

# Fire Retardant (FR) Resins

## from Ashland

Ashland Composites  
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The ultimate performance of a composite depends on many factors including: resin, catalyst, glass reinforcement, filler loading and fabrication technique. These can also affect flame, smoke and toxicity performance of the composite.

Contact Ashland's technical service group to review your specific performance requirements and recommend which Hetron™ or Modar™ resin meets your project needs. Ashland can also advise you about composite testing and the variety of industry standard tests that can be used to rate the performance or acceptability of a specific composite.

Product	Description	Viscosity	Features & Benefits
Hetron™ FR 650 series	<ul style="list-style-type: none"> <li>- General purpose FR resin ideal for a wide variety of FR applications.</li> <li>- Able to accept modest amounts of ATH filler for lower smoke applications</li> <li>- Excellent processing in hand layup and infusion applications</li> <li>- Hetron FR 650 T series are thixotropic, prepromoted, and available 20 and 40 minute gel times</li> <li>- Hetron FR 650 INF series for infusion/RTM processing available unpromoted and 20 and 40 minute geltimes</li> </ul>	450 cps for T series 180 cps for INF series	<ul style="list-style-type: none"> <li>- High strength with Class 1 (ASTM E84) performance</li> <li>- ASTM E84 test at 0.25 inches and 30% glass Flame spread index 15, Smoke index 900</li> <li>- ASTM E84 test at 0.07 inches and 30% glass Flame spread index 25, Smoke index 300 (Architectural Class A)</li> <li>- ASTM E162 Flame spread index 20 with 70 phr ATH</li> <li>- ASTM E662 Smoke density at 1.5 minutes &lt;10, at 4 minutes &lt;100 with 70 phr ATH</li> <li>- SMP 800c Smoke Toxic Gas test - Pass with 70 phr ATH</li> </ul>
Hetron FR 1540	<ul style="list-style-type: none"> <li>- FR concentrate for gel coats, pultrusion and electrical BMC applications</li> <li>- Ideal for panel resins where translucence is needed</li> </ul>	6750 cps	<ul style="list-style-type: none"> <li>- Superior weathering flame retardant high viscosity unsaturated polyester resin</li> <li>- Ideal Formulating Base - used to add flame retardance and good weathering to non-halogenated resins</li> <li>- Highly brominated (34% wt/wt)</li> <li>- Low APHA color</li> </ul>
Hetron 92	<ul style="list-style-type: none"> <li>- Designed for electrical press molding and naval (lifeboat) applications</li> </ul>	2200 cps	<ul style="list-style-type: none"> <li>- Meets Mil Spec 7575C (A&amp;B), 21607D</li> </ul>
Modar™ 820 series	<ul style="list-style-type: none"> <li>- High Performance resin for low flame / low smoke applications.</li> <li>- Ideal for mass transit, interior architectural and grating applications.</li> <li>- MODAR 820 TC gives excellent processing in hand layup and pultrusion applications</li> <li>- MODAR 820 INF is designed for infusion/RTM applications</li> </ul>	35 cps for TC 20 cps for INF	<ul style="list-style-type: none"> <li>- Designed to maintain excellent mechanical properties with high ATH filler loading and/or infusion applications</li> <li>- Class I (E-84), low smoke (&lt;200) with 140 phr ATH</li> <li>- Meets NFPA 286 (Room Corner Burn) with 150 phr ATH</li> <li>- Meets Bombardier, Siemens, Alstom, NFPA 130 and Docket 90 Mass Transit specifications with 75 phr ATH</li> </ul>
Enguard™ FR gelcoat	<ul style="list-style-type: none"> <li>- High performance Gelcoat for low flame / low smoke applications.</li> <li>- Ideal for mass transit and architectural applications</li> </ul>	5000 cps	<ul style="list-style-type: none"> <li>- Class I (ASTM E-84) FR performance</li> <li>- Meets Bombardier, Siemens and Alstom FR specifications</li> <li>- Laminates made with the Enguard FR Series Gelcoats have met the ASTM E162-98 and ASTM E662-97 (Smoke Density) criteria for Mass Transit applications</li> <li>- Laminates made with the Enguard FR series gelcoats have met a V-0 self extinguishing UL-94 rating within 10 seconds with no dripping.</li> </ul>

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Critical applications require world-class solutions from the global leader in resin chemistry. With more than 50 years of successful application experience, Ashland continues to raise the innovation bar for fire retardant resins.

### Chemistry

Thermosetting fire retardant Modar™ resins are based on non-halogenated modified acrylic polymer chemistry while Hetron™ fire retardant resins are based on halogenated chemistry. Both accept the addition of fillers, such as alumina trihydrate or ground marble, to improve the fire retardance, cosmetic properties or the economics of finished composites.

### Economics

Composites made with Hetron and Modar resins offer excellent life cycle costs including high strength-to-weight ratios, low maintenance and excellent thermal insulation properties.

### Molding

Modar and Hetron resins can be used with all composite fabrication processes including:

- Hand lay-up
- Spray-up
- Resin transfer molding (RTM)
- Compression molding
- Pultrusion
- Filament winding

### Architecture

Ashland's Modar and Hetron resins have been specified by architects and engineers to replace traditional materials of construction like steel, aluminum, wood, stone and concrete. These resins have been used to manufacture the following composites:

- Baseboards
- Columns
- Doors
- Facades
- Fascia panels
- Furniture
- Grating
- HVAC ducting
- Light poles
- Moldings
- Planters
- Polymer concrete
- Railings
- Roof slates
- Stairways
- Window frames

### Mass Transit

In addition, Modar and Hetron fire retardant resins have been used to mold composites for mass transit applications such as buses, subway cars, rail passenger cars and people movers. Composite components include:

- Interior panels
- Exterior panels
- Doors
- Interior components
- Roofs
- Seating
- Sleeper compartments
- Third rail cover
- Lavatory compartments

