Low-smoke, fire retardants composites based on Modar™ acrylic modified resins

Fire safety in public environments is a critical concern. One way to address this concern is mandated fire retardant (FR) norms and performance standards. Critical applications like these 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 low smoke fire retardant resins.

There are a wide variety of FR resins available in the market today for the fabrication of fire retardant composites. Ashland offers a number of halogenated polyesters and halogenated epoxy vinyl ester resins under the Hetron™ and Derakane™ trade names.

Modar resins, which are based on non-halogenated acrylic modified polymer chemistry, readily accept the addition of fillers, such as alumina trihydrate (ATH). This improves fire retardance, cosmetic properties and economics in finished composites. Composites made with Modar resins offer significant life cycle costs including high strength-to-weight ratios, low maintenance, excellent thermal insulation and sound dampening properties.

When filled with ATH, Modar resins deliver unmatched low smoke performance. Fire retardant laminates made with Modar resins have met ASTM E-84 Class I flame spread index requirements and low smoke characteristics typically required by building codes. These same compositions also meet mass transit requirements as measured by ASTM E 662 and E 162. Moreover, Modar resins readily accept high filler loadings without substantial loss of cured mechanical properties. In the case of Modar 820 TC, the filled resin mix also exhibits exceptional suspension stability.

Architectural Applications

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

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

Composites shapes can be curved, corrugated, ribbed or contoured with varying thicknesses. Research has shown that pound for pound, FRP is stronger than concrete, steel or aluminum and can weather extreme conditions for more than 50 years without signs of deterioration. In architectural applications fiber reinforced plastic (FRP) structures are often selected over other materials because they are lightweight, cost-effective, corrosion resistant and virtually maintenance free.

Modar 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 a wide variety of fire retardant low-smoke composites for use in architectural applications such as:

- Baseboards
- Columns
- Doors
- Facades
- Grating
- Ducting
- Light Poles
- Moldings and Cornices
- Planters
- Railings
- Roof slates
- Stairways
- Window frames

Mass Transit Applications

Fuel costs for public transportation systems have more than doubled in the last 10 years. Weight is a paramount concern given the high cost of fuel. Using composites to reduce weight and improve aerodynamics has long been demonstrated to bring significant fuel consumption savings.

Composites are commonly found in buses, subway cars, people movers, dining cars and passenger rail applications. FRP enables the coach designer to mold in multiple features, thus reducing part assembly requirements, labor and maintenance. Applications include the following:

- Cable tray
- Ceiling and floor panels
- Doors
- End caps
- Engineer consoles
- Front ends
- Interior panels
- Lavatory compartments
- Luggage compartments
- Platforms
- Seating
- Sleeper compartments
- Third rail covers
- Wall panels
- Window surrounds

Global Competency with a Precise Focus on Customer Challenges

Ashland constantly evaluates the performance of Modar and Hetron fire retardant laminates for FR applications both in the field and in our laboratory in Dublin, Ohio. While primary research and development activities are based in the United States, we also maintain product development teams in Asia and Europe to ensure we develop solutions suited to our global customer base.

Ashland's technical service team has an industry-leading reputation for solving problems. We will work closely with our customers to understand specific application challenges and recommend the best product to meet business objectives. Whether focused on product design, process optimization or new product development, Ashland prides itself on building partnerships that lead to innovative solutions.

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