

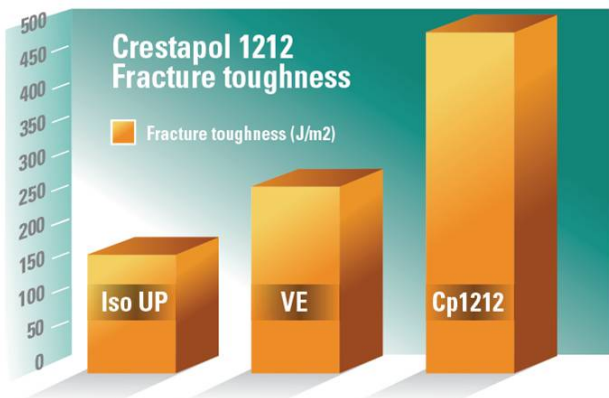
PRESS RELEASE

May 12

Crestapol[®] 1212 and 1214 High Performance Resins Enable Improved Product Performance and Productivity for Pultruded Composite Profiles.



Pultruders benefit from higher productivity with Crestapol1212 resin due to the higher haul off rates possible, even at high ATH filler loadings for demanding building and rail applications where the FRP profile must meet Spanish M1/F0 fire test ratings.



Crestapol 1212 Fracture toughness V's Iso UP and VE resins.

Composite Profiles – A Growing Global Trend

Pultrusion is a continuous, automated fabrication process for manufacturing in high volume constant cross section profiles and solid shaped parts. Using reinforcements, fillers and surface veils with a suitable resin, pultruded FRP structural profiles with exceptional finish and performance properties can be cost effectively fabricated. Pultruded composite profiles are being specified in a growing number of applications worldwide, as the performance properties that can be obtained by leading pultruders enable them to supply filled and fibre reinforced (FRP) composite profiles which can compete with metals, such as steel and aluminium.

Pultrusion Process

The process typically involves firstly drawing continuous glass or carbon fibres through a bath of resin blended with a catalyst, which passes through pre-formers and then a heated die which has the sectional geometry of final finished profile. Due to the uniformity of cross-section, consistent resin content, accurate fibre distribution and alignment possible with a pultrusion process, composite pultruded profiles with predictive mechanical properties can consistently be produced to a required

application specification. The selection of the right resin type and fillers to achieve the combination of desired properties for an application, such as shear strength, fatigue resistance and fire, smoke and toxicity (FST) performance, is critical. According to Scott Bader, their Crestapol® range of urethane acrylate based resins offer pultruders a technically proven high performance resin, which can also improve productivity and reduce overall production costs compared with other thermosetting systems.

Higher Productivity

Scott Bader, a member and sponsor of the European Pultrusion Technology Association (EPTA), specialises in high performance pultrusion resins. They manufacture in their UK production plant their Crestapol range of urethane acrylate based thermoset blend low viscosity resins, which provide pultruders the key benefit of lower overall manufacturing costs and increased productivity compared to using more traditional pultrusion resin systems, such as vinyl esters and phenolics. The principal grades, Crestapol 1212 and 1214, were specifically developed by Scott Bader's R & D team to be processable on unmodified pultrusion equipment using standard initiators, additives and fillers. Both grades are suitable for wet bath and injection applications with high filler loadings (up to 2:1 filler to resin loadings) and achieve rapid wet out of reinforcement fibres. Crestapol resins have a very rapid self accelerating cure; this enables faster haul-off speeds to be used compared with typical pultrusion grade thermosetting resins. Due to this high reactivity, even when heavily filled there is no loss of pultrusion line speed.

Excellent Fire Performance

Crestapol resins offer the flexibility of achieving a wide range of specifications by optimising the formulation for specific application and performance needs. The inherent toughness of the cured urethane acrylate based resin matrix provides pultruded profiles with very high mechanical properties, even with high mineral filler loadings. Crestapol urethane acrylate resins have been developed to achieve the highest FST international performance standards. So, for a variety of challenging applications, mechanically superior profiles can be made which also meet demanding FST test standards. Crestapol 1212 and 1214 resins can be heavily filled with up to 200 parts per hundred of resin (phr) by weight of alumina trihydride (ATH) filler. Crestapol 1214 is a low profile urethane acrylate based resin that is recommended by Scott Bader for applications where a profile must have high fire resistant (FR) properties in combination with the lowest shrinkage and a very smooth, glossy high quality surface finish.

Pultruded profiles made from ATH filled Crestapol resins up to 200phr can achieve a wide range of International fire, smoke and toxic fumes standards specified for building and transportation applications, including overground and underground rail applications; ATH filled glass reinforced Crestapol laminates of both grades have passed DIN 5510 S4/SR2/ST2, French Epiradeateur NFP 92-501-M1 and NFF 16-101-F0, as well as the more stringent Spanish M1/F0 fire resistance test for interior rail applications. When used in closed mould applications in combination with Scott Bader's Crystic® Fireguard 70PA intumescent topcoat, Crestapol 1212 with 170 phr of ATH achieves FIRESTARR HL2 performance to CEN TS45545-2: 2009. Crestapol 1212 resin is also compatible with standard pigments, allowing high quality colouration of components to be achieved.

Spanish Pultruders Switch to Crestapol

Two leading Spanish pultruders have both seen major benefits in improved productivity and enhanced product performance from using Crestapol 1212 resin to more cost effectively produce a variety of pultruded profiles for building, land transportation and industrial applications.

Polymec S.L., based in Murcia, specializes in the production of pultruded carbon fibre and glass fibre reinforced composite profiles. During 2010, they successfully completed extensive trials and switched to using ATH filled Crestapol 1212 resin for various rail interior profile applications, such as

cable covers. Ms. Carmen Sánchez, International Manager of Polymec S.L. stated: *"We chose Crestapol 1212 for our production because the resin enables us to attain the required mechanical and fire resistance properties with respect to fire, smoke and toxicity, while also allowing us to increase our production rate, which has boosted productivity; we could not get this combination from other resins we tested that were suitable for rail applications."*

Another specialist Spanish pultruder, Technipul Composites S.L., located in Barcelona, also switched to using ATH filled Crestapol 1212 resin, which is now specified for a variety of glass fibre reinforced profiles used for exterior and interior finished parts which must meet stringent FST specifications for both over ground and underground trains, in metro stations and rail tunnel roofs. Mr. Lluís Muxi, general manager for Technipul Composites S.L. stated: *"We have specified Crestapol 1212 resin because it meets the fire retardant performance needed in combination with providing good mechanical properties and an excellent surface finish."*

Global Technical Support

Scott Bader provides global technical support for pultruders interested in using Crestapol 1212 and 1214 resins; this includes offering 'bespoke solutions' to customers in order to provide the best option for individual requirements. Several Crestapol development projects with leading pultruders in Europe, China and South America are currently ongoing for profiles used in a range of rail, metro and building applications. Mr Neil Gray, Scott Bader's Global Business Manager for Crestapol resins commented: *"We work very closely with individual pultruders to ensure they get the maximum performance, cost saving and productivity benefits from their line which are achievable using our Crestapol resins."*

Further details about Crestapol high performance resins, plus information on Scott Bader and their complete range of Crystic resins, gelcoat and structural adhesive products is available on line at www.scottbader.com and www.crestapol.com.

About Scott Bader

Scott Bader was established in 1921. Today it is a £200 million multinational chemical company, employing 600 people worldwide. It is a common trusteeship company, having no external shareholders, with a strong commitment to support its customers, workforce and the environment.

Scott Bader's headquarters is based in the UK where they have purpose-built, state-of-the-art technical facilities that provide R & D as well as complete evaluation, testing and application support. They have manufacturing facilities in the UK, France, Croatia, The Middle East and South Africa. For further information regarding Scott Bader, please call +44 (0)1933 663100, visit www.scottbader.com or e-mail: info@scottbader.com