pinfa
Phosphorus, Inorganic & Nitrogen Flame Retardants Association

Your newsletter for non-halogen fire safety solutions n° 157 February 2024

PINFA IN ACTION


Free webinar on regulation and sustainability

28th February 2024. EU regulatory strategy for sustainable chemicals and opportunities for PIN flame retardants: the presenters will give an update on the EU Green Deal, Zero Pollution Action Plan and the ECHA Regulatory Strategy for Flame Retardants and what they will mean for flame retardants tomorrow in Europe and worldwide. They will discuss opportunities for innovative and safe PIN FRs, to respond to industry needs and ensure sustainable fire safety. With Adrian Beard, responsible for FR advocacy at Clariant and Chairman of pinfa, and Peter Fisk, founder of Green Chemical Design Ltd.

7th pinfa-NA Listen & Learn webinar, 28th February 2024, 11h30-12h30 ET (16h30-17h30 CET) www.pinfa-NA.org

pinfa-NA explainer video series – n°5

5th educational video explains, with examples, how flame retardants can prevent fires happening or reduce their gravity. The 4 minute video outlines how FRs can prevent ignition, with the example of a burning cigarette dropped on a hotel lobby carpet. The video explains how FRs can slow fire development and provide life-saving minutes for escape before non-survivable flashover: "Every second counts". Examples are given of FRs preventing fire spread in buildings in fire-stop materials used where cables or pipes cross walls, and of intumescent coatings which protect steel or concrete from structural failure in fires.

The first four videos already online explain how flame retardants work, different layers of fire protection, fire regulations – codes and standards and fire risk scenarios.

www.pinfa-na.org/learnfrmaterials

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A sector group of Cefic

Global chemistry industry transparency

ICCA progresses towards global public database on plastics additives, including flame retardants. The International Council of Chemical Associations (which includes Cefic in Europe) is establishing an integrated public safety and sustainability data base for chemicals used in plastics formulation, so providing a tool to support plastics recycling and waste management. Information will initially include (from 2024): identification numbers and names, additive functions, application sectors and polymers, use tonnage estimates, regulatory registrations in different countries and determined hazard classifications where applicable. In a second stage information on health and environment properties, leaching and exposure will be added. ICCA underline the crucial role of technical additives in plastics to ensure durability and performance characteristics, also needed for sustainability (renewable energy, light-weighting).

"ICCA Chemical Database - Global Partners For Plastics Circularity"
https://plasticscircularity.org/additives/

POLICY AND REGULATION

EU One Substance – One Assessment

The European Commission has adopted three acts to streamline chemicals assessment, data bases and monitoring. The changes aim to ensure transparency of scientific studies commissioned by authorities and by companies, to collect human biomonitoring data (results of measurements of chemicals in human blood, urine or milk), strengthen cooperation between relevant European agencies (European Chemicals Agency ECHA, European Food Safety Authority, European Environment Agency, European Medicines Agency), enable transfer of knowledge between different product legislations and establish a common data platform (subsuming existing platforms).

European Commission press release 7th December 2023 "'One substance, one assessment' chemicals assessment reform"
https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6413

Proposal for a Regulation establishing a common data platform on chemicals: https://environment.ec.europa.eu/publications/proposal-regulation-establishing-common-data-platform-chemicals_en

Proposal for a Regulation on the re-attribution of scientific and technical tasks and improving cooperation among Union agencies in the area of chemicals https://environment.ec.europa.eu/publications/proposal-regulation-re-attribution-scientific-and-technical-tasks-and-improving-cooperation-among_en

Proposal for a Directive on the re-attribution of scientific and technical tasks to the European Chemicals Agency
https://environment.ec.europa.eu/publications/proposal-directive-re-attribution-scientific-and-technical-tasks-european-chemicals-agency_en

EU publishes review of RoHS Directive

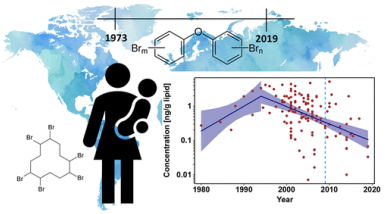
Report concludes RoHS Directive "continues to respond to needs" and supports the Circular Economy. The report estimates that the Directive reduced restricted substances in EEE by two-thirds (2003-2016). It underlines that the list of restricted substances should regularly be updated and notes that a clearer methodology and consultation process should be defined for this (in coherence with REACH). It is considered that the use of groups of substances in the restrictions list of RoHS is considered positive (rather than lists of individual substances). Restrictions of substances in EEE are considered to facilitate recycling (by avoiding use of chemicals which become restricted), despite a WEEE collection rate of below 50% in the EU (2020). It is also proposed to define beneficial conditions for recycled materials (lighter restrictions for some substances). The report notes overlap between RoHS and other EU chemicals legislation, in particular the WEEE Directive, REACH, EcoDesign and POP. It is proposed to reattributed RoHS list chemical assessments to ECHA, in line with the "One chemical one assessment" approach (see above).

European Commission report on the review of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, SWD(2023) 760, 7th December 2023
https://environment.ec.europa.eu/publications/report-review-directive-restriction-use-certain-hazardous-substances-electrical-and-electronic_en

Political agreement on EU EcoDesign

This will probably enable adoption of the EcoDesign Regulation revision before the June 2024 European elections. The European Commission statement announcing this 'trilogue agreement' (provisional agreement between the European Parliament and Council) underlines that the EcoDesign revision will emphasise energy efficiency and climate objectives (including carbon footprints), product durability – reuse – recycling and chemical substances susceptible to inhibit reuse and recycling, consumer information and transparency (including the Digital Product Passport). The Commission's proposal for the revised Regulation includes the possibility to exclude "substances of concern", with a wide new definition including any chemical which "negatively affects the re-use and recycling of materials in the product" (see pinfa Newsletter n°132). The trilogue text is not yet published.

"Provisional agreement for more sustainable consumer products", European Commission, 5th December 2024
https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6257



Flame retardant regulations are effective

Study suggests that regulation has been effective in reducing levels of targeted FRs in human breast milk. Analysis of over 200 published studies shows a 'break point' in concentrations of two FRs* regulated in Europe in 2004. Comparisons between regions with different regulatory histories confirmed the effectiveness of regulations. Data was insufficient to conclude for two other FRs regulated more recently**. The authors conclude that regulation appears to have a quantifiable effect on reducing targeted FRs in breast milk, but that monitoring needs to continue after regulation is introduced to verify impacts.

** BDE-49 =pentaBDE and BDE-99 = octaBDE.*

*** HBCDE and BDE-209 = decaBDE.*

"Has Regulatory Action Reduced Human Exposure to Flame Retardants?", V. van der Schyff et al., Environ. Sci. Technol. 2023, 57, 19106−19124 https://doi.org/10.1021/acs.est.3c02896

FIRE SAFETY


TORONTO SUN

JOLTING: Lithium-ion battery concern heats up after New Year's Eve TTC train fire

Toronto's fire chief warns faulty battery fires rose 90% in 2023 from the previous year

E-bike catches fire on Toronto metro

The incident showed the effectiveness of demanding fire and smoke safety standards in underground rail systems. Only the e-bike owner and one other passenger sustained non life-threatening injuries from the bike battery fire and other passengers escaped safely when the train stopped at Sheppard-Yonge Station. The metro line was able to rapidly re-open after evacuating the impacted train. Fire protection engineers and scientists underline that smoke control and material fire resistance standards applicable in underground transit systems ensured that the fire did not spread to seats and that smoke from the burning battery did not inhibit evacuation of the train or the station.

"Toronto subway e-bike fire highlights dangers of incidents involving lithium-ion batteries", Toronto City News, 1st January 2024 https://toronto.citynews.ca/2024/01/01/ttc-sheppard-yonge-subway-train-fire-ebike-lithium-ion-batteries/

Toronto Sun, 3 January 2024 https://torontosun.com/news/local-news/jolting-lithium-ion-battery-concern-heats-up-after-new-years-eve-ttc-train-fire

Comments: https://www.linkedin.com/posts/wojciech-wegrzynski_twitter-x-user-kyletaylor-httpslnkdin-activity-7147605068131848192-bMT4/

"Luckily, I was able to put the flames out, but I had a shock and have been left with a burn hole in my sofa. I dread to think what would have happened if I had been asleep or was not in the property, as there is no doubt the sofa and house would have gone up in flames."

Ian, 57, a Customer Assistant from the Isle of Wight

Aviva warns of battery fire risks

Insurer Aviva UK is warning customers to change battery charging habits, as 1 in 9 households has seen a battery fire. The UK's leading insurance company, with nearly 19 million customers, says lithium-ion battery fires increased 7% from 2022 to 2023 and 11% of households have experienced a battery fire or explosion. Yet over 40% of the population don't know what a lithium-ion battery is, and are not aware of the risks related to charging. 70% don't know the warning signs that a battery is likely to fail. Many people leave their devices charging when already fully charged or when they are not at home. 10% of households still do not have a smoke alarm. Aviva presents a number of tips to extend lithium-ion battery lifetime and keep them safe and avoid fires when charging.

"Aviva issues warning about unsafe charging habit", Aviva UK, 10th January 2024 *https://www.aviva.com/newsroom/news-releases/2024/01/Aviva-issues-warning-about-unsafe-charging-habits/*

Experts say FR materials saved lives

Airbus and materials scientists say fire resistant composites saved lives of the 349 passengers in Tokyo plane crash. All passengers on the A350 escaped alive after the aircraft hit a small stationary plane on the runway during landing (see pinfa Newsletter n° 156). The A350 contains large amounts of polymer composites. Airbus is quoted as stating that the composites offer as much fire resistance as aluminium (which burns at 600°C). Emilie Greenhalgh, materials scientist at Imperial College London, says that although the composites can burn at lower temperature, they form a char layer which acts as a barrier against fire progression. This barrier is the result of non-halogenated PIN flame retardants, which prevent and reduce fire and reduce smoke emission.

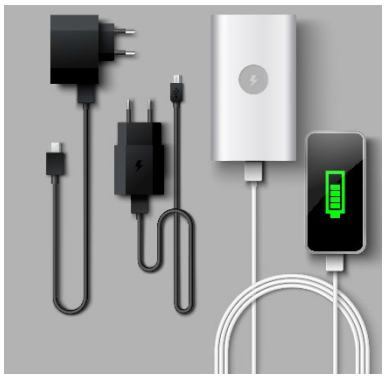
"Plastic Fantastic: Composites: Tokyo air crash saviour?", PlastEurope News, 12th January 2024
https://www.plasteurope.com/news/PLASTIC_FANTASTIC_t254343/

RESEARCH AND INNOVATION

PIN FR for fire safe EV portable charging

Mobility Dock EV mobile charger by Lapp uses BASF's high strength, UV resistant PIN flame retardant polyamide. The Mobility Dock provides a compact, ergonomic, transportable solution to charge electric vehicles from standard household sockets. BASF's polyamide compound containing PIN flame retardants provides the mechanical performance, UV and weathering resistance, design flexibility, electrical properties and laser marking possibilities required for the Mobility Dock. The Mobility Dock has achieved recognition in the German Design Award (Excellent Product Design/Automotive Parts and Accessories category), eMove360° award (for Electric & Autonomous Mobility Connectivity & Engineering) for Sustainability in Mobility Concepts.

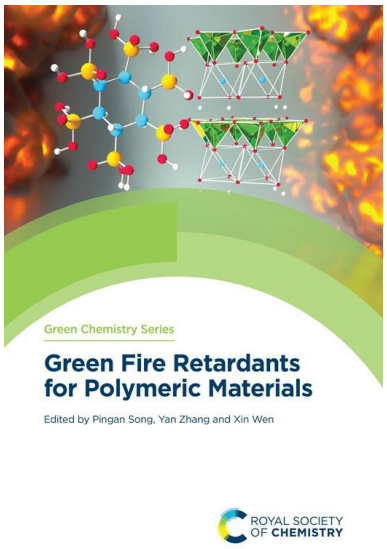
"Free and independent: Portable charging for electric vehicles entirely in style", BASF 28 September 2023
https://www.basf.com/global/en/media/news-releases/2023/09/p-23-305.html Photo Lap 2023.



PIN FR recycled / biobased TPE

Avient has launched HFFR TPEs with post-consumer recycled or bio-biased content for performance cable applications (Halogen Free Flame Retardant Thermo-Plastic Elastomer). The resin compounds have up to 45% bio-based or 30 post-consumer recycled content. They achieve UL 94 V-0 (3.2 mm), offer UV resistance, hardness and processability for extrusion molding. The TPEs are compatible with overmolding onto PP, ABS and PE and can be coloured. Applications include electronics cables such as USB-C connector wires. Non halogenated flame retardant TPEs with recycled or biobased content are also available for transport, consumer and other applications.

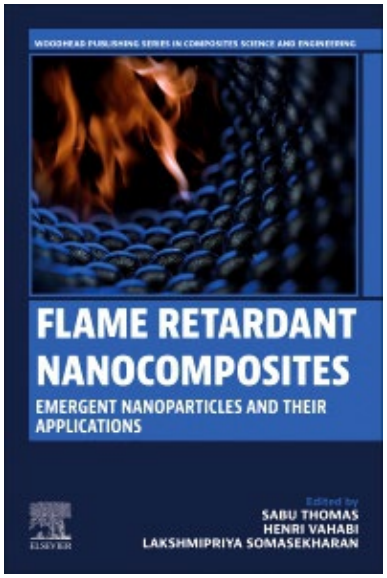
"Avient Launches Halogen-Free Flame-Retardant TPE Grades Made with Sustainable Raw Materials for USB-C Cable Jackets", Avient, 27 June 2023. Photo Getty from Avient. https://www.avient.com/news/avient-launches-halogen-free-flame-retardant-tpe-grades-made-sustainable-raw-materials-usb-c-cable-jackets



Book: 'Green' flame retardants for polymers

Wide R&D perspectives for bio-derived and green mineral, phosphorus and nitrogen flame retardants. A definition of a "Green Flame Retardant" is proposed (page 363, W. Tang et al.) as: including at least one bio-based or its synthesis respects at least one of the twelve principles of Green Chemistry. Written by around 50 scientists from China (mainly) and worldwide, the book covers as "Green flame retardants" (FRs): bio-derived FRs, including with active phosphorus (P) and nitrogen (N); mineral-derived FRs and 'green synthesis' of PIN FRs. Bio-derived FRs presented include both natural chemicals, such as alginate (N) and phytate (P), and those produced by combining bio-derived organic chemicals (lignin, furfural dopamine …) with P and/or N (e.g. phosphoramides, phosphonates …). The chapter on mineral FRs covers both widely used commercial PIN FRs processed from natural minerals or chemically synthetised, as well as research into possible use of waste materials (fly ash). More than half of the book presents "Green synthesis" of FRs, covering both possible new chemical routes to current commercial PIN molecules and new PIN molecules proposed in research publications.

"Green Fire Retardants for Polymeric Materials", 450 pages, ed. P. Song, Y. Zhang, X. Wen, UK Royal Society of Chemistry, 2024, 224€ https://books.rsc.org/books/edited-volume/2146/Green-Fire-Retardants-for-Polymeric-Materials



Book: Flame Retardant Nanocomposites

Nano-delivered PIN FRs can form nanocomposites for enhanced performance and fire safety in modern materials. This book presents a range of "emerging" nanocomposite FR solutions, including bio-based nano-materials, graphenes, minerals and metal compounds, metal-organic frameworks (MOF) and polyhedral oligomeric silesquioxanes (POSS). Different modes of action including gas phase, char formation and surface protective barrier are discussed. Applications presented include textiles, transportation, electronics, construction. Environmental assessment methods are proposed.

"Flame Retardant Nanocomposites. Emergent Nanoparticles and their Applications", ed. S. Thomas, H. Vahabi, L. Somasekharan, Elsevier, January 2024, 800 pages, 247€50, https://shop.elsevier.com/books/flame-retardant-nanocomposites/thomas/978-0-443-15421-8

PUBLISHER INFORMATION

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