



WE THINK
INNOVATION

Crystic® Application Success Stories



Global Manufacturers of Crystic® Resins, Gelcoats and
Adhesives for Composites Applications

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Automotive

MOTORCYCLE COMPONENTS MANUFACTURED BY ARIANETECH INGENIERÍA, S.L. USING CRYSTIC® GELCOAT 253PA AND CRESTAPOL® 1250LV

Company Profile - ArianeTech Ingeniería, S.L.

LOCATION : BARCELONA, SPAIN

ArianeTech was first established in 2004 and today it is a leading engineering services company within the automotive, motorcycle and rail industries, specialising in the design and prototyping of motorcycles and scooters for a variety of high profile customers including Yamaha, Derbi and Rieju.

More recently ArianeTech produced the bikes for the Spanish Championship (Moto 3 and Moto 2).



Crystic® Gelcoats and Crestapo® Application

Crystic® Gelcoat 253PA and Crestapol® 1250LV

The parts were produced by Karbonius and the plugs and tools were manufactured by Skillful, LDA with a Rapid Tooling System.



Benefits/Advantages

- ✓ Exceptional strength and durability
- ✓ Lightweight
- ✓ Excellent bond to carbon or glass
- ✓ High temperature resistance
- ✓ Superb surface finish
- ✓ Rapid cycle times
- ✓ Simple one stage cure profile

Customer Quote

“

We appreciate the quality of laminates made by infusion with Crestapol® 1250LV, especially when it comes to the favourable mechanical properties. After several falls during the race tests, the parts made out of Crestapol® 1250LV did not break. Previously equivalent parts were made by hand from glass/polyester which meant that they were heavier and as a result broke easily during the same race tests. In addition to the exceptional strength and durability of Crestapol® 1250LV, we also like the transparency of the parts which are made with the clear Gelcoat Crystic® 253PA.

Juanma Navarro (General Manager)

”

CITROËN DS3 BODY PANELS MANUFACTURED WITH CRESTAPOL® 1250LV URETHANE ACRYLATE RESIN BY GALWAY CARBON

Company Profile - Galway Carbon

LOCATION : ORANMORE, IRELAND

- Galway Carbon, based in Oranmore on the West Coast of Ireland is seen as a leader in innovative, Advanced Composite fabrications for the motorsport industry.
- Experience with many applications and production methods, materials and processes.
- Leaders in new composite applications and technologies.



Crestapol® Application

Crestapol® 1250LV

11 new composite body panels for the Citroën DS3 were vacuum infused using Scott Bader's high performance Crestapol® 1250LV urethane acrylate resin reinforced with carbon fibre and Kevlar fabrics.

Ability to infuse and cure at room temperature.

Available in multiple pack sizes.

- Product Features
- Excellent bond to carbon or glass
 - Quick cycle times
 - High temperature resistance
 - Ultra low water absorption
 - Room temperature cure
 - Simple one stage cure profile
 - Lightweight
 - Superb surface finish



Benefits/Advantages

- ✓ Reduced weight of certain parts by up to 89% by reducing or eliminating the use of steel
- ✓ Replaced traditional GRP parts with new Crestapol® 1250LV and Carbon-Kevlar, significantly improving stiffness and reducing weight by 50%
- ✓ Faster processability than rival epoxy products
- ✓ No need to post cure – rapid cycle times and superb surface finish
- ✓ Exceptional strength and durability

Customer Quote

“ There are several reasons why we chose Crestapol® 1250LV. The resin's mechanical performance is exceptional, combining the strength and durability needed to reliably cope with harsh rally car racing conditions; being a Scott Bader product we have a high level of confidence in its quality. From the processing side, it is extremely good for vacuum infusion, with very rapid cycle times at room temperature which is way ahead of any comparative epoxies, and the surface finish is excellent. The final reason is that overall Crestapol® has proved to be more cost effective than any epoxy resin we have ever used as we don't need to do any oven curing.”

Galway Carbon.

CUSTOM CAR BODY PARTS MANUFACTURED BY KARBONIUS COMPOSITES USING CRESTAPOL® 1250LV AND CRESTABOND® M1 STRUCTURAL ADHESIVES RANGE

Company Profile - Karbonius Composites

LOCATION : LA CORUÑA, SPAIN

Karbonius Composites is a leading rally car custom body parts fabricator located in Spain, with over 8 years' experience in composites.

Karbonius specialises in the design, manufacturing and repairing of all types of carbon fibre parts, carbon and Kevlar, as well as some fibreglass.



Crestapol® and Crestabond® Application

Crestapol® 1250LV and Crestabond® M1 Structural Adhesives Range

Carbon and glass fibre reinforced body panels and bumpers, vacuum infused using Crestapol® 1250LV. Crestapol 1250LV is the specified laminate resin due to its toughness, rapid flow and low temperature cure for fast infusion cycle times, plus its compatibility with both carbon and Aramid fibres, as well as glass fibres.

Crestabond® M1 structural adhesive grade is also used to bond a variety of metal and composite parts on the car, including the carbon fibre Crestapol body panels.

Pigmented Crystic® gelcoats are also used on the super car's composite body panels.



Tauro V8 Spider (Manufactured using Crestapol® 1250LV and Crestabond® M1 Structural Adhesive Range)

Benefits/Advantages

CRESTAPOL® 1250LV

- ✓ Exceptional strength and durability
- ✓ Faster processability than rival epoxy products
- ✓ No need to post cure the parts, resulting in rapid cycle times
- ✓ Superb surface finish
- ✓ Excellent flow and fibre impregnation

CRESTABOND® M1 STRUCTURAL ADHESIVES RANGE

- ✓ Improved, more flexible assembly production
- ✓ Accurate adhesive application
- ✓ Minimal surface preparation
- ✓ Reduced assembly times
- ✓ Excellent surface finish

Customer Quote

“ Scott Bader products and especially Crestapol® 1250LV resin used in our Tauro V8 Spider widely outperform our expectations to a level that we have dismissed the possibility of producing our body panels using Carbon prepreg.

Pedro Santos, CEO, Tauro

”

SUZUKI S1600 RALLY CHAMPIONSHIP CAR MANUFACTURED WITH CRESTAPOL® 1250LV RESIN AND CRYSTIC® 97PA GELCOAT

Company Profile - Karbonius Composites

LOCATION : SPAIN

Karbonius is a Spanish composite part manufacturer renowned for innovative Carbon-Aramid, moulding, processing and design of high quality composite parts. Specialising in the automotive sector for high end performance vehicles, Karbonius manufactures bespoke carbon parts for vehicle modifications for a variety of top car manufacturers and after market kits.



Crestapol® Application

Crestapol® 1250LV

- 60% (10.2kg) weight reduction
- Lightweight, tough composite parts for Rally Cars
- Replaced traditional Epoxy parts with new Crestapol 1250LV and Carbon-Aramid, significantly improving stiffness, performance and reliability
- Crestapol 1250LV and Crystic Gelcoat 97PA give exceptional surface finish
- Faster and easier to process than rival Epoxy products
- No need to post cure due to rapid cycle times
- Exceptional strength and durability
- 2 layers of twill Aramid, 1 layer of glass Silicone



Benefits/Advantages

- ✓ Excellent bond to Carbon, Aramid or Glass
- ✓ Rapid cycle times
- ✓ High temperature resistance
- ✓ Ultra low water absorption
- ✓ Room temperature cure
- ✓ Simple one stage cure profile
- ✓ No hardeners required
- ✓ Lightweight
- ✓ Superb surface finish

Customer Quote

“

“It is a fabulous resin, saving us 40% (8kg) in weight on the bumpers alone. The parts have lasted 7 races so far, with epoxy resins lasting only 1 race.

The resin is easy to infuse, cures quickly and its properties are unbeatable. This is without a doubt the best resin I have used.”

Karbonius

”

"INTRADO" CAR MANUFACTURED BY FAR-UK LTD USING CRESTAPOL® 1250LV RESIN AND CRESTABOND® M1-20 STRUCTURAL ADHESIVE

Company Profile- Far-UK Ltd

LOCATION : NOTTINGHAM, UK

Far is an innovative company offering a revolutionary approach to the design and manufacturing of lightweight structural composite components.

The company is based in Nottingham, bringing together the combined industry expertise of engineering, manufacturing and materials to create a design team with future manufacturing capabilities and training packages for those organisations with a desire to enter the composites industry, either directly or in partnership with their existing customers and suppliers.

The employees of Far have a strong automotive background and bring that experience to both automotive customers as well as other industries where cost effective and lightweight solutions are important. Far offers its services in the design and conceptualisation of new products and services, specialising in low carbon emission vehicles. The business offers its clients a range of services; from day rate contracting on specific projects or manufacturing of specific components, through to a full service proposition.

For example, in the full service, Far will design the key structural elements of carbon fibre vehicles, build and validate the prototypes for the client and then offer the on-going supply of structural elements or transfer the key technologies and knowledge so that the customers can build their own vehicles.

This may include the production of small runs of vehicles for road testing and publicity purposes, as well as the design of factories for clients to initiate their own production. Far is also working with a range of non-automotive customers where the core skills the company possess can offer real added value to those customers.

Crestapol® and Crestabond® Application

Crestapol® 1250LV and Crestabond® M1-20 Structural Adhesive

- The resin system is used in either vacuum infusion or resin transfer moulding processes.
- The adhesive is used to make structural joints at nodal points of the space frame chassis.



Benefits/Advantages

Crestapol® 1250LV

- ✓ Exceptional strength and durability
- ✓ Lightweight
- ✓ Rapid cycle times
- ✓ High temperature resistance
- ✓ Ultra low water absorption
- ✓ Room temperature cure
- ✓ Single one stage cure profile
- ✓ Superb surface finish

Crestabond® M1-20

- ✓ Improved, more flexible assembly production
- ✓ Accurate adhesive application
- ✓ Minimal surface preparation
- ✓ Out performs other adhesive technologies
- ✓ Avoids material selection error
- ✓ Reduced assembly times
- ✓ Superb surface finish

Customer Quote

“Scott Bader and Axon Automotive have worked together for more than 4 years on applications of the Crestapol® 1250LV resin and Crestabond® M1-20 adhesives. We are extremely pleased by both the technical excellence of the products and the support given by Scott Bader. The inherent fast cure characteristics allow the potential for high volume production of these components.”

Far-UK

CRESTABOND® M1-05 & CRESTOMER® ADVANTAGE 30 INCREASE PRODUCTION OF CLEAN MOTION CARS

Company Profile - Clean Motion AB

LOCATION : TROLLHATTAN, SWEDEN

- Clean Motion has developed the **next generation** of Zbee electric vehicles which generate **no noise** or **local pollution**.
- These small energy efficient vehicles are **ultra light** and have powerful electric motors to ensure **fast acceleration** and reach **exceptional efficiency** and driving economy.
- The Zbee's **compact size** makes it agile in traffic and **easy to park** as up to three can fit in a traditional single parking space.
- Weight 230Kg, energy consumption 4KWh/100Km, range 50Km and maximum speed 45Km/h.
- Clean Motion's core values are **Lean, Clean** and **Safe**.

Clean Motion is a new company focused on small vehicles. This project was only started in 2010-2011 to meet the **transportation needs** of the **21st century**. Demand is rapidly increasing for this type of vehicle and there are **new projects** planned for **2014**.



Adhesive Application

Crestabond® M1-05 & Crestomer® Advantage 30

From the **beginning** of the project, Crestabond® M1-05 and Crestomer® Advantage 30 adhesives have been used in production with the subcontractors.

- Application
- Using **Crestabond® M1-05** and **Crestomer® Advantage 30** to bond **FRP** (Fibre Reinforced Plastic).
 - Assembly **process designed** from the start of the project with Crestabond® and Crestomer® in mind.
 - Cartridge application with manual and pneumatic guns for **greater production flexibility** and **accuracy**.

- Advantages
- **Speed of production** maximised through use of Crestabond® and Crestomer® Advantage 30.
 - **Very strong bonded joints** without the use of mechanical fixings.
 - Production flow improved as **minimal surface preparation** needed prior to bonding.
 - Outstanding product performance with **high elongation** and **toughness** leading to high **impact strength** which are important for these types of applications.



Benefits/Advantages

- ✓ Speed of production capitalised through minimal surface preparation
- ✓ Production time saved through precise adhesive selections best suited to application
- ✓ Excellent product quality and performance
- ✓ High elongation, toughness and impact strength while remaining light weight
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“By using Crestabond® M1-05 and Crestomer® Advantage 30 cartridges, we get both **outstanding performance** and **shorter lead times**. These products enable us to **save time** and **speed up production times** as **minimal surface preparation** is needed prior to bonding.

As the production is **rapidly increasing** in the coming years for this type of vehicle, it's **important** we are using a product which **meets all parameters** for quality and efficiency. Budget for 2014 is about 300-350 vehicles with **new projects** in Asia.”

Niclas Johansson, Co-Owner Kompositmontering AB & Sub-contractor to Clean Motion AB.

”



Land Transport

CARBON FIBRE PARTS FOR AMBULANCES MANUFACTURED BY FAIBER USING CRYSTIC CRESTAPOL® 1250LV

Company Profile: FAIBER

LOCATION : SKENE, SWEDEN

FAIBER originally began operations in 1981 in Kinnahult, manufacturing items ranging from motorcycle fairings and bodies, to buggy cars. This soon developed into subcontract production for Swedish industrial companies and in the late 1980s, Faiber had its own production plant built in Skene.

Today, the premises have been extended and adapted to FAIBER'S needs, enabling the manufacturing of a large number of different components, from car fenders, boat hulls and advanced enclosures for prototypes, through to slides and ambulance body parts.



Crystic® Crestapol Resin

Crestapol® 1250LV

FAIBER only uses closed methods and RTM Light/ Vacuum Infusion for production due to high environmental values. Crestapol® 1250LV was chosen as an alternative to epoxy resin for the manufacture of their carbon fibre ambulance structures. This Scott Bader urethane acrylate resin technology is processed via an RTM/ infusion process and allows FAIBER to shorten cycle times and avoid elevated temperature post cure in the production of their high performance carbon composite products.

In addition to these benefits, the compatibility between Crestapol®1250LV and polyester based systems opens up a range of high performance Iso-NPG gelcoats which were previously off limit to FAIBER.



Benefits/ Advantages

- ✓ Faster process ability
- ✓ Room temperature cure and no need for post cure, resulting in rapid cycle times
- ✓ Easy to use standard gelcoats
- ✓ Exceptional strength and durability
- ✓ Excellent flow and permeability with carbon fibre technology
- ✓ Weight reduction
- ✓ Excellent surface finish

Customer Quote

“ Scott Bader has been a supplier to us for more than 20 years and we have always found them to offer high quality products and a high quality service. Finding the new Crestapol® 1250LV product has enabled us to replace the epoxy we have been using in some of our products, which in turn has reduced the process time significantly. Scott Bader with its unique structure with commonwealth ownership, excellent products and its focus on innovation, gives us full long-term confidence where both the product and supplier relationship is concerned.

Susanne Svedberg, General Manager

”



STORAGE SOLUTIONS FOR THE EMERGENCY VEHICLE INDUSTRY USING CRESTABOND® M1 STRUCTURAL ADHESIVES RANGE

Company Profile - Slide and Tilt Ltd

LOCATION : SHROPSHIRE, UK

Incorporated in 2010, Slide and Tilt Ltd provide storage solutions to the emergency vehicle industry.

Products are designed with three key principles in mind; ease of use and reliability for the end user, ease of fitting and control for the vehicle builder, and repetitive quality in manufacture. These key principles have resulted in Slide and Tilt Ltd working with Scott Bader and its high performing adhesives range, which both works with aluminium and provides exceptional strength.



Crestabond® Application

Crestabond® M1 Structural Adhesives Range

We wanted to bring a more complete solution to the market and the main problem was assembly.

We know we have a great sellable product, but we needed a way to manufacture cleanly.

We were therefore recommended Scott Bader via Aalco, who already uses Crystic Crestabond®. We had samples and our trial results were better than we could have anticipated.

As a result, we proceeded to use Crestabond® M1-04 for the assembly of Slide and Tilt drawers which are used for fire engines.



Benefits/Advantages

- ✓ Clean
- ✓ Easy to use
- ✓ Incredibly strong
- ✓ Gives our products a clean, professional look
- ✓ Drawers tested with a minimum 500kg load
- ✓ Previously the drawer was assembled using 20+ screws
- ✓ Eliminates the need to mark out and drill screw holes
- ✓ Weight saving
- ✓ Labour saving

Customer Quote

“

With this being a new product for us, the support we received from the Adhesives Sales Development Manager at Scott Bader was invaluable. We were shown how to use the adhesive and the best working methods.

Our Scott Bader representative even came to our potential customer to put their mind at rest and to demonstrate what the adhesive can do. This particular customer of ours have since placed a big order with us!

Kevin Taylor, Director

”



CRYSTIC CRESTABOND® M1-05 STRUCTURAL ADHESIVE SPECIFIED FOR A VARIETY OF DAIMLER TRUCKS HGV APPLICATIONS

Company Profile - Freightliner Trucks

LOCATION : NORTH AMERICA

Freightliner Trucks is the largest business division of Daimler Trucks in North America (Daimler Trucks is part of the Daimler AG Group of manufacturing companies). The company produces medium and heavy duty trucks for a broad range of commercial applications at its production plants in the United States and Mexico.



Freightliner Cascadia™ truck on the road

Crystic Crestabond® Application

Crystic Crestabond® M1-05 Structural Adhesive

Within Daimler Trucks, Crestabond® M1-05 primer less methacrylate structural adhesive is now specified for a variety of HGV applications. This includes M1-05 being used to bond ABS to ABS and ABS to aluminium components together as part of the assembly process used to fabricate the sleeping bunk in the driver's cab of Freightliner Trucks in North America.

The bonding of these ABS and aluminium bunk parts with Crestabond® M1-05 is carried out by a local subcontract thermoforming specialist, which supplies assembled bunks to the Freightliner Trucks Saltillo assembly plant in Mexico, where the bunks are installed on the truck cabin production line.



** All photos courtesy of Freightliner Trucks. Copyright Daimler. All rights reserved. Freightliner Trucks is a division of Daimler Trucks North America LLC, a Daimler company.

Benefits/Advantages

- ✓ Clean
- ✓ Easy to use
- ✓ Labour saving
- ✓ Gives products a clean, professional look
- ✓ Eliminates the need to mark out and drill screw holes
- ✓ Weight saving
- ✓ Incredibly strong

AGRICULTURAL VEHICLE PARTS MANUFACTURED USING CRYSTIC® GELCOATS LS 97PA AND LS 65PA

Company Profile - LAST sro

LOCATION : TECOVICE, CZECH REPUBLIC

LAST was originally created following the privatisation of a small composite workshop in 1991. Today, LAST produces vehicle parts for BOVA buses and Nissan pick-up trucks to name a few, as well as producing equipment for kindergartens, such as playground slides etc.



Crystic® Gelcoats LS 97PA and LS 65PA Application

Crystic® Gelcoats LS 97PA and LS 65PA

LAST uses Scott Bader Crystic® Gelcoats LS 97PA and LS 65PA in a variety of colours, as well as Crystic® Gelcoat 42PA, Bonding Pastes (BP 90-80) and products from the Crystic Crestabond® M1 range of structural adhesives. They have more recently successfully tested Crystic® 2.446 for LAST production processes, but are looking for a suitable resin with longer curing times after gel time.



Benefits/Advantages

- ✓ Leading global manufacturer of adhesives, resins and gelcoats for the composites industry
- ✓ Excellent customer service
- ✓ High quality products
- ✓ Competitive pricing
- ✓ Over 60 years of technical expertise
- ✓ R&D facilities
- ✓ Global manufacturing locations

Customer Quote

“

LAST decided to use Scott Bader's Crystic® Gelcoat LS 97PA due to the combination of its technological suitability, the excellent customer service received and competitive pricing.

One particular project has resulted in LAST deciding to use (and subsequently place orders for) the Scott Bader red colour 5373 - a LAST specification - for the production of large harvester parts within the Russian market. LAST has been producing these parts since 2011 and there is strict requirement for colour accuracy, because the Harvester fairing is assembled using thermoplastic and composite parts in the same colour. In summary, Scott Bader has won this business due to the technical compatibility, excellent customer service and competitive pricing.

General Manager, LAST

”

SOLOMON COMMERCIAL REMAINS COOL AS PRODUCTION SPEEDS UP WITH CRESTABOND®

Company Profile - Solomon Commercial

LOCATION : LANCASHIRE, UK

- **Leading manufacturer** of **temperature control vehicle** conversions since 1976.
- Solomon manufacture **bespoke refrigerated bodies** in six factories, over three manufacturing sites onto lorry chassis and trucks converting distribution rigids, multi drop delivery vehicles, home delivery vehicles, drawbar and trailer bodies.
- **Customer specialisation** to exact requirements for temperature controlled bodywork including multi-temperature solutions, fixed/moving partitions, shelving designs, door closure and entry locations, temperature monitoring equipment, etc.
- Previously vehicle body panels were assembled using a combination of mechanical fixing with rivets and bonding with a PU adhesive. They have now switched to using just Crestabond, an MMA (methyl methacrylate) structural adhesive and are **confident** with this assembly method and **long term performance** in use.



Crestabond Application

Crestabond® M1-30

Crestabond adhesives are used in the production of bespoke temperature control bodies. The versatility of this product has **reduced assembly times** allowing production capacity to be increased without the need for investment in more space and manpower.

- Application
- Using **Crestabond M1-30** to bond **aluminium** profiles to **GRP** panels.
 - Unique bulk dispensing unit allows for **freedom of movement** on the vehicles whilst offering material cost savings.
 - Product can be supplied in small pack sizes for use with **pneumatic applicators**.
- Advantages
- Quick and easy to apply with vastly reduced material waste.
 - **Primer-less** adhesive requiring minimal surface preparation.
 - Elimination of traditional mechanical fixings, saves time, money, and **improves overall aesthetics**.
 - **Cure time** of adhesive tailored to production process.
 - True structural adhesive with **unique patented formula**, offering excellent elongation and long term fatigue resistance.



Benefits/Advantages

- ✓ Greater confidence and trust in product performance
- ✓ Adhesive cure speed fits to manufacturing process times
- ✓ Bulk and cartridges adhesive application with pneumatic guns
- ✓ Production time saving - Faster process from 6 hours to 2 hours, leading to increased output
- ✓ Cost saving through elimination of mechanical fixings
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“ Solomon Commercial does whatever it takes to provide **high quality** temperature control vehicles and if that means investing time and money then we do so **to remain the market leader**. Scott Bader has become an important **key supplier** to us. This is down to all the technical help we received to significantly increase shop floor productivity **very cost effectively**, as well as reliably supplying high quality products. They worked closely with the Solomon Operations team to ensure a smooth introduction of the Crestabond adhesive into our production process. Overall, we feel we have backed a winning horse to help us stay **ahead of our competition** and to achieve key business goals. ”

Michael Solomon, Director.

LEADING BUS BODY MANUFACTURER, BUSMARK 2000 GROUP REDESIGN WITH CRESTABOND® FOR IMPROVED PRODUCT QUALITY, EFFICIENCY & REDUCED WEIGHT

Company Profile - Busmark 2000 Group

LOCATION : SOUTH AFRICA

- **Leading bus body builder, repairer and parts supplier** in South Africa employing **over 500 staff**.
- Founded in **1973**, it has the following four business units;
 - **Busmark 2000**: Marketing new and used buses including CAIO and Busaf.
 - **Cadcor**: Bus body manufacturer.
 - **Busmex**: Repairs and refurbishments.
 - **CAIO Buses Africa**: Bus bodywork in CKD and FBU plus coach imports.
- Cadcor and Busmex mould a wide range of **GRP interior and exterior bus parts** (front and rear domes, body panels, ceiling sections, flooring, locker boxes, parcel shelves and window frames).
- Some of their OEM customer base includes: HINO Trucks SA, ISUZU Trucks SA, Iveco, MAN Truck & Bus, VW, Mercedes Benz SA, UD Trucks SA, Scania, VDL Bus & Coach and Volvo SA.

For many years, **Scott Bader Pty** has been a **key raw material supplier** to Busmark. They have combined forces to redesign composite parts to enable the use of **structural adhesives** and take advantage of their performance capabilities by creating a **more cost effective** fabrication method.



Crestabond® Application

Crestabond® M1-20

In order to improve product efficiency, Crestabond® was successfully trialled for a number of **fibreglass and metal bonding applications**. They were looking for a product that would suit their shop floor working environment, eliminate the need for mechanical fixings and ultimately **increase production output**.

- Application
- Using **Crestabond® M1-20** to bond **GRP to mild steel and stainless steel**.
 - Assembly process was redesigned away from the use of mechanical fixings and adjusted to incorporate Crestabond.
 - 400ml cartridges applied with manual and pneumatic guns for **more accurate adhesive application** and allows **production process flexibility**.
 - GRP front/rear domes and exterior side panels for Mercedes Benz buses.
- Properties
- **Excellent bond strengths** achieved with **minimal surface preparation** of GRP and stainless steel.
 - **Elongation properties** of structural bonds, gives excellent long term **fatigue and impact resistance**.
 - Longer working times of M1-20 suits several **different application requirements**.



Benefits/Advantages

- ✓ Improved and more flexible assembly production process resulting in reduced product weight
- ✓ Over 15% productivity savings through reduced assembly times
- ✓ Minimal surface preparation needed to achieve excellent bond strengths
- ✓ Accurate adhesive application with manual and pneumatic guns
- ✓ Avoids material selection error risk with having just one adhesive and increases productivity
- ✓ Technology developed and fully supported by Scott Bader
- ✓ Proven to out perform other adhesive technologies

Customer Quote

“ Scott Bader’s product offering, reliable **quality** and **customer support** has contributed enormously to the **technical advances** Busmark 2000 has made in the production and repair of bus body parts. This is evident in the noticeable **improvements** in our product **quality, production efficiency and throughput times**. Scott Bader’s hand-on, practical customer support and expert advice has helped Busmark 2000 to confidently implement more advanced composite manufacturing methods, such as bonding, which has **contributed** to our **leading position** in the Southern African bus market today. ”

Hannes Pienaar, Resident Engineer, Busmark 2000.

BL SEARLE REPLACE FASTENERS WITH CRESTABOND® TO SPEED UP PRODUCTION & IMPROVE AESTHETICS

Company Profile - BL Searle Ltd

LOCATION : Bedfordshire, UK

- Established commercial vehicle body manufacturer since the mid **1970s**, BL Searle **build** and **repair** commercial vehicle bodies, truck bodies, specialist and bespoke vehicle bodies for a range of markets.
- These commercial vehicle bodies are produced for a range of customers **all over the country**, ranging from large national companies with extensive fleets, and Council and Government departments to small businesses with one or two employees.
- BL Searle is a **family owned** and run business with workshops in **Gamlingay**, near Sandy, dedicated to achieving **high quality** end products. They specialise in high quality conversions with superb attention to detail to produce a vehicle to meet and **exceed customer specifications**.
- BL Seale previously used **mechanical fasteners** and a single part **MS Polymer sealant/adhesive** in combination to assemble vehicles, but now prefer Crestabond, a MMA (methyl methacrylate).



Crestabond® Application

Crestabond® M7-15, M1-05 & M1-20

Crestabond® adhesives are now used in the production areas to produce GRP Boxes and Toolboxes. The versatility of this product has **reduced assembly times** and enabled BL Searle to produce **light weight** structures with **better aesthetic appeal**.

- Application
- Using **Crestabond® M7-15** to bond **Aluminium** faced Aalco panels to **Zinc** coated frame.
 - Using **Crestabond® M1-05** to bond **Aluminium** cappings to the **Aluminium** Aalco panels around the toolbox assembly.
 - Also using **Crestabond® M1-05** and **Crestabond® M1-20** to bond **Aluminium** and **Stainless Steel** to **GRP Body Panels**. These are aluminium captive corner pillars, captive cant rail, rub rail and side raves as well as the stainless steel rear frames to the GRP panels.
 - Crestabond® is applied with **manual** and **pneumatic** applicator guns straight from **400ml cartridges**.

- Advantages
- Increased throughput** of finished parts due to faster cure times than MS Polymer and mechanical fasteners.
 - Primer-less technology meaning no need for primers and abrasion to **bond dissimilar substrates** – Minimal surface preparation.
 - Labour saving** and reduction of potential water **ingress points** as no drilling of cappings or panels.
 - Different working and cure times of **adhesives suited** to different sized parts within the assembly process.
 - Elimination** of 220+ mechanical **fastener** heads on the vehicle body leading to great **aesthetic appeal** of finished part.



Benefits/Advantages

- ✓ Adhesive cure speed matched to manufacturing process & part size
- ✓ Production time reduced and increased throughput of finished parts due to faster cure times
- ✓ Able to bond dissimilar substrates – Primer-less Technology
- ✓ Reduced labour (drilling) through elimination of 220+ mechanical fasteners to improve aesthetic appearance
- ✓ Lighter weight structure produced compared to previous assembly
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“ BL Searle produce a **high quality** product and are open to using **new technology** to provide a better looking vehicle to our customers whilst retaining this high quality specification. By using Crestabond adhesives we have not only **saved time** and **money** but we believe our vehicles are **aesthetically more pleasing** with the reduction/elimination of mechanical fasteners giving nice clean lines to our bodywork. With Scott Baders technical support and assistance we have now introduced **Crestabond®** as the **adhesive of choice** in the assembly of our vehicles. ”

Stephen Searle, Director.

CRESTABOND® M1-20 COMPLETELY ELIMINATES NEED FOR COSTLY RE-WORK FOR GLOBAL COMPOSITES (PTY) LTD

Company Profile - Global Composites (Pty) Ltd

LOCATION : Pietermaritzburg, South Africa

- Formed in 1999.
- Responsible for the **entire production process**, from concept design to series production.
- Design, manufacture and assemble **fibre-reinforced plastic** components.
- Employ **over 200 people** highly knowledgeable in the composite industry.
- Worked on many projects from Bell Equipment **vehicle cabs** to **high performance composite trailers** for Eskom.

A **strong working relationship** has been established with **Scott Bader** over the years. **Rudi Coetzee**, Global Composites' Director has told us that he is **very pleased** with Scott Bader's supply and **support service**.

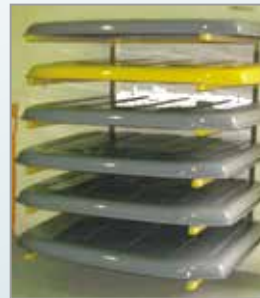


Crestabond® Application

Crestabond® M1-20

Global Composites is a key **supplier of components** for drivers' cabs for **Bell Equipment**. The **GRP components** are all produced in **RTM light** closed mould process.

- Application
- Using **Crestabond® M1-20** to bond **GRP to GRP** and **GRP to Powder Coated Metal**.
 - Minimal surface preparation** needed. Simply de-grease substrate to achieve a strong bond.
 - Ability to select the **best cure speed** for production.
- Properties
- Unique patented formulation.
 - When cured, Crestabond provides a **hard, smooth and clean surface**.
 - Good finish critical when 'show edges' need to be perfect **eliminating re-work** after a paint application.
 - No pin holes** created during the curing process whereas competitive adhesives needed costly repairs to remove.
 - Used to **fill gaps of various thicknesses** and even on thicker sections, a hard, smooth surface is achieved.



Benefits/Advantages

- ✓ Primer-less system – No abrasion
- ✓ Works on a range of metals, thermo-plastics or composites
- ✓ Excellent fatigue and impact resistance
- ✓ Short fixing times, reduced labour times
- ✓ Good gap filling capability
- ✓ Improved quality production output - Less need for extra pre-work prior to paint

Customer Quote

“ **Unlike similar competitive products** that we have tried, Crestabond® can be used to **fill gaps** of varying thicknesses around finished edges without the cured adhesives having air bubbles and pin holes due to excessive heating during the curing process... This has **completely eliminated** the need for **costly re-work**. Because of this, the guys in the paint shop **love Crestabond...**! ”

Rudi Coetzee, Global Composites' Director.

VIP CHAIR FOR CHINA HIGH SPEED TRAIN MANUFACTURED BY SHANGHAI CEDAR COMPOSITES CO. LTD USING CRESTAPOL® 1212

Company Profile - Shanghai Cedar Composites Co. Ltd

LOCATION : SHANGHAI, CHINA

Established in 2006 Shanghai Cedar Composites Technology Co. (Cedar), designs, develops and manufactures composite products for sports leisure, medical equipment and transportation industries.



Crestapol® Application

Crestapol® 1212

Application: VIP chair for China High Speed Train
FR Standard: German DIN 5510, S4/SR2/ST2
ATH Loading: 100 Parts ON904
Producing Process: Vacuum Assistant RTM
Mould Structure: The structure of this chair is very complex, separating into 3 pieces and using several mould insert blocks



Benefits/Advantages

- ✓ Excellent low smoke, low toxicity fire performance
- ✓ Meets the highest fire standards globally, achieving M1/F0, HL2,S4/SR2/ST2
- ✓ Extremely low viscosity
- ✓ Ideally suited to vacuum infusion as well as selective RTM systems
- ✓ Works with many reinforcement options from traditional glass, to Kevlar and Carbon
- ✓ Represents the highest grade of fire resistant systems for the transport, construction and rail industries

Customer Quote

“

“We are very satisfied with Crestapol® 1212 because the product can be used in Closed Mould processing, with a short cure time which gives us an overall faster cycle time.

We have tried DSM 9001 FR resin (UPR resin modified by MMA) for these RTM parts before, but they had poor mechanical properties, cracked easily and had a slower cycle time. Crestapol® 1212 resin however, is very tough, even with high ATH filler loading levels and still has very good mechanical properties.”

Shanghai Cedar Composites Co. Ltd

”

CAF EUROPE TRAIN PRODUCTS MANUFACTURED BY DONGGUAN COUNTRY BUSINESS PLASTIC HARDWARE COMPANY

Company Profile - Dongguan Country Business Plastic Hardware Company

LOCATION : HONG KONG, CHINA

Dongguan Country Business Plastic Hardware Company (Country Business Limited) was founded in 2001 and today specialises in providing professional services from rapid prototyping and product development, to manufacturing.

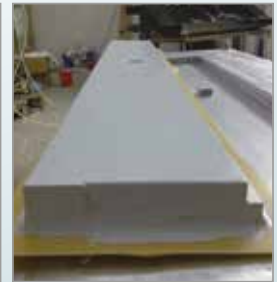
With its 15,000 square meter factory located in China, Country Business is able to meet the needs of its customers from around the world, in a variety of industries including automotive and railway.



Crystic Crestapol® Application

Crestapol® 1212

Application: Carrier cover board for CAF Europe train
FR Standard: French NFP 92-501 M1 F2
ATH Loading: 170 Parts ON904
Producing Process: Vacuum Assistant LRTM



Benefits/Advantages

- ✓ Excellent low smoke, low toxicity fire performance
- ✓ Meets the highest fire standards globally, achieving M1/F0, HL2,S4/SR2/ST2
- ✓ Extremely low viscosity
- ✓ Ideally suited to vacuum infusion as well as selective RTM systems
- ✓ Works with many reinforcement options from traditional glass, to Kevlar and Carbon
- ✓ Represents the highest grade of fire resistant systems for the transport, construction and rail industries

Customer Quote

“

“One of the reasons we chose to use Crestapol® 1212 is because it can be used for closed mould with gelcoats to achieve EN 45545 HL2, whereas other company resin systems are only suitable for HLU. Our workers are also happy to work with Crestapol® 1212 filled by 170 phr ATH, as it is possible to achieve FST, which removes the need to use phenolic in the plant. We also chose to work with Scott Bader and Crestapol® 1212 because the FRP parts made by 1212 can be easily repaired, compared to phenolic which makes it impossible to repair parts with!”

Mr.Lai, owner of Country Business

”



Marine

MULTI-PURPOSE COMPOSITE MARINE CRAFT MANUFACTURED BY CTRUK BOATS LTD USING CRYSTIC CRESTOMER® 1152PA

Company Profile - CTruk Boats Ltd

LOCATION : BRIGHTLINGSEA, ESSEX, UK

CTruk Boats Ltd designs and builds multi-purpose composite marine craft used as workboats for offshore wind farm support, as well as customised vessels for military, security, disaster relief and commercial applications.

Established in 2010, the company has a clear business mission to provide safe, fast and highly flexible working vessels by taking an innovative design approach. The company's patented modular pod system, initially created to meet the complex requirements of offshore wind support work, is a key example of CTruk's innovative design approach to problem solving. The unique 'moveable' FRP deck pods enable an operator to change the vessel's functionality in just a few hours.



Crystic Crestomer® Application

Crystic Crestomer® 1152PA

To further reduce weight, increase productivity and cut labour costs, CTruk uses a structural adhesive where possible for FRP-FRP joint bonding in its designs. Scott Bader's Crystic Crestomer® 1152PA (DNV approved) urethane acrylate structural adhesive has therefore been specified by CTruk for all composite marine craft, for structurally bonding hull stringers and bulkheads, transom sections, engine beds, deck sections and for hull to deck joints.

The main deck beam, in spite of it being a high impact area, is joined only using Crystic Crestomer® 1152PA structural adhesive, as well as some of the hull and deckhouse structural flange connections.



Benefits/Advantages

- ✓ Excellent adhesive properties when bonding FRP to FRP
- ✓ Increased speed of production through excluding mechanical fixing, leading to increased output
- ✓ Helps keep the structure as light as possible without sacrificing strength
- ✓ Product meets stringent offshore vessel standards (DNV approved)
- ✓ Reduction in labour costs due to increased speed of production, without compromising on quality
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“As we manufacture vessels to full marine classification, the company must use materials that have gone through rigorous type-approvals. The CTruk design team only specifies proven products that are known to meet DNV and BV requirements with reliable and consistent results. Crestomer® 1152 is one such product, giving the advantages of high-elongation, toughness and impact resistance at an economical cost.”

Jim Cutts, Director of Engineering
CTruk Boats Ltd

MARINE CRAFT CONSTRUCTION USING CRESTAPOL® 1250LV HIGH PERFORMANCE RESIN AND CRYSTIC CRESTOMER® STRUCTURAL ADHESIVE

Company Profile - Hell's Bay Boatworks

LOCATION : TITUSVILLE, FLORIDA (USA)

Hell's Bay Boatworks (www.hellsbayboatworks.com) has been designing and building the world's finest shallow water skiffs since 1998. The company prides itself in being the leader in innovation when it comes to shallow water fishing boats.



Crestapol® and Crystic Crestomer® Application

Crestapol® 1250LV High Performance Resin and Crystic Crestomer® Structural Adhesive

Crestapol® 1250LV was used in conjunction with carbon innegra and glass to infuse a hull, deck and bulkheads. Crestomer® Structural Adhesive was used to bond bulkhead panels without having to tab them in with glass. It was also used to bond the deck to the hull.



Benefits/Advantages

CRESTAPOL® 1250LV

- ✓ Exceptional strength and durability
- ✓ Weight reduction
- ✓ Faster processability than rival epoxy products
- ✓ No need to post cure the parts, resulting in rapid cycle times
- ✓ Superb surface finish
- ✓ Excellent flow and fiber impregnation

CRYSTIC CRESTOMER® STRUCTURAL ADHESIVES RANGE

- ✓ Improved, more flexible assembly production
- ✓ Accurate adhesive application
- ✓ Minimal surface preparation
- ✓ Reduced assembly times
- ✓ Compatibility with Gelcoat and Awl grip
- ✓ Excellent surface finish

Customer Quote

“

Scott Bader provided the technical support for Hell's Bay Boatworks to be confident enough to try these innovative products to build a custom, super strong and light weight poling skiff for a very high profile customer. Crestapol® and Crestomer® helped to achieve an approximate 20% reduction in weight to a similarly produced skiff that used conventional laminates and resins.

Chris Peterson (owner)

”

2012 OLYMPIC SECURITY & RESCUE BOATS MANUFACTURED BY RIBCRAFT USING CRESTABOND® M1-30

Company Profile - Ribcraft

LOCATION : Yeovil, UK

- **Design and manufacture** 150 custom **rigid inflatable boats** a year to achieve **£4 million** annual global turnover, while employing **38 people**.
- Dynamic company started in the hobby and leisure sector, now **expanding** into professional marine security sector, police and private patrolling companies.
- For the **2012 Olympic Games**, Ribcraft successfully produced **64 security boats** for the outdoor water sports events within a tight schedule after winning tender from 28 other companies worldwide.
- Started building security boats in November 2010 and **finished** in June 2011 **on time** while still satisfying existing customers.



Crestabond® Application

Crestabond® M1-30

Conventional hand layup method changed to accommodate the **limited production space** and **labour** available. New production method enabled **10 boats** to be batched and **built together**.

- Application
- Using **Crestabond® M1-30** to bond **GRP to GRP**.
 - Three preformed layers bonded together without **mechanical fixings**.
 - **Bulk dispensing equipment** used for large quantities of adhesive for **accurate application** of adhesive.
 - **Less space needed** to build new boat design increasing production capacity to 10 boats at a time.
- Properties
- **Two component acrylic adhesive** demonstrating good impact, high tensile, peel, shear, compressive strength and fatigue resistance.
 - **Maximised bond performance** through use of bulk dispensing machine for **accurate mixing**.
 - Cost savings through bulk adhesive usage and **reduced wastage**.
 - Minimal surface cleaning of substrate as **primer-less** adhesive.



Benefits/Advantages

- ✓ Speed and cost saving helped to win Olympic tender to build security boats
- ✓ Boats bonded without mechanical fixings
- ✓ High tensile strength and speed of use selected for application
- ✓ More efficient manufacturing process to increase production capacity in limited space and with limited labour
- ✓ Bulk dispenser used to reduce wastage and guarantee accurate mixing ratio obtained
- ✓ Primerless adhesive manufactured by Scott Bader

Customer Quote

“ For the Olympic boats we used a different manufacturing process which meant we had to **structurally bond** together three preformed sections and it was vital that the mixed adhesive **performed extremely well** because that's all that is holding them together. I realised early on that the adhesive is only as good as the quality of mixing and Liquid Control gave us the precision and technical support we needed and with the added benefit that we were able to **save money** by **reducing resin wastage** because of the accuracy of the Liquid Control equipment, which also enabled us to control the adhesive placement precisely **ensuring optimum adhesive strength!** ”

Mark Gardiner, Ribcraft Founder.

SCHAT-HARDING LIFEBOAT BONDED WITH CRYSTIC CRESTOMER® 1152PA WITHSTANDS IMPACT AFTER FREEFALLING 65.1 METRES

Company Profile: Schat-Harding Equipment AS

Location : Rosendal, Norway

- **Global market leader** in marine life saving systems and offers the **largest worldwide service network** in the industry.
- Design, manufacture and service a **wide range of products** to enable the safe evacuation of crews, passengers and offshore workers. These include innovative lifeboats, davits, winches and rescue boats.
- Schat-Harding Equipment AS' head office is in **Norway** and has production facilities in **Europe, Asia and USA**.
- Operating in **13 different countries**, there are 25 offices and more than 60 stations to form a service network while employing **more than 800 employees**.

Schat Harding set a **freefalling lifeboat record** with their **FF1200 boat** that successfully dropped from a height of **65.1 metres** as part of their boat certification tests. The FF1200 was specifically designed to facilitate the evacuation of rigs and installations in heavy seas and comply to **new more stringent standards**.

The nose had to **withstand** the full **force** on impact and then was fully **submerged** to a depth of over **10 metres** before resurfacing.

As offshore installations get larger, there is a greater need for the ability to drop safely and without any structural damage from greater heights.



Adhesive Application

Crystic Crestomer® 1152PA

Crystic Crestomer® 1152PA adhesive was used for bonding stringers, bulkheads in the hull, canopies and bonding innerliners together with the hull.

- Application
- Using **Crestomer® 1152PA** to bond **GRP to GRP**.
 - Applied to **stringers, bulkheads, innerliners and canopies**.
 - Adhesive applied by **bulk dispenser**.

- Advantages
- **Excellent adhesion** between GRP and GRP.
 - Tough enough to withstand not only the **rough offshore conditions** but also the massive impact that freefalling boats are exposed to when falling from high heights.
 - **Production speed** can be increased without sacrificing quality needed to meet high standards set by the offshore industry.
 - **Cure time** of adhesive **tailored** to production process.
 - Improved **working environment** through bulk application of adhesive.
 - Improved **impact strength** while keeping structure as light as possible.



Benefits/Advantages

- ✓ Greater confidence and trust in product and supplier performance
- ✓ Excellent adhesive properties when bonding GRP to GRP
- ✓ Product maintains high impact strength. This enables it to withstand the tough conditions that they are exposed to
- ✓ Helps keep the structure as light as possible without sacrificing strength
- ✓ Increased speed of production through excluding mechanical fixing thus leading to increased output
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“

“The Crestomer® range gives us opportunities to **increase** our **speed** of production and at the same time keeping the **quality** of our lifeboats to the **highest standards** set by the offshore industry.

Scott Bader and its unique structure with commonwealth ownership, **excellent products** and their focus on innovation gives us **full confidence** in both product and **supplier relationship**.”

Arvid Skogseide, Factory Manager.

”

YACHT HULL PRODUCED USING CRYSTIC® MATCHED TOOLING SYSTEM

Company Profile: HACO

LOCATION: EL HAOUARIA, TUNISIA

HACO shipyard, located near the Cap Bon in the very North of Tunisia, is part of the Gonser Group. They produce the 40' Akilaria racing yachts in addition to other performance sailing yachts. The shipyard demonstrates expertise when it comes to the infusion process, both for sandwich structures and monolithic.

HACO works with glass and carbon fiber and uses both epoxy and Vinyl Ester resins.



Crystic® Application

Matched Tooling System

HACO has an excellent reputation for its knowledge of the production of large tools, having recently delivered a large number of moulds to be used in Europe. After using alternative products in the past, Haco chose to use the Scott Bader Crystic® Matched Tooling System due to the excellent gloss retention of Crystic® Gelcoat 15PA, the absence of print through, ease of use and competitive pricing.



Benefits/Advantages

- ✓ Easy to apply Crystic® Vinyl Ester Gelcoat 15PA (brush or spray)
- ✓ Excellent gloss retention
- ✓ High temperature resistance
- ✓ Prevention of fibre print through using Crystic® 679PA Vinyl Ester Skincoat
- ✓ Pre-accelerated, low profile, rapid tooling resin (Crystic® RTR 4000PA) offering good handling properties and rapid cure, catalysed with MEKP

Customer Quote

“

“The Scott Bader Crystic® Matched Tooling System was chosen due to the quality of the moulds we wanted to produce. The three components are easy to use, require no repair, prevent lost time and all products work according to the application guide, which is a big advantage. The skin coat is also very efficient and the tools are excellent, with absolutely no print through”

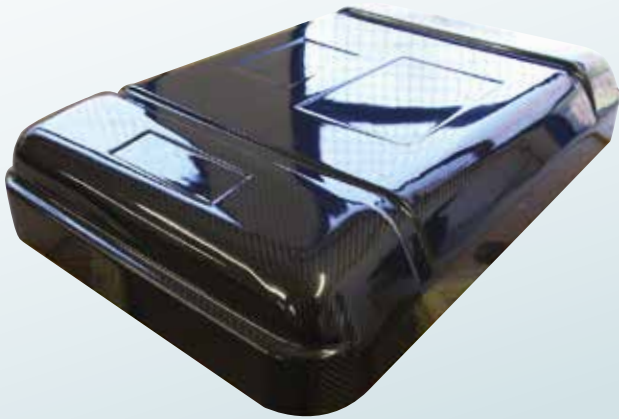
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CARBON FIBRE / KEVLAR LIFE RAFT HOLDERS MANUFACTURED BY HI-SPEC COMPOSITES USING GC 252PA EPOXY BONDING GELCOAT

Company Profile - Hi-Spec Composites

LOCATION : SOUTH SHIELDS TYNE & WEAR, UK

Hi Spec Composites have been in business for over 45 years specialising in the design and manufacture of life raft holders for the marine and leisure industries.



Crystic® Gelcoats Application

GC 252PA Epoxy Bonding Gelcoat

GC 252PA Epoxy Bonding Gelcoat is used for high performance life raft holders made in an infusion process from Carbon fibre/ Kevlar and epoxy resin.

They previously infused the life raft holders in-house after which they then sent them to an external company to be coated in a 2-component UV stable lacquer. This process was costly and time consuming.

GC 252PA however allowed them to create finished parts straight from the mould, eliminating cost and saving time.



Benefits/Advantages

- ✓ Excellent surface finish vs lacquer
- ✓ Reduction in process steps leading to lower costs
- ✓ Better control of production process, leading to better product quality
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“

The use of GC 252PA in production of our high strength life raft holders, has allowed us to save significant process time which has helped to reduce our costs. It has allowed us to produce a more consistent product with a superb surface finish. It is an excellent product and has exceeded our requirements.

Gary Bates Managing director –
Hi Spec Composites & East Coast Fibreglass supplies.

”



Building & Construction

CRESTABOND® SHUTS THE DOOR ON SLOW PRODUCTION TIMES FOR NEW WORLD DOORS LTD

Company Profile - New World Doors

LOCATION : Ballymena, Northern Ireland

- **Leading manufacturer** of exterior and interior UPVC and GRP composite domestic doors.
- Produce a range of doors including their new **all-GRP** Apeer 70 (double rebate, high security door) and Apeer 44 (flush fit alternative to the Diamond range).
- Door skins are bonded to each side of the frame and PU foam is injected into the core.

New World supply to trade companies and have a large number of distributors approved to fit and supply their products. They have a **well established** customer base in **Ireland** and **UK** and now they are looking into their sales growth in Europe and USA.

New World Doors has worked with Scott Bader, investing time and engineering resources into Crystic Crestabond® to **determine** what **benefits** and **savings** could be made.

A two part polyurethane (PU) adhesive was previously used, which needed **45 minutes** before it could be moved onto the next production stage meaning a **long production time** cycle which has now been **significantly reduced**.



Crestabond® Application

Crestabond® M1-05

Now used on 85% of all New World range doors, Crestabond® M1-05 has been phased in since mid 2011. It is specified for the key inner sash frame and door skin structural bonding applications **eliminating any distortion** once installed.

- Application
- Using Crestabond® **M1-05** to bond **GRP** door skins to **pultruded GRP** or **UPVC** door inner frames
 - GRP or UPVC cut to size profiles to create the rectangular inner sash frame of the door **reducing scrap levels**.
 - **Minimal surface preparation** needed – Pultruded sections are simply abraded and solvent wiped.
 - Automated 10:1 **dispensing machine** used with 20 litre pails **increases speed** of adhesive application.
 - **Cartridges** used for smaller, more **intricate bonding** applications involving 4mm profiles.

- Properties
- Significantly **faster fixture times** selected to increase production, from 16 to 12 minutes for bonding and assembly stages.
 - **Cycle time reduced** by **73%** for UPVC inner sash doors.
 - **One adhesive** for use on all **substrates**.
 - **Faster** and **better application control** of small adhesive beads when using cartridges in a pneumatic gun achieve **less wastage**.



Benefits/Advantages

- ✓ Entire door designed with same material which eliminates distortion once installed
- ✓ 25% faster cycle times in the bonding and assembly stages
- ✓ No compromise on build quality
- ✓ Better application control of small quantities so less wastage and faster use
- ✓ Major productivity gains and overall lower production costs
- ✓ Tougher, more reliable than PU and other MMA previously used for this application
- ✓ Technology developed and owned by Scott Bader

Customer Quote

“ With Crestabond® **M1-05**, due to its significantly **faster fixture time** we have made significant **productivity gains** in our door production. The overall cost benefit analysis is commercially very attractive for the business relative to the price of Crestabond. **Product quality** has definitely **improved**, particularly during colder periods, as Crestabond has proved to be a **tougher, more reliable** and consistent adhesive, which gives few breakages and scrap loss compared with other MMA and polyurethane adhesives previously used for this application. ”

Asa McGillian, Managing Director, New World Limited

LIGHTWEIGHT EN APPROVED SSC COMPOSITE MANHOLE AND DRAIN COVERS MANUFACTURED USING CRESTAPOL® ACRYLIC RTM RESIN

Company Profile - SSC Limited

LOCATION : BARROW IN FURNESS, UK

Established since 2005, SSC Ltd has extensive knowledge and expertise in designing, manufacturing and supplying high quality composite manhole cover solutions for underground access. All SSC composite manhole covers are independently tested to fully validate that both the product design and all fabricated products supplied to an installer meet the BS EN124:1994 standards specified for a specific application.

The durable, long term performance properties of SSC composite access covers, alongside the significant benefits of easy installation and in-situ opening and closing due to being so light, has gained SSC orders across the UK, and internationally with a rapidly growing export business.



Crestapol® Acrylic RTM Resin Application

“Custom Grade” Crestapol® RTM Acrylic Resin

The full RTM closed moulding process and tooling used by SSC is well-suited for high volume production of 100 to 10,000 units per annum.

By combining its unique Thrubeam® technology with a ‘custom grade’ Crestapol® resin specially developed for SSC by Scott Bader, SSC is able to produce GRP composite covers which are more than 20% lighter than other composite covers currently available, based on independent test data.

This has been achieved due to the high mechanical properties of the Crestapol® resin, along with more precision and control through using an RTM injection process. In other words, a thinner, so overall much lighter, Crestapol glass fibre laminate is needed to encapsulate the Thrubeam® stiffener beams used in all SSC covers, with no loss of performance in use.



Benefits/Advantages

- ✓ Exceptional strength
- ✓ Incredibly lightweight
- ✓ Rapid cure
- ✓ Low viscosity resin
- ✓ Fully compatible with polyester pigment pastes
- ✓ Compatible with Crystic® Gelcoats, as well as Crestomer® and Crestabond® adhesives

Customer Quote

“ After extensive new product development trials and testing different UPR and epoxy resin systems, we were very pleased that Scott Bader was able to develop a special grade of its Crestapol® high performance acrylic resin for SSC that met all our needs. The custom Crestapol® grade we now use firstly provides a level of physical properties to match our Thrubeam® technology and meet BS EN124 test standards. Secondly, the resin’s rheology and very fast cure rate at moderately elevated temperatures enables us to manufacture our composite covers consistently, and with a high level of confidence that parts will meet our quality standards. ”

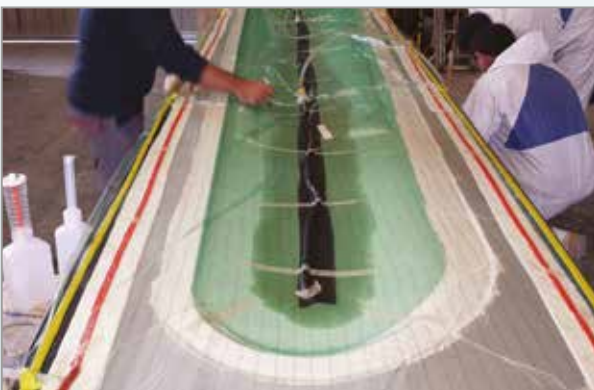
Andrew Burton, General Manager of SSC

WIND TURBINE BLADE MAINTENANCE BY IM FUTURE USING CRYSTIC® RAPID TOOLING SYSTEM

Company Profile - IM FUTURE

LOCATION : NOIA (A CORUÑA, GALICIA), SPAIN

IM Future has more than 15 years' experience in the maintenance, operation and management of wind farms where they carry out preventative and corrective maintenance, exchange, as well as repairs to wind turbine components.



Benefits/Advantages

Crestapol® 1250 LV was selected among other resins due to:

- ✓ Exceptional strength and durability
- ✓ Faster processability than rival epoxy products, with lead times of less than 48 hours
- ✓ No need to post cure the parts resulting in rapid cycle times
- ✓ Superb surface finish
- ✓ Excellent flow and fibre impregnation
- ✓ Crestapol® 1250LV is more cost effective than epoxies previously used by IM FUTURE

Application of Crystic® Products

Crystic® Rapid Tooling System

The following Rapid Tooling System products were used;

- Crestabond® M1 and M7
- Filler X401
- Crystic® 15PA
- Crystic® 679PA
- Crystic® RTR 4000PA Excel

Epoxy resins were also used and supplied by Resinas Castro.



Customer Quote

“Blade repairs are generally urgent issues which need to be solved quickly and so short lead times are essential in most cases, ensuring a prompt rotor restart and therefore avoiding energy production losses. Scott Bader's products enable us to carry out such repairs within the required short lead times.

IM FUTURE also aims to meet its customers' demands for repair systems which involve products suitable for both in-house and out in the field applications. It is therefore very important for us to have readily available stock and this is possible thanks to the excellent service provided by Resinas Castro.

Blade refurbishing means, in some cases, the need for tools which are suitable for the rapid production of new parts. Resinas Castro in conjunction with its sister company Skillful, LDA and the high quality products supplied by Scott Bader, has helped IM FUTURE with this important process.

Skillful has previously been able to scan a blade tip while out in the field, while obtaining the 3D files by reverse engineering and producing the CNC foam tip plugs. IM FUTURE was then able to produce the polyester/glass tools using the Scott Bader Rapid Tooling System, supplied by Resinas Castro – this is an example of the successful collaboration between Scott Bader, Skillful, Resinas Castro and IM Future.

IM FUTURE

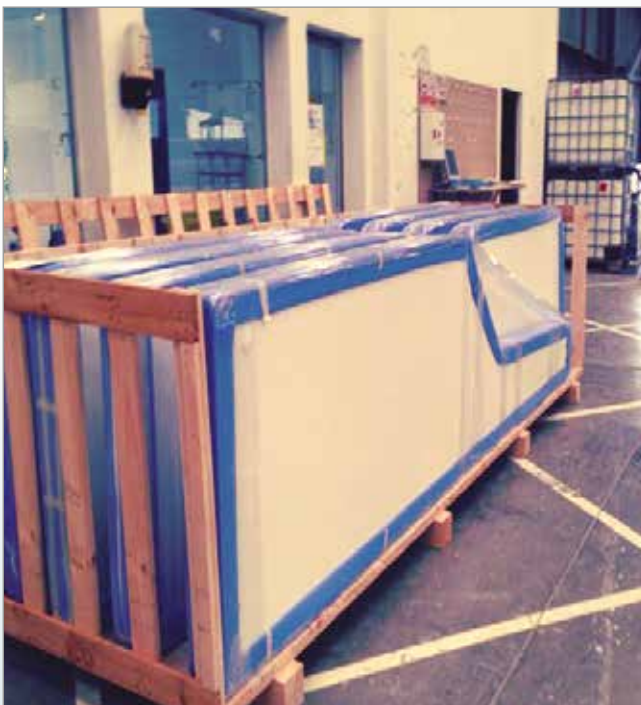


BBVA HEADQUARTERS SAVES ENERGY USING CRESTAPOL® 1212 AND CRYSTIC® FIREGUARD 75PA (IMS)

Company Profile: Innova Composite

LOCATION : SPAIN

Innova Composite is a leading Spanish composite parts manufacturer with a long established track record in supplying custom designed composite parts for construction infrastructure projects, as well as to other sectors including naval, aviation, automotive, rail and wind energy.



Crystic® Crestapol & Fireguard Application

Crestapol® 1212 and Crystic® FIREGUARD 75PA (IMS)

To meet the required UNE-EN 13501-1 fire standard for the building, the composite panels were vacuum infused using Scott Bader's matched fire retardant laminate system, comprising of Crestapol® 1212 high performance urethane acrylate resin with intumescent in-mould spray Crystic® FIREGUARD 75PA (IMS) EXCEL fire protection gelcoat.



Benefits/ Advantages

- ✓ Rapid moulding due to the very fast ambient temperature cure rate of Crestapol® infusion resin
- ✓ Productivity gains from being able to spray the gelcoat
- ✓ Faster processing times helped Innova to be competitively priced overall
- ✓ Excellent low smoke and toxicity fire performance
- ✓ Represents the highest grade of fire resistance systems for construction, transport and rail industries
- ✓ Extremely low viscosity

Customer Quote

“ We had excellent technical support from Scott Bader in both materials selection of the intumescent FR gelcoat with Crestapol® 1212 resin and with help to optimise our infusion process at the high ATH filler level to achieve the EN 13501-1 FR specification to the requested B-s2 d0 level at a competitive part price.”

Mr. Carles Gil, Technical Director for Innova Composite

”

PAJARES TUNNEL PROJECT MANUFACTURED USING CRESTAPOL® 1212

Company Profile: TECNIPUL

LOCATION : BARCELONA, SPAIN

For over 15 years, TECNIPUL has specialised in the making of GRP (Glass Reinforced Plastic) profiles, specifically using the pultrusion manufacturing process.

TECNIPUL has maintained a steady growth over the years and today, TECNIPUL has 15 production lines dedicated to producing pultruded profiles, totalling a combined surface area of 5,000m².



Crystic® Crestapol Resin

Crestapol® 1212

The Pajares corrugated tunnel plates (810cm wide) are made using pultrusion, with Crestapol® 1212 and 170pph ATH.

Crestapol® 1212 was selected because it achieves Bs2d0 (standard EN 13501), but also due to its inherent low water uptake. Crestapol® 1212's low water uptake is essential for this particular project, as TECNIPUL had previously experienced significant water permeation with their tunnels. Using Crestapol® 1212 has enabled the effective recovery of the water which previously leaked into the tunnels.



Benefits/ Advantages

- ✓ Represents the highest grade of fire resistant systems for the construction industry
- ✓ Meets the highest fire standards globally, achieving M1/ F0, HL2, S4/ SR2/ ST2
- ✓ Low water uptake due to the urethane acrylate technology
- ✓ Easy to use in the pultrusion process as a highly filled resin
- ✓ Extremely low viscosity

Customer Quote

“ Ever since we started working on the TECNIPUL project, we have worked very closely with Scott Bader. We have developed a fantastic partnership with Scott Bader for many years now and we are always confident that Scott Bader can provide us with the required technical support, expertise, advice and of course products which offer the necessary mechanical and FST properties.

Overall, we consider Scott Bader to be an excellent partner for high tech composites projects.

Mr. Lluís Muxi, General Manager, TECNIPUL

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POLYPROJECT ENVIRONMENT AB USES CRYSTIC® RANGE TO MANUFACTURE ENVIRONMENTALLY FRIENDLY TECHNOLOGY

Company Profile: Polyproject Environment AB

LOCATION : NORRKÖPING, SWEDEN

Polyproject was founded in 1967 and has worked continually to develop technology and products which meet market demands. This has resulted in Polyproject becoming one of Scandinavia's leading environmental technology companies, offering smarter solutions for a cleaner environment.

Polyproject specialises in manufacturing products for aggressive chemicals, water, gas and air. They offer everything, from products produced from initial drawings, to turnkey installations, where they are required to take full responsibility for the entire process. Polyproject manufactures equipment and commissions the plant.

The company itself is divided into four departments: Systems, Components, Production, and aftermarket.



Crystic® Range Application

POLYESTER RESINS: Crystic® 2-446 PALV/MPALV
Crystic® 489PA, Crystic® 397PA

VINYLESTER: Crystic® 676/1TP

GELCOATS: Crystic® LS 97 PA, Crystic® 64PA

BONDING PASTES: Crystic® 90-82PA
Crystic® 90-85PA

ADHESIVES: Crestabond® M1-20



Benefits/ Advantages

- ✓ High level of customer service
- ✓ Complete product range
- ✓ High performance Crystic® products resulting in quality excellence
- ✓ Vinylester suitable for all conventional techniques
- ✓ Easy to use vinyl ester due to pre-accelerated and thixotropic properties
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“

Our customers are top industrial manufacturers and power plants, who each have very high quality demands, which means we only use high quality raw materials. For us, lead time is an important factor and Scott Bader has always been able to deliver high quality products at the right price and on time.

Daniel Bergsten, CEO

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TECNIUM USES CRYSTIC® VE676T TO MANUFACTURE CORROSIVE CHEMICAL TANKS AND CONTAINERS

Company Profile: Tecnum – Casals Cardona Ind.

LOCATION : MANRESA, BARCELONA, SPAIN

Tecnum specialises in the manufacture of equipment for corrosive chemicals, in addition to facilities for scrubber.

The company started in 1957 with the aim of implementing projects and buildings that meet the needs and expectations of its customers in terms of reliability, competitiveness and quality. This is done through experience and by successfully meeting the most demanding international standards.

Tecnum production plants are located in Manresa and today the company has a production area of 15,000 m² spread across 3 buildings and an office measuring 1,200 m².



Crystic® VE676T Application

Crystic® VE676T

Crystic® VE676T was chosen by Tecnum to produce tanks which can hold up to 200.000l of corrosive chemicals. As they apply the resin by filament winding and hand lamination, it was really important to have a thixotropic version to ensure successful application.



Benefits/ Advantages

- ✓ Competitive price
- ✓ Technology developed and fully supported by Scott Bader
- ✓ Long-term relationship and trust has been built with Scott Bader
- ✓ High level of customer service

Customer Quote

“

I have worked with Scott Bader for a long time now. As a supplier, Scott Bader always provides me with quick answers to my technical requests. I have been using Crystic® 489PABTLV for many years and have experienced excellent results. Crystic® VE676 was originally tried, but being a non-thixotropic resin, it was a problem for us. As soon as you developed the thixotropic version of this product, we tested it and began to use it immediately.

Tecnum

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ARAPOL 2000 S.L. USES CRYSTIC® 199 TO MANUFACTURE LARGE VOLUME WATER STORAGE TANKS

Company Profile: ARAPOL 2000, S.L.

LOCATION : ZARAGOZA, SPAIN

ARAPOL was founded in 1992 in order to meet the growing demand for existing water tanks in the area.

Due to the changing market needs Arapol slowly began to expand and incorporate other related material, such as the manufacture of speciality products.

Today ARAPOL has facilities covering 1,700m² covered, which is divided into three naves and 1,000 m² of outdoor space.



Crystic® 199 Application

Crystic® 199

Crystic® 199 was chosen by ARAPOL to support their manufacturing of food contact items, specifically potable water.



Benefits/ Advantages

- ✓ Ideal elasticity (a key characteristic required when assembling parts)
- ✓ Good viscosity, ensuring ease of use
- ✓ Excellent behavior of laminates in tensile strength and hardness (Barcol) tests
- ✓ Technology developed and fully supported by Scott Bader
- ✓ Excellent customer service

Customer Quote

“ ARAPOL has full confidence in Scott Bader due to our common approach. Scott Bader is a safe choice, especially when we require certain resin properties to be of a particularly good quality. Scott Bader has been able to provide us with all of the requested certificates - especially the up-to-date resin certificates for food contact, while the ordering and delivery processes were both quick and painless. It means we can work in confidence and with little stress!

Manager, ARAPOL

”



Sports & Leisure

CUSTOM MADE SURFBOARDS MANUFACTURED USING CRESTAPOL® 1250LV HIGH PERFORMANCE ACRYLIC RESIN

Company Profile - PS Surfboards

LOCATION : TYNEMOUTH, UK

Established in 2009, PS Surfboards is a UK based manufacturer of custom made surfboards, with the headquarters based in Tynemouth.



Crestapol® 1250LV Application

Crestapol® 1250LV Resin

Crestapol® 1250LV was used during the laminating of polyurethane foam blanks with fibreglass cloth and Carbon Fibre. To get a good light and tight lamination, the use of vacuum bagging is sometimes adopted.

Crestapol® 1250LV gives the surfboard superb structural rigidity while maintaining an excellent level of impact toughness.



Benefits/Advantages

- ✓ Creates a good cloth to foam bond
- ✓ Low viscosity, which allows for good saturation of the cloths without soaking too far into the foam and adding extra weight
- ✓ Dries without discolouring the blanks
- ✓ Exceptional strength
- ✓ Light weight
- ✓ Rapid cycle times
- ✓ High temperature resistance

Customer Quote

“

I have found the products to be very useful in the process of making surfboards, particularly when it comes to the ease of use, not to mention the consistency experienced despite varying temperatures.

PS Surfboards

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HIGH QUALITY COMPETITIVE SPORTS EQUIPMENT USING CRESTAPOL® 1250LV AND CRYSTIC® MATCHED TOOLING PRODUCTS

Company Profile - Prestol Kompozits Ltd

LOCATION : RIGA, LATVIA

Prestol Kompozits is an ambitious company which produces sports equipment, while also working exclusively on special composite projects. The company's main focus is the production of top quality flat water racing kayaks and canoes, as well as bobsleds. As the company is founded by two former Latvian national team athletes, one of the main objectives is to achieve the Olympic gold medal using Prestol equipment. They have now made a new canoe with a totally new design and after several tests this canoe has now been approved according to the Olympic Rules, valid at Rio De Janeiro 2016. This particular Prestol canoe is 1 out of only 5 canoe suppliers which has been approved.

Recently Sia Prestol has also signed a contract with the Latvian Skeleton National Team for their need for new Skeletons.



Crestapol 1250LV® Application

Crestapol® 1250LV High Performance Resin

Prestol Kompozits has used products supplied by Scott Bader since 2010 for a variety of applications, particularly high quality and competitive sports equipment. The main process Prestol Kompozits uses is vacuum infusion with heat post-curing. Products used include hand laminating resins and gelcoats, Crystic Crestapol® 1250LV high performance acrylic resin (which is used in almost all infusion processes), as well as products from the Crystic® Matched Tooling range for mould and plug preparation.



Benefits/Advantages

- ✓ **Weightsaving.** A typical 7.5 meter, 2-paddle canoe weighs 20kg, but using Crestapol® 1250LV reduces the weight to 18kg
- ✓ **Faster processability** compared to using epoxy
- ✓ **Excellent flow and permeability** of carbon fibres
- ✓ **Exceptional strength and durability** (Crestapol® 1080 is extremely good for impact resistance)
- ✓ **Significant reduction** in the number of overall issues experienced through using standard Crystic® Gelcoat, compared to using epoxy
- ✓ **Using Scott Bader Adhesives** results in improved production processes with a reduction in the total time used while minimal surface preparation is required

Customer Quote

“

“Prestol Kompozits manufactures all top-level competitive sports equipment, including Olympic canoes and bobsleds. Due to the nature of the equipment and its end use, it is for this reason we need to be able to 100% trust the materials we work with in the long term. We believe, from our experience, that Scott Bader's Crystic® Gelcoats are the best in the world and we always manage to get the best colours, with a high quality finish due to the easy polishing and very low shrinkage. Our favourite resin to work with is Crystic Crestapol® 1250 LV, which we have found to be the best material to make competitive sports equipment with. It works perfectly with carbon fibre, structural adhesives and all gelcoats. Scott Bader is our favourite company to work with due to its high quality products, technical expertise and after care service. We are proud to use Scott Bader products in our production processes.”

Oto Dzenis, Prestol Kompozits

”



Sanitaryware

MPI USES SCOTT BADER'S CRYSTIC® TOOLING SYSTEM TO MANUFACTURE SANITARYWARE THROUGH CONCRETE RESIN AND SOLID SURFACE

Company Profile: MPI

LOCATION : BARCHON, BELGIUM

MPI (Mineral Products International) have over 30 years' experience in the design and manufacturing of sanitaryware components, moulded from synthetic stone.

MPI produces high-end bathroom items and has become a European leader in the industry due the quality of its products.

MPI produces components through casting concrete resin with a gelcoat or solid surface and works in partnership with many European hotel chains, hospitals and nursing homes.



Crystic® Tooling System

Crystic® 15PA, Crystic® 679PA, Crystic® RTR 4000PA

The main requirements for Mineral Products International include the need to make high quality moulds which are durable and able to endure the thermal and mechanical shock introduced within a demanding production environment. Scott Bader's tooling system delivers on these exact requirements and it is for this reason that MPI has chosen the Scott Bader tooling system to create its tooling sets.



Benefits/ Advantages

- ✓ Crystic® Gelcoat 15PA is an easy to apply brush or spray vinyl ester gelcoat, offering exceptional gloss retention and a temperature resistance
- ✓ Excellent gloss retention over a long period of time
- ✓ Crystic® 679PA is a vinyl ester skincoat which significantly reduces print through
- ✓ Crystic® RTR 4000PA is a very effective resin, offering anti-shrinkage properties and good wet-out of many types of reinforcement

Customer Quote

“

Our tools are part of our manufacturing strength. We must be able to maintain our tools for a very long time, and so they are often subject to significant constraints such as rapid rotations and difficult thermal cycles.

Scott Bader's Tooling system ensures durability, exceptional gloss retention and low-shrinkage properties, while being easy to apply. It is for these reasons we work with Scott Bader to produce our high quality moulds.

MPI

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POLYPROJECT ENVIRONMENT AB USES CRYSTIC® RANGE TO MANUFACTURE ENVIRONMENTAL MANAGEMENT PRODUCTS

Company Profile: Polyproject Environment AB

LOCATION : NORRKÖPING, SWEDEN

Polyproject was founded in 1967 and has worked continually to develop technology and products which meet market demands. This has resulted in Polyproject becoming one of Scandinavia's leading environmental technology companies, offering smarter solutions for a cleaner environment.

Polyproject specialises in manufacturing products for aggressive chemicals, water, gas and air. They offer everything, from products produced from initial drawings, to turnkey installations, where they are required to take full responsibility for the entire process. Polyproject manufactures equipment and commissions the plant.

The company itself is divided into four departments: systems, components, production, and aftermarket.



Crystic® Range Application

RESIN: Crystic® 2-446 PALV/MPALV
Crystic® 489PA, Crystic® 397PA

VINYLESTER: Crystic® 676/1TP

GELCOATS: Crystic® LS 97 PA, Crystic® 64PA

BONDING PASTES: Crystic® 90-82PA
Crystic® 90-85PA

ADHESIVES: Crestabond® M1-20



Benefits/ Advantages

- ✓ High level of customer service
- ✓ Complete product range
- ✓ High performance Crystic® products resulting in quality excellence
- ✓ Vinyl ester suitable for all conventional techniques
- ✓ Easy to use vinyl ester due to pre-accelerated and thixotropic properties
- ✓ Technology developed and fully supported by Scott Bader

Customer Quote

“ Our customers are top industrial manufacturers and power plants, who each have very high quality demands, which leads us to use only raw material of the highest standard. For us, lead time is important and Scott Bader has always been able to deliver material of the right quality, at the right price and at the right time.

Daniel Bergsten, CEO

”

ARAPOL 2000 S.L. USES SCOTT BADER'S CRYSTIC® 199 TO MANUFACTURE TANKS FOR PORTABLE WATER

Company Profile: ARAPOL 2000, S.L.

LOCATION : ZARAGOZA, SPAIN

ARAPOL was founded in 1992 in order to meet the growing demand for existing water tanks in the area.

Due to the changing market needs Arapol slowly began to expand and incorporate other related material, such as the manufacture of speciality products.

Today ARAPOL has facilities covering 1,700m² covered, which is divided into three areas and 1,000 m² of outdoor space.



Crystic® 199 Application

Crystic® 199

Crystic® 199 was chosen by ARAPOL to support their manufacturing of food contact items, specifically portable water.



Benefits/ Advantages

- ✓ Ideal elasticity (a key characteristic required when assembling parts)
- ✓ Good viscosity, ensuring ease of use
- ✓ Excellent behavior of laminates in tensile strength and hardness (Barcol) tests
- ✓ Technology developed and fully supported by Scott Bader
- ✓ Excellent customer service

Customer Quote

“ ARAPOL has full confidence in Scott Bader due to our common labor path. Scott Bader is a safe choice, particularly when we need to be certain resin properties are of good quality. Scott Bader has been able to provide us with all of the requested certificates - especially the up-to-date resin certificates for food contact, while the ordering and delivery processes were both quick and painless. It means we can work in confidence and with little stress!

Manager, ARAPOL

”

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