

Crystic® Permabright High Performance D-Iso/NPG Polyester Gelcoat

Advanced polymer technology gelcoat with exceptional colour stability

Crystic Permabright - 2 times better colour stability than next best in class Iso/NPG* - 4 times better colour stability than a standard Isophthalic Gelcoat*

A dE of 1.0 is the smallest colour difference the human eye can see, so after 12 months in intense sunlight in Florida, the colour change of Crystic Permabright is difficult to detect.

This means, products manufactured using Crystic Permabright Gelcoat can maintain their show room look and condition for longer.

Crystic Permabright Technology

Polyester Gelcoats will change colour when exposed to UV and this process is accelerated in hotter climates such as Florida. White and off-white gelcoats will turn yellow which is not aesthetically pleasing. So, in 2006 Scott Bader initiated a strategic gelcoat development project at its global R&D facility located in its Wollaston manufacturing site in the UK. The business identified the need for a superior gelcoat that could withstand harmful UV environmental conditions while delivering **vastly improved gloss retention and colour stability results**. The project's goal was to design a new gelcoat that would meet these needs leading to a step change in market performance. To achieve this objective the Scott Bader team of chemists utilised more than 50 years of experience producing world class unsaturated polyester gelcoats to introduce a new D-Iso/NPG polymer base **specifically designed to combat colour change**. The excellent gloss retention and colour preservation results from QUV & Xenon testing and 12 months of Florida exposure proves Crystic Permabright is one of the most significant developments the composites industry has seen for many years.



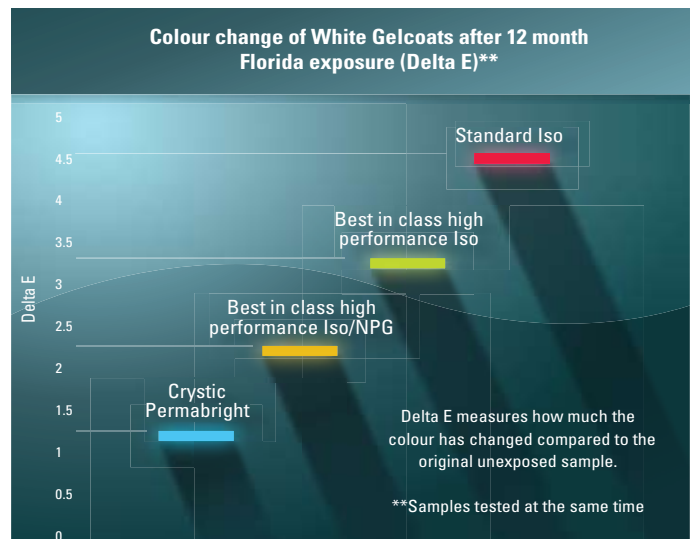
Princess 78 Motor yacht

Markets

- ✓ MARINE
- ✓ BUILDING
- ✓ TRANSPORT
- ✓ INDUSTRIAL
- ✓ APPLICATIONS WHERE EXTERIOR DURABILITY IS CRITICAL

Technical Benefits of Crystic Permabright

- D-Iso/NPG polymer technology **designed to combat colour change**
- Excellent weathering performance measured by very low colour change and high gloss retention
- Can be used under the water line as the water uptake is very low and has high resistance to osmotic blistering when used as part of a marine grade system proven in a rigorous 12 month test
- Handling is comparable to an Iso/NPG based gelcoat with similar back up times
- The gelcoat base resin uses novel unsaturated polyester technology unique to Scott Bader
- Easy to repair
- Low porosity finish
- Low styrene content
- Available in white, off-white and light cream shades



*Calculated using dE values from a 12 month Florida weathering test

Facts About Marine Gelcoats

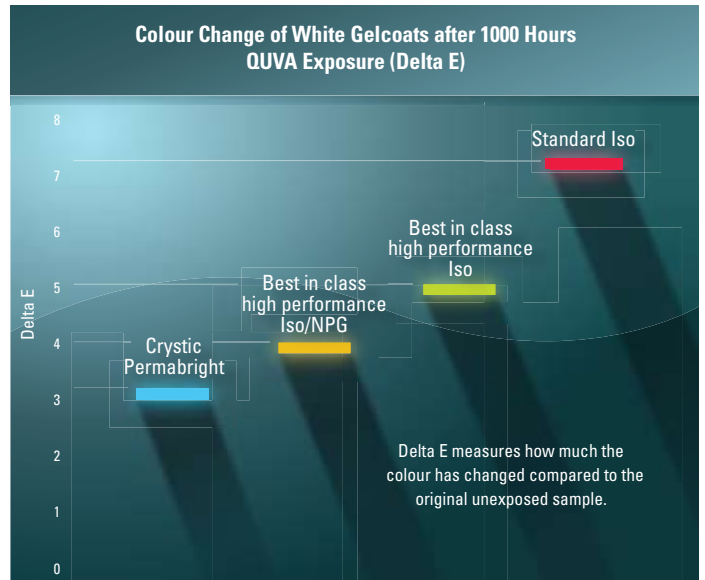
Gelcoats used for the marine industry have to be durable and resist the effects of sunlight and moisture. Sunlight and harmful ultraviolet (UV) radiation have a destructive effect on unsaturated polyester resins leading to loss of gloss and colour change. Moisture penetration into the gelcoat is just as harmful with blistering and delamination from the glass reinforced unsaturated polyester composite. Over the years incremental improvements to the UV resistance has been made but gelcoats currently on the market still exhibit noticeable colour change when exposed to sunlight. Crystic Permabright has been developed to show very little colour change over time and is indeed a step-change technology for the industry.



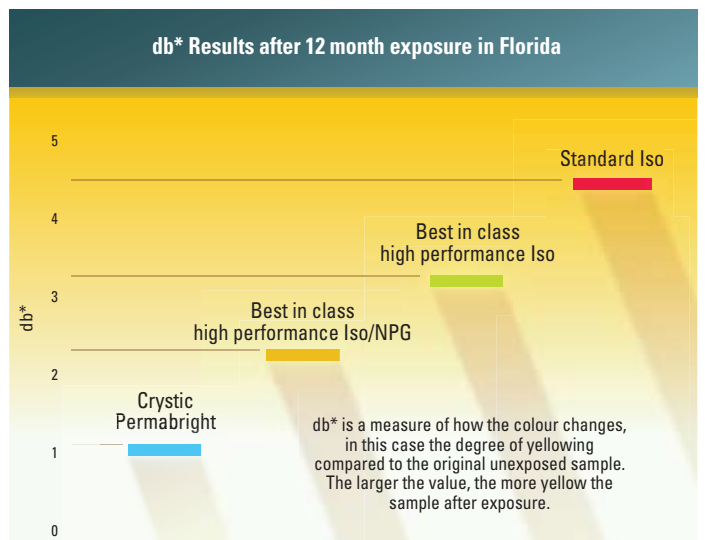
PANELS IN FLORIDA - Extreme natural exposure conditions accelerate product weathering, two to three times faster than normal locations.



Circular gelcoat panels used for 12 month blistering test in de-ionised water.



This is an accelerated weathering test which can be used as an indication of performance.



Properties	Typical Result Brush	Typical Result Spray
Viscosity, 25°C 0.6s ⁻¹	350 – 450 poise	230 - 280 poise
Viscosity, 25°C 4500s ⁻¹	12 – 18 poise	2.3 - 2.5 poise
Specific Gravity at 25°C	1.2	1.2
Stability at 20°C	3 months	3 months
Geltime 25°C 2% Butanox M50 (or other equivalent catalyst)	6 – 10 minutes	6 – 10 minutes

Mechanical Properties	Method	Typical Value Brush	Typical Value Spray
Barcol Hardness (Model 934-1)	EN 59	46	48
Heat Deflection Temperature	BS EN ISO 75-2 (1996)	53°C	68°C
Water Absorption 24 hours at 23°C	BS EN ISO 62 part 6.2	9.4 mg	6.3 mg
Tensile Strength	BS EN ISO 527- 2	58 MPa	61 MPa
Elongation at Break	BS EN ISO 527- 2	3.3 %	2.7 %
Flexural Strength	BS EN ISO 178	103 MPa	97 MPa
Flexural Modulus	BS EN ISO 178	2980 MPa	3490 MPa