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Welcome back to the pinfa Newsletter. Over recent months, the pinfa Newsletter has not been emailed in the usual form and has been put online only as PDF. We apologise for these problems, which are the result of the need to technically upgrade our website and of changes to the emailing system to ensure full conformity with the new EU GDPR (General Data Protection Regulation). These challenges have been addressed, and **monthly publication and circulation of the pinfa Newsletter will now resume**, providing once again news and information on regulation, research, new products and applications of PIN flame retardants.

We invite you to send us any information you think could be of interest to fire safety stakeholders and flame retardant users, in particular new developments and applications of PIN flame retardants.

In order **to respect GDPR**, you can find a **“Verify email address”** button in the top banner of this newsletter and, by clicking on it, confirm your wish to continue to receive the pinfa Newsletter. If you wish to not receive future pinfa newsletters you can unsubscribe by clicking on the **“Unsubscribe”** button at the bottom of this page. You can re-subscribe at any time (including if you forget to opt-in) via www.pinfa.eu



PolyOne joins pinfa Europe

[PolyOne](#) is a longstanding and founding member of pinfa North America (engaged and active since 2012) and has now also additionally joined pinfa Europe. PolyOne Corporation, with 2017 revenues of \$3.2 billion, is a premier provider of specialized polymer materials, services and solutions. [PolyOne](#) is an [ACC Responsible Care®](#) certified company, committed to its customers, employees, communities and shareholders through ethical, sustainable and fiscally responsible principles. PolyOne has developed a range of non-halogen, [flame retardant solutions](#) to enable manufacturers to meet the EU CPR (Construction Product Regulations) standards set out by the newly harmonized European Standard, EN13501. These compounds are highly flame retardant and non-halogenated. During a fire, materials formulated are non-dripping, minimize corrosive gas or toxic fume emissions, and generate a low amount of smoke. This can help to meet the highly demanding Euroclass designations - Class B2ca and Cc, as well as being suitable for other classes such as Dca or Eca. Key characteristics are also easy processing and smooth finish.

Information: <http://www.polyone.com/products/engineered-polymer-formulations/flame-retardant-formulations> and <http://www.polyone.com/news/new-european-fire-safety-standards-met-polyone%E2%80%99s-eccoh-formulations-wire-and-cable>



FM Global fire risk resilience index

FM Global's origins are from a Rhode Island textile mill owner who in 1835 improved his installation to reduce the risks of fire loss, and asked his insurers for a lower premium. When they declined, he set up Factory Mutuals with other safety conscious industrialists, to develop fire prevention and inspection methods, and then to return lower premiums to property owners. Today FM Global is a global insurance group, centred on resilience. The FM Global Resilience Index assesses business environment risks for 130 countries worldwide, including "Fire Risk Quality", which is assessed on the quality and enforcement of national building codes and on the risk quality of actual facilities verified by FM Global. Eleven countries achieve a score 90% or higher: (in order) USA (100%), Portugal, Canada and Singapore, Hong Kong, New Zealand, Australia, Greece, Spain, Switzerland and Poland. Achieving nearly 90% are Germany, Romania, Belgium, Turkey, the Netherlands, France, Austria; Russia and Norway. The UK, Sweden, Finland, Israel, Italy and China have lower scores around 65-70%

<https://www.fmglobal.com/research-and-resources/tools-and-resources/resilienceindex>



Public support for fire codes but adoption neglect

The US National Fire Protection Association (NFPA) and the Fire & Life Safety Policy Institute have issued reports showing public support for fire and electrical safety codes, but widely varying implementation of codes in different US States, so depriving citizens of the protection benefits offered by updated codes. In an independent survey commissioned the organisations, over 80 percent of U.S. residents polled feel that policymakers should make it a priority to ensure electrical and fire safety codes are up-to-date, and 86 percent believe that if they purchased a newly-constructed home today, it would meet the most up-to-date codes. However, the report into implementation of the US National Electrical Code (NEC) shows that wide variations between States in adoption and update, with for example nearly one third of States having skipped at least one update since 2008 whilst adoption delays in some states run to over five years.

"NFPA report reveals wide variations in state adoptions of NEC and neglect of electrical safety", 20th March 2018 <https://www.nfpa.org/News-and-Research/News-and-media/Press-Room/News-releases/2018/NFPA-report-reveals-wide-variations-in-state-adoptions-of-NEC-and-neglect-of-electrical-safety> and report *"Falling Behind on Electrical Safety: Wide Variations in State Adoptions of the NEC Reveal Neglect of Electrical Safety"* 15th March 2018 <https://www.nfpa.org/-/media/Files/About-NFPA/Policy-Institute/PolicyInstituteFallingBehingElectricalSafetyReport.pdf>



600 000 dishwashers recalled for fire risk

BSH Home Appliances has recalled around 408 000 Bosch, Gaggenau, Jenn-Air and Thermador dishwashers in the USA plus 61 000 in Canada because the power cord can overheat and catch fire. This follows a recall of 149 000 units already in 2015. Five reports of fires have been noted in the USA, resulting in property damage but no injuries.

"BSH Home Appliances Expands Recall of Dishwashers Due to Fire Hazard", 20 October 2017 <https://www.cpsc.gov/Recalls/2018/BSH-Home-Appliances-Expands-Recall-of-Dishwashers>



Whirlpool named 'worst offender' for white goods fires in London

Fire brigade data show appliance maker's machines caused three times more blazes in capital over eight years than next worst offender Bosch



UK: Whirlpool accused of white goods fires

Data from the London Fire Brigade, covering eight years, shows that Whirlpool white goods caused three times more fires than any other manufacturer. The data was released after a Freedom of Information request by law firm Leigh Day for all manufacturers whose appliances caused more than 50 fires over the period. A total of 2 891 fires caused by white goods were included in the data, in private dwellings as well as in public settings such as care homes, resulting in 10 deaths and 348 injuries. Whirlpool appliances caused 895 fires (including the brands Hotpoint, Indesit, Whirlpool, Creda, ProLine and Swan). Whirlpool responded by underlining that the figures should be compared to market share. The data showed that the most fires were caused by washing machines (908), followed by tumble driers (608), refrigerators (600) and dishwashers (426). Again these data should be compared to market penetration, which is significantly higher for washing machines and refrigerators than for dishwashers or tumble dryers.

"Whirlpool named 'worst offender' for white goods fires in London", The Guardian, 24 November 2017 <https://www.theguardian.com/uk-news/2017/nov/24/whirlpool-named-worst-offender-for-white-goods-fires-in-london> and Leigh Day "Data shows thousands of fires caused by white goods in London" same date <https://www.leighday.co.uk/News/News-2017/November-2017/Data-shows-thousands-of-fires-caused-by-white-good>



No recall for Grenfell fire fridge-freezer model

The UK Government has announced conclusions of a product safety investigation into the Hotpoint FF175B fridge-freezer (manufactured by Whirlpool from 2006-2009) identified by the police as being involved in the Grenfell Tower fire last year (see pinfa Newsletter n°81). This included examination of the product by independent experts, fire testing of the model and document and data analysis. The experts conclude that the product is conform to legal safety requirements and represents a "low" fire risk. The UK Government's Chief Scientific Advisor has thus concluded that no product recall or other corrective action is required. The study reports do show that the model had flammable insulation foam which was partly not protected around the compressor unit, which is indicated by fire brigades as a potential ignition cause, but this is considered standard for such equipment at the time, although more recently changes in design by some constructors aim to minimise such potential contact. Test photos show burning foam. The [organisation](#) Electrical Safety First considers that current legal requirements allow fridge-freezers to be sold with plastic backs which present a fire risk and states that it is working with industry to develop a voluntary mark to identify models made from "proven fire-resistant materials".

"Hotpoint Fridge Freezer (FF175B): independent investigation. Findings of the investigation into the fridge freezer involved in the Grenfell Tower fire", UK Government, 15th May 2018 <https://www.gov.uk/government/publications/hotpoint-fridge-freezer-ff175b-independent-investigation>

"Electrical Safety First responds to Government View" 17th May 2018 <https://www.electricalsafetyfirst.org.uk/media-centre/press-releases/2018/05/electrical-safety-first-responds-to-government-view/>



Cost benefit analysis of fire barriers in furniture

A study by California State University tries to make a Cost Benefit Analysis of including a cloth fire barrier in domestic upholstered furniture in California. The authors note that taking into account both first ignited item and contribution to flame spread, upholstered furniture can be estimated to cause 610 deaths per year, 1 120 injuries and 615 million US\$ property loss. The societal cost of furniture-related fires in California is estimated at 1.7 – 1.9 million US\$/year (lives, injuries, property loss). The total cost of implementing the barriers is estimated at around 1 million US\$/year (barrier material, additional labour in furniture production, testing and enforcement costs). The study however assumes that a cloth fire barrier reduces on average the risk of ignition by <20%, noting that CPSC estimated a 25-51% risk reduction for flammable cellulose furniture cover fabrics. When divided by this risk reduction factor, the benefit of the fire barrier drops to around 1/3 of the implementing costs. The study also notes that California fire losses from upholstered furniture are “substantially lower” than the US average [pinfa note: probably because of past furniture fire safety regulations in California] and this reduces the benefit of the fire barrier.

“A cost-benefit analysis of consumer protection through upholstered furniture fire barriers”, R. Wassmer & N. Fesler, California State University, 19 Sept. 2018, 40 pages
http://www.bearhfti.ca.gov/forms_pubs/fire_barrier_cba.pdf



NFPA stops development of furniture flame ignition test

The Standards Council of the US National Fire Protection Association (NFPA) has voted to stop development of NFPA 277 Standard Methods of Tests for Evaluating Fire and Ignition Resistance of Upholstered Furniture Using a Flaming Ignition Source. NFPA’s Vice-President, Christian Dubay, noted that “Burning upholstered furniture presents a significant fire issue that demands a solution to protect both citizens and first responders”. However, there is a lack of consensus on how to test flammability of domestic upholstered furniture exposed to a flame. NFPA’s proposed approach was to address total and peak heat release after ignition, but the proposal met a wide range of comments covering fundamental aspects of the test method, pass/fail criteria, technical specifications, duplication of existing methods and wider concerns including questions about possible health impacts of flame retardants.

“NFPA Standards Council votes to cease standards development of NFPA 277, Standard Methods of Tests for Evaluating Fire and Ignition Resistance of Upholstered Furniture Using a Flaming Ignition Source” 10th April 2018 <https://www.nfpa.org/News-and-Research/News-and-media/Press-Room/News-releases/2018/NFPA-Standards-Council-votes-to-cess-standards-development-of-NFPA-277>



Controversy over furniture fire smoke study

A four page article in FSTB by A. Morgan, fire safety group leader at University of Dayton Research Institute (UDRI) and Editor-in-Chief of the Journal of Fire Sciences (JFS), questions the conclusions of the recent study by McKenna, Stec, Hull et al. on domestic furniture smoke emissions (see pinfa Newsletter n°87). This study was based on one or two full scale fire tests of four mock-up full scale sofas. Dr Morgan argues that results were not comparable, because of different wind and humidity conditions during the tests and that the use of a larger flame source than in the UK furniture regulations (crib7 instead of crib5) is confusing, so that results do not justify the paper’s

claim that “flame retardants ... increase smoke toxicity”. He notes that “halogenated flame retardants, due to how they work in a flame, will create more non-combusted products and more smoke” but that materials which char can have both low heat release and reduced toxic gas emissions. He suggests that the paper’s conclusions show that “Flame retardants in UK furniture can be overwhelmed by stronger fire sources and may not address all fire hazards”

FSTB Fire Safety & Technical Bulletin, GBH International, February 2018,
<http://www.gbhint.com/fire-safety-and-technology-bulletin>



More than 100 000 non residential fires in the US

The US Fire Administration (FEMA) has published a report on non-residential fires. Over 100 000 fires in non-residential buildings in the USA are reported annually, causing around 90 deaths, 1 350 injuries and 2.4 billion US\$ property losses, that is one fifth of total property losses from all fires. Non residential buildings include a wide range of properties: public buildings, restaurants, stores, offices, industry, storage, detached private garages ... The most significant identified causes of fires were cooking, other unintentional/carelessness, electrical malfunction and intentional (arson). The most significant identified first ignited item was structural building components and finishes, with electrical cables and exterior sidewall covering showing as specific items first ignited. Smoke alarms were present in less than half of the non-confined fires in these buildings.

“Nonresidential Building Fires (2014-2016)” FEMA, Topical Fire Report Series, July 2018,
 volume 19, issue 3 <https://www.usfa.fema.gov/downloads/pdf/statistics/v19i3.pdf>



PIN FR plywood achieves B-S1, d0

UPM, a Finnish and global leader in paper and fibre products, has launched a new flame retarded WISA-Spruce^{FR} structural plywood for construction uses. The non-halogen, non heavy metal FR treatment enables to achieve B-S1, d0 (roof and wall) and B_{fl}-s1 (floors) – the most demanding fire performance and low smoke classification possible for a wood under the EU Construction Products Regulation, as well as and M1 and EN 13986 E1 (low formaldehyde emissions). Fire classification is maintained including with air gaps behind the plywood panels. Because the new FR treatment does not use pressure impregnation, it does not affect the plywood strength and mechanical properties, enabling use for structural and load bearing applications. The panels are available in standard sizes, with optional T&G (tongue & groove), and 15 or 18 mm thickness (to EN 315 tolerance). Because the FR treatment is low toxicity, the panels can be disposed or recycled in the same way as untreated panels.

<http://campaigns.wisaplywood.com/wisa-spruce-fr>

and <http://www.wisaplywood.com/Products/product-catalogue/WISA-SpruceFR/Pages/Default.aspx>



ISO 13571 updated to modify smoke toxicant calculation

The ISO 13571 standard document “Life-threatening components of fire - Guidelines for the estimation of time to compromised tenability in fires” has been updated, in particular removing use of “fractional effective concentration” (or FEC) from fire gas emissions, and replacing by “fractional effective dose” (FED). FEC considered the effects of irritant gases to be instantaneous, rather than basing assessment on a fraction of the lethal dose. This led to unfavourable results for heteroatoms, in particular halogens. The change is based on bioassay research showing that toxicity of irritants is dependent on dose (not just concentration) and fire analysis research showing that fires in cables (which often contain PVC) did not generate the high numbers of fatalities which would be expected from FEC calculations.

ISO 13571 standard “Life-threatening components of fire - Guidelines for the estimation of time to compromised tenability in fires” <https://www.iso.org/standard/73217.html>



US railway fire standard NFPA 130 modifications

Proposals for updates of the US rail and transit fire standard NFPA 130 is under discussion. Proposed modifications include elimination of “limited combustible materials” from all construction. This will require extensive station reconstruction if adopted, to replace such materials with non combustible materials such as concrete or steel. Other proposed changes include adding melting and dripping requirements for generic flame spread and for upholstery, interior finish fire testing to NFPA 286 (that is: room corner test, not just ASTM E84 Steiner tunnel test) and clarifications for testing of cables, trays, adhesives and sealants.

NFPA 130 “Standard for Fixed Guideway Transit and Passenger Rail Systems” <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=130>



PIN FR compounds to substitute PVC

Dynamic Modifiers, an innovative speciality plastic compounder based in Atlanta, Georgia, USA with 13 staff and operating since 2001, have developed a PIN FR polyolefin replacement for flexible PVC, called PAL, using their DynaChar intumescent flame retardant custom tailorable compounds. Potential applications include extrusion coated fabrics, coated yarns, textiles, sheets, profiles and molded shapes in sectors such as roller shades, tents, banners, wall coverings and floorings, automobile, swimming pools and bathrooms, children’s bedding and toys. Fire performance of UL94 V-0 is offered, as well as a bio-based polymer version with UL94 V-2. The compounds claim drop-in replacement possibility for PVC in many applications using melt extrude or extrusion coating processing, halogen-free low toxicity and low-smoke, very low VOC emissions, UV resistance, high levels of physical performance and recyclability. Sandwich sheets or films combining with glass or carbon fibres offer specific performance characteristics and resist a 60 second / 1900°C flame vertical burn test.

<http://www.textileworld.com/textile-world/nonwovens-technical-textiles/2018/07/specialty-plastic-compounds-and-new-website-for-dynamic-modifiers-llc/> and <https://dynamicmodifiers.herokuapp.com/downloads/TAPPI.pptx>

Kunststoffe
international.com

Recycling PIN FR polyamides

An article in Kunststoffe International industry magazine outlines the potential for recycling of PIN flame retardant plastics in the Circular Economy and presents results of recycling tests on glass fibre reinforced polyamide (PA6 and PA66) containing phosphorus flame retardants (mainly aluminium diethylphosphinate with phosphoric synergists). Such compounds are widely used for performance applications, e.g. in E&E (electrical and electronics) and automobile. Five recycling cycles were tested (granulation, drying, extrusion, accelerated ageing at 120°C, granulation). Results show that the repeated recycling reduces the length of the glass fibres, so impacting mechanical properties (E-modulus and tensile strength) whereas the presence of the PIN flame retardant had no negative impact on mechanical properties in multiple processing. Also, the fire performance of UL94 V-0 was maintained.

“Secondary raw materials of the future. Recycling halogen-free flame-retardant plastics. Example: polyamide”, C. Schultheis & E. Metzsch-Zilligen, Fraunhofer LBF, Kunststoffe International 8/2018. Article online at <https://www.flameretardants-online.com/news/?showid=18452> The testing presented is part of the PIN FR recycling project developed by pinfa (see pinfa Newsletters n°s 60 and 88).



CPR compliant low smoke HFFR cable compounds

Teknor-Apex, a global leader in custom compounding solutions and customer-specific requirements, offers EU Construction Product Regulation fire safety standard compliant low-smoke, halogen free FR cable compounds (LS HFFR). Low smoke, flame retardant cable compounds are required to offer CPR classifications ranging from B2ca to Eca, according to the new harmonised standards and test methods EN 50575 implemented in July 2017. Halguard® Low Smoke, Flame Retardant compounds from Teknor Apex have achieved as high as Class B2ca, which requires the lowest heat release, lowest fire growth rate and lowest flame spread in cable testing.

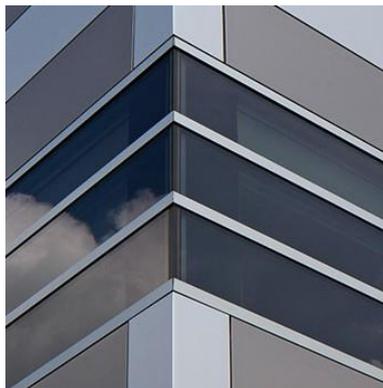
“New Products From Teknor Apex Enable Compliance With Tough New EU Fire Standards For Wire and Cable” <https://www.teknorapex.com/new-products-from-teknor-apex-enable-compliance-with-tough-new-eu-fire-standards-for-wire-and-cable>



PIN epoxy achieves Airbus fire and smoke specs.

Masterbond, global technical adhesive system [specialist](#) since 1976, has launched a non-halogenated flame retardant two component epoxy meeting Airbus' demanding standards for fire performance, smoke emission and toxic gas emission in case of fire. These are respectively sections 7.1.2 (12 seconds vertical burning test), 7.3.2 and 7.4 of ABD0031, Issue F, and AIM 30005 Issue 2. The epoxy can be used as an adhesive, sealant and for encapsulation, including in aircraft interiors, floor and door assemblies, frame linings and electronics. It offers convenient processing, high adhesion to a wide range of substrates, low shrinkage on curing and good electrical insulation at service temperatures -60°C to 200°C.

“Epoxy Meets Airbus Standards for Flame Retardancy, Smoke and Gas Emissions. Product: EP93FRHT”, 5/6/2017, <https://www.masterbond.com/newsrelease/ep93frht>



Halogen-free fire protection foam insulated metal panels

CENTRIA, a world leader in performance building envelopes, launched in 2017 and now provides as standard its fire retardant Formawall Dimension Series [foam-insulated metal panels](#) (IMP) as halogen-free. The panels combine fire safety, high thermal insulation performance, moisture protection and sustainability, come [with](#) a Health Product Declaration ([HDP](#), an industry leading standard) and are available with variable thickness, several depths and profiles. The panels are UL-listed for the US and Canada (CAN/ULC-S134) and achieve the future updated NFPA 285 cladding fire test which includes no flame propagation to the next storey up, limits to flame spread above or laterally to window opening and temperature limits throughout the assembly during testing. Testing has also been successfully carried out using 58 different non-CENTRIA materials as weather resistant barriers behind the wall system.

"Announcing Formawall with Halogen-Free Foam", 2 February 2017

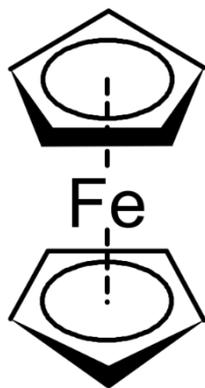
<https://www.centria.com/news/2018/02/centria-launches-formawall-with-halogen-free-foam>

FORMAWALL® "The only foam-insulated metal panel system with halogen-free enhanced fire protection that comes standard" <https://www.centria.com/reformulate>

Iron compound reduces smoke emission

Ferrocene, an aromatic iron compound (C_5H_5)₂, was tested for smoke emission effects in polystyrene sheets, using cone calorimeter, thermogravimetric analysis (TGA), Fourier transform infrared (TGA-FTIR) and transmission electromicroscopy. 3% w/w ferrocene reduced both peak and total smoke emission by >55% but increased peak and total heat release rates by >25%. Ferrocene did not cause char formation, showing that the effects were gas phase. Ferrocene showed to accelerate removal by combustion of smoke precursors and intermediates, in particular oxidising both PAHs (benzene derivatives / polycyclic aromatic carbons) and CO (carbon monoxide). The effect is considered by the authors to be due to gas phase catalysis of oxidation by γFe_2O_3 .

"Insightful investigation of smoke suppression behavior and mechanism of polystyrene with ferrocene: An important role of intermediate smoke", Z. Li et al., Fire and Materials. 2018;42:286–295 <http://dx.doi.org/10.1002/fam.2491>

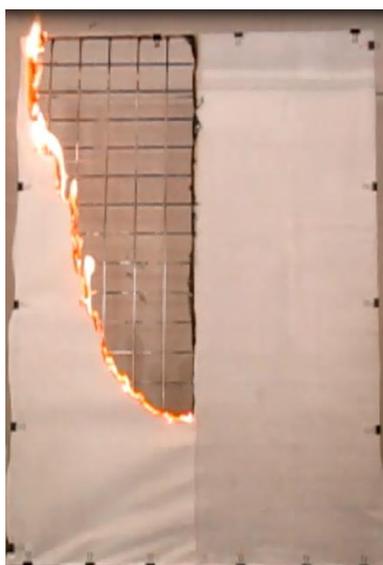


Metyx rail fire safety standard performance materials

Metyx Composites has enlarged its range of performance materials and composites for railways, which includes aramid and carbon fibre composites and texties, eglass, and moulding sandwich panel materials. METYCORE FS (fire shield) and METYCOREMAX FS are RTM (resin transfer moulding) sandwich materials using glass fibre fabric and a PIN flame retardant resin core. EU railway fire performance standard EN45545 is achieved, with low smoke formation and low smoke toxicity in case of fire. METYCORE composite materials offer lower weight, so improving train performance and energy efficiency, are durable and easy to clean, so reducing railway maintenance costs.

"METYX Composites Showcasing New High Performance RTM Fabric and Carbon Woven Technical Textiles at JEC World 2017, Paris" <http://www.metyx.com/2017/03/08/jec/#more-1279> "New Metycore FS (Fire Shield) RTM Fabric Meets EN 45545 'Fire and Fume' Railway Regulation" <http://www.metyx.com/rail/>





Water based PIN FR coating

Dainichi Giken Kogyo, Daimaru Kogyo and Teijin have co-developed the “world’s first” non-halogenated, water-based, transparent acrylic FR coating for materials including wood, paper, fibres, rubber and plastics. Landex Coat Flame Retardant Clear uses Teijin’s FCX-210 non-halogenated organo-phosphorus flame retardant, which is widely used in electronics and automobile polymer applications. The Landex coating maintains colour and material texture, and improves weather and mould resistance, and can achieve UL94 VTM-0 fire rating on thin films. It is adapted to fire protection of wood and timber in construction, interior and exterior, which is a major challenge in Japan, where legislation since 2010 promotes the use of wood in public buildings. [Dainichi Giken](#) produces coatings and polymers in Showa for nearly 60 years. Daimaru Kogyo is a leading Japanese chemical trading company. [Teijin](#) is a Japan-based group active in films, resins, fibres, composites, healthcare and pharmaceuticals worldwide.

Teijin FCX-210 <https://www.teijin.com/products/resin/products/fg/index5.html>

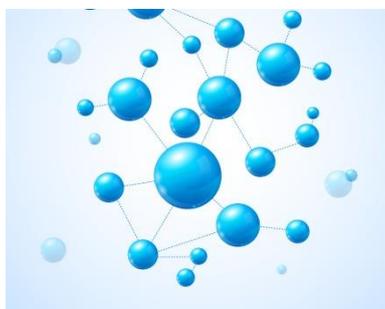
Dainichi Giken, Daimaru Kogyo and Teijin Co develop world’s first aqueous transparent flame retardant coating for a wide range of combustibles”, 24th August 2017
<https://www.teijin.com/news/images/ebd170824.pdf>



Self-extinguishing TPE for performance polymers

Kraiburg TPE GmbH & Co. KG, a leading manufacturer of tailor-made soft thermoplastic elastomers (TPE) for specialist and industrial applications, has extended its range of HFFR (Halogen Free Flame Retardant) TPEs. The FR1 and FR2 HFFR compound series provides UL94 V0 classification for injection molding and extrusion applications, in particular for polypropylene, for wall thicknesses down to 1.5 mm. Further special HFFR compounds are adapted for polar thermoplastics such as ABC, PC and certain polyamides. These compounds are halogen free (as specified by IEC 61249-2-21) and so have reduced harmful gases in case of fire, so meeting EU Construction Product Regulation (CPR) and railway EN 45545 standards. The compounds offer attractive tactile properties, such as soft touch and good grip. Applications include electrical and electronics connectors and sockets, cable coatings and clips, furniture components, window gaskets.

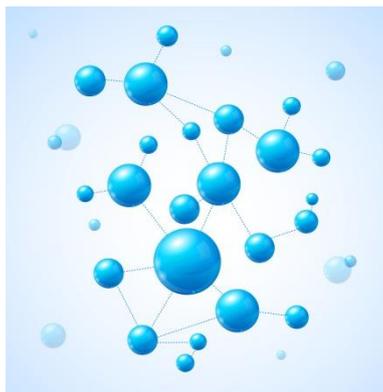
Photo: (© CONTA-CLIP) Modular cable entry system KDSClick from CONTA-CLIP, using HFFR Kraiburg TPE THERMOLAST® K. More information: “Halogen-free TPE That Comply with the UL94 V0 Standard” <https://omnexus.specialchem.com/news/product-news/kaiburg-tpe-self-extinguishing-tpe-fire-protection-000214965>



Heat release of Chinese upholstered furniture

Zou et al. carried out full scale heat release fire tests of items of upholstered furniture. A 3.6 x 2.4 x 2.4 m test room was used with a 0.5 l gasoline fire ignition source. Six cushions were tested (60 x 60 x 5 cm, polyurethane foam, fabric covered) and two full scale wooden-frame 4-seater sofas (all non flame retarded). Heat release rate from the two sofas reached 600 and 1000 kW after around five minutes and total heat release rate in both cases was around 350 MJ.

“Modelling of heat release rate in upholstered furniture fire”, G. W. Zou et al., *Fire and Materials*. 2018;42:374–385. <http://dx.doi.org/10.1002/fam.2502>



Testing PIN FRs in poly lactic acid (PLA) foam

Ammonium polyphosphate (APP), montmorillonite and PIN-FR cellulose (cellulose surface treated with diammonium phosphate and boric acid) were tested in polylactic acid foam (PLA, a bio-based polymer). The low density PLA foam (90% void) was produced by supercritical CO₂ assisted continuous extrusion foaming. With cellulose (2%) and APP (15%) the foam achieved UL94 V-0 and a LOI of 31.5 vol% with total additives <20%. Without PIN-FR additives, the foams showed extremely high horizontal flame spreading rates, around 313 mm/min (UL-94 NR). The authors note that the montmorillonite – APP synergy was less marked in foams than in bulk PLA (see Wang et al. in pinfa Newsletter n°63).

“Flame retardancy of microcellular poly(lactic acid) foams prepared by supercritical CO₂-assisted extrusion”, D. Vadas et al., Polymer Degradation and Stability 153 (2018) 100e108 <https://doi.org/10.1016/j.polymdegradstab.2018.04.021>



ECHA increases pressure on SVHC chemicals

The European Chemicals Agency ECHA has announced that notifications of uses of “Authorised” chemicals will now be systematically made public on their website (except certain confidential commercial data). There are today 43 chemicals listed for “Authorisation” under REACH, which can only be used if the specific use (including naming of downstream users) are notified to ECHA. The public notification register will include the uses of the substances, specifying which companies at which sites, as well as any specific additional data indicated in the Authorisation decision. Additional information such as numbers of workers concerned or substitution activities can also be included. This decision follows a transparency request from environmental lawyers ClientEarth.

“Downstream user notifications of authorised uses: Information made public by ECHA”, https://echa.europa.eu/documents/10162/22979809/du_art66_notifications_info_en.pdf ECHA, July 2018 and user notifications web page (not yet complete). <https://echa.europa.eu/regulations/reach/downstream-use-notifications#register>

“Non-Halogenated Flame Retardant Chemicals Market - Segmented by Type, End-user Industry, and Geography - Growth, Trends, and Forecast (2018 - 2023)”, Mordor Intelligence, April 2018 <https://www.mordorintelligence.com/industry-reports/non-halogenated-flame-retardants-market>



Bus fires in Rome

Two bus fires in Rome on 8th May caught media attention, with a new hashtag [#flambus](#) with a total of ten bus fires in the city in 2018 and 22 in 2017. To date, few serious injuries have been reported, but in several cases the buses burn like fireballs. Many of the buses are considered old (15 years) but one of the fires concerned a bus only five years old. The city’s public transport company ATAC is accused of inadequate investment and maintenance. However, the problem is not specific to Rome. The US NFPA (National Fire Protection Association) suggests that 1 700 to 3 300 bus and coach fires occur annually in the USA.

“Why do Rome’s buses keep catching fire?”, BBC, 8th May 2018 <https://www.bbc.co.uk/news/world-europe-44041597> and “Buses ablaze. Buses are burning in Rome ... and elsewhere”, NFPA Journal July-August 2018 <https://www.nfpa.org/News-and-Research/Publications/NFPA-Journal/2018/July-August-2018/News-and-Analysis/Dispatches/International>



PIN flame retardant market growth

Two further reports confirm expected growth of the world PIN flame retardants market, estimating respectively annual growth rates of 8.3% 2017-2021 and 6.2% 2018-2023. Another recent study estimated growth of over 8% to 6.9 billion US\$ by 2024 (pinfa Newsletter n°92). The two new reports note that PIN FRs contribute to fire safety “without emitting toxic gases”, indicating strong growth in electrical and electronics applications and in construction, as well as in industries including wire and cable, textiles and transportation.

“Halogen-Free Flame Retardant Chemicals Market Overview: Competition Trends, Top Players, Industry Growth and Forecast 2021”, Absolute Reports, 14 June 2018
<https://www.absolutereports.com/global-halogen-free-flame-retardant-chemicals-market-2017-2021-10690489>

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For abbreviations see: <https://www.pinfa.eu/flame-retardants/abbreviations/>