



# TSWB®

## Fire Retardant Additive

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**Product Description** General purpose fire retarding and smoke suppressing polymeric additive. **TSWB®** is bromine, antimony and hydrated mineral free.

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**Intended Uses** Designed and formulated to be incorporated within both thermoset and thermoplastic composites that require fire protection and smoke suppression.

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<b>Practical Information</b>	<b>Appearance</b>	White free flowing powder
	<b>pH</b>	8.7-8.9 (10% aqueous slurry)
	<b>Solubility</b>	Trace if any in either aqueous or solvent systems
	<b>Product Density</b>	1.81 g/cc.
	<b>Avg. Particle size (μ)</b>	28 Microns
	<b>Toxicity</b>	None
	<b>Maximum Processing Temp.</b>	425°F Recommended 450°F Max (Discoloration may occur above this temperature depending upon exposure time.)

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<b>Product Features</b>	<b>Superior Performance:</b>	Extremely effective at the proper loading against open flame and high radiant heat, even in severe fires with high velocity combustion fronts.
	<b>Climate Survivability</b>	Resistant to water, weather, sea spray, chemical attack and protects over a wide range of operational temperatures.
	<b>Versatile</b>	Effective for use in a wide range of ambient fabrication methods and elevated temperature curing; thermoforming; and molding processes as high as 450°F.
	<b>Heat Barrier</b>	This thermally non-conductive and infrared reflective insulating material can extend substrate time to failure by as much as 470% verses unprotected substrates.
	<b>Environmentally Friendly</b>	Non-toxic and may be recycled with thermoplastics. Suppresses smoke normally generated by polymeric resins. <b><i>Contains no bromine, antimony or magnesium.</i></b> No PBDEs, PBDDs, PBDFs or other toxins can be formed from this product.
	<b>Ease of Application</b>	Easily incorporates with sheer into a wide variety of thermoset resins. Is easily compounded; heat pressed molded; or thermoformed in pre-produced cast film 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

**TSWB® can be incorporated into a medium by a number of methods:**

- Addition of TSWB directly in the polymer resin en masse prior to process fabrication.
- Spraying a filled slurry.
- Applying a highly filled pre-impregnated reinforcement.
- May be blended with a variety of commercially available paints, resins and surface coatings for application onto wood, metal, and plastic.

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### Cautionary Notes

#### **PEROXIDE INITIATOR USE WITH TSWB®**

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 TSWB™ 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.]:

- TSWB™ 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 **TSWB®** 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.

- **TSWB®** is not recommended for use with Diacyl Peroxides (Molding temperatures of 200-270°F / Ex.: BPO.
- AVTEC recommends the use of Peroxyesters. Specifically 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.

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**Standard Packaging: 100 lb. and 300 lb. Fiber Drums.**  
**Store in a cool dry place .**

*REV 01/07*

*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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