



FireWall ULTRA

Fire Retardant & Smoke Suppressing Surfacing Mat
for Thermoset and Thermoplastic Composites
US Patent 9,028,633

<ul style="list-style-type: none">• Product Description	<p>FireWall ULTRA is an FRP continuous glass fiber surfacing fabric impregnated on one side with an intumescent / cementitious fire and smoke suppressing film that is fortified with expandable graphite. This material contains no bromine, antimony or metallics. The film, or sponge, side <i>MUST</i> be oriented against the die, press, rollers or mold surface to be effective. It can be used in nearly all thermoset and reinforced thermoplastic applications that require low flame spread and low smoke development characteristics.</p>												
<ul style="list-style-type: none">• Intended Uses	<p>Designed and engineered to be oriented at and within the surface of fiber reinforced composite structures. The mat provides fire protection, thermal insulation properties and smoke suppression when exposed to open flame or high radiant heat.</p>												
<ul style="list-style-type: none">• Practical Information	<table><tr><td>Appearance</td><td>Dark gray, chalky, sponge front with white, continuous filament glass back.</td></tr><tr><td>pH</td><td>FR Additive 8.0-9.0 (10% aqueous slurry)</td></tr><tr><td>Solubility</td><td>Wet-out in most thermoset resins and will heat consolidate in most reinforced thermoplastic products.</td></tr><tr><td>Product Weight and Dimension</td><td>36 -0/+6 grams per square foot. Glass fabric is approx. 7.0 grams per square foot. Fire retardant density is 1.90 g/cc.</td></tr><tr><td>Toxicity</td><td>Non-toxic</td></tr><tr><td>Maximum Processing Temp.</td><td>350°F Recommended 400°F Recommended Maximum</td></tr></table>	Appearance	Dark gray, chalky, sponge front with white, continuous filament glass back.	pH	FR Additive 8.0-9.0 (10% aqueous slurry)	Solubility	Wet-out in most thermoset resins and will heat consolidate in most reinforced thermoplastic products.	Product Weight and Dimension	36 -0/+6 grams per square foot. Glass fabric is approx. 7.0 grams per square foot. Fire retardant density is 1.90 g/cc.	Toxicity	Non-toxic	Maximum Processing Temp.	350°F Recommended 400°F Recommended Maximum
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<ul style="list-style-type: none">• Product Features	Superior Performance:	Extremely effective at fire retarding and smoke suppression against open flame and high radiant heat when oriented at the surface of a composite part. During processing, the mat is subsumed as the surface of the part.
	Climate Survivability	Incorporated as the surfacing reinforcement, resistant to water, weather, sea spray, chemical attack and protects over a wide range of operational temperatures.
	Versatile	Effective for use in a wide range of ambient fabrication methods and elevated temperature curing; thermoforming; and molding processes as high as 425°F.
	Environmentally Friendly	Non-toxic and ecologically acceptable. Suppresses smoke normally generated by polymeric resins. <i>Contains no bromine, antimony or magnesium.</i> No PBDEs, PBDDs, PBDFs or other toxins can be formed from this product.
	Ease of Application	Easily incorporates in a wide variety of thermoset resins. May be heat consolidated into a wide range of thermoplastics. Forms an excellent mechanical bond with finished thermoset substrates and thermoplastic mediums.

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• Methods of Application

- Easily introduced into pultrusion dies and filament winders due to its high tensile strength.
- May be applied on filament wound products on both the interior and exterior surfaces.
- Easily applied to VARTM and RTM laminate schedules.
- May be heat consolidated into thermoplastic panel or sheeting. If desired, the material may be re-formed under heat and pressure to complex shapes.

• Thermoset Processing Notes

PEROXIDE INITIATOR USE WITH FireWall™

Unsaturated resins are cured using a variety of initiators, depending upon temperature, used for the process. The reactivity of the resin and the use of modifiers, promoters, accelerators, as well as **additives**, greatly influence the choice of the proper and most correct initiator. **Fire Retardants and Smoke Suppressants** may each affect the type and concentration of initiator, or initiators required. The selection of initiator, or initiator system, is based upon the rate of cure desired, the extent of working time required (pre-gel time), and the necessary storage time of the resin/initiator-additive mix (pot-life).

When fabricating with FireWall™ ULTRA at ambient temperature (i.e. room temperature) with polyester, or vinyl ester resin [**NOTE:** this might include-Open Molding; Closed/clamshell molding; Resin Transfer Molding; Casting; Filament winding; Vacuum Bagging; etc.]:

- FireWall™ ULTRA is not affected by MEKP (Methyl Ethyl Ketone Peroxide)/Metal Carboxylate (i.e. Cobalt Napthanate) initiator/accelerator systems.

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- **Cautionary Notes**

When fabricating with FireWall™ ULTRA at elevated temperatures with polyester, or vinyl ester resin: [**NOTE:** This could include: Pultrusion; Filament Winding; Compression / Bulk Molding; Elevated Sheet Molding; Pre-Preg; etc.

- Peroxydicarbonate (Ex.: AKZO's "Perkadox 16") is often included in a resin system to "initiate" the peroxide blend decomposition cycle and is perfectly acceptable with the FR veil.
- AVTEC recommends the use of Peroxyesters. Example, T-Amyl-Peroctoate (Molding temperatures of 210-280°F), 75% liquid concentration in a Plastisizer Solution as an alternative to Benzoyl Peroxide initiation.
- Other Peresters, such as T-Butly-Perbenzoate (Molding temperatures 275-325°F), used to "finish" the part for a complete, hard cure are also recommended with TSWB™. This TBPB peroxide is the favored Perester for good surface characteristics.
- Peroxyketals, such as Peroxy-Cyclohexanes (Molding temperatures 265-310F), have very low sensitivity to compounding ingredients and are recommended for use in the intermediate phase of the thermal initiation process to optimize a thorough cure.

AVTEC Industries encourages the systematic screening of peroxide initiator candidates and related cure promoter/accelerators to optimize process performance.

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- **Safety Precautions**

This Product is intended for use by professional fabricators in industrial situations in accordance with the advice given on this sheet, and the Material Safety Data Sheet (MSDS) that Avtec Industries provides to its customers.

All work involving the fabrication and use of this product should be performed in compliance with all relevant Health, Safety & Environmental Standards and Regulations.

If in doubt regarding the suitability of use of this product, consult ***AVTEC INDUSTRIES*** for further advice.

Packaging: Up to 60 inch width X 300 feet Rolls

Store in a cool dry place.

REV 04/15

SUPERSEDES 01/09

Disclaimer: All information contained herein is believed to be accurate and reliable. However is it the user's responsibility to determine the suitability of this product for their own use. As the use of this product is beyond our control, no warranty, expressed or implied is made by Avtec industries, Inc. except to replace material deemed defective by use.

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