

TECH NEED

Seeking Non-Toxic Flame-Retardant Coating for Polymeric Materials



KEY INFORMATION

TECHNOLOGY CATEGORY:
Chemicals - Coatings & Paints

TECHNOLOGY READINESS LEVEL (TRL): **TRL6 TO TRL9**

COUNTRY: **SINGAPORE**

ID NUMBER: **TN174468**

BACKGROUND/DESCRIPTION

The increasing emphasis on fire safety regulations and standards, along with the growing awareness of the potential hazards posed by fires, has driven the demand for flame-retardant coatings. These coatings play important roles in fire protection by effectively slowing down the spreading of fires, thereby preventing catastrophic accidents, safeguarding assets, and saving lives. Industry segments such as electronics, automotive, aerospace, construction, and household, which extensively utilise materials prone to fire hazards, require effective fire protection solutions.

As the demand for flame retardant coatings continues to rise across various sectors, the market is experiencing significant growth. According to MarketsandMarkets, the global flame retardants market is expected to be worth USD 9.5 billion by 2028, with a compound annual growth rate (CAGR) of 5.2%. Particularly, the Asia Pacific region is the fastest-growing market.

Traditional flame retardants, especially those containing brominate or chlorine, have been associated with their impacts on the environment and human health. Consequently, the demand for environmentally friendly coating solutions, such as

nanocomposites and natural bio-based retardants, is growing at a rapid pace. However, the performance, efficiency, environmental impact, and cost-effectiveness of these alternative materials are still hot topics of ongoing research.

This tech need calls for non-toxic and innovative flame-retardant coatings capable of addressing the above challenges. Such coating solutions should be available for test-bedding, licensing, and co-development with industrial partners, paving the way for safer and more sustainable fire protection methods.

TECHNOLOGY SPECIFICATION

We are seeking technology owners who have non-toxic and innovative coating solutions with proven flame-retardant properties. The desired technical performance of the fire-retardant coating includes:

- Completion of performance tests and verification in accordance with UL94 and/or ASTM D6413 standards
- Eco-friendly: solvent-free and water-based formulation
- Non-toxic to humans and the environment throughout production, application, usage, and disposal
- Transparent coating that does not change the colour, texture, or appearance of the substrate
- Customisable for various polymeric materials, such as wood, foams, textiles, plastics, etc.
- Excellent resistance and durability in tropical weather conditions (i.e. high temperature and humidity)
- Easy-to-apply: adaptable to industrial practices such as spray coating, dip coating, and brush painting
- Cost-effective for scaling up in Singapore and Southeast Asia markets

WHAT WE ARE NOT INTERESTED IN

- Halogenated flame retardants (HFRs)
- Brominated flame retardants (BFRs)
- Market ready products for buy-and-sell and distribution
- Coating solutions not available for customisation and co-development

PREFERRED BUSINESS MODEL

- Licensing
- R&D Collaboration