

# HP using halogen-free recycled plastics to achieve 2025 goal

Clariant's phosphinate-based compound 'a sustainable replacement'

18 March 2020



Computing and printing giant HP is using a halogen-free resin made from recycled plastics in some of its products, to address concerns with brominated flame retardants and plastic pollution.

Last year, the company announced a goal to increase the amount of recycled plastic content in its products and supplies to 30% by 2025.

To help achieve this, HP asked chemical company Clariant and Canadian recycled plastics producer Lavergne to develop a material from ocean-bound plastics (OBPs – see box) that is free of halogenated flame retardants.

## What are OBPs?

Ocean-bound plastics are those that are likely to end up in the oceans because they are not properly disposed of. They are collected in villages and on beaches or coastlines in specific regions – in Clariant and Lavergne's case, this is mainly bottles in the Caribbean country Haiti. It is usually considered ocean-bound plastic when it is found 50km from the shoreline.

More than 75% of HP's personal systems product series – including laptops, tablets, PCs and displays – have been 'low halogen' since 2018, meaning they contain below 0.1% by weight of the halogens bromine and chlorine.

Use of the substance class in electronics has come under increased regulatory pressure in the EU, with the European

Commission recently [adopting](#) a ban on the group of chemicals in some electronic displays under the Ecodesign Directive. Some halogenated flame retardants, such as HBCD and decaBDE, have been banned under international treaty the Stockholm Convention for their persistence in the environment.

In May last year, a US National Academies report [backed](#) a class-based approach as the "only possible practical" way of addressing halogenated flame retardants, which contain elements including bromine, chlorine and fluorine.

HP told Chemical Watch it has advocated for legislation to restrict brominated flame retardants, as well as PVC and phthalates because, even though alternatives have been identified for most applications, barriers to adoption remain, such as increased cost or limited availability. "Without regulatory restriction, widespread adoption of the less hazardous alternatives will not be possible," it says.

For the products it has switched, it is largely using chemical company Clariant's halogen-free phosphinate-based compound.

Some ecolabels, such as the US' Electronic Product Environmental Assessment Tool (EPEAT), reward the use of post-consumer recyclates in electronics. Therefore, Clariant said, original equipment manufacturers (OEMs) are looking to increase their use of resins based on recycled materials.

However, for certain applications, flame retardancy is required, it added, so the company supplied a halogen-free solution for Lavergne's OBP resin. HP said it is looking to develop future products with the material.

### Halogen-free

Clariant's phosphinate-based compound has been tested under European Commission-funded project, ENFIRO, that looks into substitution options for specific brominated flame retardants (BFRs). It also scored a benchmark 3 classification under NGO Clean Production Action's assessment tool, GreenScreen – which identifies it as a good option to use because of its low hazard but adds there is "still opportunity for improvement". It has also met Clariant's own criteria for its EcoTain label (see box).

"All studies documented the excellent health and environmental profile of [the compound] and consider it a sustainable replacement of other flame retardants, for example, those based on brominated compounds with antimony trioxide as a synergist," Clariant said.

There have been some challenges in using the new material, HP said, but these have been related to the differences in processing a combination of polybutylene terephthalate (PBT) and polyethylene terephthalate (PET) – the polymers that make up the majority of plastic bottles – rather than the addition of halogen-free flame retardants. Clariant said the material is available for commercial use and for production at scale. It adds that it is "the first flame retardant material of this kind we are aware of, based on ocean-bound plastics and designed for use in electronics and electrical applications."

The chemical company added that the material could also be used in the transportation sector, for railway, aeroplanes and automotive (mainly in e-mobility), and in electric parts like circuit breakers or connectors.

### Clariant's label

Clariant's EcoTain label is awarded to products that have "undergone a systematic, in-depth screening process", using 36 criteria encompassing the lifecycle, which also provides a holistic picture of social, environmental and economic aspects. A corporate panel of experts review candidate products in Clariant's portfolio and awards the label to those that meet the criteria. By 2018, 193 products had qualified.

The label is a result of Clariant's Portfolio Value Program (PVP), which was launched in 2012 in cooperation with the Collaborating Centre on Sustainable Consumption and Production (CSCP), founded by Unep and the Wuppertal Institute. The programme is based on an analysis of sustainability trends and needs, based on the input and views of external stakeholders.

Clariant has also, together with other chemical companies, contributed to the development of a common methodology for Portfolio Sustainability Assessments (PSA) in the chemical industry with the World Business Council for Sustainable Development.

The PSA methodology lays down principles for broader sustainability categories. Each company can also apply their own labels and standards to illustrate their view on "sustainability excellence".

---

**Disclaimer:** Content on Chemical Watch (including any of its websites) shall not be regarded as professional advice and is not intended as such. CW Research Ltd does not accept liability for inaccuracies in published material. Customers are advised to take appropriate professional advice to inform business decisions.

**Copyright:** Documents and web pages downloaded from Chemical Watch (including any of its websites) are for the use of registered users only. Such documents and web pages must not be distributed or republished without consent from CW Research Ltd (email [enquiries@chemicalwatch.com](mailto:enquiries@chemicalwatch.com)). Copyright in original legal texts and guidance remains with the respective government authorities.



Chemical Watch provides independent intelligence and insight for product safety professionals managing chemicals. We help businesses across value chains stay ahead of the dynamic chemicals management agenda by providing access to in-depth knowledge, tools and a network of experts. We empower our members to transform product safety management and unlock the full value of regulatory compliance within their business.

[Find out more about Chemical Watch membership](#)