



# Fire Retardant Resins

PERFORMANCE THAT TAKES THE HEAT



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AOC Aliancys' Firepel® resins combine the performance benefits of composite resins with fire retardant and smoke suppression technologies.

Firepel resins meet flame, smoke and other performance requirements for specific end-use applications and fabrication methods including hand lay-up, spray-up, filament winding and pultrusion. Some products can also be used in closed mold processes such as Resin Transfer Molding (RTM) and Infusion. With superior strength, durability and flexibility, AOC Aliancys fire-retardant resins outperform the competition.



The information contained in this brochure is based on laboratory data, testing results, and field experience. AOC Aliancys believes this information to be reliable, but does not guarantee the applicability of such information to the user's process or that the user will be able to replicate such results in their own process. Further, AOC Aliancys assumes no liability for occurrences arising out of such information. The user, by accepting the products described herein, agrees to be solely responsible for thoroughly testing each such application before committing to production. The only operative warranties with respect to any of the products described herein shall be pursuant to AOC Aliancys' standard terms and conditions associated with an executed invoice or purchase order pursuant to an executed purchase agreement.



## FIRE RETARDANT TEST METHOD OVERVIEW

Requirement	Test Method	Market Requirement	Test Characteristic	K140	K320	K133	K010
<b>International Building Code</b>	ASTM E 84	Construction	Flame Spread and Smoke Development	✓	✓	✓	*
<b>British Standards</b>	BS 476 Part 6 and Part 7	Construction	Fire Propagation and Flame Spread	*	*	✓	*
<b>British Standards</b>	BS 6853 Annex B and Annex D	Transportation	Smoke Development and Smoke Toxicity	*	*	✓	*
<b>Federal Transit Administration</b>	ASTM E 162	Transportation	Flame Spread	✓	✓	✓	✓
<b>Federal Transit Administration</b>	ASTM E 662	Transportation	Smoke Development	✓	✓	✓	✓
<b>Bombardier Specification</b>	SMP 800	Transportation	Toxic Gas Production	✓	✓		✓
<b>Boeing Specification</b>	BSS 7239	Transportation	Toxic Gas Generation	*	*	✓	*
<b>European Consolidated Standard</b>	EN45545 (ISO 5658-2, ISO 5659-2, ISO 5660-1)	Transportation	Flame Spread, Smoke Development, Toxic Gas, Heat Release	✓	*	*	*
<b>Underwriters Laboratory</b>	UL 94	Devices and Appliances	Flammability Rating	*	✓	✓	*
<b>Miscellaneous</b>	ASTM D 635	Miscellaneous	Rate of Burning	*	*	✓	*
<b>Miscellaneous</b>	ASTM E 1354 ISO 5660-1	Miscellaneous	Oxygen Consumption Calorimeter	✓	*	✓	*

\*Not tested. Many products are able to meet other requirements in addition to the formal testing listed above. AOC Aliancys chemists can customize a formula to meet specific needs and test requirements not listed. Please contact your AOC Aliancys sales or technical service representative for more information about your project's unique needs.

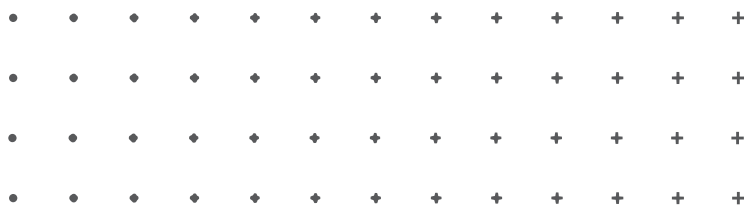
Testing: The degree of fire resistance of a cured resin is characterized by many different tests depending on the requirements for the end use application. These tests are performed under strictly controlled conditions by third party accredited testing facilities. How the results are reported vary depending on the test performed. Results from this testing can be assigned a rating based on a predefined scale and/or on a pass/fail criteria.

The fire retardant performance of a composite cured under controlled conditions can vary significantly in an actual fire situation due to the large number of unpredictable variables associated with actual fire situations. The fire performance of a particular resin as determined by the conditions of a fire test is indicative of a fully-cured composite and is dependent on part thickness and glass content. AOC Aliancys has additional information regarding post-cure and laminate construction that can be useful for assisting our customers in fabricating a composite part to meet the intended fire test requirements.

**FIRE RETARDANT / CORROSION RESINS**

**Contains Halogens**

Resin Chemistry	Product Series	Description	Primary Markets Served
<b>Brominated Bisphenol-A Vinyl Ester</b>	Vipel K022	<ul style="list-style-type: none"> <li>• Can meet ASTM E 84 Class 1 flame spread requirements</li> <li>• Versions containing Antimony Trioxide (ATO) are available for improved flame spread results</li> <li>• Excellent corrosion resistance</li> <li>• Thixotropic versions available for improved sag resistance</li> <li>• Pre-promoted versions available and customized for ease of use</li> <li>• RoHS compliant versions</li> </ul>	Construction Chemical
<b>Specialty Brominated Bisphenol-A Vinyl Ester</b>	Vipel K026	<ul style="list-style-type: none"> <li>• Can meet ASTM E 84 Class 1 flame spread requirements</li> <li>• Thixotropic versions available for improved sag resistance</li> <li>• Excellent corrosion resistance</li> <li>• Higher heat distortion temperature than standard Brominated Bisphenol-A Vinyl Esters</li> </ul>	Construction Chemical
<b>Brominated Novolac Vinyl Ester</b>	Vipel K095	<ul style="list-style-type: none"> <li>• Can achieve ASTM E 84 Class 1 flame and smoke requirements</li> <li>• Excellent corrosion resistance</li> <li>• Designed for elevated temperature service</li> </ul>	Construction Chemical
<b>Brominated Isophthalic</b>	Vipel K733	<ul style="list-style-type: none"> <li>• Can meet ASTM E 84 Class 1 flame spread with and without ATO</li> <li>• Thixotropic versions available for improved sag resistance</li> <li>• Pre-promoted versions available and customized for ease of use</li> <li>• Suitable for some mild chemical resistant applications</li> </ul>	Construction Chemical
<b>Brominated Polyester</b>	Firepel K130	<ul style="list-style-type: none"> <li>• Most versatile fire retardant resin</li> <li>• Can meet ASTM E 84 Class 1 flame requirements</li> <li>• ATH filled versions available to achieve ASTM E 84 Class A rating</li> <li>• Pre-promoted versions available and customized for ease of use</li> <li>• RoHS compliant versions</li> </ul>	Construction
<b>Chlorendic Polyester</b>	Vipel K190	<ul style="list-style-type: none"> <li>• Preferred resin for hot-wet chlorine and oxidizing chemicals</li> <li>• Can meet ASTM Class B requirements</li> <li>• Excellent corrosion resistance</li> </ul>	Chemical





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