

FLAMTARD™

Flame Retardant Synergists and
Smoke Suppressants for Plastics

William Blythe Limited is a leader in providing antimony-free, flame retardant synergist solutions for polymer material formulators under our brand: Flamtard™.

Based on zinc, tin and mixed metal oxide technology, the Flamtard™ products are synergists that can offer flame retardant and smoke suppressant properties in a range of polymer systems, including PVC, polyamides, elastomers and thermosets. All Flamtard™ products are non-hazardous, environmentally benign and registered globally.

Flamtard™ product benefits:

Flame retardant and smoke suppressant

Non-hazardous

Highly active at low concentrations

Char-forming

Flamtard™ H

Based on zinc hydroxystannate chemistry, Flamtard™ H is thermally stable up to 220°C and is the synergist of choice for many low temperature processing polymers such as PVC. The zinc and tin components in the product act in the gas and condensed phase to provide a dual mode of action for inhibiting the propagation of flame and smoke. Flamtard™ H can be used to replace antimony flame retardants and is typically used at low concentrations in combination with a halogen source or other flame retardant additive.

Flamtard™ S

Based on zinc stannate chemistry, Flamtard™ S is an anhydrous product that is stable above 400°C and recommended for high temperature processing polymers. Alongside the synergistic ability of providing flame protection and smoke suppression properties, Flamtard™ S is also an acid scavenger and as such provides anti-corrosion functionality in systems where free acid is generated during polymer processing. Flamtard™ S can be used to replace antimony flame retardants and is typically used at low concentrations in combination with a halogen source or other flame retardant additive.

Flamtard™ X

A mixed metal (hydroxy)oxide that can be used as a cost-effective, non-hazardous replacement of antimony-based flame retardant synergists in PVC formulations. Flamtard™ X can be used at low concentrations in combination with a halogen source or other flame retardant additive.

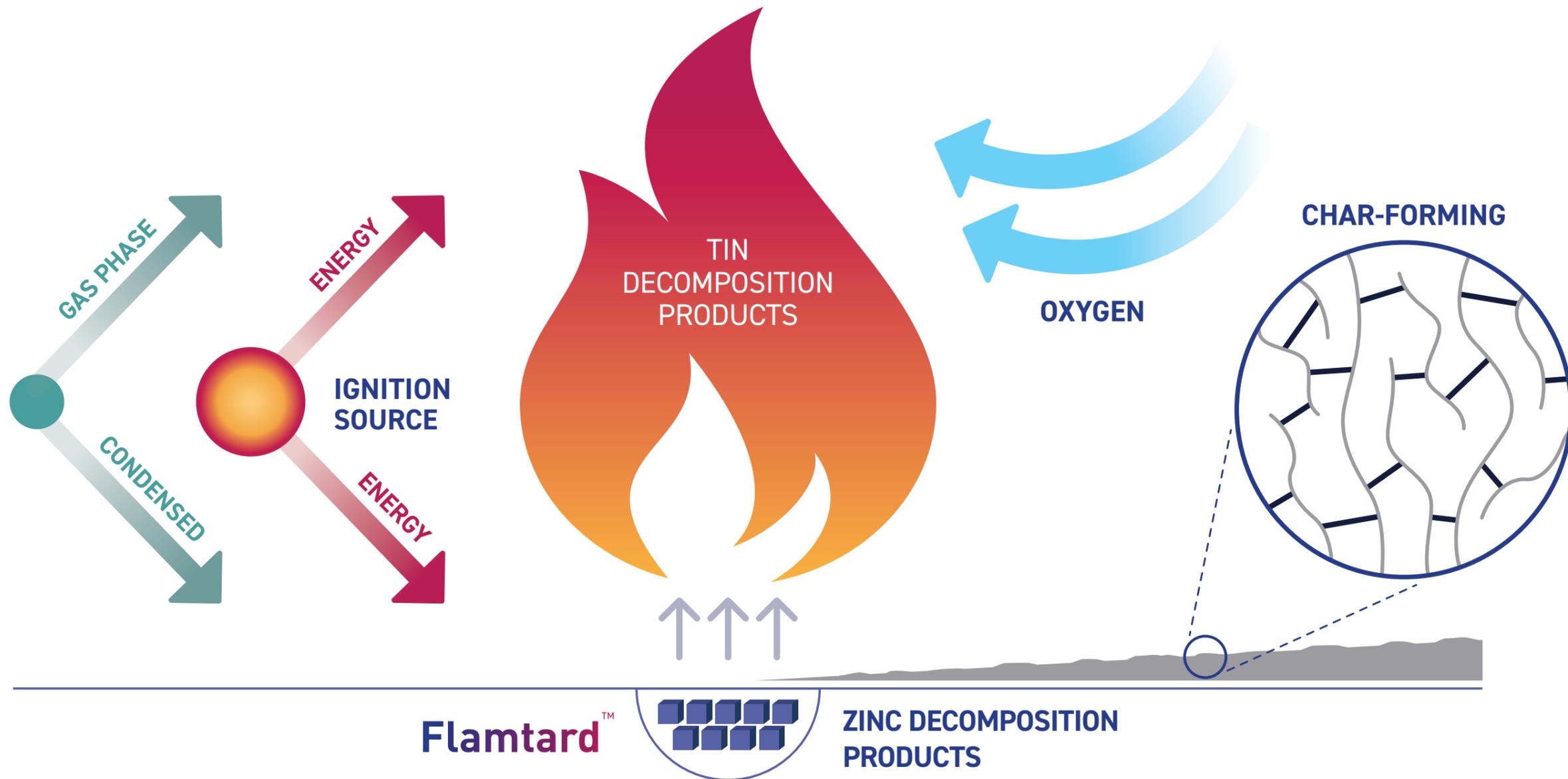
MECHANISM OF FLAME RETARDANT ACTION

The Flamtard™ range has dual phase activity: inhibiting flame by the gas phase mechanism and suppressing smoke by a condensed phase mechanism.

During the early stages of combustion, tin is released into the gas phase where it can combine with halogen radicals released from the decomposition of PVC or halogen-containing additives, inhibiting flame formation. The zinc component acts in the condensed phase, catalysing the conversion of the decomposing polymer into a carbonaceous char rather than into smoke. The gas phase activity is analogous to the way in which antimony trioxide functions and can therefore be used as a direct replacement in some formulations that require antimony-free products.

Flamtard™ products have also shown to be active in non-halogen containing formulations alongside other flame retardant additives to improve properties such as char formation and smoke suppression. The dosage of Flamtard™ can be highly dependant on the polymer matrix, additives and primary flame retardants used, but the common dosage range is 2-5 wt%. William Blythe have a team of polymer experts that can assist with formulation development with Flamtard™ products.

Flamtard™ products are stable and compatible with most polymer systems with no adverse effect on polymer performance properties. Our commitment to manufacturing excellence and continuous improvement ensures that all Flamtard™ products have a high purity and a tightly controlled particle size, delivering consistently superior performance.



Applications of Flamtard™



Plasticised PVC

Flexible PVC compounds require flame retardant additives as a result of the flammable plasticisers that are used to impart flexible properties. Flamtard™ H and X are ideal products for use as alternatives to the traditional antimony-containing additives. Flamtard™ H and X have controlled particle size to ensure full dispersibility in plasticized PVC systems. Applications include PVC wire & cable, PVC-coated technical textiles, wall covering and flooring.



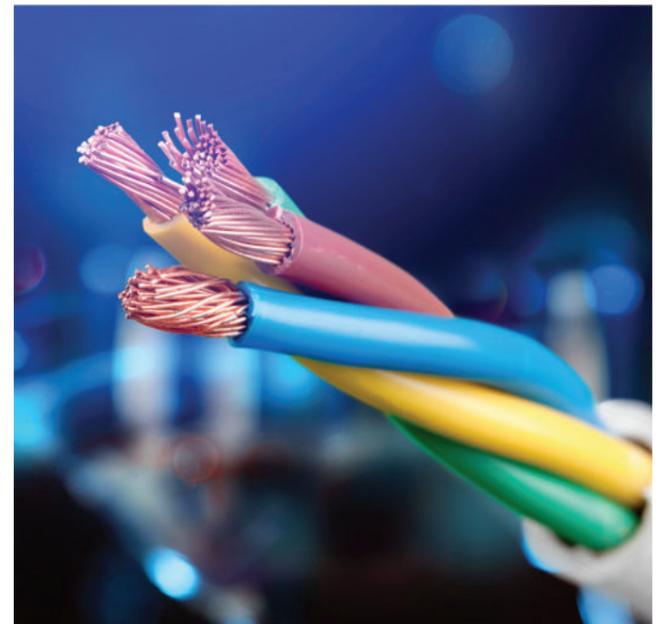
Polyamides

A critical performance parameter for polyamides in engineering plastics applications is non-flammability. With ever increasing demands for flame retardant properties in applications such as electrical components in electric vehicles, the need for high performance additives is critical. Flamtard™ S is an ideal additive to boost flame retardant properties alongside halogenated or non-halogenated additives. With non-halogenated additives, Flamtard™ S can also aid in providing anti-corrosion properties.



Elastomers, Thermoplastics & Thermosets

Flamtard™ products can improve flame retardant properties in many different halogenated polymer systems, alongside additives such as brominated flame retardants or chlorinated polymers/waxes. This includes elastomers (EDPM, TPEs), polyolefins (PE,PP), composites, thermoplastic urethane and acrylic fibres. For non-halogenated systems, Flamtard™ products can help to promote char formation and reduce smoke density.





Contact us here

William Blythe Limited is a manufacturer of speciality inorganic chemicals and advanced materials. With significant investment in product development and production infrastructure, our business is committed to working in development partnerships with our clients. Our ever expanding portfolio covers compounds of iodine, tin, copper, tungsten and graphene oxide used in catalysis, electronics, life sciences, polymer additives and renewable energy markets.

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