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f Happy New Year!

This is the first pinfa Newsletter of 2012, and the whole pinfa team would like to wish you a happy new year and all the best for 2012. Fire safety is our main concern and the festive season has its own particular danger. Fire safety organisations remind us that Christmas trees can become a significant fire danger. An average 240 home fires per year begin in Christmas trees in the USA: nearly one fifth of home fires over the Christmas period. More than one in twenty of these fires result in death. These figures are from the US National Fire Protection Association (NFPA) updated report on Christmas tree fires, November 2011. The NFPA has also published a video showing how a dry tree burns much more violently than one which has been regularly watered. We hope that you enjoyed a safe and happy Christmas and New Year celebrations.



NFPA Christmas tree fires: "Home Christmas Tree and Holiday Light Fires", November 2011, M. Ahrens, Christmas tree fire fact sheet, video: <http://www.nfpa.org/categoryList.asp?categoryID=296>



f Mattress and bedding fires continue to kill

Over 370 civilian deaths result from fires starting in mattresses and bedding every year in the USA, according to a recent report from the US National Fire Protection Association (NFPA). Mattress and bedding fires in the US also caused over 1 300 civilian injuries and US\$ 380 million property damage. Three quarters of these fires started in the bedding fabrics, including cotton, rayon, wool and blends. Mattresses and bedding rank second, after upholstered furniture, as items first ignited in home fires leading to deaths. The US introduced 'small flame' resistance fire safety requirements for mattresses in July 2007, and the number of fires starting in mattresses and bedding has fallen by 19% from 2006 to 2009, compared to a fall of only 3% from 2003 – 2006. To date, only three countries in Europe have legislation requiring significant fire resistance for mattresses: UK and Ireland: resistance to a small flame and limited rate of burning (mass loss) for mattresses; Czech Republic: small flame resistance for bed bases and interior textiles. A few other countries have ineffective regulations requiring only cigarette ignition resistance (France, Finland, Sweden).

"Home structure fires that began with mattresses and bedding", NFPA (B. Evarts) October 2011:

<http://www.nfpa.org/itemDetail.asp?categoryID=423&itemID=18255&URL=Research/Fire%20reports/Major%20causes>

f PIN flame retardant use expected to accelerate

A global market study on flame retardants concludes that improving fire safety regulations in many countries across the world will result in a growing need for flame retardants, with a particularly rapid growth of 3.5 – 4.5% per year for phosphorus based PIN flame retardants because of the emphasis on environmentally friendly products. Innovation will include developments in nanotechnologies, micro-encapsulation and intumescent systems, and increasingly tailored user- and product- specific formations for particular applications. The most widely used flame retardant, the PIN mineral aluminium hydroxide (ATH) is expected to continue to dominate the market over the coming six years.

Market Study Flame Retardants 2018: Ceresana Research: <http://www.ceresana.com/en/market-studies/additives/flame-retardants/ceresana-research-market-study-flame-retardants.html>

f Approved Cables Initiative

The UK campaign against non-conform cables and wires, Approved Cable Initiative, is reinforcing its action to increase public, industry and regulator awareness of the risks resulting from substandard cables, in particular fire dangers. A video shown on the BBC1's "Fake Britain" programme underlines the fire risks resulting from wires with below specification copper thickness or which do not respect fire performance requirements, including footage of fire testing of cables used in schools, hospitals and other public buildings. The organisation estimates that 20% of cables sold in the UK are non-approved, unsafe or counterfeit, and that problems starting in wiring are the cause of a quarter of electrical fires, resulting in 1 200 injuries and 15 fire deaths per year in the UK.

Approved Cable Initiative (ACI): www.aci.org.uk



f Innovative FR cables and connectors for electric vehicles

Hitachi Cable has developed what it says are the smallest compact connectors available for the demanding requirements of high power wiring in hybrid and electric vehicles, to be combined with the company's special heat resistant cables (rated ISO6722 class D at 150°C and class F at 200°C). The former uses "halogen and heavy metal free" materials based on an ethylenic copolymer with metal hydroxide flame retardants to ensure self-extinguishing and low smoke for the insulation and sheath. The latter is fluorine resin cable Fluonlex[®]. The connectors use a specific spring mechanism whereby high spring force is applied after inserting the connectors, and a single spring for multiple terminals, thus minimising size and improving vibration resistance.



Photo : Hitachi Cable compact connector

Hitachi news release 30th August 2011: <http://www.hitachi-cable.com/products/news/20110830.html>

Hitachi development paper: http://www.hitachi-cable.com/about/publish/review/_icsFiles/afieldfile/2010/01/18/n28_2.pdf

f FRX Polymers innovation award entry

FRX Polymers polymeric phosphorus flame retardants are entered for the US Presidential Green Chemistry Challenge Awards, operated by the EPA (Environment Protection Agency). FRX has brought online a high-yield production plant for DPP (DiPhenyl methyl phosphonates), which is then polymerised into flame retardants containing up to 10% phosphorus which can either be used as stand-alone polymers, or as additives to improve fire safety of polycarbonates, polyesters, polyurethanes, PET, epoxies and polyureas, as well as in bio-sourced polymer materials. The polymerisation process is solvent free, producing mainly phenol as a by-product, which is recycled back to monomer production. The polymer flame retardant is non-migrating (avoiding losses from products to air or dust), amenable to recycling and does not deteriorate host polymer physical performance. Applications tested to date include carpets, transparent lenses in LED lights, electrical connectors and switches and electronic products housings. FRX already obtained the 2008 Frost & Sullivan North American Product Innovation of the Year Award for flame-retardant materials.

US Presidential Green Chemistry Challenge Awards: <http://www.epa.gov/greenchemistry>

FRX Polymers www.frxpolymers.com

f New flame retardants in consumer products

A study of brominated and organophosphorus flame retardants in new consumer goods in Japan suggests that the chemicals being used have evolved, with in some cases new brominated molecules appearing (bromine present but "traditional" flame retardants analysed not found) and in other cases replacement by phosphorus based products. The "traditional" organophosphorus ester flame retardants were also not detected, whereas triphenylphosphate was widely found, possibly because of its presence as an impurity in some formulations of condensed organophosphorus flame retardants. These new molecules offer the advantage of low indoor air pollution. The study notes that the organophosphorus compounds in the products do not correspond to those found in household dust, which may come from floor polishes (TBEP).



Traditional brominated flame retardants were found in low concentrations in some cases, probably because of the use of recycled materials.

Brominated and organophosphate flame retardants in selected consumer products on the Japanese market in 2008, N.Kajiwara, Y. Noma, H. Takigami, Journal of Hazardous Materials, Volume 192, Issue 3, 15 September 2011, Pages 1250-1259: <http://www.sciencedirect.com/science/article/pii/S0304389411008053>

ACI is an industry-wide working group bringing together organisations including Electrical Distributors Association (EDA); Electrical Contractors Association (ECA); Electrical Safety Council; British Approvals Service for Cables (BASEC); British Cables Association (BCA); Energy Networks Association (ENA); Ascertiva (previously the NICEIC Group Limited) and SELECT.

ACI - "Low Smoke Halogen Free Cables - are you getting the performance you expect?"

<http://www.aci.org.uk/page/90/Low-Smoke-Halogen-Free-Cables-are-you-getting-the-performance-you-expect-.htm>

Fire Industry Association (FIA) "Focus" article, Issue 20, 2011, pages 12-13:

<http://content.yudu.com/Library/A1tyfr/FIAFocusIssue20/resources/12.htm>

f Wildfire risks increasing

Evidence suggests that the frequency, extent and impacts of wildfires are already increasing, and will accelerate in coming years, as a consequence of climate change, and of increasing urbanisation of risk areas. The US National Fire Protection Association has devoted a special issue of its magazine NFPA Journal to wildfires (October 2011). US studies suggest that the wildfire season is now 78 days longer than it was in the 1980's, that wildfire consumed biomass will double in the Western US this century, but that also States in the North East and West will face fire where it has not traditionally been a problem. Climate change accentuates wildfires with increasing temperature, extended droughts, and stronger winds. 45 million homes in the USA are potentially threatened by wildfires. PIN substances such as ammonium phosphates are widely used to support wildfire fighting, as environmentally safe additives to fire fighting water which improve fire prevention and suppression.

NFPA Journal "Big Picture NFPA and wildfire", October 2011: www.nfpa.org

f Fire retardant window screen wins Sustainability award

Draper's GreenScreen Revive® is a window shade fabric, certified by MBDC (Cradle to Cradle®-certified Silver www.c2ccertified.com) and by Greenguard® Environmental Institute (Children and Schools and Indoor Air Quality), which offers solar control, reducing heat and glare, whilst maintaining a clean window view. The halogen-free, low VOC flame retardant (NFPA 701, CSFM Title 19) polyester fabric is made of c. 90% Repreve® recycled fabric, produced from consumer waste plastics. 1 kg of Repreve fibre saves around 3.6 litres of oil. GreenScreen has won the 2011 Window Coverings Manufacturers Association "Sustainability: Most Innovative Concept" Award 2011.

Draper GreenScreen Revive window shade fabric:

<http://www.draperinc.com/windowshades/revive.asp>





f Halogen-free FR cables for electronics and vehicles



Alliance Polymers & Services (APS), US specialist in elastomer applications, has launched new halogen-free flame retardant (HFFR) polymers for a range of cable applications. APS's halogen-free TPEs (styrenic block copolymer thermoplastic elastic) are adapted for power plugs, charger cables, ribbon wire and other cables in consumer and industrial applications, offering flexibility, good processing and surface quality. The different grades are conforming to UL 1581 or UL94 as appropriate. APS has also launched solutions for high-temperature, high-voltage cable harnesses and sheathing in electric and hybrid vehicles. The use of BASF's Elastollan thermoplastic polyurethanes ensures high physical resistance to wear, chemicals and temperature (up to 300°C) and conformity to requirements for high voltages in electrically powered vehicles and can be supplied halogen-free fire safety treated.

Alliance Polymers & Services www.apstpe.com

f Other news

A study of 13 herring gull eggs from the US-Canada Great Lakes detected two halogenated organophosphorus flame retardants (TCPP, TCEP) and one phosphate ester mainly used in floor polish and other industrial applications (TBEP) in all the tested eggs, generally at <1 ng/g (<1 part per billion) levels. Two other phosphorus flame retardants analysed were detected in only 2 and 3 of the 13 eggs, and the other 7 phosphorus flame retardants analysed were not detected at all.

Determination of non-halogenated, chlorinated and brominated organophosphate flame retardants in herring gull eggs based on liquid chromatography-tandem quadrupole mass spectrometry, Journal of Chromatography A, in press (12/2011), D. Chen, R. Letcher, S. Chu <http://www.sciencedirect.com/science/article/pii/S002196731101747X>

f Abbreviations

DPCP	Diphenyl cresyl phosphate	
HFFR	Halogen Free Flame Retardant	
NFPA:	US National Fire Protection Association www.nfpa.org	
TBEP:	Tris(2-butoxyethyl)phosphate	
TCEP:	tris(2-chloroethyl) phosphate (known as "TRIS")	halogenated flame retardant
TCPP:	tris(2-chloro-1-methylethyl) phosphate	halogenated flame retardant



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f Agenda

Events with active pinfa participation are marked: ►

6-8 March 2012	Cologne, Germany	Cables 2012 (AMI): http://www2.amiplastics.com/Events/Event.aspx?code=C441&sec=2105
14-16 March 2012	New York	5 th International Symposium on Tunnel Safety & Security http://www.istss.se/en/Sidor/default.aspx
20-22 March 2012	Cologne, Germany	Green Polymer Chemistry 2012 www.amiplastics.com
25-29 March 2012	San Diego, California	ACS Fire and Polymers VI conference http://portal.acs.org
1-5 April 2012	Orlando, Florida	► National Plastics Exhibition www.npe.org , SPE Conference www.spe.org
16-17 April 2012	Shanghai, China	3 rd International Conference on Flame Retardants (SKZ) http://www.skz.de/en/training/conferences/international_conference/1499.html
18-21 April 2012	Shanghai, China	Chinaplas (Asia Plastics and Rubber Trade Fair) http://www.chinaplasonline.com
8-10 May 2012	Indianapolis, Indiana	American Coatings Show (Vincentz Network) http://www.american-coatings-show.com/
13-16 May 2012	Strbske Pleso, Slovakia	7 th International Conference on Wood & Fire Safety http://www.sfs.au.com/documents/Wood%20&%20Fire%20Safety%20Conference%2020121.pdf
20-23 May 2012	Cambridge, Massachusetts	BCC Flame Retardancy conference http://www.bccresearch.com/conference/
23-24 May 2012	Würzburg, Germany	Trends im Brandschutz/Flammschutzmittel (SKZ) www.skz.de
4-6 June 2012	Lausanne, Switzerland	ETTC European Technical Coatings Congress www.etcc2012.ch
11-14 June 2012	Las Vegas	NFPA Conference and Expo (US National Fire Protection Association) http://www.nfpa.org/displayContent.asp?categoryID=943
14-15 June 2012	Denver, Colorado	► Fire Retardants in Plastics (AMI) http://www2.amiplastics.com/Events/Event.aspx?code=C448&sec=2199
27-28 Sept. 2012	Chicago	► 2 nd International Conference on Fires in Vehicles (FIVE) www.firesinvehicles.com