Rail product guide
Our diverse range of products is specifically designed to offer complete systems that meet European and Global FST standards & performance ratings. Our FST products are used in many industries including Rail, Building & Construction and Marine. Scott Bader aims to provide excellent technical support, expertise and advice to support our products.

**Rail Application case study:** VIP Chair for China High Speed Train manufactured by Shanghai Cedar Composites Co. Ltd using Crestapol® 1212

Scott Bader was established in 1921 and today we are an independent, multinational chemical company with over 650 employees worldwide. We are a common trusteeship company, which means Scott Bader is owned by all employees, and can operate with great agility and innovation for the customers and industries we serve.

Today Scott Bader is a US $287 million global chemical company, with manufacturing facilities in Europe, The Middle East, India, South Africa, Saudi Arabia, Canada and South America.
For the full range of systems, please ask a Scott Bader representative for assistance.

Crestapol’s FST performance is achieved by the addition of aluminium trihydrate (ATH). Due to the inherently low viscosity of Crestapol® Resins up to 200 phr of ATH can be incorporated to achieve a range of stringent fire, smoke and toxic fume standards (full details and certification can be found on page 7).

FST performance will also be dependent on glass content and profile thickness. Please contact Scott Bader Technical Services Dept. for advice on ATH loadings for specific applications.

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### Fire Retardant Resins

<table>
<thead>
<tr>
<th>Application</th>
<th>Resin Type</th>
<th>Paint</th>
<th>Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crestapol® 1212 / ATH</td>
<td>Closed Mould &amp; Pultrusion</td>
<td>Urethane acrylate</td>
<td>Passed, Passed, M1, F0, S4, SP2, ST2, M1, HL2</td>
</tr>
<tr>
<td>Crestapol® 1213A</td>
<td>Closed Mould</td>
<td>Urethane acrylate</td>
<td>HL2</td>
</tr>
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</table>

### FST RESINS & GELCOAT SYSTEMS

| Crestapol® 1211A | Fireguard GC 78PA | Closed Mould | Urethane acrylate | Yes | HL2 (R1), HL3 (R10), HL3 (R17) |
| Crestapol® 1212 / ATH | Fireguard GC 70PA | Closed Mould | Urethane acrylate | Passed, Passed | M1, F1, S4, SP2, ST2, M1 |
| Crestapol® 1213A | Fireguard GC 70PA | Closed Mould | Urethane acrylate | HL2 |
| Crestapol® 1261 | Fireguard GC 78PA | Infusion | Urethane acrylate | Yes | HL2 (R1), HL3 (R10), HL3 (R17) |
| Crestapol® 1261 | Fireguard GC 78PA | Infusion | Urethane acrylate | HL2 (R1) |

**Crestapol® 1211A**
- Closed Mould
- Urethane acrylate
- Yes
- HL2 (R1), HL3 (R10), HL3 (R17)

**Crestapol® 1212 / ATH**
- Closed Mould
- Urethane acrylate
- Passed, Passed
- M1, F1, S4, SP2, ST2, M1

**Crestapol® 1213A**
- Closed Mould
- Urethane acrylate
- HL2

**Crestapol® 1261**
- Closed Mould
- Urethane acrylate
- Yes
- HL2 (R1), HL3 (R10), HL3 (R17)

**Crestapol® 1261**
- Closed Mould
- Urethane acrylate
- HL2 (R1)

**Crystic® FR1166 PAK**
- Fireguard GC 72PA
- HL & RTM
- Ortho/DCPD
- M2, F1

**Crystic® U 1131 TPA**
- Fireguard GC 807PA
- HL & S
- Ortho
- S4, SP2, ST2

**Crystic® U 1131 TPA**
- Fireguard GC 72PA
- HL & S
- Ortho
- Passed, Passed
- M2, F1

**Crystic® 5046 PA**
- Fireguard GC 72PA
- HL & S
- Ortho
- M1, F2

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### Certificates

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<th>ES</th>
<th>EU</th>
</tr>
</thead>
</table>

**Fireguard Gelcoat 70PA**
- Very low smoke & very low surface spread of flame
- Halogen free
- Spray gelcoat

**Fireguard Gelcoat 72PA**
- Low smoke & surface spread of flame
- Halogen free
- Spray gelcoat

**Fireguard Gelcoat 73PA**
- Very low smoke & low surface spread of flame
- Halogen free
- Brush gelcoat

**Fireguard Gelcoat 78PA**
- Highest level of FST performance in Fireguard range
- New FST Intumescent technology based system
- Allows for design of lighter weight FST composite parts
- Developed to achieve European harmonised fire specifications
- Spray gelcoat

**Fireguard Gelcoat 75PA Excel**
- Excellent Fire Retardant Performance
- Intumescent FST Technology
- Spray and brush grades available

**Fireguard Topcoat 75PA Excel can withstand a direct flame at 700°C for over 60 minutes**

### In-house tests have shown
- Fireguard Topcoat 75PA Excel can withstand  a direct flame at 700°C for over 60 minutes

**Spread of flame on a horizontal burn test after 5 minutes**

*Samples tested using the UL94-HB test: 20mm flame is applied to the 3mm thick gelcoat sample for 30 seconds, the resultant horizontal flame spread after 5 minutes is then measured, this is repeated three times and an average is taken.*

**NEW**

For the full range of systems, please ask a Scott Bader representative for assistance.

Crestapol’s FST performance is achieved by the addition of aluminium trihydrate (ATH). Due to the inherently low viscosity of Crestapol® Resins up to 200 phr of ATH can be incorporated to achieve a range of stringent fire, smoke and toxic fume standards (full details and certification can be found on page 7).

FST performance will also be dependent on glass content and profile thickness. Please contact Scott Bader Technical Services Dept. for advice on ATH loadings for specific applications.
Crestapol resins’ FST performance is achieved by the addition of aluminium trihydrate (ATH). Due to the inherent low viscosity of Crestapol® resins up to 200 phr of ATH can be incorporated to achieve a range of stringent fire, smoke and toxic fume standards.

Fire performance will also be dependent on glass content and profile thickness. Please contact Scott Bader Technical Services Dept. for advice on ATH loadings for specific applications.

**Crestapol® 1211A**
- Compounded Version of Crestapol® 1212
- Pre-accelerated and Pre-filled with ATH
- Closed Mould Applications
- Liquid Cure System
- Designed to be used with Fireguard GC 78PA for lighter weight FST Composite Parts

**Crestapol® 1212**
- Urethane Acrylate based
- Thermosetting resin
- Very Low viscosity
- Flexibility to adjust ATH & Accelerator levels
- Pultrusion & Close moulding applications

**Crestapol® 1213A**
- Compounded version of Crestapol® 1212
- Pre-accelerated and Pre-filled with ATH
- Hand Lamination & Close moulding applications

**Crestapol® 1214**
- Urethane Acrylate based
- Comparable FST performance of Crestapol® 1212
- Low Profile technology for aesthetically demanding applications
- Pultrusion grade only

**Crestapol® 1261**
- Urethane Acrylate based
- Excellent mechanical performance & toughness
- Compatible with glass & carbon fibres
- Designed for structural FST composite parts
- with Fireguard GC 78PA

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### Pultrusion guidelines

**Typical formulation**

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit of Measurement</th>
<th>Crestapol® 1212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>-</td>
<td>Clear yellowish brown</td>
</tr>
<tr>
<td>Viscosity @ 25°C</td>
<td>Poise</td>
<td>0.7</td>
</tr>
<tr>
<td>Density @ 25°C</td>
<td>gcm⁻³</td>
<td>1.07</td>
</tr>
<tr>
<td>Volatile Content</td>
<td>%</td>
<td>49</td>
</tr>
<tr>
<td>Stability in the dark @ 20°C</td>
<td>Months</td>
<td>9</td>
</tr>
</tbody>
</table>

### Features

- **High Reactivity**
  Offering the potential for high line speeds compared to other typical thermosetting resins.

- **Mechanical Performance**
  The inherent “toughness” of the cured resin matrix results in profiles exhibiting excellent mechanical performance despite the presence of high levels of filler.

- **Pigmentable**
  Crestapol® 1212 is pigmentable and fully compatible with polyester pigment pastes.
Scott Bader Group Companies
Leading composites innovation for over 60 years

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

SB Eastern Europe s.r.o
Mimon II, Czech Republic
Tel: +420 (0) 487 863 880
Fax: +420 (0) 485 111 254
Email: miro@sbee.cz

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

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

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

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

Scott Bader Middle East Limited
Dubai, United Arab Emirates
Tel: +971 481 50 222
Fax: +971 488 35319
Email: info@scottbader.ae

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

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

Scott Bader Japan KK
Yokohama, Japan
Tel: +81 (0) 45 620 3745
Email: enquiries@scottbader.com