

Available in 125mm width, weight 446g/m<sup>2</sup>  $\pm 45^\circ$ . This tape significantly increases structural strength where major reinforcement is required.



## 701 Episize™ Graphite Fibres

25mm Graphite Fibres are continuous-length fibre tows with a modulus of approximately 200,000 MPa. They are much stronger and stiffer for their weight than nearly all engineering materials, including steel and aluminium. Graphite fibres are used as a secondary engineering material where space or size is confined, yet are cost-effective and contribute significantly to overall structural capability. Average tow thickness is 0.25mm.

## 703-706 Carbon Tape

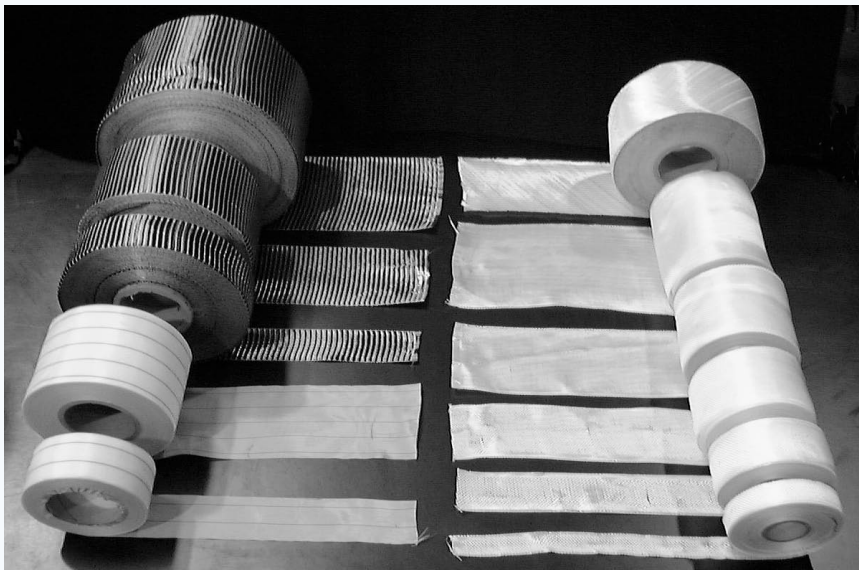
324g/m<sup>2</sup> unidirectional carbon reinforcing tape used to improve tensile strength and stiffness in one direction while adding minimum thickness and weight. The carbon is held in place by a glass thread for easy handling and wetting out of the fibre. Available in widths of 50mm and 150mm.

## 750-751 Carbon Fabric

Twill weave carbon fabric provides improved tensile and compressive strength to laminates. Two fabrics are available; 200g/m<sup>2</sup>, 2/2 Twill Weave or 280g/m<sup>2</sup>, 4/4 Twill weave. Available by the metre or in 25m, 50m and 100m rolls.

## 775 Peel Ply

Peel Ply is a finely woven fabric treated with a release agent to which epoxy will not bond. Excellent for providing a release and reducing subsequent sanding prior to applying more epoxy. Available in 100m rolls and 50mm and 100mm wide tape.



## 8.8 Application Tools



### 790 180mm Foam Roller Cover

180mm wide, 45mm diameter, foam roller cover.

### 791 180mm Roller Frame

180mm wide bird cage roller frame designed for use with the 790 Roller cover.

### 800 75mm Foam Roller Cover

75mm wide foam roller cover - ideal for coating epoxy in small areas.

### 801 75mm Roller Frame

Reusable 75mm wide roller frames for use with the 800 roller covers.

### 802 Roller Pan

Flexible plastic roller pan allows cured epoxy to 'pop out', so the pan can be reused. Eliminates the need for liners.

### 803 Glue Application Brushes

Handy, disposable, glue brushes with a wooden handle. These brushes are used for a wide variety of gluing and coating applications.

### 804 Mixing Sticks

150mm x 18mm wide rounded wooden mixing sticks for blending epoxy and perfect for small radii fillets.

## 804B Wooden Stirrers

300mm x 27mm, square edged wooden stirrers will ensure thorough mixing when high percentages of fillers are incorporated into the epoxy. Strong, durable stirrers that are ideal for scraping excess epoxy from surfaces.

## 805 Graduated Mixing Pot

Strong reusable 800ml mixing pots graduated in 50ml divisions. When cured, solid epoxy easily “pops out”.

## 807/807B Syringes

Reusable syringes which can be loaded with the epoxy for injecting into difficult working areas. Ideal for hardware bonding and plywood repairs. 10ml and 50ml available.

## 808 Plastic Squeegees

Lightweight, reusable squeegees for fairing and filling applications. Double-edged, 90mm x 150mm.

## 809 Notched Spreaders

110mm × 110mm Lightweight, reusable spreaders with 3mm, 4mm and 6mm notches on three sides for quickly applying modified epoxy at a constant rate. Useful when laminating large panels

## 811 Paddle Rollers

Ridged aluminium rollers for thoroughly wetting-out fabrics with epoxy. Available in 50mm, 90mm and 150mm lengths, diameter 22mm.

## 817 Finishing Brush

High quality brush for varnish or paint application. Available in 25mm and 50mm widths.

## 818 Laminating Brush

Good quality firm bristle brush for applying epoxy over the laminating area and for consolidating the fabric. Available in 50mm and 100mm widths.

## 820 Resin Removing Cream

Formulated to remove uncured epoxy from skin. Available in 250 and 500ml dispensers and 1kg plastic pots.

## 831 Barrier Cream

An aerosol containing a non-irritant, multi-purpose barrier cream which has special bactericidal ingredients to minimise the risk of skin infection. Protects against resins, oils, grease and petroleum spirits.

## 832 Disposable Gloves

Lightweight, seamless disposable gloves help prevent exposure to chemicals. Excellent protection with good finger sensitivity and dexterity. CE marked.

## 834 Reusable Gloves

Heavy-duty rubber gloves offer superior tear and abrasion resistance and are liquid proof. Can be reused. CE marked.

## 850 Solvent

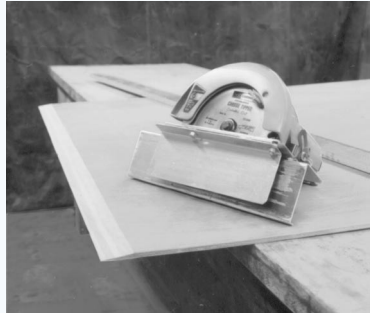
A specially blended cleaning solvent for removing uncured epoxy from tools, boat and workshop surfaces. Also excellent for cleaning contaminants from cured epoxy surfaces.

## 855 Cleaning Solution

A safe, easy to use cleaning solution developed to remove uncured epoxy from tools workbenches, minipumps etc. Can also be used to wash off amine blush.

## 875 Scarffer™

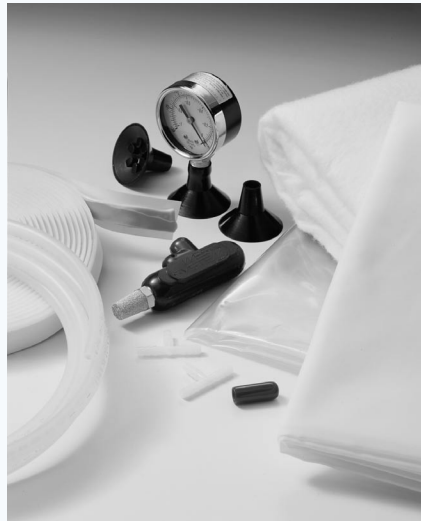
A unique tool designed by Gougeon Brothers for cutting accurate scarf joints in plywood up to 9mm thick. Attaches easily to most circular saws and is simple to remove.



## 885 Vacuum Bagging Kit

A complete starter kit for room temperature repairs and small laminating projects up to 1.2m<sup>2</sup> in size. The kit includes: Venturi vacuum generator (with bronze muffler), Vacuum Cups (3), 6mm i/d. Vacuum Tubing (3m), Vacuum Gauge, Junction "T" Barbs (2), Release Fabric (1.4m<sup>2</sup>), Breather Fabric (1.4m<sup>2</sup>), Vacuum Bag Film (1.4m<sup>2</sup>), Vacuum Bag Sealant (7.5m), Instruction leaflet, 002-150 VACUUM BAGGING TECHNIQUES.

The venturi generator develops over 65kPa of vacuum (0.065MPa) and is designed to run off of conventional shop air compressors delivering at least 0.42MPa. Some item specifications may vary.



## 8.9 Instructional Publications

### 002 The Gougeon Brothers on Boat Construction

This book is a must for anyone building a boat or working with wood and WEST SYSTEM epoxy. Includes extensive chapters on composite construction techniques, materials, lofting, safety and tools, with many illustrations, diagrams and photographs. Hardcover - 406 pages

### 002-550 Fibreglass Boat Repair & Maintenance

A complete guide to repair fibreglass boats with WEST SYSTEM epoxy. Includes illustrated procedures for structural reinforcement, deck and hull repair, hardware installation, keel repair and teak deck installation. Softcover 75 pages.

### 002-970 Wooden Boat Restoration & Repair

An illustrated guide to restore the structure, improve the appearance, reduce the maintenance and prolong the life of wooden boats with WEST SYSTEM epoxy. Includes information on dry rot repair, structural framework repair, hull and deck planking repair, hardware installation with epoxy and protective coating. Softcover 76 pages.

### 002-650 Gelcoat Blisters - A Guide to Osmosis Repair

A guide for repairing and preventing gelcoat blisters in fibreglass boats with WEST SYSTEM epoxy. Includes an analysis of the factors that contribute to blister formation and illustrated steps for preparation, drying, repairing and coating for moisture protection. Softcover 22 pages.

### 002-150 Vacuum Bagging Techniques

A step-by-step guide to vacuum bag laminating, a technique for clamping wood, core materials and synthetic composites bonded with WEST SYSTEM epoxy. Discusses theory, moulds, equipment and techniques used to build composite structures. Softcover 52 pages.

### 002-740 Final Fairing & Finishing

Techniques for fairing wood, fibreglass and metal surfaces. Includes fairing tools, materials and a general guide to finish coatings. Softcover 29 pages.

## 8.10 Instructional Videos

### 002-894 Fibreglass Repair with WEST SYSTEM Brand Epoxy

A guide to structural repair on fibreglass boats. Covers repairs to cored and non-cored panels and how to apply gelcoat over epoxy repairs. VHS—20 min.

### 002-896 Gelcoat Blister Repair with WEST SYSTEM Brand Epoxy

A guide for repairing and preventing gelcoat blisters on fibreglass boats. Includes an analysis of the factors contributing to blister formation and steps for preparation, drying, repairing and coating for moisture protection. VHS—16 min.



# WEST SYSTEM®

BRAND

Epoxy Products  
For the Construction,  
Restoration, Maintenance  
and Repair of Boats of All Sizes.....

Velsheda, the J Class Yacht  
racing during the America's  
Cup Jubilee has been restored using  
WEST SYSTEM brand products.



## Wessex Resins and Adhesives Limited

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Email: [info@wessex-resins.com](mailto:info@wessex-resins.com) Website: [www.wessex-resins.com](http://www.wessex-resins.com)

Photo: Roger Goldsmith



WEST SYSTEM epoxy is manufactured in the UK under licence from Gougeon Brothers Inc., by:

## Wessex Resins and Adhesives



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