

# HP Product Material Content Information



June 2017

HP actively identifies the materials and chemicals used in products, packaging, and manufacturing processes. We provide this information to customers, workers, communities, and other stakeholders so they can make informed decisions and reduce their own environmental impacts, subject to the need to protect confidential information for legitimate business needs and innovation. This document contains material content information for typical HP personal systems and printer products. Additional material content information can be found on the [HP Eco Declaration website](#), which includes REACH and IT-Eco declarations.

HP began proactively eliminating substances of concern in the early 1990s. See the HP product proactive materials restriction/substitution timeline for additional information. Our complete list of substance restrictions can be found in the [HP General Specification for the Environment](#). Phasing out phthalates, Brominated Flame Retardants (BFRs), and Polyvinyl Chloride (PVC) remain key focus areas. 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)<sup>1</sup>. In addition, 75% of personal systems product groups sold in 2016 were classified as low halogen<sup>2</sup>, 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 product proactive materials restriction/substitution timeline

Substance / Material	Scope	Date <sup>3</sup>
Antimony	Bleached paper <sup>4</sup>	2012
Antimony Trioxide	Low halogen products <sup>4</sup>	2011
Arsenic / Arsenic compounds	All products	2009
Beryllium / Beryllium compounds	All products	2010
Bisphenol-A	Thermal paper	2011
	External plastics	2016
Cadmium	All products	1996
Chlorinated paraffins, medium chain (MCCPs)	Low halogen products <sup>4</sup>	2013
Chlorinated paraffins, short chain (SCCPs)	All products	2002
Chlorine	Bleached paper <sup>4</sup>	2012
Cobalt dichloride	Desiccants and humidity indicators	2012
Flame retardants, polybrominated biphenyls (PBB) / polybrominated diphenyl ethers (PBDE) (including DecaBDE)	All products	1991
Flame Retardants, Chlorinated (CFRs)	External case plastics	2007

<sup>1</sup> This does not include external components, mainly cables and external power supplies.

<sup>2</sup> The low-halogen standard = <900 ppm chlorine, <900 ppm bromine, <1,500 ppm chlorine + bromine in any homogeneous material in the products.

<sup>3</sup> Dates refer to when proactively adopted materials restrictions were first introduced on a HP product, ahead of regulatory requirements. For a comprehensive list of HP's materials restrictions, including numerous materials restricted by HP on a worldwide basis in response to regional regulations, refer to HP's General Specification for the Environment.

<sup>4</sup> These requirements apply only when designated by specific HP business units.

Substance / Material	Scope	Date <sup>3</sup>
Flame Retardants, Brominated (BFRs)	External case plastics	2007
	New HP Brand Personal computers	2009
Hexabromocyclododecane (HBCDD)	All products	2012
Hexavalent Chromium	All products	2004
Lead / Lead compounds	External Cables	2003
	All products	2004
Mercury / Mercury compounds	All products (except bulbs)	1998
	Notebooks	2008
N,N-dimethylacetamide (DMAC)	All products	2017
Ozone Depleting Substances (ODS)	All products and manufacturing processes	1993
Phthalates	Cables (Di-(2-ethylhexyl) phthalate (DEHP), Dibutyl phthalate (DBP), Butyl benzyl phthalate (BBP), Diisobutyl phthalate (DIBP)	2010
	Non-EEE products (DEHP, DBP, BBP, Diisodecyl phthalate (DIDP), Di-n-hexyl phthalate (DnHP)	2011
	New Personal computing products (DEHP, DBP, BBP)	2011
	Packaging (DEHP, DBP, BBP, DIBP)	2013
	New Personal computing products (DIBP)	2016
	New Inkjet printers (DEHP, DBP, BBP, DIBP)	2016
Polycyclic aromatic hydrocarbons (PAH)	External rubber or plastics	2008
Polyvinyl Chloride (PVC)	External case plastics	1993
	Packaging	2006
	New HP Brand Personal computers	2008

## Monitored substances<sup>5</sup>

Substance / Material
Remaining uses of Antimony
Remaining uses of Beryllium
Remaining uses of Bisphenol-A
Remaining uses of MCCPs
Remaining uses of BFRs
Mercury (in bulbs)
Nonylphenol
Other perfluorinated chemicals
Remaining uses of certain phthalates
Remaining uses of PVC
Proposition 65 list of chemicals
REACH Candidate List of SVHCs

## Notebook Material Content

A typical notebook PC contains more than 115 substances, many in very small amounts. The table and chart below illustrate the greatest mass substances in a typical notebook PC comprising a cumulative concentration of nearly 99%<sup>6</sup>. Each remaining substance comprises less than 0.1% by weight of the product.

<sup>5</sup> Materials have been identified by stakeholders as potential materials of concern. Future possible restriction of those materials depends, in part, on the qualification of acceptable alternative materials.

<sup>6</sup> Graphic is based on literature research, component based studies, substance disclosure data from HP's suppliers, and test data. Weight and component composition is representative of a typical notebook PC (with a hard disk drive) of approximately 2 kg. This analysis does not include external components, such as the power supply and power cord. Power cords contain about 70% PVC and 30% Copper. We have reduced PVC usage by shortening power cords and we offer PVC-free power cords that use thermoplastic elastomers in many countries worldwide, depending on the product. Data do not add up to 100% due to rounding.

## Notebook Material Content



- PC/ABS
- Copper (Cu)
- Lithium Cobalt Oxide (LiCoO<sub>2</sub>)
- PET/PBT
- Printed Circuit Board Epoxy
- Polyethylene (PE)
- Acrylonitrile Butadiene Styrene (ABS)
- Polybutylene Terephthalate (PBT)
- Flame Retardants
- Stainless Steel (Fe-12Cr-1C)
- Aluminum (Al)
- Borosilicate Glass
- Carbon (C)
- Other Organic Solvents
- Silica (SiO<sub>2</sub>)
- Iron (Fe)
- Nickel (Ni)
- Low-level Additions (<1%)\*

Substance	% Mass
Polycarbonate (PC) / Acrylonitrile Butadiene Styrene (ABS)	24.5%
Stainless Steel (Fe-12Cr-1C)	9.2%
Copper (Cu)	8.1%
Aluminum (Al)	7.8%
Lithium Cobalt Oxide (LiCoO <sub>2</sub> )	6.9%
Borosilicate Glass	6.9%
Polyethylene Terephthalate (PET) / Polybutylene Terephthalate (PBT)	4.9%
Carbon (C)	3.1%
Printed Circuit Board Epoxy	3.0%
Other Organic Solvents	2.7%
Polyethylene (PE)	2.6%
Silica (SiO <sub>2</sub> )	2.3%
Acrylonitrile Butadiene Styrene (ABS)	1.9%
Iron (Fe)	1.8%
Polybutylene Terephthalate (PBT)	1.8%
Nickel (Ni)	1.2%
Flame Retardants <sup>7</sup>	1.0%
Low-level Additions (<1%)*	10.2%

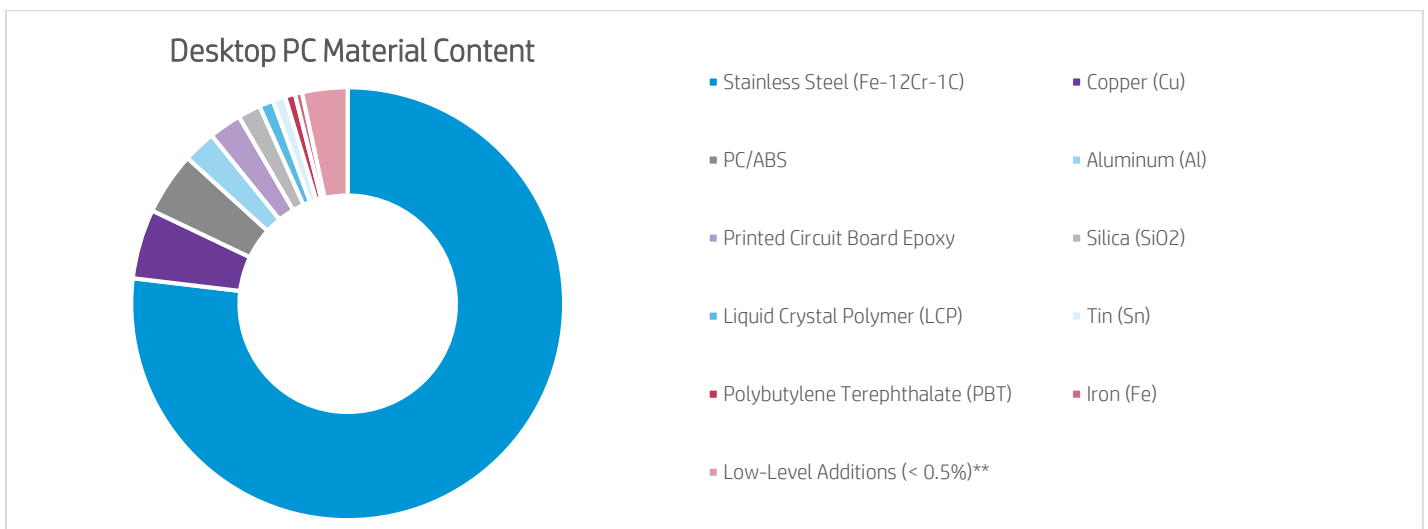
\*Included in low-level additions are the following substances. Not listed are substances that comprise less than 0.1% by weight of the product:

<sup>7</sup> 75% of personal systems product groups sold in 2016 were classified as low halogen, including all HP Elite Desktops, All-in-Ones, notebooks, thin clients, and workstations.

Substance	% Mass
Zinc (Zn)	0.9%
Poly(methyl Methacrylate) (PMMA)	0.8%
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	0.7%
Tin (Sn)	0.6%
Polyvinylidene Fluoride (PVDF)	0.6%
Cellulose Triacetate (TAC) film	0.6%
Rubber	0.6%
Polycyclohexylenedimethylene Terephthalate (PCT)	0.5%
Polyphenylene Sulfide (PPS)	0.4%
Calcium Oxide (CaO)	0.4%
Liquid Crystal Polymer (LCP)	0.4%
Lithium Hexafluorophosphate (LiPF <sub>6</sub> )	0.4%
Polypropylene (PP)	0.3%
Silicon (Si)	0.3%
Epoxy	0.3%
Chromium (Cr)	0.2%
Polyimide (PI)	0.2%
Copper Beryllium (Cu-0.7Be) <sup>8</sup>	0.2%
Magnesium Oxide (MgO)	0.2%
Barium Titanate (BaTiO <sub>3</sub> )	0.2%
Cerium Oxide (CeO <sub>2</sub> )	0.1%
Polyamides (PA)	0.1%
Boron Trioxide (B <sub>2</sub> O <sub>3</sub> )	0.1%
Polyvinyl Alcohol (PVA)	0.1%
Solder Mask	0.1%

## Desktop PC Material Content

A typical desktop PC contains more than 120 substances, many in very small amounts. The table and chart below illustrate the greatest mass substances in a typical desktop PC comprising a cumulative concentration of nearly 96%<sup>9</sup>. Each remaining substance comprises less than 0.1% by weight of the product.



<sup>8</sup> Beryllium is restricted in the HP General Specification for the Environment with a threshold limit of 1000ppm with the exemption of ceramics in electronic components and electrical bonding applications of beryllium copper, such as connectors, springs, or EMI gaskets.

<sup>9</sup> Graphic is based on literature research, component based studies, substance disclosure data from HP's suppliers, and test data. Weight and component composition is representative of a typical tower desktop PC of approximately 18 kg. This analysis does not include external components, such as the keyboard, mouse, and power cord. Power cords contain about 70% PVC and 30% Copper. We have reduced PVC usage by shortening power cords and we offer PVC-free power cords that use thermoplastic elastomers in many countries worldwide, depending on the product. Data do not add up to 100% due to rounding.

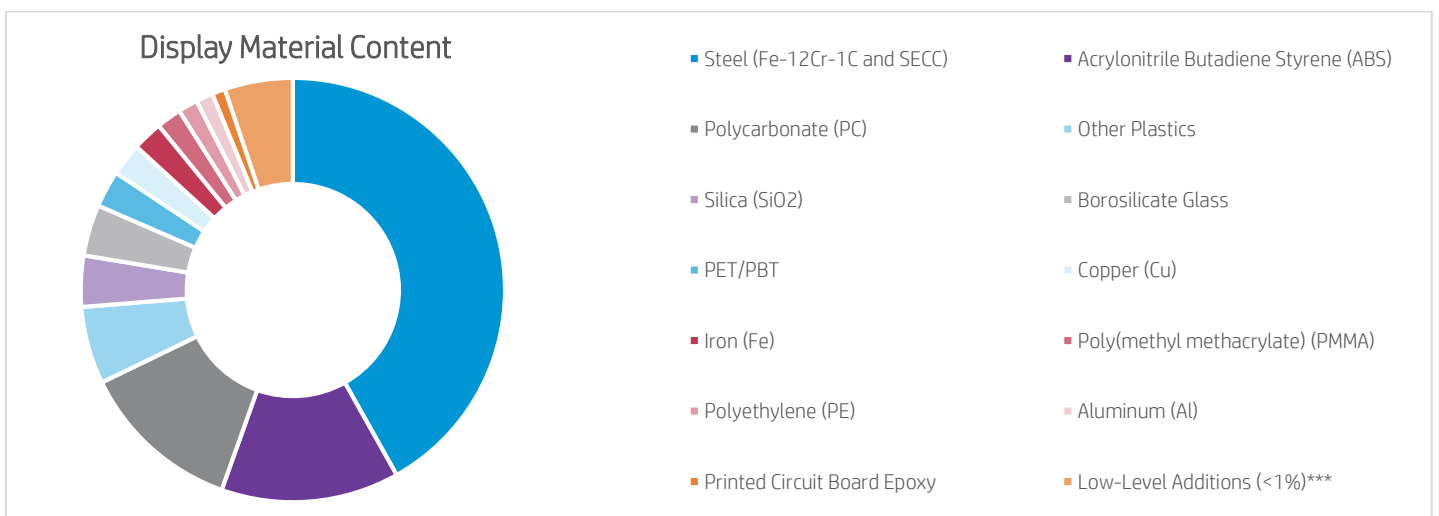
Substance	% Mass
Stainless Steel (Fe-12Cr-1C)	72.5%
Copper (Cu)	4.9%
Polycarbonate (PC) / Acrylonitrile Butadiene Styrene (ABS)	4.4%
Aluminum (Al)	2.3%
Printed Circuit Board Epoxy	2.3%
Silica (SiO <sub>2</sub> )	1.6%
Liquid Crystal Polymer (LCP)	1.0%
Tin (Sn)	0.9%
Polybutylene Terephthalate (PBT)	0.7%
Iron (Fe)	0.5%
Low-Level Additions (< 0.5%)**	3.2%

\*\*Included in low-level additions are the following substances. Not listed are substances that comprise less than 0.1% by weight of the product:

Substance	% Mass
Polyethylene Terephthalate (PET) / Polybutylene Terephthalate (PBT)	0.4%
Copper Beryllium (Cu-0.7Be) <sup>10</sup>	0.3%
Calcium Oxide (CaO)	0.3%
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	0.2%
Polyamides (PA)	0.2%
Flame Retardants <sup>11</sup>	0.2%
Polyethylene (PE)	0.2%
Nickel (Ni)	0.2%
Epoxy	0.2%
Solder Mask	0.1%
Boron Trioxide (B <sub>2</sub> O <sub>3</sub> )	0.1%

## Display Material Content

A typical display contains more than 90 substances, many in very small amounts. The table and chart below illustrate the greatest mass substances in a typical display comprising a cumulative concentration of nearly 99%<sup>12</sup>. Each remaining substance comprises less than 0.1% by weight of the product.



<sup>10</sup> Beryllium is restricted in the HP General Specification for the Environment with a threshold limit of 1000ppm with the exemption of ceramics in electronic components and electrical bonding applications of beryllium copper, such as connectors, springs, or EMI gaskets.

<sup>11</sup> 75% of personal systems product groups sold in 2016 were classified as low halogen, including all HP Elite Desktops, All-in-Ones, notebooks, thin clients, and workstations.

<sup>12</sup> Graphic is based on literature research, component based studies, substance disclosure data from HP's suppliers, and test data. Weight and component composition is representative of a typical flat panel display of approximately 5.5 kg. This analysis does not include external components, such as the power cord. Power cords contain about 70% PVC and 30% Copper. We have reduced PVC usage by shortening power cords and we offer PVC-free power cords that use thermoplastic elastomers in many countries worldwide, depending on the product. Data do not add up to 100% due to rounding.

Substance	% Mass
Steel (Fe-12Cr-1C and SECC)	41.9%
Acrylonitrile Butadiene Styrene (ABS)	13.6%
Polycarbonate (PC)	12.4%
Other Plastics	5.9%
Silica (SiO <sub>2</sub> )	3.9%
Borosilicate Glass	3.9%
Polyethylene Terephthalate (PET) / Polybutylene Terephthalate (PBT)	2.8%
Copper (Cu)	2.5%
Iron (Fe)	2.3%
Poly(methyl Methacrylate) (PMMA)	1.9%
Polyethylene (PE)	1.5%
Aluminum (Al)	1.3%
Printed Circuit Board Epoxy	1.0%
Low-Level Additions (<1%)**	5.2%

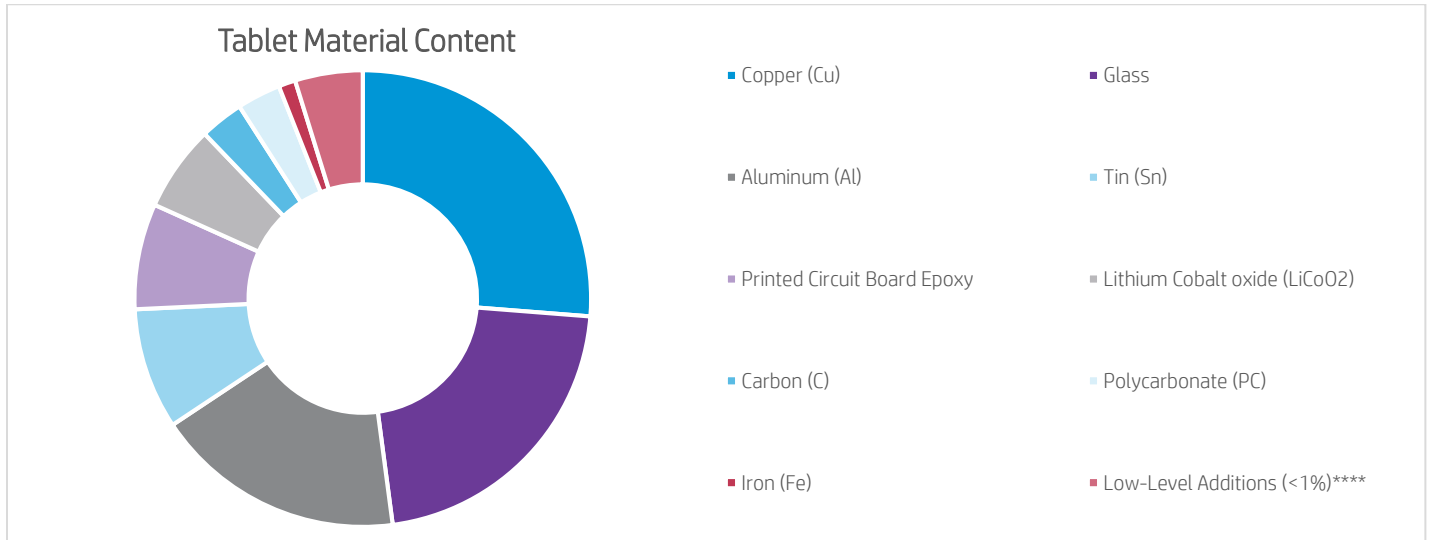
\*\*Included in low-level additions are the following substances. Not listed are substances that comprise less than 0.1% by weight of the product:

Substance	% Mass
Polyoxymethylene (POM)	0.6%
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	0.4%
Paper	0.4%
Nickel (Ni)	0.3%
Cellulose Triacetate (TAC) film	0.3%
Zinc (Zn)	0.3%
Tin (Sn)	0.3%
Copper Beryllium (Cu-0.7Be) <sup>13</sup>	0.3%
Liquid Crystal Polymer (LCP)	0.3%
Polyimide (PI)	0.3%
Polyamides (PA)	0.2%
Barium Titanate (BaTiO <sub>3</sub> )	0.2%
Silicone	0.2%
Polyphenylene Sulfide (PPS)	0.1%
Calcium Oxide (CaO)	0.1%
Carbon (C)	0.1%

<sup>13</sup> Beryllium is restricted in the HP General Specification for the Environment with a threshold limit of 1000ppm with the exemption of ceramics in electronic components and electrical bonding applications of beryllium copper, such as connectors, springs, or EMI gaskets.

## Tablet Material Content

A typical tablet contains more than 120 substances, many in very small amounts (see graph). The table and chart below illustrate the greatest mass substances in a typical tablet comprising a cumulative concentration of nearly 99%<sup>14</sup>. Each remaining substance comprises less than 0.1% by weight of the product.



Substance	% Mass
Copper (Cu)	26.3%
Glass	21.7%
Aluminum (Al)	17.8%
Tin (Sn)	8.6%
Printed Circuit Board Epoxy	7.5%
Lithium Cobalt Oxide (LiCoO <sub>2</sub> )	6.1%
Carbon (C)	3.1%
Polycarbonate (PC)	3.1%
Iron (Fe)	1.2%
Low-Level Additions (<1%)****	4.8%

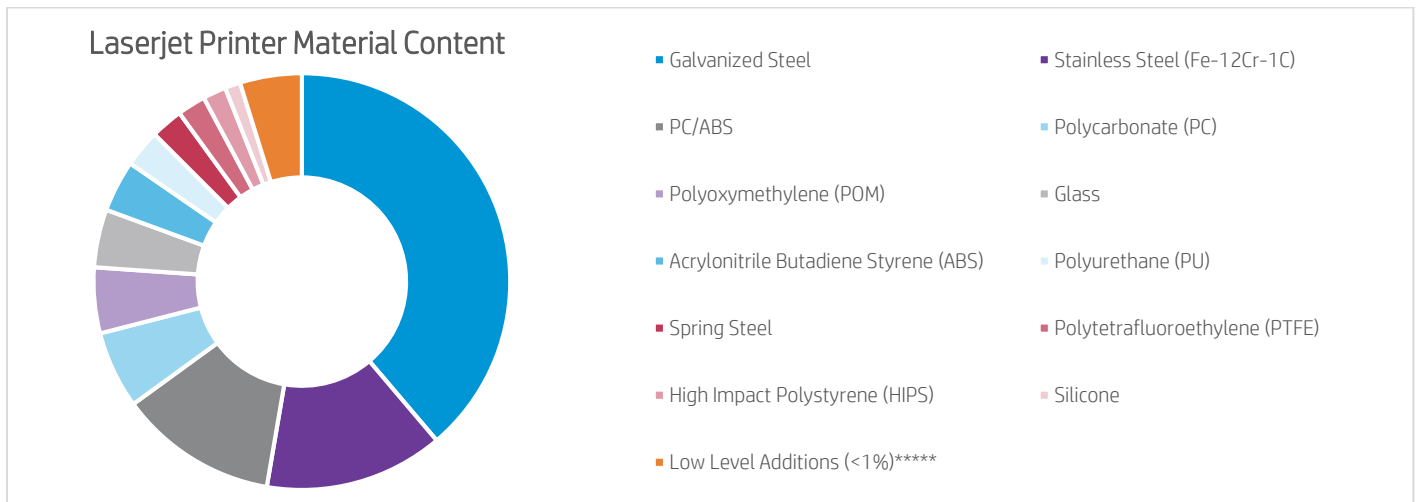
\*\*\*\*Included in low-level additions are the following substances. Not listed are substances that comprise less than 0.1% by weight of the product:

Substance	% Mass
Nickel (Ni)	0.6%
Flux residue	0.6%
Silicone Polymer	0.4%
Silver (Ag)	0.3%
Zinc (Zn)	0.3%
Silicon (Si)	0.3%
Silicon Dioxide (SiO <sub>2</sub> )	0.2%
Chromium (Cr)	0.2%
Barium Titanate (BaTiO <sub>3</sub> )	0.2%
Liquid Crystal Polymer (LCP)	0.1%

<sup>14</sup> Graphic is based on literature research, component based studies, substance disclosure data from HP's suppliers, and test data. Weight and component composition is representative of a typical tablet of approximately 0.2 kg. This analysis does not include external components, such as the power cord. Power cords contain about 70% PVC and 30% Copper. We have reduced PVC usage by shortening power cords and we offer PVC-free power cords that use thermoplastic elastomers in many countries worldwide, depending on the product. Data do not add up to 100% due to rounding.

## LaserJet Printer Material Content

A typical LaserJet printer contains more than 130 substances, many in very small amounts (see graph). The table and chart below illustrate the greatest mass substances in a typical LaserJet printer comprising a cumulative concentration of nearly 99%<sup>15</sup>. Each remaining substance comprises less than 0.1% by weight of the product.



Substance	% Mass
Galvanized Steel	38.8%
Stainless Steel (Fe-12Cr-1C)	13.9%
Polycarbonate (PC) / Acrylonitrile Butadiene Styrene (ABS)	12.3%
Polycarbonate (PC)	6.0%
Polyoxymethylene (POM)	5.1%
Glass	4.5%
Acrylonitrile Butadiene Styrene (ABS)	4.0%
Polyurethane (PU)	2.9%
Spring Steel	2.5%
Polytetrafluoroethylene (PTFE)	2.2%
High Impact Polystyrene (HIPS)	1.8%
Silicone	1.2%
Low Level Additions (<1%)*****	4.8%

\*\*\*\*Included in low-level additions are the following substances. Not listed are substances that comprise less than 0.1% by weight of the product:

Substance	% Mass
Copper (Cu)	0.98%
Printed Circuit Board Epoxy	0.95%
Aluminum (Al)	0.71%
Toner	0.42%
Silicon Dioxide (SiO <sub>2</sub> )	0.39%
Calcium Oxide (CaO)	0.12%
Brass	0.12%
Polyethylene (PE)	0.11%
Tin (Sn)	0.11%
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	0.11%

<sup>15</sup> Graphic is based on literature research, component based studies, substance disclosure data from HP's suppliers, and test data. Weight and component composition is representative of a typical LaserJet printer of approximately 20 kg. This analysis does not include external components, such as the power cord. Power cords contain about 70% PVC and 30% Copper. We have reduced PVC usage by shortening power cords and we offer PVC-free power cords that use thermoplastic elastomers in many countries worldwide, depending on the product. Data do not add up to 100% due to rounding.