

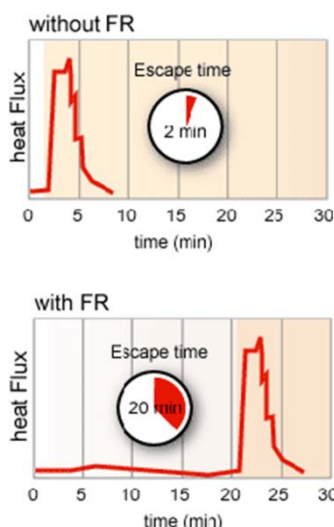
## Your newsletter for non-halogen fire safety solutions No. 64 April 2016

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### Upcoming pinfa events:

26-27 April	Montreal, Canada	▶ pinfa-na industry seminar: flame retardancy of materials for surface transportation <a href="http://pinfa-na.org">http://pinfa-na.org</a>
15 June	Brussels	▶ pinfa General Assembly

For complete, up to date events listing, see [www.pinfa.eu](http://www.pinfa.eu)



### SpecialChem flame retardant Techno Briefs

SpecialChem online offers summary information on fire safety, different flame retardant types for polymers, flame retardant application and use and fire performance testing. All flame retardant chemistries are presented, covering particularly applications in construction, electrical & electronic and transport applications. The dossiers explain that “Flame retardants contribute directly to the saving of lives”, by slowing down polymer combustion time and degradation (fire extinction), reducing smoke emissions and avoiding dripping, so increasing escape time for occupants. Phosphorus FRs are indicated as addressing the trend to replace halogenated FRs by PIN FR systems, providing efficient performance, compatibility and cost in polyurethane foams, thermoplastic alloys (e.g. PC/ABS, PPO/HIPS). In foams, P-FRs enable high viscoelasticity, uniform IFD (hardness) distribution and low migration out of the material.

Above: SpecialChem online graph illustrating how flame retardants increase escape time <http://polymer-additives.specialchem.com/selection-guide/flame-retardants-center/why-use-flame-retardants>

SpecialChem “Flame retardants for polymers” <http://polymer-additives.specialchem.com/selection-guide/flame-retardants-center> Twitter: [@SpecialChem](https://twitter.com/SpecialChem)

## New pinfa member: CTF2000

CTF2000, with its headquarters in Belgium, is a dynamic, young European compounding company, specialised in the development and production of flame retardant compounds and textile specialities. Under the brands Addiflam® and flamaway®, CTF2000 offers tailor-made flame retardant solutions for textiles, carpets, wood and timber, plastics and polymers, paper and cardboards, foams, rubber and sealants. Applications include textiles for furniture, interior decoration and transports (automotive, railway, aviation, shipping), industrial protective clothing, tents, wood and timber in construction and interior building finishings. Current developments include a focus on blackout fabrics for the curtain industry and on upholstery in general. CTF2000 is also working on PIN flame retardant compounds in order to meet its own sustainability program. The company's products contain a range of flame retardant combinations including phosphorus and/or nitrogen compounds, metal hydroxides, expandable graphite. CTF2000 is certified ISO 9001 and ISO 14001 and offers in-house testing of application processes, durability tests, wash resistance, abrasion and fire performance testing. CTF2000's flame retardant Addiflam PP50 is certified Oeko-Tex® Standard 100 textile ecolabel for synthetic, natural and blended fibres. CTF2000 hopes to contribute together with pinfa to a general awareness on flame retardants by sharing their knowledge and their efforts to meet with the strictest environmental regulations.



[www.ctf2000.com](http://www.ctf2000.com)

## A. Schulman joins pinfa Europe

A. Schulman is an international supplier of performance plastics compounds, powders, composites and resins, with technology centres in North America and in Europe. A. Schulman supplies PIN FR plastic compounds for a wide range of markets including building & construction, wire & cable, transportation and electrics & electronics. The company uses PIN FRs in brands such as POLYFLAM®, SCHULADUR® FR, SCHULAKETON® FR and SCHULAMID® FR. Already a member of pinfa-na (pinfa North America) since several years, A. Schulman has now also joined pinfa in Europe. "Our key learning from our North American membership is that pinfa does not only follow but drive market trends and pinfa members share a common vision to continuously improve the environmental footprint of their flame retardant products," says Horst Klink, Vice President Business Unit Engineering Plastics EMEA at A. Schulman. "We are supporting a wider recognition of PIN FRs. They are tomorrow's solution for improving public fire safety and engineering plastics performance combined with optimal environmental and health and safety profiles."



[www.aschulman.com](http://www.aschulman.com)



## Washington D.C. metro 24-hour shutdown

The entire Washington D.C. Metrorail system was closed for 24 hours on March 16<sup>th</sup> to allow emergency inspection of cables, following an electrical fire two days earlier which filled a tunnel with smoke. This was the second electrical cable fire in a week. Just over a year ago, a Washington D.C. Metrorail fatal fire started in malfunctioning cables (pinfa Newsletter n° 49). Following this fire, inspections had been carried out and 125 cables replaced. The shutdown, with the objective of ensuring public safety, is reported to result from concern that the previous inspections had not been adequate. PIN flame retardants are a key component in reliable, fire-safe electrical cables, and in particular, can ensure low smoke emissions and low smoke corrosivity in case of fire or of over-heating or electrical failure.

*"Transportation: Questions on cables' safety demand 24-hour Metro shutdown", Washington Post, 15<sup>th</sup> March 2016 [https://www.washingtonpost.com/local/2016/03/15/8e0b2be4-eae8-11e5-b0fd-073d5930a7b7\\_story.html](https://www.washingtonpost.com/local/2016/03/15/8e0b2be4-eae8-11e5-b0fd-073d5930a7b7_story.html)*



## Fire safety of polymer materials in buildings

A group of industry associations including PlasticsEurope, the insulation materials industry and pinfa, has published a 'view paper' on fire safety in buildings. The four page document discusses fire statistics, buildings materials fire safety standards and test methods, façade insulating materials, sandwich panels and smoke toxicity. Key messages are: subsidiarity – enabling Member States to set building fire standards in accordance with local specificities; acknowledgement of testing methods and results for polymer building materials; the need to improve and harmonise fire statistics; the importance of public education and prevention in fire safety.

*"View Paper on Fire Safety in Buildings", September 2015, PlasticsEurope, Isopa, PU Europe, Europur, Exiba, EUPC, EUMEPS, pinfa;*

[http://www.plasticseurope.org/documents/document/20160108061146-final\\_updated\\_view\\_paper\\_on\\_fire\\_safety\\_03122015.pdf](http://www.plasticseurope.org/documents/document/20160108061146-final_updated_view_paper_on_fire_safety_03122015.pdf)

*PlasticsEurope one-page "Fire Safety in Buildings", September 2015*

[http://www.plasticseurope.org/documents/document/20151019140247-final\\_fire\\_safety\\_onepager\\_sept2015.pdf](http://www.plasticseurope.org/documents/document/20151019140247-final_fire_safety_onepager_sept2015.pdf)



## Bio-based PIN FR for bio-based polymer

Phytic acid (inositol hexakisphosphate acid), a phosphorus-rich, bio-degradable, natural chemical, is widely present in plant materials such as grains, beans and oil seeds. It is not a useful food component because it cannot be digested by humans, poultry or pigs. Because of its high phosphorus content, phytic acid has PIN flame retardant properties. Here it was tested for treatment of the bio-sourced polymer poly lactic acid (PLA), as a nonwoven fabric 80 g/m<sup>2</sup>. The PLA fabric was soaked in 70% solution of phytic acid in water, and then dried. This resulted in formation of a char layer on the PLA fabric during fire tests with an increase in LOI (loss on ignition) of the PLA fabric from 26% to 36%. The PHRR (peak heat release rate) was nearly halved and the area of damage was reduced in a vertical burning test. The authors underline however that because phytic acid is water soluble, this treatment is not durable.

*X-W. Cheng et al. "Phytic acid as a bio-based phosphorus flame retardant for poly(lactic acid) nonwoven fabric", J. Cleaner Production, 2016 <https://dx.doi.org/10.1016/j.jclepro.2016.02.113>*



## Specialist flame retardant market reports

MarketsAndMarkets has published a report on "Fire, Smoke and Toxicity Retardant" composite resins, estimating the global market for such materials today at around US\$ 500 million, with expected growth of 8.5% per year to 2020. QY Research has published a report on the global inorganic flame retardant industry, looking at international market data, structure and development; manufacturing processes; raw materials; leading industry players and products; investment projects and market trends. Acute Market Reports has published a market report on the US flame retardant fabric industry. This provides an overview of industry, key companies, raw materials, processes and market trends.

*"Global Inorganic Flame Retardant Industry 2016 Market Research Report", February 2016, [QYResearch](#)*

*"United States Flame Retardant Fabric Industry 2016 Market Research Report", March 2016, [AcuteMarketReports](#)*

*"Fire, Smoke, and Toxicity Retardant (FST) Composite Resin Market by Resin Type (Phenolic, Epoxy, Polyester, Thermoplastic), by Composite Manufacturing Process, by Application (Transportation, A&D, Construction, Marine), and by Region - Global Forecast to 2020" [MarketsAndMarkets](#)*





## ELDRA halogen-free cables for sustainable buildings

Eldra (TKH-Group), supplier of cables, conduits and connectivity solutions for over 50 years, has installed cables protected with pin flame retardants in two recent sustainable building frontrunner projects: Deloitte's The Edge building and Danone's Innovation Centre. Deloitte's 40 000 m<sup>2</sup> new building in Amsterdam, completed 2014, is "the world's most sustainable office building" and the second largest building in the world to achieve the BREEAM "Outstanding Sustainability" certification. The Deloitte building will be the workspace for 1 800 staff. Created by Lee Polisano and Ron Baker, architects, it emphasises natural light and transparency to make workspace more agreeable and integrates 700 m<sup>2</sup> of solar panels. The PIN flame retardant cables for fire, evacuation, signalling and control supplied by Eldra have the advantage that "they do not release any harmful or corrosive gases containing halogens, unlike conventional cables." Danone's 24 000 m<sup>2</sup> Innovation Centre opened in Utrecht in 2013. It groups laboratories, offices and testing facilities for Europe, as well as an underground car park, meeting centre, café and sky-bar. Eldra supplied 94 km of PIN flame retardant cables for electrical and technical systems, helping the building achieve BREEAM "Excellent" rating

*Eldra "Halogen-free cabling for Danone Innovation Centre, 15/10/2013*

<http://www.eldra.nl/en/news/news/halogen-free-cabling-danone-innovation-centre> (photo)

*Eldra "Halogen-free cabling for new Deloitte building" April 2015* <http://www.eldra.nl/en/over-eldra/referenties/halogen-free-cableing-new-deloitte-building> (photo)



FIRE SCIENCE

### UL Heading Research of Flame Retardant Exposure

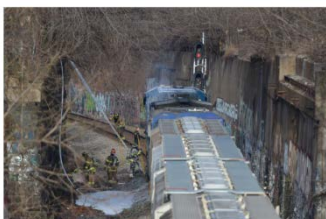
UL's Human Health research organization is leading an investigation into how to measure and assess the impact of human exposure to flame retardants. Understanding how these exposures happen and the potential health consequences as well as comparing traditional flame retardants against non-chemical alternatives can help optimize the performance and health safety of products.

## Furniture flammability and human health

UL (Underwriters Laboratories) is researching the possible health impacts of, and exposure to, flame retardants in consumer furniture, looking into alternative and environmentally preferable flame retardants. Research will include developing scientific methods to better assess human exposure to flame retardants in air and dust, looking at furniture manufacturing and materials, defining parameters for measuring chemical exposure risk and identifying methods to compare alternative flame retardant technologies.

*"UL Heading Research of Flame Retardant Exposure"* <http://ul.com/inside-ul/ul-heading-research-of-flame-retardant-exposure/>

## Firefighters extinguish train fire in South Side



Firefighters extinguish a train fire Monday, March 7, 2016, on the South Side near the corner of South 25th and Sidney streets.  
PHOTO BY JAMES MINO / TRIBUNE-STAR

## Train fire extinguished safely

South Side Flats, Pennsylvania, March 7<sup>th</sup>: a fire started in the lead locomotive of a CSX freight train carrying goods including cardboard, chemical solvents and acid. The fire was successfully extinguished with no injuries and without its spreading to other parts of the train. This is another example of the effectiveness of fire safety requirements in trains and rolling stock.

*Tribune Review* <http://triblive.com/news/adminpage/10100551-74/fire-battling-crews>

## ProStack pallets offers complete range with PIN FRs



Polymer Solutions International Inc. has obtained FM approval for its new PIN flame retardant pallets (phosphorus – inorganic – nitrogen flame retardant). This is now available through the full ProStack range of durable, hygienic and reusable plastic pallets, including the ProGenic (NSF independently certified) and patented Double Leg Ratchet pallets. The new pallets are part of the company's commitment to innovation and R&D to "meet the global demand to eliminate halogens from products while actually improving product performance, providing products that meet or exceed customers' demands while meeting environmental safety regulations".

Source: <http://packagingrevolution.net/plastic-pallet-manufacturer-receives-fm-approval-for-halogen-free-pallets/> Polymer Solutions International: [www.prostack.com](http://www.prostack.com)

## Recycling of plastics containing hazardous substances



The Netherlands Environment and Public Health Agency has called for "room for manoeuvre" in EU chemicals policy to facilitate recycling. The report notes that "One of the problems of recycling is that the materials may contain substances that pose a risk to man and the environment" and this must be weighed against advantages of recycling such as CO<sub>2</sub> savings. The report notes that a process exists to re-dissolve EPS and remove the HBCD. The report refers to the Solvolys process, noting issues with achieving the low levels of HBCD in the recycled polystyrene required by chemical regulation. Editor's note: this process, now CreaSolve®, has been improved to achieve well below 100 ppm HBCD (the EU POP regulation limit). The report recommends a risk assessment approach to define whether higher contaminant limits should be authorised for some recycled products, in order to enable the circular economy.

"Plastics that contain hazardous substances: recycle or incinerate?" [RIVM Letter, report 2016-0025](http://www.rivm.nl/en/letter-report-2016-0025), M.P.M. Janssen et al. 2016

## United Nations ECE bus fire regulations tightened



The United Nations ECE (Economic Commission for Europe) has decided a tightening of fire safety standards for buses and coaches, modifying regulation n° 118 "Uniform technical prescriptions concerning the burning behaviour of materials used in the interior construction of certain categories of motor vehicles" (published 10<sup>th</sup> July 2010 in the Official Journal of the European Union, L 177/263, revised 2013). The revision includes the following test obligations for materials used in bus and coach interiors: Horizontal flame propagation test to FMVSS 302, Small flame test on all vertical interior materials to ISO 6941, Dripping test for ceilings to NF P 92505, Burning behaviour test of electric cables to ISO 6722. On a voluntary basis, the stringent lateral flame propagation test to ISO 5658-2 used for railways in Europe can be performed. Materials that are approved by this test are considered to also fulfil the requirements for both the vertical burning rate test and the melting test, provided no burning drops are observed. Since 2014, this UNECE regulation is applicable in Europe, replacing Directive 95/28/EC on fire safety of buses. There is agreement that the modification of UNECE regulation 118 is a positive step for bus and coach fire safety, but standards are still very inadequate and much weaker than for trains. In particular, the regulation needs to be extended to cover better fire safety of bus and coach seats.

"Busses - Fire Safety Requirements tightened, but not enough" <http://www.flameretardants->

[online.com/web/en/news/index.htm?showid=402](http://online.com/web/en/news/index.htm?showid=402)



## Other news

**ECHA CORAP list:** the European Chemicals Agency (ECHA) has added 54 substances to the 'CORAP' (Community Rolling Action Plan) list of chemicals to be evaluated because of possible health or environmental concerns. The [list](#) now covers 138 substances.

[ECHA/NA/16/11](#), 22<sup>nd</sup> march 2016 "Member States to evaluate 39 priority substances in 2016". The newly added substances include the FR EINECS 244-617-5 and the FR synergist EINECS 215-175-0. Two other FRs were already on the list : EINECS 204-112-2 and 911-815-4.

**Chemicals in clothing:** the European consumer federations ANEC and BEUC have published a document on chemicals in clothing. The federations consider that the EU should install specific legislation excluding chemicals of "very high concern" from textiles. The NGOs are targeting chemicals which are persistent, bio-accumulative, toxic, endocrine disrupters or sensitizers. Whilst concern about potentially health-impacting chemicals is understandable, the exclusion of persistent chemicals does not seem feasible because incompatible with durable (wash-proof) textile treatments such as colours or functionalisation.

"Protecting consumers from hazardous chemicals in textiles", [January 2016](#), ANEC (European Association for the Co-Ordination of Consumer Representation in Standardisation) and BEUC (European Consumer Organisation) . See EU Commission consultation on chemicals in textiles in *pinfa Newsletter n°57*.

## Call for papers:

Call for papers on **textile fire safety** for FLARETEX COST MP1105 final action and publication in MDPI Polymers Journal, themes: Novel Flame Retardants, Toxicological and environmental aspects, Processing and applications, Testing and standardization. Deadline 30/6/2016 [COST.MP1105@UGent.be](mailto:COST.MP1105@UGent.be)

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For abbreviations see: [www.pinfa.org](http://www.pinfa.org)