Brochure

Leading the way through a responsible materials strategy

Customers and stakeholders increasingly expect companies to understand what materials are used in their products, the sources of those materials, and the corresponding environmental and human health impacts.

HP is reinventing how products are designed, manufactured, used, and recovered as we shift our business model and operations toward a materials- and energy-efficient circular economy. In manufacturing HP products, we work to do more with less, getting maximum value from the materials we use. A key concept in the circular economy is a materials cycle where plastics, metals, and other durable materials are used over and over without being "downcycled" into lower-grade uses, eventually becoming waste. To achieve a healthy materials cycle, and reduce our product-related environmental impact, HP works to find alternatives to substances of concern, offers robust product recycling systems, and uses recycled content in new products. Together, these approaches drive our sustainability-driven materials management strategy. For instance, through our closed loop recycling process, we recycle old ink and toner cartridges into new products and reduce landfill impacts.

Assuring materials compliance

HP complies with laws and regulations where HP does business and adopts and applies international standards where laws are less stringent. We implement our materials restrictions through a three-part compliance process:

- The HP Supplier Safe and Legal Standard provides a management system for the design, manufacture, and delivery of products.
- The HP General Specification for the Environment (GSE) includes substance and materials requirements for parts and components used in HP products, packaging, and manufacturing.
- The HP Active Verification Materials Testing Specification defines our requirements for testing materials for specific substances restricted under the GSE.

Finding safer alternatives

When replacing substances of concern, we provide guidance to suppliers on commercially viable alternatives with lower potential impact.

In assessing viable alternatives we look for materials that meet performance and cost standards while reducing the risk of human health and environmental impacts. HP's alternatives assessment process is aligned with the National Academies of Science publication A Framework to Guide Selection of Chemical Alternatives and incorporates the GreenScreen® For Safer Chemicals. In 2016, we expanded our use of GreenScreen® to assess alternatives for chemicals used in our printing inks as well as our hardware products. We also advocate for use of the GreenScreen® methodology when regulators or eco-label organizations restrict substances of concern.

HP began proactively eliminating substances of concern in the early 1990s. Our current efforts to phase out substances of concern mainly focus on phthalates, brominated flame retardants (BFRs), and polyvinyl chloride (PVC).

All personal systems and inkjet printer products launched in 2016 have eliminated the phthalates bis(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), butyl benzyl phthalate (BBP), and diisobutyl phthalate (DIBP).[1] In addition, 75% of personal systems product groups sold in 2016 were classified as low halogen[2], including all HP Elite Desktops, All-in-Ones, notebooks, thin clients, and workstations. All HP disk drives, application-specific integrated circuits (ASICs), and memory modules are also classified as low halogen. HP has also reduced PVC usage by shortening power cords and we can provide PVC-free power cords for PCs and printers in many countries worldwide, depending on the product. These initiatives have reduced PVC usage by a total of more than 7,000 tonnes since 2011. HP will continue to advance these product improvements for our personal systems and printers.

HP aspires to a world where our products and operations use materials and chemicals that cause no harm. We are committed to proactively evaluating chemicals and materials in HP's products and supply chain, and prioritizing them for restriction based on published lists of chemicals of concern, customer preferences, sound scientific analysis that reveals a potential risk to human health or the environment, and the availability of feasible alternatives.

As part of this commitment, we plan to reduce our chemical footprint in 2017 by:

- Further reducing PVC in our personal systems portfolio
- Continuing to eliminate the use of phthalates with expected completion by end of 2018
- Working to restrict N,N–dimethylacetamide (DMAC) in products by next year

We also aspire to zero exposure of workers to toxic chemicals in electronics manufacturing processes. We are working with industry groups, such as the Clean Electronics Production Network (CEPN), to this end. This work includes creating case studies for replacing priority substances with safer alternatives, a pilot program for more comprehensive monitoring of worker exposure, and a common standard for reporting substances used.

Using recycled materials

We are committed to supporting the development of recovered materials markets through the use of recycled content in new HP products. HP's earliest closed loop recycling activities began with creating HP toner cartridges with plastic recycled from the HP Planet Partners program in 2000. Leadership with closed loop plastics recycling expanded in 2005 when the company started using recovered polyethylene terephthalate (PET) from our ink cartridges as a material source for new cartridges. Over time, this program has expanded to include additional cartridges and polypropylene plastic. Since 2000, HP has manufactured more than 3.5 billion

Materials Cycle

- Production
- Product
- Use
- Return
- Disassembly
- Durable materials
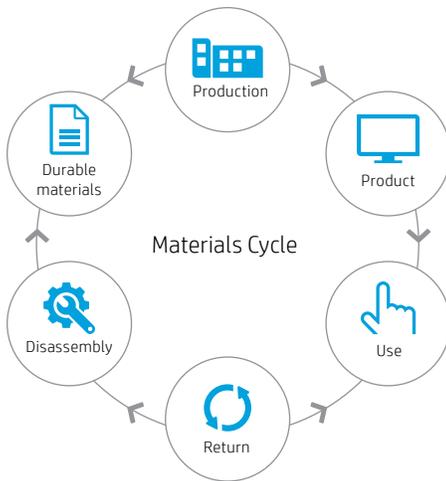
HP ink and toner cartridges using more than 199 million pounds of recycled content material. Through this process, the company kept 735 million cartridges, 70 million apparel hangers, and 3.7 billion postconsumer plastic bottles out of landfills, upcycling these materials for continued use. More than 80% of our ink cartridges now contain 45–70% recycled content, and 100% of HP toner cartridges now contain 10–33% recycled content.[3]

We also use recycled content in personal systems and printing products when feasible. In 2016:

• 47% of new commercial HP desktop products contained greater than 10% postconsumer recycled (PCR) plastic content, up from 33% in 2014.

• 70% of HP commercial displays contained more than 10% PCR plastics, and 26% contained more than 40% PCR plastics.

• We launched three inkjet printers that contained more than 5% PCR plastics. All models of our PageWide fleet now contain post-consumer recycled content plastic of more than 5%.

Sourcing materials responsibly

It is not only important what materials are used in a product but also how those materials are produced. Two important areas for responsible sourcing for HP are conflict minerals and paper.

Conflict minerals
The exploitation of natural resources in the Democratic Republic of Congo (DRC) to fund groups engaged in extreme violence and human rights atrocities has generated global outrage and action. Of greatest concern are mineral precursors of the metals tantalum, tin, tungsten, and gold (3TG)—known as "conflict minerals." Any possibility that the manufacture of our products might be connected to armed conflict is unacceptable. HP conducts rigorous due diligence on conflict minerals across its diverse supply chain and works to catalyze responsible mineral sourcing across our industry.

Paper
Use of paper represents as little as 13% of the GHG emissions of a home desktop printer and as much as 93% of the emissions of a PageWide Press across their respective life cycles. To help our customers print sustainably, we source the paper we sell responsibly, facilitate efficient paper use, and press the paper industry to adopt best practices as standard. We also apply these approaches in our own operations. Our company-wide Environmentally Preferable Paper Policy governs paper use at HP. It defines our principles for buying, selling, and using paper and paper-based packaging, and describes our commitment to sourcing from suppliers that demonstrate responsible forestry and manufacturing practices. HP achieved its goal of 50% FSC-certified fiber in HP brand paper in 2014—a year ahead of schedule. We apply the same passion for innovation to our packaging as we do to our products. By finding ways to use less material, optimize shipping densities, and utilize recycled and recyclable materials, we lessen the GHG emissions and raw materials use associated with packaging and product transportation. Our packaging innovations advance our customers' sustainability objectives, help reduce the environmental footprint of HP products, and support progress toward a circular economy.

In 2016, we set a goal to meet our objective of zero deforestation in HP's supply chain. All HP paper-based products and packaging[4] will be derived from certified or recycled sources by 2020. To support its achievement, HP will only purchase recycled fiber or responsibly sourced virgin fiber that can be traced to the source forest. We will work with the WWF's Global Forest & Trade Network (GFTN) and our suppliers to ensure full traceability of virgin fiber and to increase the amount of certified fiber where possible. HP will maintain its preference for Forest Stewardship Council® (FSC®)-certified fiber. PEFC certification or relevant national certification schemes that comply with our paper policy can be used in regions where they are recognized, are endorsed by competent independent stakeholders, and ensure a reliable guarantee of responsible sources.

Driving innovation with 3D printing

HP's 3D printing solution, Jet Fusion, is an important enabler of the circular economy. This disruptive technology facilitates more efficient materials use by streamlining the prototyping process, improving the economics of short-run manufacturing, and avoiding waste associated with mass production. It also enables superior designs for the customer.

HP's innovations in commercial 3D printing will enable our customers to fundamentally reinvent manufacturing, transforming industries in ways that drive down cost-per-part, waste, and GHG

HP thin client computing devices can require up to

65%

less material to produce and ship than our smallest desktop PC

emissions. This groundbreaking technology enables shorter production runs and manufacture of one-of-a-kind products and parts locally, rapidly, and inexpensively. By removing the barriers to adoption associated with current 3D printing technology, HP 3D printing will help make the technology ubiquitous and bring it to scale. Key sustainability benefits include:

• Streamlined prototyping processes will enable more rapid iteration in product design and development, including for features that enhance environmental performance.

• Perfect matching of supply and demand will dramatically reduce waste and cost associated with manufacturing products and spare parts that are never used (analogous to improvements HP has achieved by digitizing commercial print production and enabling the analog-to-digital shift). Localized manufacturing will eliminate the environmental impacts and expense associated with transportation to and from large regional or global factories and warehouse operations, and decrease the need for packaging.

• Product lifespans will extend due to the ability of companies to manufacture spare parts on demand that would otherwise not be available or affordable, or would require advanced warehouse and logistics systems.

• Additive manufacturing will dramatically reduce the amount of material needed to make finished parts by realizing complex shapes or redesigning complex assemblies into a single part and reducing waste compared to traditional manufacturing methods.

• Fewer material types used in production may increase the recyclability and value of product materials at end of service.

Progress through partnerships

We work closely with industry, governments, and nongovernmental organizations to achieve consistent standards and forward-looking approaches to materials use in the IT sector. We continue to advocate for consistent and stronger legislation in this area, which will help move the industry toward eliminating substances of concern.

In early 2016, HP joined Green America's Clean Electronics Production Initiative, a new multi-stakeholder initiative aimed at moving the electronics industry toward zero exposure to hazardous substances in the manufacturing process. This will help protect workers and the environment while supporting more effective monitoring and control systems.

As an active member of the Business-NGO Working Group (BizNGO), HP collaborates with industry partners and environmental groups to advance sustainable materials use. Working with BizNGO, HP has contributed to the development of GreenScreen® and the Chemical Footprint Project, as well as several other initiatives. We also endorse the BizNGO Prin es for Safer Chemicals and have integrated these into our materials strategy.

Through the International Electronics Manufacturing Initiative (iNEMI), we collaborate with industry partners to develop alternative materials, such as those used for low-halogen printed circuit boards, and to improve alternative materials assessment standards.

HP recognizes the importance of measuring substances of concern in our products and setting goals for improvement, so in 2016 we participated in the Chemical Footprint Project (CFP). In 2013 and 2014, HP helped develop and pilot the CFP, a third-party benchmark tool launched by Clean Production Action, the Lowell Center for Sustainable Production, and Pure Strategies, that provides companies with a standard way to evaluate progress toward reducing chemicals of high concern and to identify opportunities in this area.

Advancing the way people live and work

Sustainability is fundamental to HP's corporate strategy and informs our decisions throughout the value chain. It advances our current and future lines of business and helps us meet our customers' needs.

HP is reinventing the way that products are designed, manufactured, used, and recovered as we shift our business model and operations toward a materials- and energy-efficient circular economy. Working with our supply chain partners, we are reducing the environmental impact of our products at every stage of the value chain.

For more information on our materials strategy and to see our closed-loop recycling process in action—including helpful resources for your purchasing decisions—take a look at these additional resources:

• Materials section of the HP 2016 Sustainability Report

• A Sustainable IT purchasing guide including a checklist to help you evaluate technology products on a variety of environmental criteria, including materials used in manufacturing

• Life of an HP cartridge video

• To request more information, contact sustainability@hp.com

[1] This does not incude external components, mainly cables and external power supplies.
[2] The low-halogen standard = <900 ppm chlorine, <900 ppm bromine, <1,500 ppm chlorine+bromine in any homogeneous material in the products..
[3] Includes recycled plastic as well as recycled metal content.
[4] Packaging is the box that comes with the product and all paper (including packaging and materials) inside the box.