pinfa
Phosphorus, Inorganic & Nitrogen Flame Retardants Association

Your newsletter for non-halogen fire safety solutions n° 116 September 2020

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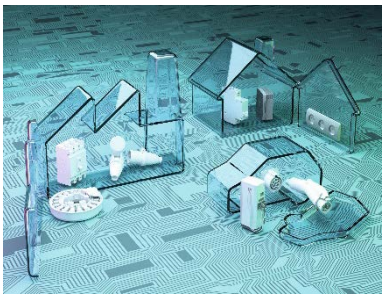
PINFA NEW MEMBERS



RadiciGroup High Performance Polymers

For RadiciGroup High Performance Polymers, pinfa membership is an important step of the journey towards sustainability. RadiciGroup High Performance Polymers is one of the world's leading manufacturers of polyamide and other engineering polymers. It is part of RadiciGroup, which produces speciality chemicals, performance polymers, synthetic fibres and nonwovens since 1941. The Group has seven engineering polymer production sites around the world, with vertically integrated production and R&D support, serving automotive, electrical/electronics, consumer goods and industrial sectors. RadiciGroup High Performance Polymers is committed to social environmental responsibility, including ISO systems for environmental, safety and quality management, a Life Cycle Assessment approach to product improvement through certified Environmental Product Declarations and commitment to Voluntary programs like Responsible Care®, and the Global Reporting Initiative framework for the company's sustainability report. Coherent with sustainability objectives, RadiciGroup High Performance Polymers has developed a range of halogen-free flame retardant materials. pinfa membership will enable RadiciGroup High Performance Polymers to engage in an industry approach to the complexity of flame retardant systems and access networks and information, so facilitating the development of more environmentally friendly fire-safe materials.

https://www.radicigroup.com/en/products/plastics/flame-retardant-radiflam
Photo: Radici high performance polymers for e-mobility, electrical and electronic markets.

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FR Advisers LLC, Georgia, USA

Dr. Anteneh Worku, FR Advisers LLC, has joined pinfa-NA as a professional member. After 20+ years of flame retardant research and development at Dow Chemical, Dow Epoxies and Albemarle, Dr. Worku now provides consulting services to industrial clients concerning synthesis, patenting and new product commercialisation, based on a track record of design, scale-up to production, identification of applications and patenting of new flame retardants, from small molecules to oligomers. In addition to multiple patents, Dr. Worku co-authored "Flame Retardants: Overview" in Kirk Othmer Encylopedia of Chemical Technology (2015).

Contact information: aworku@FR-Adviser.com

REGULATORY AND POLICY

Information on melamine REACH dossier

European producers have announced the self-classification of melamine as a suspected human reproductive toxicant Cat. 2 This follows results of animal testing funded by industry, after ECHA concluded in 2017 that existing scientific data was inconclusive. The European Melamine Producers Association (EMPA) has informed downstream users of the self-classification decision, taken by the Melamine REACH Consortium. Melamine now requires labelling to specify "H361f" and to include "Suspected of damaging fertility" on packaging. However, existing guidance for safe use of melamine by workers remains unchanged (DNEL for inhalation remains 8.3 mg/m^3). Also, the classification is not applicable to mixtures with <3% melamine and to melamine present in articles (e.g. laminates, foam, etc.).

pinfa notes that this classification of melamine is not relevant for melamine as used as a flame retardant, that is after inclusion in a material, but is relevant to compounders and processers handling melamine.

pinfa currently expects that this classification of melamine will not impact melamine derivatives used as flame retardants (unless they contain > 3% unreacted melamine) and pinfa member companies are currently assessing this. Any classification updates will be indicated in the pinfa product selector.

Melamine cyanurate is already classified H373 (specific organ toxicity repeated exposure STOT re.2 kidney). Other melamine derivatives used as flame retardants have no classification: Melamine borate, Melamine phosphate, Melamine polyphosphate, Melamine-poly(aluminium phosphate), Melamine-poly(zinc phosphate).

Melamine REACH Consortium, classification of Melamine, May 2020 https://www.reachcentrum.eu/consortium/melamine-reach-consortium-136.html#

EU GPP criteria exclude halogens

New Green Public Purchasing (GPP) for printers exclude all halogenated polymers and halogenated flame retardants. GPP criteria are "voluntary", but can be used by public bodies to justify tendering criteria with full legal security. The new criteria concern "Imaging equipment" (in effect, printers), consumable for printers and print services. The Technical Specification TS12 "*Hazardous substances content*" specifies that "*Halogenated polymers and halogenated organic compounds for their use as flame retardants are not permitted*" (except for parts < 25g and "*special parts located close to heating and fuser elements*". Even for these exceptions, the brominated FRs PBBs, PBDEs and chlorinated paraffins are specifically excluded.

EU Green Public Purchasing (GPP) criteria
https://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

SWD(2020) 148 final "EU green public procurement criteria for imaging equipment, consumables and print services", 27th July 2020 – on the above page.

Note that an EU public consultation on proposed Green Public Purchasing criteria (GPP) for computers and monitors was open to 14th August 2020, also proposing (in TS5) a comparable and coherent exclusion of halogenated substances.
https://susproc.jrc.ec.europa.eu/computers/stakeholders.htm

General Product Safety Directive

Pinfa has called for a better inclusion of fire safety in product safety rules in EU consultation on GPSD. The General product Safety Directive 2001/95, now twenty years old, sets general safety rules for products not covered by specific legislation (e.g. products covered by the Construction Products Directive are not concerned). A public consultation (summer 2020) on the 'Roadmap' to define orientations for revision of this Directive will be followed by a full public consultation. The proposed Roadmap document suggests to centre revision on challenges linked to artificial intelligence, online sales, product recalls, market surveillance and food-imitating products. pinfa input underlined that ubiquitous electronics, widespread use of batteries and new materials pose increasing fire risks which should be considered.

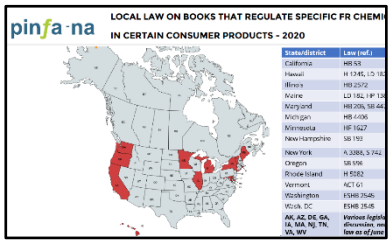
EU public consultation « General Product Safety Directive – review", closed 1st September 2020 https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12466-Review-of-the-general-product-safety-directive

EU project on fire safety statistics

Pilot project on fire data launched after European Parliament vote will prepare EU initiatives on fire safety. A consortium with Efectis, IFV, CTIF, NFPA, DBI, VFDB, BAM, the European Fire Safety Alliance, The University of Edinburgh and The University of Lund has been awarded the contract for an EU pilot project on EU fire data, aiming to pave the way for European actions on fire safety. This project is the result of a 2018 vote in the European Parliament (see pinfa Newsletter n°95). The aim is to define how "to provide meaningful data sets to allow legislative decisions on fire safety at Member States and at EU level".

EU tender details "Closing Data Gaps and Paving the Way for Pan-European Fire Safety Efforts" (19th November 2019)
https://etendering.ted.europa.eu/cft/cft-display.html?cftId=5447

Modern Building Alliance (MBA) summary 27th May 2020 "Pilot project on fire Safety" https://www.modernbuildingalliance.eu/pilot-project-on-fire-safety



pinfa-NA update on regulatory trends

Flame retardant solutions are needed which combine fire safety with chemical safety for health. At a June 2020 webinar for technical staff of a global plastics materials supplier, Tim Reilly, (Clariant and pinfa North America) presented at an overview of today's fire safety challenges and regulatory, industry and society pressure for chemical safety of flame retardants, from consumers' organisations, trade unions, firefighters). This presentation is now public here. It includes updates on regulation on flame retardants in North America, China, Japan and Europe. Sectors are identified where industry has strong opportunities for moving to more sustainable fire safety solutions: building insulation, automotive interiors, children's car seats, electronics parts and firefighting foam.

"Flame retardant technology trends and regulatory considerations for the 2020 decade", T. Reilly, Clariant and pinfa-NA, 34 slides, June 2020
https://www.pinfa.eu/media-events/presentations/

Ministry of Housing, Communities & Local Government

1 billion UK£ to replace unsafe cladding

The UK government has now allocated 1.6 billion UK£ to remove non fire-safe cladding materials from buildings. The new UK£ 1 billion fund will help building owners remove flammable non-ACM (aluminium composite material) from residential buildings > 18 m high. It is additional to 600 million UK£ already allocated to remove ACM cladding in 2019 and shows the considerable cost of using non fire-safe materials in construction.

"New £1 billion building safety fund to remove dangerous cladding from high rise buildings" https://www.gov.uk/government/news/new-1-billion-building-safety-fund-to-remove-dangerous-cladding-from-high-rise-buildings

UK regulation on combustible cladding

Legislation to extend ban on combustible cladding materials for buildings is moving towards adoption in the UK. The proposal expected to be scheduled in Parliament this autumn includes reducing the height of buildings concerned from 18 m to 11 m, extending building types covered (to include hotels and similar), banning the use of metal composite materials with polyethylene core in all buildings (irrespective of height), including shading products (e.g. blinds, shutters), modifying the list of exemptions and adding to the accepted performance requirements (EN 13501-1:2018 A2fl-s1 and A1fl). Industry has questioned the feasibility of applying standards intended for cladding to moveable blinds and other elements.

"Review of the ban on the use of combustible materials in and on the external walls of buildings"
https://www.gov.uk/government/consultations/review-of-the-ban-on-the-use-of-combustible-materials-in-and-on-the-external-walls-of-buildings

New UK cladding fire tests

BSI has published revised test methods for fire performance of building external cladding materials (BS 7414). The updated standards cover non-loadbearing systems either (part 1) applied to the building masonry or (part 2) on steel frame. Changes concern the test specimen definition and dimensions and expanded requirements for post-test examination and test report.

"BSI revises British Standard test method for the fire performance of external cladding systems", 30th April 2020 https://www.bsigroup.com/en-GB/about-bsi/media-centre/press-releases/2020/april/bsi-revises-british-standard-test-method-for-the-fire-performance-of-external-cladding-systems/

FIRE INCIDENTS

Vape leads to fire death

A man died in a house fire in Florida caused by the lithium ion battery of a vape device. The battery had failed, entered thermal runaway, and then ignited combustible materials in the bedroom. Firefighters were called by the smoke alarm monitoring company but on arrival the whole house was on fire and the victim in the bedroom whose body was reached was already deceased.

NFPA Journal, May/June 2020, Firewatch https://www.nfpa.org/News-and-Research/Publications-and-media/NFPA-Journal/2020/May-June-2020/News-and-Analysis/Firewatch

Fast growth of façade fires

The frequency of façade fires in large buildings has grown seven times over the last 30 years. The US NFPA (National Fire Protection Association) summarises current information on façade fires, outlining regulatory developments and illustrating ten major incidents since 2017: Grenfell London, Torch Tower Dubai, Yuansheng China, Taksim Ilk Yardim Hospital Turkey, Zen Tower Dubai, Kaifeng apartments China, Golden Eagle Mall China, Luoyang China, Warsaw Poland, The Cube Bolton UK. Façade systems are very varied, using a range of different materials in combinations, and NFPA underlines the lack of accurate data on the type of façade system involved in fire incidents, making learning from experience problematic. This is accentuated because there are many different national façade testing methods, resulting in non-comparable data.

"Data void", NFPA Journal, May/June 2020, https://www.nfpa.org/News-and-Research/Publications-and-media/NFPA-Journal/2020/May-June-2020/Features/Grenfell

Amazon warehouse fire Redlands

A fire destroyed 55 000 m^2 of Amazon warehouse, Redlands, California, June 5th with millions of dollars damages. The warehouse, operated by Kuehne+Nagel, who ship extra-large items to customers, was equivalent to nearly eight football fields, and stored large consumer items such as furniture and electrical apparatus. The fire caused collapse of sections of the concrete tilt-up building and destroyed several trucks. The around 100 people working in the warehouse escaped without injury. The cause of the fire and the apparent failure of the sprinkler systems is under investigation.

Redlands Daily
https://www.redlandsdailyfacts.com/2020/06/05/firefighters-battle-massive-warehouse-blaze-in-redlands-part-of-10-freeway-closed/

City shuttle bus fire closes Paris-Orly airport

Outside a terminal, the bus rapidly engulfed in flames and the, airport had to be evacuated, again showing the inadequacy of bus fire safety standards. The driver had stopped the city – airport shuttle bus, which did not have passengers on board, after smelling smoke. Flames engulfed the bus within minutes, followed by explosions of a tire and bus windows.

Orly bus fire, 18th July 2020 https://www.leparisien.fr/info-paris-ile-de-france-oise/incendie-d-un-bus-au-terminal-4-d-orly-les-300-voyageurs-evacues-ont-pu-rejoindre-l-aeroport-18-07-2020-8354853.php

Nantes cathedral fire

The fire which destroyed the historic organ of Nantes Cathedral, France, 18th July, was arson. A Rwandan national, who had been ordered to leave the country in 2019, and who was regularly doing voluntary work for the Church, is reported to have admitted starting the fire, apparently using fuel in several places. The fire destroyed the historic cathedral organ, stained glass windows and a C19° painting. The Cathedral's roof did not catch fire because it had been rebuilt in concrete in 1972 when the Cathedral also faced a major fire.

Nantes cathedral fire https://www.liberation.fr/france/2020/07/26/incendie-de-la-cathedrale-de-nantes-le-suspect-numero-1-avoue_1795280 and https://www.lemonde.fr/idees/article/2020/07/21/l-incendie-de-la-cathedrale-de-nantes-sonne-comme-un-avertissement-pour-la-restauration-de-notre-dame_6046784_3232.html

SURPRISING

British animal fire pranks

Firefighters were called to a farm in Yorkshire, UK, May 2020, to save the bacon. The free-range pigs were equipped with pedometers (to prove that they were doing their 10 000 steps to keep in good health). Unfortunately, one pig ate the pedometer from another's foot (no doubt hoping to improve the flavour of Yorkshire sausage). Nature then took its course, and the combination of battery (digested) and pig-pooh (similarly) set fire to the pigs' straw. This follows on from an Essex, UK, December 2019, dog which started a fire by turning on a microwave oven in which was stashed a packet of bread rolls. The fire service said the dog was not hurt (although it may have been feeling guilty) and recommended not to use microwaves for food storage. Also in Essex (a county notorious for its impish fauna), a 45-year old tortoise (who should have known better) knocked its heat lamp over on Christmas Day 2019 (too much brandy?) setting fire to its bedding. Firefighters successfully rescued the contrite reptile and underlined that this showed the importance of the smoke alarm which had sounded the alert.

Pig fire https://www.bbc.com/news/uk-england-york-north-yorkshire-51790435 Dog fire https://www.bbc.com/news/uk-england-essex-50641442 Tortoise fire https://www.telegraph.co.uk/news/2019/12/26/tortoise-rescued-setting-house-fire-heat-lamp/

INNOVATION AND RESEARCH

PIN FR polyamide for 3D-printing

Lehmann&Voss launches a ceramic-filled polyamide for high-temperature extrusion printing, offering UL94-V0 @ 0.4 mm. The material offers printability comparable to polyamide 6, with lower water absorption and higher temperature resistance. Ceramic fillers increase thermal capacity and are compatible with filament production and extrusion printing, such as FFF (fused filament fabrication), without warping. Heated chamber is not required during printing. The material is compatible with HIPS and PVOH support materials. Lehmann&Voss, based in Hamburg, Germany, develops and produces speciality chemicals for now over 125 years.

"LUVOCOM 3F PAHT® - Flame-retardant high-temperature polyamide for 3D printing" *https://www.luvocom.de/en/news-contact/news/details/article/luvocom-3f-pahtr-flame-retardant-high-temperature-polyamide-for-3d-printing/*

PIN FR cable for railway

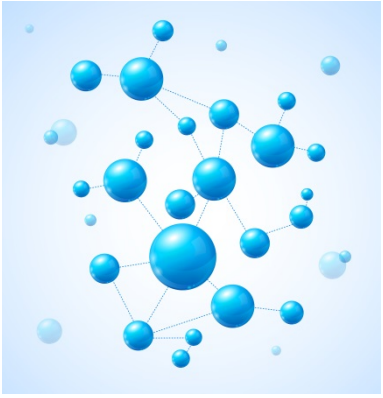
SAB Bröckskes launches high-flexibility EN 45545 cable to Hazard Level HL 1 - 3 for railway applications. The PIN flame retardant cable is available for both power (300/500V) and data applications (paired) and adapted for both railways for indoor (e.g. door systems) and outdoor (e.g. bogies), as well as for public transport, construction machines etc. Characteristics include resistance to weather, ozone and UV, oil and fuels. Fire performance is DIN R15 (EL1A) and R16 (EL1B) European railway standard EN 45545-2 HL 1-3.

https://www.sab-cable.com/news/piece/rail-cable-for-outdoor-use-sab-railline-560.html

PIN FR optic hybrid HDMI cables

ProCo Sound, part of ACT/RHC, launches zero halogen, low smoke, high performance, S-locking video cables. The hybrid optic cables enable video transmission for computers, monitors, gaming, in commercial, studio and home applications, with advanced chipsets enabling signal integrity for over distance. Thin cable and detachable HDMI/Micro-HDMI to allow to fit through small conduits. RHC, Jackson, Missouri, is one of the world's largest producers and suppliers of audio, video and data interfacing products.

"ProCo Sound to Unveil Fiber Optic Hybrid HDMI Cables" *https://www.soundandcommunications.com/proco-sounds-hdmi-fiber-optic-hybrid-cables/*



New P-FR for flexible polyurethane foam

BDMMP, a liquid, phosphorus-based PIN flame retardant shows fire performance, heat ageing and migration resistance. The PIN FR dimethyl methylphosphonate (DMMP) is widely used today in flexible polyurethane foams (PUR), but its low molecular weight can result in volatilisation and migration, with resulting loss in fire safety. A new and larger phosphorus-based molecule, bis((dimethoxyphosphoryl)methyl) phenyl phosphate (BDMPP) was synthetised, resulting in a liquid P-based PIN FR. This was compared to DMMP at 10% and 20% loading in flexible PUR foam. BDMPP showed improved fire performance (e.g. peak heat release rate kW/m^2 276 @ 10% BDMPP compared to 300 @ 10% DMMP and 334 for neat PUR) and lower migration (DMMP foam @ 20% failed after 32 hours of accelerated heat ageing, BDMMP @ 20% only after 48 hours). BDMMP increases the density of the foam and slightly deteriorates tensile strength and elongation at break, compared to DMMP.

"Synthesis of a novel liquid phosphorus-containing flame retardant for flexible polyurethane foam: Combustion behaviors and thermal properties", F. Zhou et al., Polymer Degradation and Stability 171 (2020) 109029 https://doi.org/10.1016/j.polymdegradstab.2019.109029

PUBLISHER INFORMATION

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