

Safe and Sustainable Flame Retardants for Fire Safety

A vision from pinfa, a sector group of Cefic representing the manufacturers of non-halogenated phosphorus, inorganic and nitrogen flame retardants (PIN FRs).



Fire safety is integral to Europe's sustainability goals, and to ensure a safe green and digital transition. Flame retardants have a key role to play in this, to meet tomorrow's challenges they must:

- Deliver optimal fire resistance in various materials and technologies.
- Be sustainable, by ensuring:
 - » Durability: Ensure long-lasting products and buildings
 - » Safety: Safe for health and the environment
 - » Circularity: Compatible with recycling

Achieving these goals requires:



Fire safety standards

that are independent of chemical regulation. These standards must minimise risks of fire to people and property. Chemical regulations must ensure that materials used to achieve this are safe for health and for the environment.



Funding support for innovation

and the development of more sustainable flame retardant solutions and recycling technologies, including chemical recycling as a viable option.



Recognition of the role of flame retardants

in eco-design regulations. In line with EU sustainability goals, specifically "SDG GOAL 11" on inclusive, safe, resilient, and sustainable cities, flame retardants contribute to fire safety and product durability. By reducing the incidence of fires, they also mitigate the potential environmental impacts associated with fire-related damage.



Enforcement and rigorous guidelines

to ensure compliance with fire safety regulations such as EU Chemical Legislation (REACH), particularly for imported products.

Commitment to sustainable flame retardants

pinfa is committed to the safety and sustainability of flame retardants. We endorse the scientific assessment of potential risks and support authorities in their safety evaluations under REACH and other legislation.

We engage in:



Collaboration with regulatory bodies, in particular ECHA, to ensure comprehensive data submission for safety evaluations.



Ongoing research on the recyclability of PIN FR materials.



Participation in the development of Safe and Sustainable-by-Design (SSbD) criteria for chemicals, applying these to flame retardants.



Conducting PIN FR life cycle and product portfolio sustainability assessments, with contributions to research.

Background: The evolving challenge of fire safety

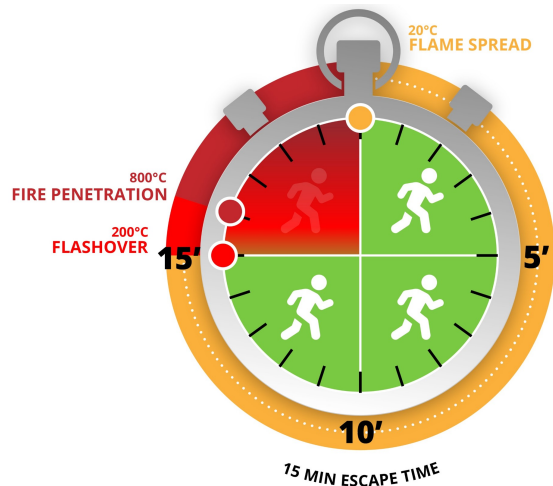
Today, life is safer thanks to fire standards. These standards need to keep up with new materials and emerging technologies – this is where flame retardants can make a significant contribution.

A fire today is potentially very dangerous: modern materials burn faster and release more gases and smoke and there is an increasing amount of flammable material in our buildings. For example, a home with modern materials can reach flashover in less than 3 minutes.¹

In addition, the shift towards renewable energy and sustainable building materials, including batteries, solar power systems, connected-things and flammable construction materials add new fire hazards, requiring advanced fire safety measures.

Flame retardants can make the difference by increasing escape time up to 15 minutes instead of 5.

Escape time with PIN flame retardants



Escape time includes the time to discover the fire, alert other people, take the decision to call the fire brigade, take own actions to extinguish or take the decision to evacuate the building. The times and temperatures in the graphs are typical numbers, but can vary according to the circumstances and materials involved.

¹ Underwriters Laboratories tests show how a 1960's furnished room takes nearly 30 minutes to reach flashover, whereas a room with modern materials reaches flashover in less than 3 minutes: [2009 video here](#) and [2020 update here](#)



Stakeholder engagement is essential to create effective and sustainable flame retardants. pinfa is ready to continue our work, providing expertise and scientific knowledge to support balanced policies and contribute to a safe and sustainable Europe.

Who is pinfa?

pinfa, the Phosphorus, Inorganic, and Nitrogen (PIN) Flame Retardants Association, represents the producers and users of a group of non-halogenated phosphorus, inorganic and nitrogen flame retardants. It is a Sector Group of Cefic.

The members of pinfa share the common vision of continuously improving the environmental and health profile of their flame retardant products. Phosphorus (non-halogenated), inorganic, and nitrogen flame retardants, also known as PIN FRs, are used to make materials such as plastics, textiles, fibres, and wood more resistant to fire. They can be incorporated into materials or into protective surface coatings. PIN FRs reduce fire dangers in various ways: they can prevent or slow down the start of a fire, reduce the intensity of a fire once it's started, and shield materials from heat during a fire. They can also help reduce smoke production.