Princess Yachts International Case Study

Since the launch of our first 31-footer in 1965, Princess Yachts have been quietly rewriting the rules of luxury cruising. From our legendary Flybridge range and thrilling V-class sport yachts, to our luxury long-range Motor Yachts and ground-breaking M-Class superyachts.

Our success in building world class motor yachts has been supported by suppliers such as Scott Bader who have engineered a wealth of high performance Crystic polyester and vinylester resins, market leading u.v. resistant gelcoats, superior technology barriercoats and Crestomer structural adhesives.

This has helped us to become a world-leader in closed mould resin infusion technology, enabling us to produce stronger, lighter, more fuel efficient hulls, without compromising performance.

Our partnership developing the best materials for production is constantly evolving and is fully supported by a strong technical team.

Shaun Davy – Composites Engineering Manager
CLOSED MOULD PROCESSES AVAILABLE

The choice of process will depend on many factors including the number of parts needed, unit cost, part size, complexity, specification and finance available for new equipment.

VACUUM INFUSION
A simple, adaptable process, which uses a flexible film and traditional FRP moulds. Particularly suitable for making large components.

RTM LIGHT
In this process, a machine is used to inject resin into lightweight matched FRP tools. It is fairly cost effective and is a popular choice amongst moulders.

RTM
A fast and efficient way of producing FRP parts. The process involves the controlled injection of resin through dry reinforcement placed in a rigid, matched, temperature controlled composite or metal tool. This method, although the most expensive option, is popular for moulders manufacturing a large number of parts per day.

CRYSTIC RESINS FOR CLOSED MOULD PROCESSING

<table>
<thead>
<tr>
<th>Resin</th>
<th>Description</th>
<th>Chemical Type</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crestapol 1210</td>
<td>Tough, low viscosity non-accelerated resin with rapid cure and rapid demould</td>
<td>Urethane Acrylate</td>
<td>RTM, RTM Light, Vacuum Infusion</td>
</tr>
<tr>
<td>Crestapol 1210A</td>
<td>Tough, low viscosity amine pre-accelerated resin with rapid cure and rapid demould</td>
<td>Urethane Acrylate</td>
<td>RTM, RTM Light, Vacuum Infusion</td>
</tr>
<tr>
<td>Crestapol 1212</td>
<td>Tough, low viscosity, fire retardant urethane acrylate closed mould resin with rapid cure (this resin has very high fire, smoke and toxic fume performance)</td>
<td>Urethane Acrylate</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>Crestapol 1230</td>
<td>High temperature performance (HDT 240 °C) tough resin with good strength</td>
<td>Urethane Acrylate</td>
<td>RTM, Vacuum Infusion</td>
</tr>
<tr>
<td>Crestapol 1234</td>
<td>Very high temperature performance (HDT &gt;300 °C) tough resin with good strength</td>
<td>Urethane Acrylate</td>
<td>RTM, Vacuum Infusion</td>
</tr>
<tr>
<td>Crestapol 1250LV</td>
<td>Tough resin designed for use with carbon fibre</td>
<td>Urethane Acrylate</td>
<td>RTM, Vacuum Infusion</td>
</tr>
<tr>
<td>Crystic VE671-03</td>
<td>Chemical resistant, non-accelerated, non-thixotropic epoxy bisphenol A vinylester with Lloyds approval</td>
<td>Vinylester</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>Crystic VE676-03</td>
<td>Chemical resistant bisphenol A epoxy based vinylester resin with Lloyds approval</td>
<td>Vinylester</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>Crystic VE679-03PA</td>
<td>DCPD-modified vinylester with Lloyds approval</td>
<td>Vinylester</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>701PA</td>
<td>Lloyds approved isophthalic resin for vacuum injection with a 60 - 100 minute geltime</td>
<td>Isophthalic</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>702PA</td>
<td>Lloyds approved orthophthalic resin for vacuum injection processes with a 40 - 100 minute geltime</td>
<td>Orthophthalic</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>703PA</td>
<td>Lloyds approved DCPD resin for vacuum injection with a 60-120 minute geltime</td>
<td>DCPD</td>
<td>Vacuum Infusion</td>
</tr>
<tr>
<td>781PALV</td>
<td>Orthophthalic closed mould resin with a 6 minute geltime</td>
<td>Orthophthalic</td>
<td>RTM, RTM Light Light</td>
</tr>
<tr>
<td>782PA</td>
<td>A high HDT RTM resin with a geltime of 12 minutes</td>
<td>Orthophthalic</td>
<td>RTM, RTM Light Light</td>
</tr>
<tr>
<td>783PA</td>
<td>Isophthalic closed mould resin with a geltime of 14 minutes</td>
<td>Isophthalic</td>
<td>RTM, RTM Light Light</td>
</tr>
<tr>
<td>784PA</td>
<td>Orthophthalic filled resin for RTM and RTM light with a geltime of 6 minutes</td>
<td>Orthophthalic</td>
<td>RTM, RTM Light Light</td>
</tr>
<tr>
<td>785PA</td>
<td>DCPD RTM resin with a geltime of 10 minutes</td>
<td>DCPD</td>
<td>RTM, RTM Light Light</td>
</tr>
<tr>
<td>5008ST</td>
<td>Orthophthalic resin for use in closed mould with a geltime of 6 minutes at 40°C</td>
<td>Orthophthalic</td>
<td>RTM, RTM Light Light, Vacuum Infusion</td>
</tr>
<tr>
<td>U904LVK</td>
<td>Orthophthalic resin for RTM and RTM light with a geltime of 20 minutes</td>
<td>Orthophthalic</td>
<td>RTM, RTM Light Light</td>
</tr>
<tr>
<td>U1007TPA</td>
<td>Filled fire retardant DCPD resin designed with a geltime of 17 minutes</td>
<td>DCPD</td>
<td>RTM, RTM Light Light</td>
</tr>
</tbody>
</table>
When we started looking at infusion, we wanted to find a suitable supplier with matched products for the entire system: gelcoat, skin coat and vinylester infusion resin. We looked at a number of options, but Scott Bader was an easy choice even though they had not supplied vinylester resins to us before.

The superior colour retention in the Permabright gel coat is a great quality improvement benefit, but Scott Bader not only has excellent quality products, they also provide us with their technical support and experience. More importantly, even though we are not a large account, we have always felt valued and very well supported, so Scott Bader is a valuable partner to us.

Nigel Stuart, M.D. — Discovery Yachts
Scott Bader Group Companies

HEAD OFFICE
Scott Bader Company Limited
Wollaston
England
Tel: +44 1933 663100
Fax: +44 1933 666139
email: enquiries@scottbader.com

Scott Bader France
Amiens
France
Tel: +33 3 22 66 27 89
Fax: +33 3 22 66 27 80
email: info_distribution@scottbader.fr

Scott Bader Spain
Barcelona
Spain
Tel: +34 93 553 1162
Fax: +34 93 553 1163
email: diazfs@scottbader.es

Scott Bader Germany
Weiden
Germany
Tel: +49 961 401 84474
Fax: +49 961 401 84476
email: composites@scottbader.de

Scott Bader Ireland
Dublin
Ireland
Tel: +353 1801 5656
Fax: +353 1801 5657
email: composites@scottbader.ie

Scott Bader Scandinavia AB
Falkenberg
Sweden
Tel: +46 346 10100
Fax: +46 346 59226
email: composites@scottbader.se

Scott Bader Eastern Europe s.r.o
Mimoň II
Czech Republic
Tel: +420 (0) 485 111 254
email: miro@sbee.cz

Scott Bader Croatia
Zagreb
Croatia
Tel: +385 1 240 6440
Fax: +385 1 240 4573
email: info@scottbader.hr

Scott Bader North America
Stow, OH
USA
Tel: +1 330 920 4410
Fax: +1 330 920 4415
email: info@scottbader-na.com

Scott Bader South Africa
Hammarsdale
South Africa
Tel: +27 31 736 8500
Fax: +27 31 736 8511
email: composites@scottbader.co.za

Scott Bader Middle East Limited
Dubai
United Arab Emirates
Tel: +971 481 50222
Fax: +971 488 35319
email: info@scottbader.ae

Abahsain Scott Bader FZ CO
Jebel Ali
United Arab Emirates
Tel: +971 481 50 222
email: info@scottbader.ae

Scott Bader Asia Pacific
Shanghai
China
Tel: +86 (21) 5298 7778
Fax: +86 (21) 5298 8889
email: info@scottbader.cn

Satyen Scott Bader Pvt. Ltd
Mumbai
India
Tel: +91 22 4220 1555
Fax: +91 22 2491 1262
email: info@satyenpolymers.com

NovaScott Especialidades Químicas Ltda
Civit II, Serra, ES 29165-973
Brazil
Tel: +55 27 3298-1100
email: info@novascott.com.br

We pioneer the future of chemistry, making a positive difference to all businesses we serve and each life we touch.

For more information on Scott Bader products, visit our website

www.scottbader.com

All information correct at time of printing.