

pinfa in Action

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Free webinar: recycling of PIN FR plastics

free webinar: fire protection of EV batteries

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PINFA IN ACTION



1st pinfa sparks webinar:

pinfa launches a new series of free, public webinars with European experts on materials fire safety and flame retardants.

The “sparks” webinars, every 2-3 months, will address themes such as impacts of fires, how materials burn, fire safety for different applications, fire testing and standards, sustainability of flame retardants today and tomorrow. The 45-minute webinars will bring one or two expert presentations and time for questions. In the afternoon European time to be also accessible from the US, the sparks webinars aim to complement the successful pinfa North America ‘[Lunch & Learn](#)’ webinar series.

The first sparks webinar, 5th February 2026, is detailed below.



Free webinar: recycling of PIN FR plastics

Thursday 5th February 14h – 14h45 CET (Brussels): challenges and solutions for recycling for high-value PIN FR materials. With Michael Grosshauser, Scientific Expert at Fraunhofer Institute for Structural Durability and System Reliability LBF - Innovation, Transfer and Cooperation, Germany. The acceleration of circularity for plastics in applications such as transport and electronics, means that ensuring fire safety over the whole materials lifecycle is essential. This webinar will look at how polymer recycling and fire safety can progress together, what recycling means for material innovation, perspectives for legislation and implications for industry.

Thursday 5th February 14h – 14h45 CET (Brussels):

Registration <https://bit.ly/45tz9nD>



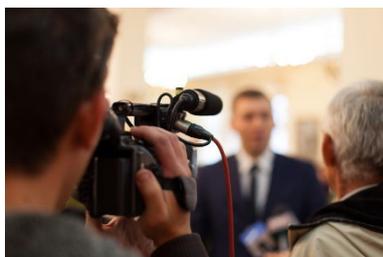
free webinar: fire protection of EV batteries

Wed. 18th February 11:30 - 12:30 EST (USA) = 17h30-18h30 CET (Brussels). **Fire Protection of Materials for EV Batteries, Regulations and Trends**, with Shababa Selim, IDTechEx. With insights from IDTechEx [report](#) "Fire Protection Materials for Electric Vehicle Batteries 2025-2035". An overview of thermal runaway regulations, the need for fire protection materials and options for these materials today and under development, fire protection benchmarking, market trends and forecasts.

Wed. 18th February 11:30 - 12:30 EST (USA) = 17h30-18h30 CET (Brussels). Fire Protection of Materials for EV Batteries, Regulations and Trends, pinfa-NA 21st free L&L webinar <https://www.pinfa-na.org/XTSg#/registration>

Registration

https://us02web.zoom.us/webinar/register/WN_KTryRPiERpWWeMCYqmXTSg#/registration



pinfa at K 2025

Eight one-minute Interviews of pinfa member company flame retardant experts present the benefits of PIN fire safety. Budenheim, Clariant, Grolman, Huber, Lanxess, Nabaltec, Thor, Tolsa, PIN flame retardant manufacturers and distributors, present how non-halogenated flame retardants enable polymer formulations to achieve high performance and fire safety standards, with sustainability, recycling, carbon footprint whilst avoiding antimony and halogen-containing chemicals. These cover the whole range of PIN flame retardants and synergists, offering solutions to accompany tomorrow's polymer and compound development.

pinfa at K 2025, 8-15 October 2025, Düsseldorf
<https://www.pinfa.eu/resource/pinfa-at-k-2025/>

Franco ORSINI, Business Manager - Flame Retardants Plastics, THOR GMBH - [link](#)

Marta SACRISTAN, Functional Additives Product Dev. Manager, TOLSA - [link](#)

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Guido KETTELER, Head of Business Development & Heiko TEBBE, Head of Application Technology, LANXESS - [link](#)

Adrian BEARD, CLARIANT, Pinfa Chair & Marketing and Advocacy for Flame Retardants - [link](#)



pinfa China textile flame retardants seminar

The pinfa China seminar, Shenzhen, 12th December 2025, brought together experts 80+ experts and attendees in fire safety treatment of textiles. Speakers included pinfa, Clariant, Flamaway, Department for Emergency Management Department, Roland Berger Consulting, Shanghai Antu Flame Retardant Fiber, Beijing University of Chemical Technology, Guangdong Kaidun New Materials, Shanghai Quality Supervision and Inspection Technology Research Institute.

The seminar explored cutting-edge trends, technological breakthroughs, and industrial applications in textile flame retardants. Topics included global flame retardant trends, electric vehicle fire prevention, textile flame retardant solutions, new material R&D, and regulatory standards. Leading companies and researchers shared insights to connect research, technology transfer and industrial implementation to advance safer, greener, and more efficient flame retardant technologies for textiles.

Adrian Beard, Clariant and pinfa Vice-President, presented global perspectives, outlining developments in textile fire safety and innovation, and the key role of non-halogenated flame retardants in combining demanding chemical safety requirements (e.g. REACH, ECHA, SSbD, Ecodesign) and fire safety obligations for textiles, in particular in public buildings and transport applications.

“Global Perspectives on Flame Retardants for Textiles: pinfa’s Role in Advancing Safety and Innovation”, Adrian Beard, Clariant and pinfa Vice-President, at pinfa China Flame Retardant Academic and Industrial Seminar in Textile Application, 12th December 2025

<https://www.pinfa.eu/resource/global-perspectives-on-flame-retardants-for-textiles-pinfa-role-in-advancing-safety-and-innovation/>

pinfa China <http://www.pinfachina.net/>

FIRE SAFETY



Fire safety of aircraft materials proven again

Recent incidents show that fire safe materials in aircraft are protecting lives. According to a [UL report](#), there are around two battery fires in aircraft per week. An increasing number of airlines are banning or limiting power banks on flights, with [restrictions](#) varying between different airlines: banning batteries in hold luggage, obliging to keep batteries in the cabin on your person not in the overhead compartment, power limits on power banks, bans on spare batteries not in equipment. In incidents where lithium-ion batteries or power banks have ignited on aircraft:

- An Air China flight was diverted mid-flight and safely landed in Shanghai after a lithium-ion battery apparently ‘spontaneously ignited’ in the overhead luggage compartment on [18th October 2025](#).

- 8 people were taken to hospital for observation after possibly inhaling toxic fumes after a battery ignited in hand luggage during boarding of an SAS flight in Oslo, [14th October 2025](#).
- A portable power bank in hand luggage in the overhead luggage compartment is indicated to have caused a fire which occurred shortly before take-off and which severely damaged an Air Busan plane at South Korea's Gimhae airport on [28th January 2025](#): nearly 200 passengers were evacuated.

In all cases, despite the high energy released from lithium-ion battery fires, the fire has been contained and no fatal accidents have resulted, showing the effectiveness of aircraft material fire safety standards. In that most of the interior materials in aircrafts (seats, flooring, internal structures are made of polymers and composites (for reasons of weight), this is largely due to use of flame retardants. To achieve smoke toxicity standards only PIN flame retardants are used in aircraft.

"The airlines banning power bank chargers from flights", Yahoo News 21 January 2026 <https://uk.news.yahoo.com/power-bank-charger-flight-airline-rules-ban-limit-132429726.html>

"Lithium-Ion Battery Incidents in Aviation: 2024 Data Review", UL <https://ulse.org/wp-content/uploads/2025/06/TRIP-Report-May-2025-Final.pdf>



FRs to protect building works in Hong Kong

Flame retardant netting is being distributed to construction firms for over 400 building sites in Hong Kong to improve fire safety (50 000 nets). This follows the tragic Wang Fuk Court, apartment blocks fire, 26th November fire 2025, which killed over 150 people and leaves residents homeless. The Hong Kong Construction Industry Council has posted a [video](#) showing that the distributed flame retarded protective netting is self-extinguishing and does not result in melt dripping which could potentially ignite other construction materials. The Hong Kong Scaffolding Workers Union and the Hong Kong Institute of Safety Practitioners have both [pointed](#) to the current lack of legislation to require flame retardant materials on construction sites.

The tragic Wang Fuk Court fire, 26th November 2025, Hong Kong, impacted seven of the eight tower blocks of the 2000 flat complex. 168 people died in the fire and nearly 80 were injured. The whole complex, which dates from the 1980's, was undergoing renovation and was covered in bamboo scaffolding and green protective construction site netting (see photo).

"Hong Kong construction industry body distributes 3,000 flame-retardant scaffold nets", 16th January 2026 <https://hongkongfp.com/2026/01/16/hong-kong-construction-industry-body-distributes-3000-flame-retardant-scaffold-nets/>

"Why Hong Kong's Deadly Fire Spread Swiftly - Focus On Fast-Burning Foam" https://www.ndtv.com/world-news/hong-kong-fire-wang-fuk-court-why-hong-kongs-deadly-fire-spread-swiftly-focus-on-fast-burning-foam-9710035?utm_source=chatgpt.com

“Here is what we know about Hong Kong's Tai Po fire and the role of bamboo scaffolding” https://www.abc.net.au/news/2025-11-27/what-we-know-about-hong-kong-tai-po-fire-bamboo-scaffolding/106057774?utm_source=chatgpt.com

“Hong Kong arrests more suspects in fire probe as death toll hits 151” https://www.reuters.com/world/china/police-comb-fire-ravaged-hong-kong-apartments-death-toll-146-2025-12-01/?utm_source=chatgpt.com

“Experts urge laws to mandate fire-proof materials' use”, RTHK Hong Kong, 27th November 2025
<https://qbcode.rthk.hk/TuniS/news.rthk.hk/rthk/en/component/k2/1833559-20251127.htm>

Photos: WikiCommons - Par Waydward — Travail personnel, CC0.

China orders building inspection

China's Interior Ministry has ordered inspection of a million high-rise buildings following the Hong Kong Wang Fuk fire (see above). The inspection ordered by the State Council Work Safety Commission will particularly target construction and renovation building sites to verify whether China's 2011 regulation requiring scaffolding mesh to be flame retardant and banning wooden and bamboo scaffolding. It will also target construction materials: flammable exterior insulation is banned on high-rise buildings in China since 2021. Smoke alarms, fire hydrants, sprinkler systems and fire doors will also be verified. China has more than one million high-rises, defined as buildings over 27 metres high (around 8 stories).

“China launches campaign to investigate and rectify major fire hazards in high-rise buildings”, Global Times, 29th November 2025
<https://www.globaltimes.cn/page/202511/1349356.shtml>

POLICY AND STANDARDS



The Scottish Government
Riaghaltas na h-Alba

Scotland consults on building fire safety

Open to 10th April 2026. Scottish Government consultation to review building fire safety regulations, following from the Grenfell fire Inquiry report. Questionnaire for individuals and organisations asks for input on fire safety issues which should be added to or clarified in regulatory guidance and poses specific questions on legal status of Guidance Handbooks, compartmentation, fire spread and vulnerable populations, fire engineering professional regulation, legal roles of Compliance Manager.

“Scottish building regulations - fire safety review and compliance: call for evidence”, Scottish Government, public consultation open to 10th April 2026 <https://www.gov.scot/publications/scottish-building-regulations-fire-safety-review-compliance-call-evidence/documents/>



ASTM standards updates

Amongst updates to ASTM standards underway: blooming of brominated FRs, FRs in dust, definition of “non-combustible”. For regular detailed news on standards updates, subscribe to FS&TB ([Fire Safety & Technology Bulletin](#)). Under ASTM D20 Plastics, the standard for assessing blooming of brominated flame retardants is out for ballot to add another test for flame retardants in dust. Under ASTM E05.31 Terminology, a simplification of the definition of “non-combustible” (for building materials) is expected to be balloted, to read “not capable of undergoing combustion”. A proposal to create standards for terminology for (plastics) recycling is underway. Under ASTM E2579, discussions are ongoing on a proposal to require flame retardant wood structural panels to be tested with a gap or rip, which is liable to decrease fire resistance but to reflect real-life fire risks in case of installation problems or damage.

ASTM = American Society for Testing and Materials <https://www.astm.org/>
 Information above from FS&TB December 2025 and January 2026. The above is simplified, please refer to FS&TB for full details:
<https://qbhinternational.com/fstb/>



UK publishes report on smoke toxicity

Research report for UK Government will input to possible regulation of smoke toxicity from construction products. The report was commissioned following recommendations of Dame Judith Hackitt’s review (pinfa Newsletter n°92) of building regulations and fire safety following the Grenfell fire which killed over 70 people (Public Inquiry conclusions, pinfa Newsletter n°163). This report includes a review of smoke toxicity research, standards and testing methods, and to carry out testing to support regulatory recommendations for test methods. The research tested carbon monoxide emissions only from a mixture of PIR (polyisocyanurate) and phenolic foam in a crib set up (fully ventilated). The report considers that “the findings did not provide a sufficiently robust methodology for regulatory assessment of smoke toxicity in building materials. The experimental approach of coupling bench-scale yields with burning rate measurements lacks the reliability needed for practical application in building construction regulations”. The report thus concludes that “considering the reaction-to-fire performance of materials is the primary way to reduce fire hazard” alongside building compartmentalisation to protect people from spread of fire smoke. The report recommends “that it is not necessary to explicitly regulate the toxicity of the smoke produced from burning construction materials” but that knowledge should continue to be monitored.

“Fire safety: smoke and toxicity. Final report”, R. Hadden, M. Spearpoint, J. Torero, Y. Kanellopoulos, K. Chotzoglou (Edinburgh University, OFR Consultants, University College London, Efectis) for the UK Building Safety Regulation, September 2025, 330 pages
<https://www.gov.uk/government/publications/fire-safety-smoke-and-toxicity>



Smoke toxicity of residential home contents

Research following the Grenfell Inquiry compares smoke toxicity from building contents to construction materials. This literature analysis paper aims to complement the Hadden report on smoke toxicity from construction materials (see above) by analysing published studies on smoke toxicity from household furnishings. The conclusions underline the importance of ventilation conditions, fuel load and materials burning. Plastic materials, estimated to be around 30% of mass of residential furnishings, contribute significantly to HCN emissions, with polyurethane “accounting for a disproportionately high yield”. Wood and cellulosic materials are primarily responsible for carbon monoxide emissions. The report suggests further research should concentrate on adjusting toxic gas emission estimates to real-life fire conditions, interactions between different materials in fires and effects of ventilation (oxygen availability or limitation).

“Assessing the toxic concentration of fire smoke from the contents of residential spaces”, M. Spearpoint and Y. Kanellopoulos, *Interflam* July 2025

https://www.researchgate.net/publication/393401518_Assessing_the_toxic_contribution_of_fire_smoke_from_the_contents_of_residential_spaces

RESEARCH AND INNOVATION



Optimisation of bio-based PIN intumescent

Heat barrier effect of tannic acid - ammonium polyphosphate (APP) intumescent increases with porosity and char. These PIN FR compounds were tested in DGEBA resin with a polyamine hardener. Heat transfer was tested using heat flow meter tests with the intumescent coating on a metal sheet subjected to a methane torch. The intumescent layer’s heat barrier effect increased as its porosity increased (measured by SEM scanning electron microscopy with MATLAB-based image analysis) and with formation of a thermally stable char layer at around 400°C. This research is supported by a pinfa-NA scholarship (see pinfa Newsletter n°170).

“Thermal Insulation Performance of Epoxy-Based Intumescent Coatings: Influence of Temperature-Induced Porosity Evolution on Heat Transfer Resistance”, T. Hafiz et al., *Polymers* 2025, 17, 1426, <https://doi.org/10.3390/polym17111426> Photo: Taher Hafiz.



Performance FR compounds for TPE

Kraiburg's new non-halogenated FR compounds for TPE's: material performance, rail standard EN 45545-2 compliance.

The flame retardant TPE (thermoplastic elastomer) compounds achieve UL 94 V-0 @ 1.5 mm and EN 45545-2 R22 HL3 and R23 HL3 fire performance with low smoke and low toxic gas in fire. The compounds include soft and elastic materials offering excellent performance in sealing applications up to 70°C. Material properties of the compounds also include improved tear resistance, compression set values and processing behaviour in injection moulding and extrusion. Excellent adhesion to polypropylene enables use in multi-component parts. The non-halogenated solutions also benefit from easier end-of-life management. Kraiburg TPE GmbH & Co. KG is a leader in specialist and industrial TPEs.

"New standards for meeting the highest fire safety requirements", Kraiburg, 29th October 2025 <https://www.kraiburg-tpe.com/en/new-standards-meeting-highest-fire-safety-requirements>



Melamine cyanurate (MCA) UL94 V-0 in PA

CAI Performance Additives has launched a high-efficiency MCA grade designed to enable considerably lower loadings in polyamides.

The reduced loading leads to improved retention of mechanical properties, lower compound density, reduced surface defects, low blooming or migration risk, easier colour matching, and improved processing behaviour. The non-halogenated flame retardant is targeted at PA6 and PA66 formulations without glass or mineral fillers, as these are known to dilute the polymer phase and disrupt char formation in MCA-based systems. The specifically engineered melamine cyanurate (MCA) uses a proprietary modification process that reduces inter-particle hydrogen bonding and improves de-agglomeration within the polymer melt. This results in significantly improved dispersion of the MCA phase, allowing more efficient gas-phase nitrogen release and formation of a coherent, foamed char layer during combustion. The improved efficiency directly enables meaningful reductions in loading while maintaining flame performance, achieving UL-94 V-0 ratings down to 0.8 mm in unfilled PA6 and PA66 at typical loadings of approximately 5% in PA6 and 4% in PA66 (around half conventional MCA loadings). Applications include electrical and electronic components such as connectors, terminal blocks, appliance components, and small enclosures where thin-wall flame retardancy, halogen-free compliance, and preservation of base polymer properties are critical.

"CAI Performance Additives launches halogen-free flame retardant for PA6 and PA66", SpecialChem 9th January 2026 <https://www.specialchem.com/polymer-additives/news/cai-performance-additives-launches-halogen-free-flame-retardant-for-pa6-and-pa66>

CAI Performance Additives <https://www.caiadditives.com/st-mca-h>



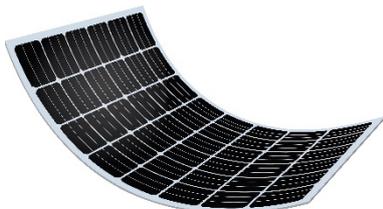
PIN FR polypropylene ChemSec Silver listed

Kafrits non-halogenated flame-retardant polypropylene (HFFR PP) is ChemSec Market Place silver listed as an environmentally preferable “silver” alternative in sheet, profile and pipe applications. The masterbatch can be blow or injection moulded for building and construction applications, and in printing and packaging. It can achieve UL 94 V-2 (0.4 mm) fire performance, and because it is non-halogenated offers low smoke and low fire toxicity (LPS 1207 Loss Prevention Standard: ignitibility, limiting oxygen index, smoke and toxic gas emissions). It enables IEC 61386 (requirement for conduits to protect electrical wiring), has good compatibility with fillers and UV additives. Kafrit’s core expertise is based on the ability to supply suitable flame-retardant performance with a wide range of colours as a “combi batches”: colour and HFFR.

“Chem Sec Market Place. Silver Alternative”

<https://marketplace.chemsec.org/alternative/Halogen-free-flame-retardant-for-PP-applications---HFFR-00228-PP-150>

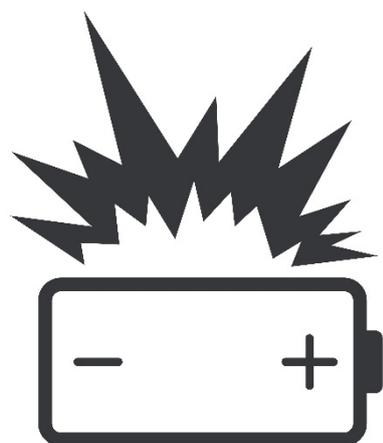
Kafrit 0028 PP: <https://kafrit.com/catalog/pipes-and-sheets/>



P - N FR for fire safety and PV performance

Novel PIN FR in TPU combined fire performance with photoluminescence, transparency, mechanical performance: nitrilotris(ethane-2,1-diyl) tris (diphenylphosphinate) (NEDP). At 9% loading in TPU (thermoplastic polyurethane elastomers), UL 94 V-0 was achieved. Applied as 0.01 mm film, the TPU-NEDP compound shows photoluminescence (emitting visible blue light under UV) and 80% light transmission. This resulted in a +0.8% increase in photovoltaic conversion efficiency when the film was applied to flexible PV cells.

“Recyclable flame retardant, luminescent, and transparent thermoplastic polyurethanes: applications in light conversion films for flexible solar cells”, L-W. Su et al., *Chemical Engineering Journal* 517 (2025) 164436, <https://doi.org/10.1016/j.cej.2025.164436>



P Mo S FR epoxy battery runaway barrier

Phosphorus molybdenum sulphur PIN FR in 3mm epoxy between pouch cells prevents battery thermal runaway. Phosphorylated MoS₂ nanowires (0.85% P) were dosed at 3% in epoxy. This results in a +159% increase in char, -57% decrease in peak heat release rate and -57% decrease in carbon monoxide emission. Used as a 3 mm layer between pouch cells, the PIN FR epoxy prevents battery thermal runaway, keeping temperature below 100°C

“Fire-resistant and mechanically-robust phosphorus-doped MoS₂/epoxy composite as barrier of the thermal runaway propagation of lithium-ion batteries”, J. Wang et al., *Chemical Engineering Journal* 497 (2024) 154866, <https://doi.org/10.1016/j.cej.2024.154866>

PUBLISHER INFORMATION

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