

**ABOUT CLOSED
MOULD PROCESSING**

Increasing commercial and environmental pressures are driving manufacturers to adopt alternative processing techniques to open moulding. The main drivers are :

- **Reduced VOC Emissions**
- **Improved Product Consistency and Quality**
- **Lighter and Stronger Components**
- **Reduced Labour Costs**
- **Improved Productivity**



Princess 32m Boat Hull Infusion

Princess Yachts International Case Study

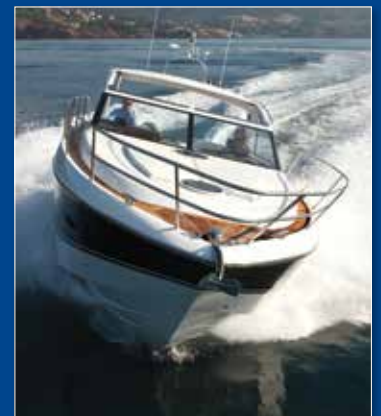
// Since the launch of our first 31-footer in 1965, Princess Yachts have been quietly rewriting the rules of luxury cruising. From our legendary Flybridge range and thrilling V-class sport yachts, to our luxury long-range Motor Yachts and ground-breaking M-Class superyachts.

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

Resin	Description	Chemical Type	Application
Crestapol 1210	Tough, low viscosity non-accelerated resin with rapid cure and rapid demould	Urethane Acrylate	RTM, RTM Light, Vacuum Infusion
Crestapol 1210A	Tough, low viscosity amine pre-accelerated resin with rapid cure and rapid demould	Urethane Acrylate	RTM, RTM Light, Vacuum Infusion
Crestapol 1212	Tough, low viscosity, fire retardant urethane acrylate closed mould resin with rapid cure (this resin has very high fire, smoke and toxic fume performance)	Urethane Acrylate	Vacuum Infusion
Crestapol 1230	High temperature performance (HDT 240 °C) tough resin with good strength	Urethane Acrylate	RTM, Vacuum Infusion
Crestapol 1234	Very high temperature performance (HDT >300 °C) tough resin with good strength	Urethane Acrylate	RTM, Vacuum Infusion
Crestapol 1250LV	Tough resin designed for use with carbon fibre	Urethane Acrylate	RTM, Vacuum Infusion
Crystic VE671-03	Chemical resistant, non-accelerated, non-thixotropic epoxy bisphenol A vinylester with Lloyds approval	Vinylester	Vacuum Infusion
Crystic VE676-03	Chemical resistant bisphenol A epoxy based vinylester resin with Lloyds approval	Vinylester	Vacuum Infusion
Crystic VE679-03PA	DCPD-modified vinylester with Lloyds approval	Vinylester	Vacuum Infusion
701PA	Lloyds approved isophthalic resin for vacuum injection with a 60 - 100 minute geltime	Isophthalic	Vacuum Infusion
702PA	Lloyds approved orthophthalic resin for vacuum injection processes with a 40 - 100 minute geltime	Orthophthalic	Vacuum Infusion
703PA	Lloyds approved DCPD resin for vacuum injection with a 60-120 minute geltime	DCPD	Vacuum Infusion
781PALV	Orthophthalic closed mould resin with a 6 minute geltime	Orthophthalic	RTM, RTM Light
782PA	A high HDT RTM resin with a geltime of 12 minutes	Orthophthalic	RTM, RTM Light
783PA	Isophthalic closed mould resin with a geltime of 14 minutes	Isophthalic	RTM, RTM Light
784PA	Orthophthalic filled resin for RTM and RTM light with a geltime of 6 minutes	Orthophthalic	RTM, RTM Light
785PA	DCPD RTM resin with a geltime of 10 minutes	DCPD	RTM, RTM Light
5008ST	Orthophthalic resin for use in closed mould with a geltime of 6 minutes at 40°C	Orthophthalic	RTM, RTM Light, Vacuum Infusion
U904LVK	Orthophthalic resin for RTM and RTM light with a geltime of 20 minutes	Orthophthalic	RTM, RTM Light
U1007TPA	Filled fire retardant DCPD resin designed with a geltime of 17 minutes	DCPD	RTM, RTM Light

Discovery Yachts

// 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.

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Nigel Stuart, M.D. – Discovery Yachts



Discovery 57 yacht, manufactured using Crystic Permabright gelcoat

*Discovery 57
hull core fitting*



*Discovery 57
vacuum infusion
resin manifold*



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