

## Neogel VE 8393 – Next Generation MEKP Curable VE Tooling Gelcoat

**When building high quality moulds in the GRP marine industry, a vinyl ester tooling gelcoat is normally selected due to its outstanding properties with regard to styrene and heat resistance as well as mechanical toughness**

Working with traditional VE tooling gelcoats is not straight forward since recovery of thixotropy during application is usually slow thereby increasing the risk of sagging. Another complicating factor is the use of

cumylhydroperoxide, instead of normal MEKP, in order to avoid gassing during curing and porosity in the cured gelcoat. In response to this need we have developed Neogel VE 8393, a sprayable and MEKP curable VE tooling gelcoat with quick recovery of thixotropy. Resistance towards styrene and heat has been tested thoroughly with very good results ensuring long-term gloss retention, even after a large number of de-mouldings. This tooling gelcoat is available in four colours: black, grey, light green and orange.



Menorquin Yachts

## Menorquin Yachts: where tradition and technology come together

Founded in 1978 by Mr. Juan Sastre, Menorquin Yachts is situated on the picturesque Mediterranean island of Menorca. Conserving traditional values and the unique personality of the typical Balearic *llaüt* or *menorquina* boats, Menorquin Yachts has created a generation of luxury motor cruisers that combine classically elegant lines with all the advantages of modern technology. As Mr.

Salvador Sancho, of Menorquin Yachts, put it: "It is a luxury vessel that maintains the islands rich marine heritage and traditions."

The boatyard has a large production facility of 30.000 m<sup>2</sup>, from where the demands of the different outlets that Menorquin Yachts has across the world can be met. In fact some 70% of the production of the boats produced are destined for export. (continued Page 2)

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### Exciting new product developments

Resins, gelcoats and bonding pastes are three of the most important ingredients used in the construction of a composite boat. Between them they provide the structural and mechanical integrity, the physical resistance to osmosis and weathering, and the high gloss aesthetic surfaces that buyers demand.

In this latest issue of Global Solutions Marine you will see that it is packed full of our latest developments and innovations in these three critical areas: like vinyl ester tooling gelcoats, Neogel ECO in a brushable form, the excellent synergy between Atlac tiecoat and Neogel ECO, customer case stories and much more besides.

Happy reading and I hope to meet you on our booth at the JEC in Paris

Bert Bakker  
Business Manager Structural Resins

## Neogel ECO 9375 – Brush version now available

Since April 2004, our low VOC gelcoat, Neogel ECO, has been available in white and off-white spray grades. After a very successful market introduction with growing sales volumes, our customers requested a brush version with the same outstanding properties as the sprayable Neogel ECO product. The best-in-class weather and water resistance and excellent application properties - all characteristics of the spray gelcoat - were focal points during the development of Neogel ECO brush. To evaluate performance we undertook a marine gelcoat benchmarking test that included top quality marine gelcoats available in the market. We exposed these and other qualities to xenon arc accelerated weathering tests. The conclusion is that Neogel ECO brush gelcoat uniquely combines excellent weather resistance with the best stability against blistering. To ensure proper application properties, we carried out extensive customer trials throughout Europe. The full spectrum of brush applications under different conditions have now been evaluated and customer testing has been successfully concluded.

Neogel ECO brush gelcoat is now available in white and off white colours.

*Neogel ECO now in brush form*



*Menorquin yachts*

## Collaboration raises quality standards

**Deliveries to an island like Menorca are logistically complicated. Fortunately Euroresins in Spain has been able to offer a total supply solution: not only with resins and gelcoat experience and technical knowledge integrated within the structure of DSM Composite Resins - but also by supplying a complete range of reinforcements, core-materials, promoters, initiators, release-agents and ancillary materials.**

### TECHNICALLY ADVANCED PRODUCTS

Even though the appearance is traditional the materials used are the ultimate in resin and gelcoat technology; with products such as Neogel NPG 8373-W-0044 (Neopentyl glycol / isophthalic gelcoat), Atlac 580 ACT (vinyl ester resin for tie-coat application) and the Synolite 8388-series (DCPD resin for structural parts). In their desire to guarantee the maximum quality for their boats, Menorquin Yachts completely adapted the company's management system and production standards to comply with the ISO 9001:2000 quality management system; achieving certification in 2003.

Euroresins España - DSM Composite Resins witnessed the efforts needed to achieve the goal of Menorquin Yachts thanks to the long standing

technical and commercial collaboration. Even before the certification process, they had clear objectives for quality management and continual improvement - trusting again in the experience of the technical team of Euroresins in Spain. Material choice is important but so too is the correct method of application. Menorquin Yachts spent more than two and half years working with DSM Composite Resins on suitable procedures to achieve an improvement in surface finish and also in optimal osmosis prevention. The outcome of this mutually beneficial cooperation meant three goals were successfully achieved: utilisation of materials of the highest quality; adopting procedures to achieve optimal application of material; and alignment and verification of procedures to meet the highest quality standards. In this multi-disciplinary process, local teams from Euroresins and DSM Composite Resins in Spain had guidance from DSM Composite Resins centrally plus support from technicians from Italy, with extensive experience in the marine industry. The collaboration was a success thanks to the complete involvement of the Production, Quality and Management departments of Menorquin Yachts. The process also resulted in an agreement between Menorquin Yachts and DSM Composite Resins for a 10-year, anti-osmosis guarantee.

## Excellent cosmetics and long-term blister protection

**The marine industry tends to focus strongly on the cosmetics of GRP boats but we should not forget that the long term quality of yachts is crucial. Osmosis principally concerns the boat owners.**

Nowadays companies like DSM are asked more frequently for guarantees against osmosis, especially related to large yachts. This is not surprising if you consider the costs of the yachts and the damage that could be done by using the wrong materials. To meet these stricter requirements, it is absolutely crucial to identify the best combination of gelcoat, tie coat, laminating resin, glass quality and all other parameters that will give the optimum performance with respect to surface quality and osmosis resistance.

### BEATING THE BLISTERS

In our laboratories in England we tested the importance of gelcoat and tiecoat. Results showed that out of numerous laminates manufactured from high-quality DSM materials, the combination of Neogel ECO and Atlac 580 ACT tiecoat gave the best performance in surface cosmetics before and after heat ageing at 70°C, and against blister formation using water vapour at 50°C.

### NEOGEL ECO GELCOAT

Besides low VOC and fantastic osmosis



*Pantera 76 GT utilises Neogel Eco/Atlac 580 synergy*

resistance, Neogel Eco is designed to be forgiving in the workshop. Even at high build thicknesses of 2000 microns, due to difficult mould geometries it won't sag and the low VOC content will reduce the film shrinkage during curing on the mould. This gives extra security to

areas which were sprayed too thinly. Neogel ECO also has excellent air release properties preventing porosity, and therefore avoiding blisters and poor surface quality. In time, dirt will fill up pores and surface porosity will be increasingly evident. Even if porosity is present immediately beneath the gelcoat surface, maintenance like polishing will in time expose this.

*Superior surface profile of Neogel Eco/Atlac 580 (left) after 1000 hours intensive blister testing*



### ATLAC 580 ACT

Two layers of CSM and Atlac 580 ACT vinyl ester urethane resin located directly behind the gelcoat makes an ideal tiecoat. A tiecoat is an extra insurance against osmosis, since the water resistant vinyl ester resin massively reduces blister formation compared to standard systems. It also works as a print-through blocker and can be used in combination with carbon or aramid fibers. The combination of these two products has a synergistic effect - rendering a smooth, osmosis resistant surface to keep your boat in good shape for years to come.

## Zaadnoordijk selects Neogel ECO as premium gelcoat



*Spraying Neogel ECO onto a deck mould*

**Netherlands based Zaadnoordijk Yachtbuilders has more than fifty years of experience in building high quality, bespoke sailing yachts. Adopting best materials, best practices and best technology has always been a central focus of the company.**

### **A CLOSE RELATIONSHIP**

The close working relationship between DSM Composite Resins and Zaadnoordijk goes back many years and is helped by the geographical proximity of the company's production facility in Heerenveen to the laboratories of the Zwolle Customer Competence Centre. Technical collaboration has always been high and in Zaadnoordijk's quest for the best materials in terms of environmental and physical performance they use Atlac 580 ACT as a tiecoat in the hull construction for optimal strength, maximum osmosis resistance and

minimal fibre print-through.

### **NEOGEL ECO IMPROVES OUTDOOR DURABILITY**

When we launched Neogel ECO the company was naturally very keen to find out more. Reduction of emission was an important benefit in improving the workplace environment, but Zaadnoordijk was especially interested in the enhanced weatherability, gloss retention and colour stability. These special features are the results of a new philosophy in gelcoat

formulation that includes new gelcoat base resin technology, and raises the outdoor durability and blistering resistance of Neogel ECO to a level that has never been equalled within the composites industry.

Successful trials followed and Zaadnoordijk has now switched deck production over to Neogel ECO. Production Manager Peter Segers is enthusiastic about the new material: "Neogel ECO provides what we are looking for in terms of toughness, durability and non-yellowing - which

*Zaadnoordijk is renowned for the quality of its cabins*





*Zaadnoordijk sails are well and truly set*

is a particular concern in all horizontal mouldings like decks and hatches. It is also easily applied with good handling properties. We appreciate the long term relationship we have with DSM, the quality of their products and their fast technical support.”

#### **AN EYE FOR DETAIL**

Zaadnoordijk sailing yachts are sold under the brandname C-Yacht, Compromis and Centaur. All development and the complete production of boats takes place on the one production site in Heerenveen. As well as a large glassfibre workshop the company also has its own joinery workshop using timber and veneers to form the distinctive, high quality interiors. Zaadnoordijk produces around 50 yachts a year that are sold under their own brandnames and a further 50 hull and deck mouldings for third party customers.

“Take a good look at the interiors of our yachts,” continued Peter Segers,” and you will see that every detail has been carefully thought out. All spaces on board are used optimally and fitted with the best matching equipment in our distinctive house style. Frans Maas, who designs our yachts, is an enthusiastic yachtsman and he always keeps a firm hand in the development of a new ship – down to the fine detail. Both the glass fibre hulls and the wooden interiors are meticulously produced by our own craftsmen. It goes without saying that each yacht complies with the most recent standards for yacht building; those of the CE-standardisation. We do things well or we don't do things at all. That has

always been our guiding principle”.

#### **NEOGEL ECO FOR DARK BLUE HULLS?**

With the increasing popularity of dark blue hulls - not just with Zaadnoordijk but with many other producers of sailing yachts and motoryachts - we have been concentrating our development focus towards a blue pigmented version of Neogel ECO. Currently this gelcoat is only available in white and off-white colours, but accelerated weathering tests and water resistance tests carried out at our Marine Expertise Centre, are proving very encouraging. Field trials will follow shortly and we hope to commercially launch Neogel ECO in dark blue by the middle of the year.

Euroresins Benelux also meet the needs of Zaadnoordijk Yachtbuilders for reinforcements, core materials and a full range of mould preparations, catalysts and other ancillary products.

#### **Zaadnoordijk C-Yacht 12.50**

Neogel ECO arrived just in time to be used on the new sailing yacht, the C-Yacht 12.50. This impressive new vessel has been shortlisted for the Dutch HISWA Boat of the Year competition. Of the 10 new boats assessed by a panel of 40 people, the C-Yacht 12.50 is one of the three that has progressed to final selection. The C-Yacht 12.50 is a completely new saloon-type yacht with a centre cockpit, an overall length of 12.50 metres and a beam of 3.90 metres. The hull is made from a polyester sandwich construction using Synolite 8388-P-1 DCPD resin and Atlac 580 ACT vinyl ester tiecoat to provide maximum protection against osmosis. Zaadnoordijk took a unique approach in which, right from the start of the design stage, a forum of potential buyers and current C-Yacht owners were invited to have their say in the design and cabin layout. Judging by the sleek lines these people had good taste!

*Zaadnoordijk Yachtbuilders latest model: C-Yacht 12.50*



## DSM leads in surface quality improvements

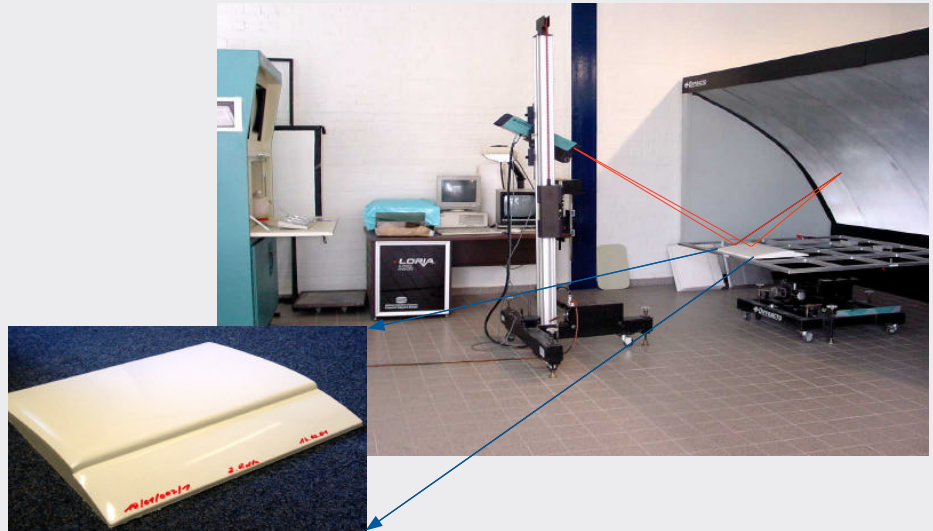
Many of the worlds leading boat builders are active in production or developing infusion programmes. One of the challenges with infusion, is producing a surface quality to the high standard expected by most boat buyers.

### MEASURING PROGRESS

Improvements in the surface quality generally come in steps as opportunities to upgrade individual raw materials or process aspects arise. In a busy production environment it is not always easy to quantify progress as the assessment can be rather subjective.

To help, DSM Composite Resins can now demonstrate the progress made using "Diffracto D site" technology from the automotive / aerospace industries. The method provides an enhanced image and a numeric measure of the surface quality by reflecting light off the sample panel onto a curved reflective screen and then back to the camera for assessment.

The surface deviations are magnified for visual assessment and numerical assessment is made of the long term wave and "orange peel" values. The long term wave records the general flatness of the panel (like the presence of butt joint lines, or overall panel undulation for example). The "orange peel" figure quantifies local defects such



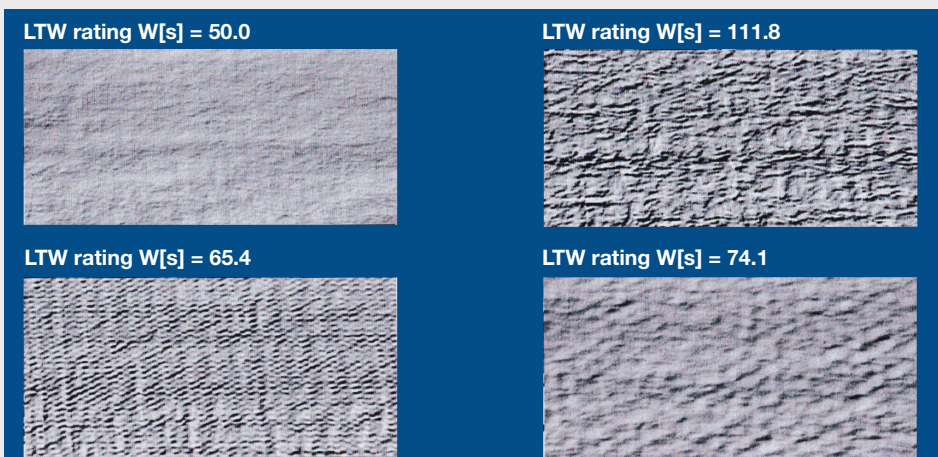
*Diffracto D Sight machine located in DSM Composite Resins research facility Ludwigshafen - Germany*

as the visible presence of woven, CSM or CFM reinforcement patterns and gives the best guide to the immediate visual impact.

The images here show the difference between a market leading surface finish (top left), utilising a number of surface improvement measures, and panels affected by continuous fibre and woven print through (top right and bottom left).

It looks certain that infusion as a marine moulding process will continue to grow. Progress is more an evolution rather than a revolution, but DSM Composite Resins and Euroresins are able to support customers with a package approach to surface improvement, and a scientific approach to surface measurement - enabling continuous progress to be made.

*Enhanced Diffracto images highlighting a range of surface profiles*



## Euroresins for all your material needs

**Distribution is a vital route-to-market for DSM Composite Resins. With our own Distribution business, Euroresins, it is a synergy with mutual benefits. Euroresins benefits from being closely allied to Europe's number one resin producer, with all the experience, technical resources and market expertise that that implies. DSM, in turn, benefits from the logistical convenience and the commercial and geographical reach that Euroresins brings, as well as the window on the market place that the business provides.**

The pan-European Euroresins group has operations in the UK, Benelux, Norway, Sweden, Italy, Spain and France. With a broad customer base, extensive product portfolio and reputation for high service levels and technical support, Euroresins is the first choice distributor for many of the composite industry's leading principals.

As well as representing DSM Composite Resins for resins, gelcoats and bonding pastes, Euroresins also represents global players like Owens Corning, Degussa, Akzo, Lantor, Farecla, Sika and Freudenberg. Euroresins is positioned as a material solutions partner to its marine customers by offering a complete package of gelcoats and resins for rapid tooling and laminating, reinforcements, core materials, mould preparations and all the necessary ancillary

*One of Euroresins' large warehouses*



products and personal protection equipment required by today's busy boat yard. The convenience of one-stop shopping is a major advantage for boat builders large and small. It reduces the costs and complexities of dealing with lots of individual suppliers and enables stock holdings to be reduced. Through Euroresins, customers can simply order what they need, when they need it.

Euroresins believes in delivering added value services to its customers. This can be in the form of hands-on help with closed mould production techniques like vacuum infusion; or advising customers on issues such as styrene emission reduction strategies or up-coming changes in standards and legislation. Equally important is the way Euroresins can work with its customers to identify ways to manufacture their products more effectively and more efficiently.

The Euroresins Rapid Tooling System (ERTS) is a good example. Neogel VE gelcoat combined with the Euroresins Rapid Tooling System (RTS) gives high gloss, durability and superior styrene resistance. A High Performance RTS system based on Atlac resins and Neogel VE gelcoat has been developed for large moulds such as boat hulls. There is no fibre print through with this system and the moulds can be operational in a fraction of the normal time.

Thanks to this innovative solution, boat builders can now substantially reduce the time it takes to bring new models to market.

### **EUROTINTER: COLOURED GELCOATS WERE NEVER SIMPLER**

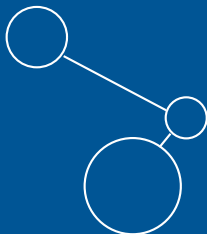
The Eurotinter service provided by Euroresins is another example of identifying a need within the composites industry, then providing a solution. Sophisticated technology enables the Eurotinter to dispense custom-coloured gelcoats (also pigment pastes) at the press of a button. Eurotinter machines are now installed at most Euroresins locations as well as in Germany, Poland and even China.



*Euroresins RTS is ideal for large hull moulds*

Colours can be matched to a laminate swatch, liquid sample, or many other media. There are several thousand colour recipes currently stored on the Euroresins database including most RAL and BS colours.

The benefits to customers are instant availability of highly accurate and consistent colours in the quantities they need. This means no overstocking, no mixing and greater flexibility in production scheduling. Little wonder then that the volume of product going through our Eurotinter machines is growing at the rate of 30% a year.



**Profile: Mel Foster**

Mel Foster (51), who has the dual roles of Business Manager for Gelcoats and for Distribution, is closely involved in the marine sector. "Marine is a strong focus, not just for our Gelcoats and Resin business but also for our Distributors who are able to supply a package of materials to provide a complete system solution to our customers," said Mel.

Having held several key management positions for DSM both in Holland and the UK, Mel is very experienced in the composites industry. Fortunately, for a frequent flier, he still enjoys travelling!

## DSM Composite Resins participating at MEC and JEC

DSM Composite Resins and Euroresins have participated at the MEC (Marine Engineering Conference) in Milan on February 8-10 with presentations on low VOC systems and surface finishing of infused laminates.

This is followed in April by JEC 2005, the global forum for the composites industry, at Porte de Versailles, Paris on April 5-7. This year's trade fair includes a special forum on Leisure Boat Building on the opening day.

The DSM Composite Resins stand will have a global business group theme. Next to the usual composite resins presentations, we will also be presenting the products and services of our Sizings and Binders, and Euroresins businesses.

Our aim is to show the unique value proposition created by the whole value chain approach that no other supplier can match - the complementary services and products offered by

DSM Composite Resins and Euroresins, as well as the value chain knowledge, and customized developments of sizings and binders all serve the needs of the customers in different end-markets.

We will also be introducing to the market some of our latest developments - so be sure to make a note in your diary to come and visit us!

The booth of DSM Composite Resins will be located at Hall 1, Stand No C69/D113. We look forward to welcoming you to our booth during the show.

## EVENTS CALENDAR

<b>BOOT HOLLAND 2005</b>	February 4-9, 2005, Leeuwarden, NL	<a href="http://www.boot-holland.nl">www.boot-holland.nl</a>
<b>MEC MARINE ENGINEERING CONFERENCE</b>	February 8-9, 2005, Milano, Italy	<a href="mailto:pierluigicuratolo@hotmail.com">pierluigicuratolo@hotmail.com</a>
<b>IBEX U</b>	February 16-17, 2005 Bournemouth, UK	<a href="http://www.ibexu.com">www.ibexu.com</a>
<b>HISWA 2005</b>	March 1-6, 2005 Amsterdam Rai, NL	<a href="http://www.hiswa.nl">www.hiswa.nl</a>
<b>JEC COMPOSITES SHOW</b>	April 5-7, 2005 Paris Expo / Porte de Versailles	<a href="mailto:infojec@globalcomposites.com">infojec@globalcomposites.com</a>
<b>NAUTIC FAIR BARCELONA</b>	October 22-30, 2005 Barcelona, Spain	<a href="http://www.firabcn.es/">http://www.firabcn.es/</a>

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