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REGULATION



EU ban on halogenated FRs in electronic display parts

The new EU Ecodesign Regulation requirements for electronic displays are now published, banning halogenated flame retardants in the enclosure and stand of all electronic displays, monitors and televisions, from 1st March 2021. See discussion of this proposal in pinfa Newsletter n°100. The Ecodesign Regulation is mandatory, so applies to all displays sold in the EU. Small displays (< 100 cm²), projectors and medical displays are excluded. 'Halogenated flame retardant' is defined as "a flame retardant that contains any halogen" and the ban is expressed as follows: "The use of halogenated flame retardants is not allowed in the enclosure and stand of electronic displays". The ban of halogenated FRs in these display parts is justified because the "presence of halogenated flame retardants represents a major issue in the recycling of plastics of electronic displays". The NGO European Environmental Citizens Organisation for Standardisation (Ecos) is [cited](#) as calling the halogenated FR ban "a big step towards a more circular economy, which should inspire the rest of the world." BSEF, the International Bromine Council, on the [other hand](#) "opposes the arbitrary and discriminatory ban on halogenated flame retardants ... unjustified, discriminatory and procedurally flawed" and considers that "this ban is now an effective regulatory precedent with the major concern that the Ecodesign Directive is being used as a vehicle to bypass the EU's well-established legislative provisions restricting the use of chemicals ... RoHS and REACH".

EU Ecodesign Regulation requirements for electronic displays, published 1st October 2019
<https://ec.europa.eu/energy/en/regulation-laying-down-ecodesign-requirements-1-october-2019>



Washington State consults on priority chemicals

Washington State has [invited](#) public comment on the five "priority chemical classes" identified in the State's [new law](#) RCW 70.365 "Safer Products for Washington" adopted Spring 2019 (Senate Bill 5135). This law identifies as initial "Priority chemicals" organohalogen flame retardants and other flame retardants identified by the Washington State Department of Ecology (as well as perfluoroalkyls PFAS, phenol compounds, phthalates, PCBs). The bill requires the Department of Ecology to identify

possible additional priority chemicals to add to this list, to identify consumer products that are a significant source of priority chemicals, to determine and adopt regulatory actions to increase transparency and reduce the use of priority chemicals in these consumer products. The stakeholder consultation proposed, for flame retardants, has an emphasis on electronics, foam used in furniture and juvenile products, and building insulation. A further consultation is expected on a draft report early 2020.

Washington State "Safe Products for Washington" website

https://www.ezview.wa.gov/site/alias_1962/37555/safer_products_for_washington.aspx

Law 70.365 RCW "Safer Products for Washington"

<https://app.leg.wa.gov/RCW/default.aspx?cite=70.365>

Washington State Department of Ecology web page on flame retardants and PBDE action plan

<https://ecology.wa.gov/Waste-Toxics/Reducing-toxic-chemicals/Addressing-priority-toxic-chemicals/PBDE>

Washington State stakeholder email inviting input (September 2019) – a clear deadline for response is not specified

https://www.ezview.wa.gov/Portals/_1962/Documents/saferproducts/Stakeholder_Email_September_2019.pdf



US CPSC takes no decision on open flame testing

The US Consumer Product Safety Commission, the body which can fix federal product safety standards, has been discussing and studying a possible federal open flame fire safety requirement for furniture for 25 years, after granting a petition from the US National Association of Fire Safety Marshalls in 1994. The Commission voted on 4th October 2019 on a "Staff Briefing" recommending to terminate rulemaking on upholstered furniture flammability and to not promulgate any other standard (in particular, the current California smouldering cigarette test) as a federal requirement, but the vote failed to reach a majority (two against terminating rulemaking, one for, two other votes). The staff briefing document estimates that upholstered furniture is the first item ignited in around 4 400 declared fires per year (USA), leading to 470 deaths, 660 injuries and nearly 240 million US\$ property losses. The Staff Briefing document concludes that the California cigarette test (CA TB 117-2013) does not relate to furniture in the real world, does not give consistent results and does not offer improved safety (because 90% of the furniture on the market would pass the test).

CPSC "Staff Briefing Package. Upholstered Furniture Flammability; Staff Activities and Recommendation. September 2019", 12 pages <https://cpsc.gov/s3fs-public/Upholstered%20Furniture%20Update%202019.pdf>

"Record of Commission Action. Upholstered Furniture Update 2019", 4 October 2019

https://cpsc.gov/s3fs-public/RCA%20-%20Upholstered%20Furniture%20Update%202019_0.pdf?oTLdo3Yc9ryc_nsXBwMrHYi_mtfC8x4u



New Hampshire bans all FRs in furniture

The State of New Hampshire has adopted a bill ([SB193](#)) banning the sale of furniture which contains > 0.1% "flame retardants" in its covering or cushioning. A "flame retardant" is defined as any chemical "for which a functional use is to resist or inhibit the spread of fire". Mattresses and furniture for public use are exempted. This follows similar bans already enacted in the States of Maine (pinfa Newsletter n°84) banning all FRs in furniture, and in California (pinfa Newsletter n°95) banning all non-inorganic FRs in furniture and children's products.

New Hampshire bill SB193

http://gencourt.state.nh.us/bill_status/billText.aspx?sy=2019&txtFormat=html&v=HA&id=241

FIRE SAFETY



UK buildings failing fire safety tests

An [estimated 1 700 buildings](#) in the UK (hospitals, schools, high-rise flats ...) may be “at risk” because cladding and construction materials pose fire risks. Following the Grenfell tower fire (2017) the UK Government banned combustible materials in new buildings over 18 m tall and fire tests have been carried out on samples from existing buildings with potentially dangerous cladding. To date, in tests carried out on 600 buildings, nearly half failed the material fire tests (see [list](#)). The UK Government has [to date allocated](#) UK£ 600 million to help fund replacement of dangerous cladding on existing buildings (for England only: UK£ 400 M in 2018 for publicly owned buildings, UK£ 200 M in May 2019 to help private building owners). This compares to the budget of the Grenfell Tower renovation in which flammable cladding was installed (around UK£ 12 M) and the [amount](#) already spent today supporting the victims of the fire (over UK£ 130 M)

Independently, UK figures are being published across the UK showing that many public buildings failed to meet fire safety standards in checks carried out by fire services over the last year (1/3 “unsatisfactory” in [Norfolk](#) up to nearly 3/4 in [Hampshire](#)). Buildings failing standards include hospitals, schools, hotels, shops, offices and factories, with failings including inadequate fire alarm testing, insufficient fire risk assessment or emergency exits not kept clear.

Two years after the Grenfell fire tragedy (14th June 2017) housing campaigners consider that not enough has been done and that thousands of people are still living in buildings that are not fire safe. ‘Grenfell United’ (a group of survivors and victims’ relatives) [organised](#) a national campaign lighting messages across tower blocks in London, Salford (Manchester), Newcastle which are still covered in flammable cladding or without sprinklers or fire doors.

Grenfell United <https://www.grenfellunited.org.uk/>



Office for Product
Safety &
Standards

Whirlpool dryer fire recall

Whirlpool is being obliged to recall further clothes dryers, because in the machines as sold, fluff can accumulated and then enter into contact with the heating element. Several million clothes dryers in the UK, sold under brands Hotpoint, Creda, Swan, Proline and Indesit were [initially recalled](#) (see pinfa News n°78) following a Consumer Magazine WHICH? [investigation](#) four years ago suggesting that these dryers were responsible for over 750 fires. Whirlpool has [issued](#) 500 000 plus 63 000 further recalls in June and September 2019.

UK Government press release 10 July 2019 “Whirlpool accepts need for recall following government intervention” <https://www.gov.uk/government/news/whirlpool-accepts-need-for-recall-following-government-intervention> and BBC 13 September 2019 “Whirlpool tumble dryer recall uncovers 65,000 dangerous machines” <https://www.bbc.com/news/business-49661636>

Which? 11 June 2019 “Whirlpool facing recall notice over fire-risk tumble dryers” <https://www.which.co.uk/news/2019/06/government-orders-recall-of-whirlpools-fire-risk-tumble-dryers/>



Grenfell law suit cites Whirlpool, Arconic, Celotex

Associated Press [reports](#) that nearly 250 survivors and families of victims' of the Grenfell tower fire have filed legal action in Philadelphia, citing Whirlpool (the manufacturer of the Hotpoint model fridge-freezer which is indicated to have started the fire, and which contained flammable insulation foam, see pinfa Newsletter n°94), cladding manufacturer Arconic and insulation manufacturer Celotex (part of Saint Gobain group). Both the cladding and the insulation product have since been taken off the market.

"Building materials helped spread Grenfell fire, US suit says", Associated Press, 12 June 2019
<https://apnews.com/ac98ee464e614e909154687794807e5a>

Fire losses in the USA in 2018

The US National Fire Protection Association (NFPA) has published its annual report on fire losses, showing that 1.3 million fires were reported by fire departments in the USA in 2018, resulting in over 3 600 civilian deaths, 15 200 civilian injuries and US\$ 25 billion property loss. The number of fires was stable from 2017, and has been nearly stable since around 2010. The number of civilian fire deaths has fallen to around half its late 1970's level, but is stable or slightly increasing since 2010. Average property losses per structure fire (excluding wildfires) have increased slowly since the late 1970's (total increase 43% since 1977). The 25 billion US\$ fire property loss in 2018 included 12 billion US\$ losses related to California wildfires.

"Fire Loss in the United States During 2018", NFPA, B. Everts, September 2019
<https://www.nfpa.org/News-and-Research/Data-research-and-tools/US-Fire-Problem/Fire-loss-in-the-United-State>



34 dead in California diving boat fire

33 passengers and one crew member died in a fire on the 23-metre commercial scuba-diving boat Conception (Truth Aquatics Inc.), which was anchored off Santa Cruz Island, California, 3rd September 2019. Five crew members escaped alive. The victims were all sleeping below deck in the wood and fibreglass vessel. The crew members who survived were sleeping elsewhere on the boat and on waking tried to reach the passenger compartment but were blocked by fire and smoke. The latest inspection of the boat in summer 2018 found no fire safety deficiencies. Questions are being asked that safety regulations should be modified to require more than one escape route from passenger quarters. Strict maritime fire safety requirements have to date limited fire deaths on recreational boats: below 1% of accidental deaths according to US Coast Guards data for 2009-2018.

Media: <https://www.bbc.com/news/world-us-canada-49681130> and
<https://eu.usatoday.com/story/news/nation/2019/09/02/california-boat-fire-santa-cruz-island/2190570001/>



Nine dead in Odessa hotel fire

A fire in the 273 room Tokyo Star Hotel, Odessa, Ukraine, 17th August, killed nine people, reportedly by carbon monoxide poisoning. The city is a popular Black Sea tourist resort. The Ukraine's President is cited as saying that the deaths were "because of criminal negligence and ignoring the elementary standards of fire safety" and has ordered inspections of leisure venues and hotels across the country following the fire. Legal action has been engaged against the hotel owner for violation of fire safety requirements.

EuroNews <https://www.euronews.com/2019/08/17/ukraine-hotel-fire-eight-people-killed-in-blaze-at-tokyo-star-in-odessa>



COMPANIES AND MARKETS



Prysmian in Dow Jones Sustainability Index

Prysmian Group, world leader in energy and telecom cable systems, has been included in the Dow Jones Sustainability Index World, recognising environmental, social and governance performance. Recently Prysmian has emphasised sustainable product innovation with 17 FREE Riser halogen-free communication cables, flexiribbon technology enabling fibre densification and so reduced material use and power systems with lower line losses. Prysmian offers LSOH (Low Smoke Zero Halogen) cable jacketing which “release only a limited amount of smoke” in fire and “do not produce a dangerous combination of gas, acid or toxic smoke when exposed to fire”

Prysmian press release, 16 September 2019 “Prysmian Group included in the 2019 Dow Jones Sustainability World Index” <https://www.prysmiangroup.com/en/press-releases/prysmian-group-included-2019-dow-jones-sustainability-index-world>



Tratos Queen’s Award for LSZH cables

Leading European electrical, electronic and fibre optic cables manufacturer, Tratos, is amongst the 2019 UK Queen’s Award Enterprise winners for innovation for its new Tratos [JBA](#) cable sheathing elastomeric compound. This is halogen free, low smoke, fire resistant to demanding requirements, resistant to mud, water, impact and extreme temperatures. Applications include oil & gas installation, naval, railways and mass transit.

“Tratos At Buckingham Palace For Queen’s Award Celebration”, 12 June 2019 <https://tratosgroup.com/news/tratos-at-buckingham-palace-for-queens-award-celebration/> and [JBA compound https://tratosgroup.com/families/fire-resistant/jba/](https://tratosgroup.com/families/fire-resistant/jba/)

Market for PIN flame retardants continuing to grow

A number of new market studies predict continuing growth for flame retardant demand, particularly for PIN FRs. DataMintIntelligence predict 6.2% growth for overall FR markets worldwide 2019-2026, with increasing application in construction, E&E and generally in plastics. TrendsMarketResearch (TMR) on the other hand predict a 3.7% growth rate in volume for FRs worldwide 2018-2023. TMR however predict the global FR masterbatch market to grow 8% in value 2019-2027 (from US\$ 1.8 billion), with E&E and cables, construction and electric vehicles identified as sectors leading growth. For PIN FRs, DataBridgeMarketResearch predicts growth of 8.44% for 2019-2026 (from US\$ 4.31 billion 2018), driven by increasing regulatory requirements for both fire safety and “environmentally friendly” FRs. Specifically for PIN FR cables, InsightPartners, predicting 10.7% growth for low smoke zero halogen (LSZH) cables 2019-2027 (from US\$ 2.5 billion 2018), driven by new testing standards for cables smoke emission and toxicity and corrosion resulting from non-LSZH cables in case of fire. Acumen predict 4.9% growth 2019-2026 for intumescent coatings (to reach US\$ 1.5 billion 2026), driven especially by passive fire protection of steel structures in the oil and gas industries.



DataMintIntelligence, FR chemicals worldwide 2019-2026 <https://marketmirror24.com/2019/07/flame-retardant-chemicals-market-is-growing-at-a-cagr-of-6-2-during-the-forecast-period/>

TrendMarketResearch global FR market 2018-2023 <https://www.trendsmarketresearch.com/report/analysis/BCC/flame-retardant-chemicals-market>

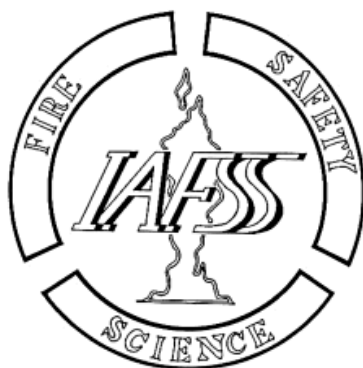
TrendMarketResearch global FR masterbatch market 2019-2027 <https://www.transparencymarketresearch.com/pressrelease/flame-retardant-masterbatches-market.htm>

DataBrdidgeMarketResearch "Global Halogen-Free Flame Retardant Market – Industry Trends and Forecast to 2026" <https://www.databridge-marketresearch.com/reports/global-halogen-free-flame-retardant-market/>

InsightPartners global "Low Smoke Zero Halogen Cable Market to 2027" <https://www.theinsightpartners.com/reports/low-smoke-halogen-free-cable-market/>

Acumen "Intumescent Coatings to Reach US\$ 1.5 Billion by 2026" <https://www.acumenresearchandconsulting.com/intumescent-coatings>

RESEARCH



IAFSS publishes agenda for fire safety

The International Association for Fire Safety Science (IAFSS) has published (in Fire Safety Journal) its "Agenda 2030 for a fire safe world", as a call for dialogue between fire scientists, fire engineers, regulators and funding agencies. Input to this Agenda included the Brussels stakeholder meeting organised with support of pinfa and other organisations in December 2018 (see pinfa Newsletter n°100). IAFSS note that fire kills 180 000 people annually (WHO), costs nearly 2% of GDP in the USA and that wildfire losses are increasing (highest ever in 2017, SwissRe). IAFSS identify two global challenges that fire research can help address: climate change, resiliency and sustainability (including addressing use of wood in construction, increased thermal insulation, reduced ventilation) and population growth, urbanisation and globalisation. The scientific association identifies seven areas of research needed to respond to these challenges: wildfires and wildfire/urban interface, social resilience, fire safety and sustainability, globally consistent standards etc., tall buildings and urban development, new technology and data, higher education.

"IAFSS agenda 2030 for a fire safe world", M. McNamee et al., *Fire Safety Journal* 110 (2019) 102889 <https://doi.org/10.1016/j.firesaf.2019.102889>



Keratin from waste feathers as a PIN flame retardant

New Zealand researchers are developing a process to extract keratin from waste poultry feathers and produce a PIN flame retardant. Some 40 million tonnes (1) of chicken feathers are generated worldwide, considered as a waste. The researchers chemically modify the keratin in the feathers, and produce a powder which can be used as a flame retardant in plastics, claiming that fire performance can be achieved with relatively low loadings and with limited deterioration of mechanical properties. Previous work by the group looked as similarly using keratin extracted from low-grade, non-saleable wool. Keratins can contain over 15% nitrogen, 5% sulphur, and some other minerals, e.g. < 0.5% calcium and phosphorus (2). The researchers consider that the flame retardant effect is due to char formation.

(1) <https://doi.org/10.1007/s10098-017-1443-9>

(2) <http://www.ingredients101.com/feather.htm>

"From chicken feathers to fire retardant", D. Bhattacharyya, 23 July 2019

<https://www.auckland.ac.nz/en/news/2019/07/23/from-chicken-feathers-to-fire-retardant.html>



Dissent over study on toxicity of FR furniture smoke

A study led by UCLAN UK centering on toxicity of smoke from FR furniture has led to publication by the same journal of an immediate rebuttal. The UCLAN study title states that FRs “increase smoke toxicity more than they reduce fire growth rate” (see comment below). Four different specially made “sofa-beds” were constructed (2 examples of each type), consisting of a mattress on a metal frame. Small samples of materials were tested as in a cone calorimeter and the sofa-beds were tested in a room scale test, ignited by a large flame source (Crib 7) with the sofa-bed being the only furniture in the room. The mattresses were made of a foam, polyester comfort layer and a covering fabric. Two of the mattresses (UKFR) used commercially sourced FR polyurethane foam and FR fabric which were conform to UK Furniture Fire Safety Regulations (the fabrics contained the halogenated FRs Deca-BDE and TCIPP, not all FRs were analysed) but with a non-FR polyester comfort layer; one mattress (“EU”) was the same but with non-FR foam and fabric, and one mattress was conform to the UK regulations using cotton, polyester and wool only for fabrics, comfort layer and foam (trade name Cottonsafe). Tests were duplicated (2 mattresses for each type) except that sampling failed for some tests, so the FR mattress toxicity tests were not duplicated. In-house equipment was designed to monitor the toxic gases carbon monoxide and hydrogen cyanide (no other forms of smoke toxicity were analysed, smoke density is not reported). The room test results indicate that peak heat release was higher for the non-FR furniture (213 kW/m² for EU non-FR, 186 for Cottonsafe, 165 and 112 for UKFR). Carbon monoxide and hydrogen cyanide yields (per g mattress) were on the other hand higher for the UKFR furniture. The rebuttal (by Marcello Hirschler) published in the same Journal as the original article underlines that the tests do show that the flame retardants successfully achieve their key objective, that is to reduce heat release. The method of the study is strongly criticised (e.g. wind exposure of the full scale test), unrealistic furniture composition (excessive thickness of polyester padding, which is not fire safety treated), conclusions on toxicity based on an “extremely controversial” equation, absence of data on quantity of smoke emitted (which is argued to be the most important driver of toxicity). pinfa adds that the article title reference to “fire growth rate” is misleading. No data on fire growth rate are given in the paper, whereas if a “rate” is calculated (PHRR / time to PHRR) this shows no significant difference between the UKFR and EU (non-FR) furniture, but a much higher “rate” for the Cottonsafe furniture.

This study dates from 2018 but was missed and not covered before in pinfa Newsletter. “Flame retardants in UK furniture increase smoke toxicity more than they reduce fire growth rate”, S. McKenna et al., Chemosphere 196 (2018) 429e439

<https://doi.org/10.1016/j.chemosphere.2017.12.017> and “Rebuttal to ...”, M. Hirschler, Chemosphere 232 (2019) 509e511 <https://doi.org/10.1016/j.chemosphere.2018.07.123> a review of the article by Efectis is also published by BSEF <https://www.bsef.com/news/efectis-report-flame-retardants-uk-furniture-increase-smoke-toxicity-reduce-fire-growth-rate-study-statistical-data-used-partial-not-objective/>



Three times more wildfires in Europe this year

The European Commission’s (JRC Copernicus) European Forest Fire Information System ([EFFIS](#)) indicates that the number of wildfires occurring in the EU in 2019 (to mid August) was three times higher than the average (for the same months) for the decade 2008-2018. Over 270 000 hectares have been burned, nearly twice the average of the previous decade. This is despite 2017, the most recent year for which a full report is available, being particularly bad for European wildfires, with 1.2 million

hectares burnt, 127 civilian lives lost and economic damage of €10 billion. Scientists estimate that a 1.5°C global climate temperature increase (as per the Paris agreement) would lead to a 40% increase in wildfires in the Mediterranean region, and a 2-3°C increase to a 100% increase.

“There have been three times more wildfires in the EU so far this year”, EuroNews 15th August 2019 <https://www.euronews.com/2019/08/15/there-have-been-three-times-more-wildfires-in-the-eu-so-far-this-year>

“Exacerbated fires in Mediterranean Europe due to anthropogenic warming projected with nonstationary climate-fire models”, M. Turco et al., Nature Communications 2018, 3821, Open Access <https://doi.org/10.1038/s41467-018-06358-z>

Scientists scrutinise phosphorus FRs

Arlene Blum, Heather Stapleton and several other scientists from six universities in North America have published a paper comparing toxicity and exposure of organophosphorus flame retardants (OPFRs) to brominated flame retardants (BFRs). Firstly, total levels of OPFRs in water and air are compared to total PBDEs, showing to be generally higher. However, the data come from different studies so are not necessarily comparable, and it is not clear why total OPFRs are compared to levels of only one class of (organo)brominated FR. The paper does note that environmental accumulation of OPFRs is not expected, due to their lower environmental persistence. Secondly, toxicity is compared using computational modelling, for six non-halogenated OPFRs (TPHP, IPP, EHDPP, BPDP, IDDP, TMPP = all additive phosphorus esters) and two halogenated OPFRs (TDCIPP, TCEP) to two BFR classes (PBDEs and TBBPA). This shows (estimated) exposure concentrations lower than modelled effect thresholds for four of the six non-halogenated OPFRs (IPP, EHDPP, BPDP, IDDP) but possibly reaching these modelled thresholds for TPHP and TMPP. The authors conclude by proposing to move away from addition of any flame retardant chemicals to products, thus apparently drawing conclusions for all types of FRs (inorganic chemicals, mineral clays, polymers ...) and for all types of organophosphorus FRs (e.g. DOPO derivatives, phosphites ...) from modelling of (only four representatives) of a specific chemical family, the phosphorus esters.

Adrian Beard, chairman of pinfa, comments: “pinfa does not consider it valid to treat all phosphate esters as one group, because some of these chemicals are already under regulatory scrutiny or have been restricted (e.g. chlorinated alkyl phosphates TCEP and TCPP), whereas others have data showing their good environmental and health profiles. Nevertheless, pinfa welcomes critical research. We are currently discussing this paper in depth with our experts, both the methodology and the results, and we are open for dialogue with the authors, other scientists and stakeholders.”

TPHP = triphenyl phosphate, IPP = isopropylated phenyl phosphate, EHDPP = 2-ethylhexyl diphenyl phosphate, BPDP = tert-butylated phenyl diphenyl phosphate, IDDP = isodecyl diphenyl phosphate, TMPP = trimethyl phenyl phosphate). TDCIPP = tris(1,3-dichloro-2-propyl) phosphate, TCEP = tris(2-chloroethyl) phosphate.

“Organophosphate Ester Flame Retardants: Are They a Regrettable Substitution for Polybrominated Diphenyl Ethers?”, A. Blum, H. Stapleton et al., Environ. Sci. Technol. Lett. 2019 <http://dx.doi.org/10.1021/acs.estlett.9b00582>





NIST tests of furniture fire barriers published

Cone calorimeter tests carried out by the US National Institute of Standards and Technology into effectiveness of barrier fabrics in furniture are now published. The published paper does not include full scale tests, presented at FRPM and summarised in pinfa Newsletter n°105. The paper notes that fires identified as involving residential upholstered furniture lead to over 600 deaths per year in the USA, that is a quarter of home fire deaths. In this study, the effectiveness of 16 commercially available furniture fire barrier fabrics was assessed on polyurethane foam. Barrier performance was compared to flammability, gas permeability, thermal protection and physical integrity. Conclusions are that FR chemicals “can be effective in quenching and extinguishing the flames” and that an effective barrier shell is also important. The five most effective barriers in reducing peak heat release rate (PHRR₂) either contained FRs or included glass fibres, showing that both FRs or structural barriers can be very effective.

“Assessing fire-blocking effectiveness of barrier fabrics in the cone calorimeter”, S. Nazare et al., J. Fire Sciences 2019, Vol. 37(4-6) 340–376 <https://doi.org/10.1177/0734904119863011>

RECYCLING



EEA says plastics recycling needs action

The European Environment Agency (EEA) has published two Briefings on “Resource Efficiency and Waste”, one of which specifically targets plastics recycling. The Agency indicates that of 30 million t/y plastic waste generated in Europe, only 17% is collected for reuse or recycling and only 6% of new plastics come from recycling. Packaging is the biggest source of plastics waste (16 Mt/y), followed by WEEE, construction/demolition and end-of-life vehicles. The EU is also under pressure to improve plastics recycling because exports of plastic waste have been cut from 3.6 Mt/y in 2016 to 1.8 Mt/y in 2019 because of import restrictions in China and Basel convention restriction on exports on some waste plastics (because of presence of POP brominated flame retardants). The EEA considers that plastics recycling offers major opportunities for resource efficiency (circular economy) in Europe. Challenges indicated are the need to increase collection rates (improve systems, ensure consumer awareness) and to improve sorting, to ensure quality of streams of collected plastics (reduce material heterogeneity and avoid the presence of hazardous additives), need for more cost-effective recycling technologies.

European Environment Agency Briefings “Resource efficiency. The plastic waste trade in the circular economy” <https://www.eea.europa.eu/themes/waste/resource-efficiency/the-plastic-waste-trade-in> and “Reducing loss of resources from waste management is key to strengthening the circular economy in Europe” <https://www.eea.europa.eu/highlights/reuse-and-recycling-are-key>



NGO questions “chemical recycling” of plastics

The environmental NGO [Zero Waste Europe](https://zerowasteurope.eu/) has published a position paper on “chemical recycling” of plastics. The NGO’s position is that chemical recycling does have “a role to play in closing the material loop and moving ... up the waste hierarchy”, but that policy priorities should be firstly to reduce and reuse, and secondly to mechanical recycling. The paper identifies three types of chemical recycling: solvent-based purification and depolymerisation, both of which only work with “mono-streams” (plastics separated by polymer type) and thermal depolymerisation / cracking processes. The NGOs suggests that policy makers need to fix a clear definition of “chemical recycling” which limits to operations which generate new plastics and which have a lower carbon footprint than virgin plastics, and that chemical recycling should be used only for degraded and contaminated plastics (not separated streams which can be mechanically recycled)

“El Dorado of Chemical Recycling. State of play and policy challenges”, Zero Waste Europe, August 2019, 27 pages https://zerowasteurope.eu/wp-content/uploads/edd/2019/08/2019_08_29_zwe_study_chemical_recycling.pdf



Additives enabling plastics upcycling

Unlike post-industrial plastics recycling, dealing with known and homogenous materials, post consumer recycling (PCR) poses challenges because the feedstream is variable and contains a mixture of different polymers and additives, with differing processing characteristics (rheology). Compounding World summarises today’s offer of specialist additives, designed to address odour problems, improve processing, improve compatibility between different polymers and fillers being remixed, limit colour deterioration and restore properties of the recycled plastic. Additives specifically adapted for recycling can limit the impacts of polymer degradation during re-extrusion, improve reprocessing (lubricants, melt stabilisers) and provide final material stabilisation (including antioxidants, anti-UV, acid-scavengers). Odours in PCR plastics can come from their previous use (contact with fish or other foods) or from chemical reactions during reprocessing, are generally related to amines or sulphur compounds, and can be addressed by specific odour-neutralising additives. Masterbatchers are now proposing part or 100% PCR masterbatches, including appropriate additives.

“Additives key to upcycling”, Compounding World, October 2019 www.compoundingworld.com
 See also *US Association of Plastics Recyclers guidance documents*
<https://www.plasticsrecyclers.eu/downloads>

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