HP Standard 011 General Specification for the Environment

The HP General Specification for the Environment (GSE) includes the following eleven standards.

1. GSE Overview (HX-00011-00); Revision AA, 29-Jul-2020
2. Substances and Materials Requirements, All Products (HX-00011-01); Revision AA, 29-Jul-2020
3. *Substances and Materials, Future Requirements (HX-00011-01A); Revision AA, 29-Jul-2020
4. *Substances and Materials, Business-Specified Requirements (HX-00011-01B); Revision AA, 29-Jul-2020
5. Packaging Requirements (HX-00011-02); Revision AA, 29-Jul-2020
6. Manufacturing Process Substances Requirements (HX-00011-06); Revision F, 29-Jul-2020
7. *Product requirements, EEE (HX-00011-11); Revision D, 29-Jul-2020
8. *Requirements for Batteries and Battery Containing Products (HX-00011-12); Revision D, 29-Jul-2020
9. *Requirements for Soft Goods (HX-00011-13); Revision D, 29-Jul-2020
10. *Requirements for Chemicals and Formulated Products (HX-00011-14); Revision D, 29-Jul-2020
11. *Requirements for Print Media (HX-00011-15); Revision D, 29-Jul-2020

** Note that these standards are available on the HP Supplier Portal (registration required).*

HP Standard 011-00 General Specification for the Environment (GSE)—Overview

Document Identifier	HX-00011-00
Revision and Date	AA, 29-Jul-2020
Last Re-validation Date	29-Jul-2020
Abstract	The General Specification for the Environment (GSE) defines HP's environmental requirements for HP brand and HP-owned brand products. The GSE is a series of standards that is comprised of this standard (HP Standard 011-00) and the standards referenced in the References section of this standard.
Applicability	Compliance to HP's General Specification for the Environment (GSE) must be included in all HP contracts for design, manufacture, or purchase of HP brand and HP-owned brand products, including HP brand licensed products. Non-HP brand products must comply with applicable legal requirements.
Status	Approved

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1 Purpose

HP's General Specification for the Environment (GSE) is a series of standards that includes this standard (HP Standard 011-00) and the standards that are listed in the References section of this standard. The referenced standards shall be considered normative references and are required for application of this standard. Accordingly, any reference to the "GSE" or "HP Standard 011" or "HP Standard 011-00" means and includes the specifications and requirements of this document, HX-00011-00, and those requirements set out in the referenced standards.

2 Scope

The GSE defines HP's global environmental requirements for all HP brand and HP-owned brand products, including parts, materials, components, and packaging that are incorporated into or supplied with HP brand and HP-owned brand products. All references to "HP brand products" in the GSE include HP-owned brand products, including HP brand-licensed products. Non-HP brand products and all parts, components, materials, and packaging incorporated into or supplied with non-HP brand products, or which are included in any HP delivered solution, must meet or exceed the applicable legal requirements in each country in which these third-party products will be sold, leased, or marketed.

HP Standard 011-00 applies to all such products and to all HP business units involved in their design, manufacture, or purchase worldwide.

HP Standard 011 (the GSE) is a series of documents that define HP's global environmental requirements for HP brand and HP-owned brand products. It is not intended to be a listing of all environmentally related product design requirements that may be established by HP's business units or by law. Supplier's compliance with this standard does not relieve or diminish the supplier's obligation to comply with any other HP product specification or its obligation to comply with all applicable laws.

3 Supplier Verification

When specified by HP or in response to a request by HP, the supplier shall be responsible for verifying compliance to the GSE. Suppliers must keep on file any documentation or test data that demonstrates specific actions taken by the supplier to verify compliance. This documentation or test data shall be kept for 10 years from the date the product is placed on the market by HP. An example of such documentation is the requirements in the Supplier Verification and Additional Substance Requirements section of HP Standard 011-01 General Specification for the Environment—Substances and Materials Requirements, All Products (HX-00011-01). The documentation may include analytical test reports, parts testing schema, and any information required for HP to comply with classification, packaging, or labeling requirements. Also included are documentation and data collected by the supplier from the supplier's supply chain and supplier's own records on the substance or material content and design of the products.

Additionally, Supplier shall, upon request by HP,

- Provide such documentation mentioned above.
- Obtain information from their upstream supply chain.
- Verify compliance of parts, components, materials, or products using analytical testing or other suitable means approved by HP.

Supplier shall further ensure that parts, components, materials, packaging, or products provided to HP are not designed to perform differently under test conditions than under normal conditions of use. Test conditions include but are not limited to analytical testing protocols or other methods used to verify compliance with the GSE or applicable regulatory requirements.

4 Product types

Electronic and electrical equipment (EEE)—a part or product that has at least one intended function which is dependent on electric current or electromagnetic fields. A product or part qualifies as EEE even if the majority of its functions do not depend upon electric current or electromagnetic fields.

Batteries—'battery' or 'accumulator' means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (nonrechargeable) or consisting of one or more secondary battery cells (rechargeable).

Battery pack—means any set of batteries or accumulators that are connected together and/or encapsulated within an outer casing so as to form a complete unit that the end-user is not intended to split up or open.

Chemicals and formulated products—For the purposes of the GSE, chemicals include substances and mixtures. A substance is a chemical element and its compounds used or incorporated in its neat form. A formulated product is a mix or solution of two or more substances. Examples of chemicals and formulated products in the context of the GSE include ink and toner formulations, cleaning fluids, bonding agents, and other formulated products.

Other non-EEE (furniture, wooden products, clothing, etc.)—a part or product that is not considered EEE and is not included in other product type definitions. Examples of other non-EEE are furniture, wooden products, and luggage.

Soft Goods—Soft goods are articles made from textiles and other soft material including leather and soft plastics. Examples of soft goods are clothing, bags, covers, and mousepads.

Print Media—products that are the substrate for the application of an image. Such products include paper, photo paper, posters, banners, textiles, and other substrates used for application of an image (printing, copying, projection, etc.). For purposes of this standard, the term "media" does not include optical media such as CDs or DVDs.

5 General

The most current revisions of the following standards must be used. HP products shall comply with the requirements contained in all standards relevant to their respective product types. More than one standard may apply to a single product type. The descriptions for each of the standards below provide guidance on relevance. However, Supplier bears full responsibility for reviewing each of the following standards and identifying the relevant standard(s) for each product type supplied to HP. See Section 7.7 for a non-exhaustive list of examples for determining the relevance of a standard.

There are three types of standards:

- HP Standards 11-0x and HP Standard 14-02, which include requirements for all products, regardless of product type.
- HP Standards 11-1x and HP Standard 25-0x, which include requirements that are specific for a certain subset of HP products.

6 Standards that apply to all product types

6.1 HP Standard 011-01 GSE—Substances and Materials Requirements, All Products (HX-00011-01)

This standard contains requirements for all products, regardless of product type.

6.2 HP Standard 011-01A GSE—Substances and Materials, Future requirements (HX-00011-01A)

The requirements in Standard 011-01A apply globally to all HP brand and HP-owned brand products and all parts, materials, and components that are incorporated into HP brand and HP-owned brand products on the future effective date provided, unless an HP business specifies in product and component specifications an earlier effective date.

6.3 HP Standard 011-01B GSE—Substances and Materials, Business-specified requirements (HX-00011-01B)

The requirements in Standard 011-01B are applicable only when and as specified by an HP business.

6.4 HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)

The requirements specified in HP Standard 011-02 General Specification for the Environment - Packaging Requirements (HX-00011-02) apply globally to all packaging used for selling or shipping HP brand and HP-owned brand products.

6.5 HP Standard 011-04 GSE—Product Requirements (HX-00011-04)

HP Standard 011-04 has been discontinued. The requirements in HX-00011-04 have been moved to standards HX-00011-01 and HX-00011-11 through HX-00011-15

6.6 HP Standard 011-05 GSE—Disclosure Requirements (HX-00011-05)

HP Standard 011-05 has been discontinued. The requirements in HX-00011-05 have been moved to HX-00011-01.

6.7 HP Standard 011-06 GSE—Manufacturing Substances Requirements (HX-00011-06)

The requirements specified in HP Standard 011-06 General Specification for the Environment – Manufacturing Process Substances Requirements (HX-00011-06) apply globally for manufacturing processes used to produce HP brand and HP-owned brand products and the manufacturing processes for all parts, components, and materials incorporated into HP brand and HP-owned brand products.

6.8 Environmental Management System for Products

The requirements specified in HP Standard 014-02 Supplier Requirements for Safe and Legal Products (HX-00014-02) apply globally to all HP brand products.

7 Standards that apply to specific product types

7.1 Requirements for EEE

EEE have at least one intended function which is dependent on electric current or electromagnetic fields. A product qualifies as EEE even if the majority of its functions do not depend upon electric current or electromagnetic fields.

7.1.1 Materials Requirements for EEE

For materials requirements for EEE, see Section 6.1. Materials requirements for EEE products are found in HX-00011-01.

7.1.2 HP Standard 011-11 GSE—Product requirements for EEE (HX-00011-11)

This standard includes global product requirements for electronic and electrical equipment (EEE). Such requirements are labeling, documentation, performance, registration, and declaration requirements.

7.2 HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)

This standard is relevant for batteries and for products that contain batteries. This includes all types of battery form factors and battery chemistries.

7.3 HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)

This standard is relevant for products that are considered soft goods. This standard also includes requirements for non-EEE parts of wearable devices (e.g. wrist straps).

A product that is considered EEE is subject to HX-00011-13 if it contains materials subject to the requirements of HX-00011-13 (for example, a backpack with charging capability would be subject to both non-EEE and EEE related standards)

7.4 HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)

This standard is relevant for product types considered substances, mixtures, chemicals, or formulated products. Such product types include ink, ink components, 3D print powder, cleaning agents, cleaning kits, other non-ink formulations, and those products considered substances and formulations.

7.5 HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)

This standard is relevant for product types considered print media. Such products include paper, photo paper, posters, banners, textiles, and other substrates used for application of an image (printing, copying, projection, etc.). Optical media (CD, DVD, etc.) is out of scope of HX-00011-15. This standard is relevant for HP branded and HP brand licensed products. Requirements of in-box documentation (like user guides and printed regulatory notices) may be found in HX-00011-02.

7.6 HP Standard 025-01— Supplemental Environmental Specification—Commodity and Component (HX-00025-01)

This standard is applicable to parts and components in scope of the standard

7.7 Examples of Products and Relevant Standards

Examples in Table 1 are given to provide guidance on relevant requirements for unique product types.

Table 1. Examples of Relevant Requirements for Product Types

Product	HX-00011-01 All products	HX-00011-11 Product req, EEE	HX-00011-12 Batteries	HX-00011-13 Soft Goods and other non-EEE	HX-00011-14 Chemicals	HX-00011-15 Print Media
Notebook computer	X	X	X			
Desktop computer	X	X	X			
Display	X	X				

Table 1. Examples of Relevant Requirements for Product Types						
Product	HX-00011-01 All products	HX-00011-11 Product req, EEE	HX-00011-12 Batteries	HX-00011-13 Soft Goods and other non-EEE	HX-00011-14 Chemicals	HX-00011-15 Print Media
Printing hardware (InkJet, LaserJet, Scanners, Webpress, Indigo, Scitex, Latex, DesignJet, etc.)	X	X	X			
Supplies cartridge (including ink/toner)	X	X			X	
Ink, toner, 3D print powder	X				X	
Board loadable component (resistor, etc.)	X					
Point of Sale product with thermal printer	X	X	X			X
Printers shipped with print media	X	X	X			X
Battery pack	X		X			
External power supply	X	X				
Wireless Headsets	X	X	X			
Wearable device containing textiles	X	X	X	X		
Textile based print media	X			X		X
Furniture	X			X		

8 References

Each of the following standards forms a part of HP's GSE and is incorporated herein by reference:

HP Standard 011-00 General Specification for the Environment—Overview (HX-00011-00)

HP Standard 011-01 General Specification for the Environment—Substances and Materials Requirements, All Products (HX-00011-01)

HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)

HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)

HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)

HP Standard 011-06 GSE—Manufacturing Substances Requirements (HX-00011-06)

HP Standard 011-11 GSE—Product requirements for EEE (HX-00011-11)

HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)

HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)

HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)

HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)

HP Standard 014-02 Supplier Requirements for Safe and Legal Products

HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)

9 Revision History

Prior revision history

• Revision, Date, Change Number	• Brief Description of change
P, 01-Aug-2012 DCN 03139	• Added reference to requirements in the Supplier Verification Section 4 of the GSE Substances and Materials Standard (HP Standard 011-1). • Added information from the downstream supply chain. • Added requirements of HP Standard 014-2 Supplier Requirements for Safe and Legal Products.
Q	• No Revision Q was issued, to align all standards to the same revision letter.
R, 04-June-2013	• Corrected section reference, Supplier Verification Section 5 of the GSE Substances and Materials Standard (HP Standard 011-1)
S, 23-Jun-2014	• Added "Overview" to the title • Added references to the three new GSE standards: Future, Business-Specified and Disclosure

T, 1-Jun-2015	• Added new HP Standard 011-06 General Specification for the Environment – Manufacturing Process Substances Requirements • Added Table 1 from HP Standard 011-01 • Added TBBPA to Table 1 • Updated Table 1 for 1,2,5,69,10-Hexabromocyclododecane (HBCDD or HBCD) in HP 011-01 document Table 1 and HP 011-01A document Table 1 • Updated Table 1 for PAH (also moved the PAH table 3 to 01 document) in HP 011-01 document Table 1Updated Table 1 for removal of "Bromine in printed circuit boards"
01-Aug-2015	• Cloned the standards for HP Inc
U, 15-Jul-2016	• Editorial changes, updated Table 1
V, 3-Jul-2017	• Added information to reflect new structure of GSE documents • Added table of example products and relevant standards • Added definitions of product types • Clarified HP brand licensed products are in scope • Editorial changes
W, 26-Jul-2018	• Clarified supplier obligation for records retention • Added reference to HX-00025-01 • Editorial changes
X	Per standard versioning best practices, there is no version X.
Y, 13-Sep-2019	• Changed title of HX-00011-13 to include other non-EEE • Defined "other non-EEE" • Included furniture in product examples • Editorial changes
Z	• Per standard versioning best practices, there is no version Z
AA, 29-Jul-2020	No changes

HP Standard 011-01 General Specification for the Environment—Substance and Materials Requirements, All Products

Document Identifier	HX-00011-01
Revision and Date	AA, 29-Jul-2020
Last Revalidation Date	29-Jul-2020
Abstract	This standard defines HP's global environmental requirements for restricting certain substances and materials in HP brand and HP-owned brand products; this document also contains other environmental requirements. HX-00011-01 applies to all products, regardless of product type.
Applicability	All HP design centers, HP manufacturing facilities, and HP's suppliers of HP brand and HP-owned brand products must comply with HP's General Specification for the Environment (GSE). Non-HP brand products must comply with applicable legal requirements.
Status	Approved

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1 Purpose

HP's General Specification for the Environment (GSE) is a series of standards that includes this standard (HP Standard 011-01) and the standards that are listed in the References section of this standard. The referenced standards shall be considered normative references and are required for application of this standard. This standard defines HP's global environmental requirements related to substances and materials in HP brand and HP-owned brand products. HX-00011-01 applies to all products, regardless of product type.

NOTE: This standard was formerly known as HP Standard 011-01 General Specification for the Environment – Substances and Materials Requirements and included substance and materials restrictions. Beginning with revision V of HX-00011-01, this standard includes substance restrictions as well as other requirements (such as labeling) that apply to all products.

2 Scope

The requirements specified in this standard apply to all HP brand and HP-owned brand products, including parts, components, and materials incorporated into HP brand and HP-owned brand products. All further references to "HP brand products" in this standard include HP-owned brand products, including HP brand licensed products. Non-HP brand products and all parts, components, and materials incorporated into non-HP brand products or which are included in any HP delivered solution, must meet or exceed the applicable legal requirements in each country in which these third-party products will be sold, leased, or marketed.

The ozone depleting substance restriction also applies to all manufacturing processes used to produce HP brand products, parts, components, and materials.

This standard, HP Standard 011-01 General Specification for the Environment (GSE)— Substances and Materials Requirements, All Products, is a component of HP's General Specification for the Environment (GSE). The GSE consists of the following standards:

- HP Standard 011-00 GSE—Overview (HX-00011-00)

Requirements that apply to all products:

- HP Standard 011-01 GSE—Substances and Materials, All Products (HX-00011-01)
- HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)*
- HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)*
- HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)
- HP Standard 011-06 GSE—Manufacturing Process Substances Requirements (HX-00011-06)

Requirements that apply to specific types of products:

- HP Standard 011-11 GSE—Product requirements, EEE (HX-00011-11)
- HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)
- HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)
- HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)
- HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)
- HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)*

*The restrictions in HP Standard 011-01A apply globally on the future effective date provided, unless an HP business requires an earlier effective date. The restrictions in HP Standard 011-01B are applicable only when and as specified by an HP business. HP Standard 025-01 is applicable to parts and components in scope of the standard.

On November 1, 2017, HP Inc. announced the completion of its acquisition of Samsung Electronics Co., Ltd.'s printer business. For suppliers within the HPPK (formerly Samsung Print) supply chain, see Appendix A for more information about substance requirements.

3 Substance and Materials Requirements

The restrictions and prohibitions specified in this standard apply to substances at the homogeneous material[1] level, unless specified otherwise.

When replacing substances, alternatives must have a lower potential impact to human health and the environment and meet HP Business performance and cost criteria. For example, when phasing out of GSE restricted phthalates, non-*ortho*-phthalate alternatives must be used. Refer to the HP Procurement

[1] "Homogeneous material" means a material that cannot be mechanically disjointed into different materials. The term "homogeneous" means "of uniform composition throughout" and refers to materials such as plastics, metals, solders, resins, coatings, plating material, and so forth. The term "mechanically disjointed" means that the materials can, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding, and abrasive processes. (Definitions taken from *BIS RoHS Regulations Government Guidance Notes*)

Guidance for Phthalate Replacements (EX-MF908-01) and HP Procurement Guidance for Flame Retardants (EX-MF908-02) (both available at the HP Supplier Portal, registration required).

The BizNGO materials selection principles constitute an overarching chemical management approach that should be used to establish the governing principles and constraints when performing a chemical alternatives assessment. There are many tools available to perform an alternatives assessment. The Organisation for Economic Cooperation and Development (OECD) has a "toolbox" that is designed to help organizations choose an appropriate method of alternatives assessment. Non-chemical alternatives should be considered first, such as redesign to avoid the need for chemical flame retardants. The following sources can help to identify potential alternatives:

- Chemical Data Commons, chemsec Marketplace, EPA's Safer Chemicals Ingredients List, SUBSPORT, Interstate Chemicals Clearinghouse, and Green Chemistry and Commerce Council.
- Literature search of the chemical of concern and any possible alternatives by using Scifinder or Google scholar, patents, academic research, government reports, technical reports, marketing literature, and industry magazines.
- Ask chemical companies / formulators about available alternatives. Chemical companies that focus on finding alternatives to hazardous chemicals may be helpful.

For more information about HP materials program, see our Materials & Chemical Management Policy, Materials Strategy, Green Chemistry Timeline, and the HP General Specification for the Environment page.

4 Pan-HP Mandatory Restrictions for All Products

The restrictions and prohibitions specified in this standard apply to substances at the homogeneous material[2] level, unless specified otherwise.

The following restrictions are applicable to **all parts, components, materials, and products** that are in scope for each restriction, except for the listed exemptions, and apply globally across HP. Some restrictions have further clarification at the end of Table 1.

Note: "all parts, components, materials, and products" include EEE, batteries, and nonelectric and nonelectronic products (such as nonelectronic carrying cases and bags) as well as formulations and print media

Requirements specific to batteries are found in document HX-00011-12.

Requirements specific to soft goods and other non-EEE are found in document HX-00011-13.

Requirements specific to chemicals and formulated products (such as toner and ink) are found in document HX-00011-14.

Requirements specific to print media (such as paper and banners) are found in document HX-00011-15.

For future restrictions and business-specified restrictions, see HX-00011-01A and HX-00011-01B, respectively

Table 1. Pan HP Mandatory Restrictions for All Products

Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
1,2,5,6,9,10-Hexabromocyclododecane (HBCDD or HBCD)†	CAS#: 25637-99-4, 3194-55-6, 134237-50-6 134237-51-7 134237-52-8	All products	Not intentionally added; 100 ppm if incidentally present[6]		Regulation (EU) 2019/1021 (POPs)	150601-11

[2] "Homogeneous material" means a material that cannot be mechanically disjointed into different materials. The term "homogeneous" means "of uniform composition throughout" and refers to materials such as plastics, metals, solders, resins, coatings, plating material, and so forth. The term "mechanically disjointed" means that the materials can, in principle, be separated by mechanical actions such as unscrewing, cutting, crushing, grinding, and abrasive processes. (Definitions taken from *BIS RoHS Regulations Government Guidance Notes*)

[3] "All products" includes "parts, components, materials, and products", this includes EEE, batteries, and nonelectric and nonelectronic products (such as nonelectronic carrying cases and bags) as well as formulations and print media.

[4] The threshold limit is the maximum concentration value allowed, reported as ppm by weight in homogenous material, unless otherwise specified. "not intentionally added" means that the substance is not used in a product; it is only incidentally present if it occurs at all.

[5] This column provides background on the source of the restriction. The reference list is not exhaustive, and more than the listed reference may apply. The cited reference is as amended.

[6] Incidentally present means occurring as unavoidable impurities or unintentional trace contaminants; such incidentally present material is not intentionally added.

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Arsenic and its compounds	Various	All products	1000 ppm	Semiconductor chips (die only) and copper foil for printed circuit boards	HP Restriction	090807-98
Asbestos	CAS#: 1332-21-4 and others	All products	Not present		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	980408-11
Benzidine-Based Dyes	See Table 3	All products	Not present		U.S. TSCA 40 CFR 721.1660	150309-30
Bisphenol A	CAS#: 80-05-7	external plastics	300 ppm[7]		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	160701-58
Decabromo-diphenyl ether (DecaBDE)	CAS#: 1163-19-5	All products	Not intentionally added; Not incidentally present[8]		TSCA PBT Rule	200715-57
4,4'-diaminodiphenylmethane (MDA)	CAS# 101-77-9	All products	1000 ppm		EU Regulation (EC) 1907/2006, Annex XIV (EU REACH)	190831-88

[7] Typical levels of residual BPA in plastics are < 100 ppm (see for example, http://www2.mst.dk/Udgiv/publications/2015/05/978-87-93352-24-7.pdf)
[8] Recycled plastic may contain <1000 ppm DecaBDE if the source of the decaBDE is recycled plastic feedstock

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Dibutyltin (DBT) compounds	See Table 4	All products	1000 ppm by weight of tin		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	110727-77
2,2'-dichloro-4,4'-methylenedianiline (MOCA)	CAS# 101-14-4	All products	1000 ppm		EU Regulation (EC) 1907/2006, Annex XIV (EU REACH)	190831-43
Diisononyl phthalate (DINP)	CAS# 28553-12-0, 68515-48-0, 71549-78-5	external plastics, including cords and cables	exposure of 146 µg/day		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	160701-81
Flame Retardant, polybrominated biphenyls (PBBs)	See Table 5	All products	Not intentionally added; 1000 ppm if incidentally present[6]		EU RoHS Directive 2011/65/EU	980408-10
Flame Retardant, polybrominated diphenyl ethers (PBDEs)	See Table 5	All products	Not intentionally added; 1000 ppm if incidentally present[6]	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	EU RoHS Directive 2011/65/EU	980408-50
Dimethylfumarate (DMF)	CAS#: 624-49-7	All products (leather and desiccant packs)	0.1 ppm		EU Decision 2009/251/EC	090807-44

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Lead carbonates, lead sulfates	Various	Paint	90 ppm		HR 4040 Consumer Product Safety Act	980408-27
Monomethyldibromodiphenylmethane (DBBT)	CAS#: 99688-47-8	All products	Not intentionally added		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH); 67/548/EEC Dangerous Substances Directive	020221-74
Monomethyl-dichlorodiphenyl-methane (Ugilec 121, Ugilec 21)	CAS#: 81161-70-8	All products	Not intentionally added		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH); 67/548/EEC Dangerous Substances Directive	020221-88
Monomethyl-tetrachlorodiphenyl-methane (Ugilec 141)	CAS#: 76253-60-6	All products	Not intentionally added		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH); 67/548/EEC Dangerous Substances Directive	020221-32

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Nickel	Various	External surface of any product with potential for direct and prolonged skin contact	0.5 µg/cm^2/week. Measurement to be performed using EN 1811:2011.		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-68
Ozone Depleting Substances (ODS)	Refer to Annexes A, B, C, E of Montreal Protocol	All products Manufacturing process	Not present Not used	Refrigeration units in manufacturing facilities or data center facilities	Montreal Protocol and amendments	980408-15
Pentachloro-thiophenol (PCTP)	CAS#: 133-49-3	All products	1% by weight		TSCA PBT Rule	200715-26
Perfluorooctane sulfonates (PFOS) and PFOS salts	See Table 6	All products	Not intentionally added; 1000 ppm if incidentally present[6,9]	Photoresists or antireflective coatings for photolithography processes Photographic coatings applied to films, papers, or printing plates	Regulation (EU) 2019/1021; Canada Regulation SOR/2008-177	070905-36
Perfluorooctanoic acid (PFOA) and esters	See Table 7	All products	1000 ppm	Spare parts for products made available before 1-Jun-14	Norway Product reg 922 of 2004, 550, 2013	130604-16
Perfluorooctanoic acid (PFOA) and esters	See Table 7	Coatings of any products	1 µg/m^2	Spare parts for products made available before 1-Jun-14	Norway Product reg 922 of 2004, 550, 2013	130604-48

[9] Calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS.

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Perfluorooctanoic acid (PFOA) and its salts; PFOA-related compounds	See Table 7	All products	25 ppb PFOA and salts; 1000 ppb PFOA-related substances		Regulation (EU) 2020/784; Regulation (EU) 2019/1021 (POPs)	170703-96
Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl), 2-benzotriazol-2-yl-4,6-di-tertbutylphenol, (UV-320)	CAS#: 3846-71-7	All products	Not intentionally added		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973; EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	090807-38
Phenol, isopropylated phosphate (PIP) (3:1)	CAS#: 68937-41-7	All products	Not intentionally added; Not incidentally present	Processing and distribution in commerce for use in lubricants and greases	TSCA PBT Rule	200715-35
Phenylmercury and its compounds	CAS #: 62-38-4, 103-27-5, 13302-00-6, 13864-38-5, 26545-49-3	All products	100 ppm Hg by weight		EU Com Regulation 848/2012	140615-84

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Polychlorinated biphenyls (PCBs)	See Table 11	All products	Not intentionally added; 0.1 ppm if incidentally present[6]		Regulation (EU) 2019/1021 (POPs) HP Requirement	980408-79
Polychlorinated naphthalenes	Various	All products	Not intentionally added		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	041210-90
Polycyclic Aromatic Hydrocarbons (PAHs)	see Table 8	Rubber or plastic material on the external or user accessed surfaces of a product[10]	1 ppm per PAH	Surfaces of internal parts that are not regularly user-accessed such as ceramics in electronic components, connectors, resistors, integrated circuit packaging, lubricants, internal cables, internal fans, and printed circuit assemblies.[11]	EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	130604-79

[10] External or regularly user accessed surfaces include but are not limited to black or grey rubber or plastic materials such as case parts, control panels, switches, cables, screens, paper trays, feeders, printer lids, printer cartridge body and carriage, and optical drives.
[11] Products out of scope are: Large scale stationary industrial tools and fixed installations as defined in EU RoHS Directive

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Radioactive substances	See Table 9	All products	Not detected (above background levels)	Thorium in UV lamps	Laws for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors,1986 (Japanese law)	041210-96
Short chain chlorinated paraffins (SCCPs)	CAS#: 85535-84-8[12]	All products	Not intentionally added; 1000 ppm if incidentally present[6]		Commission Regulations (EU 2015/2030; Japan Chemical Substance Control Law	020221-58
Tributyltin compounds (TBT)	See Table 4	All products	Not intentionally added; 1000 ppm by weight of tin if incidentally present[6]		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-84
Tributyltin oxide (TBTO)	See Table 4	All products	Not intentionally added; 1000 ppm by weight of tin if incidentally present[6]		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-37
Tris(2-chloroethyl) phosphate (TCEP)	CAS#: 115-96-8	All products	1000 ppm		DC Law 21–08	170703-03

[12] Any chlorinated alkane with a carbon length of 10 to 13 atoms and containing at least 48% by mass of chlorine, includes, but is not limited to the following CAS number: 85535-84-8. See HP Standard 011-01B for business-specified restriction for medium chain chlorinated paraffins (MCCPs).

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	CAS#: 13674-87-8	All products	1000 ppm		DC Law 21–08	170703-49
Polychlorinated terphenyls (PCTs)	Various	Preparations (excluding lubricating oils and adhesives)	50 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	980408-94
Triphenyltin compounds (TPT)	See Table 4	All products	Not intentionally added; 1000 ppm by weight of tin if incidentally present[6]		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-87
Arsenic and its compounds	Various	Computer display glass	10 ppm as trace contaminants or background levels; not intentionally added		HP Restriction	101118-42
Beryllium and its compounds†	Various	All products	1000 ppm	Ceramics in electronic components and electrical bonding applications of beryllium-copper, such as connectors, springs, or EMI gaskets	HP Restriction	101118-59
bis(2-methoxyethyl) ether (Diglyme, DEGDME)	CAS#: 111-96-6	All products	1000 ppm		HP Restriction, EU Regulation (EC) 1907/2006 (EU REACH)	170703-25

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Butyl benzyl phthalate (BBP)†	CAS#: 85-68-7	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	Delegated Directive (EU) 2015/863 amending EU RoHS Directive 2011/65/EU	120621-20
Cadmium and its compounds	Various	All products	100 ppm	EU RoHS exemptions: 8(b)i,13(b)ii, 13(b)iii,. See HX-011-01A for exemption expirations.	EU RoHS Directive 2011/65/EU	980408-84
Responsible Minerals: Conflict Minerals, gold (Au)	Various	All products	Disclosure and sourcing requirement, see section 4.1		Conflict Minerals section to the Dodd–Frank Wall Street Reform and Consumer Protection Act	110727-71
Responsible Minerals: Conflict Minerals, tantalum (Ta)	Various	All products	Disclosure and sourcing requirement, see section 4.1		Conflict Minerals section to the Dodd–Frank Wall Street Reform and Consumer Protection Act	110727-92
Responsible Minerals: Conflict Minerals, tin (Sn)	Various	All products	Disclosure and sourcing requirement, see section 4.1		Conflict Minerals section to the Dodd–Frank Wall Street Reform and Consumer Protection Act	110727-87

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Responsible Minerals: Conflict Minerals, tungsten (W)	Various	All products	Disclosure and sourcing requirement, see section 4.1		Conflict Minerals section to the Dodd–Frank Wall Street Reform and Consumer Protection Act	110727-37
Responsible Minerals: cobalt (Co)	Various	All products	Disclosure and sourcing requirement, see section 4.1		HP Requirement	200715-49
Dibutyl phthalate (DBP)†	CAS#: 84-74-2	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	Delegated Directive (EU) 2015/863 amending EU RoHS Directive 2011/65/EU	120621-13
Di-(2-ethylhexyl) phthalate (DEHP)†	CAS#: 117-81-7	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	Delegated Directive (EU) 2015/863 amending EU RoHS Directive 2011/65/EU	120621-15
Diisobutyl phthalate (DIBP)†	CAS#: 84-69-5	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	Delegated Directive (EU) 2015/863 amending EU RoHS Directive 2011/65/EU	120621-66

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Dimethyl-acetamide (DMAC)	CAS#: 127-19-5	All products	1000 ppm		HP Restriction, EU Regulation (EC) 1907/2006 (EU REACH)	180625-47
Hexavalent chromium and its compounds	Various	Nonmetallic applications (such as paints, pigments, leather, and plastics)	1000 ppm		EU RoHS Directive 2011/65/EU	061020-79
Flame retardant, chlorinated flame retardants (CFR) and brominated flame retardants (BFR)		DecaBDE replacements in external housing parts of computers and televisions	Not intentionally added; 1000 ppm combined if incidentally present[6]	Any formulation changes made before 1-Jun-2011	Maine (38 MRS S1609)	110727-18
Flame retardants, brominated	Various	External case plastic parts[13]	1000 ppm	Printed circuit board base materials or printed circuit assemblies	HP Restriction, ECMA 370 (The Eco Declaration, TED)	070905-88
Flame retardants, chlorinated	Various	External case plastic parts[13]	1000 ppm	Printed circuit board base materials or printed circuit assemblies	HP Restriction, ECMA 370 (The Eco Declaration, TED)	160701-45

[13] Parts visible to the customer in normal product operation.

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Hexavalent chromium and its compounds	Various	Metallic applications (such as corrosion preventative coatings and conversion coatings)	Not a hexavalent chromium coating as determined by IEC 62321 series of test standards[14]		EU RoHS Directive 2011/65/EU	061020-24
Lead and its compounds	Various	Polyvinyl chloride (PVC) coating for external cables, wires, and cords, including connectors and plugs (For complete requirement see Section 4.2)	300 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	031126-37

[14] HP-approved test methods are discussed in Section 6 *Supplier Verification.*

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Lead and its compounds	Various	All products	1000 ppm[15,∞,‡]	EU RoHS exemptions: 5b, 6(a)i, 6(b)i, 6(b)ii, 6(c), 7(a), 7(c)i, 7(c)ii, 13(a), 13(b)i, 13(b)iii, 15(a). See HX-011-01A for exemption expirations.	EU RoHS Directive 2011/65/EU; California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	061020-12
Mercury and its compounds	Various	All products	1000 ppm[∞,‡]	EU RoHS exemptions: 4(f). See HX-011-01A for exemption expirations.	EU Regulation (EC) 1907/2006, Annex XVII (EU REACH), EU RoHS Directive 2011/65/EU	980408-14
Mercury and its compounds	Various	external electrode fluorescent lamp	Length ≤ 1.5 m: 5 mg Hg per lamp Length > 1.5 m: 13 mg Hg per lamp		Canada Products Containing Mercury Regulations	160701-18

[15] Lead restrictions in PVC, paint, and non-EE are more restrictive.

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Mercury and its compounds	Various	Very high accuracy capacitance and loss measurement bridges and high frequency RF switches and relays in monitoring and control instruments	20 mg Hg per bridge, switch, or relay		Canada Products Containing Mercury Regulations	160701-16
Mercury and its compounds	Various	high intensity discharge (HID) lamps	10 mg Hg per lamp or have Louisiana exemption permit; 100 mg Hg per lamp or have Louisiana AND Connecticut exemption certificate	require current valid exemption certificates	Connecticut Mercury Reduction and Education Act; Louisiana Mercury Risk Reduction Act; IMERC Guidance	160701-25
Mercury and its compounds	Various	cold cathode fluorescent lamps	Length ≤ 1.5 m: 10 mg Hg per lamp Length > 1.5 m: 13 mg Hg per lamp		Canada Products Containing Mercury Regulations	160701-87

Table 1. Pan HP Mandatory Restrictions for All Products						
Substances and Materials	Substance Identifier	Scope[3]	Threshold Limit / Criteria[4]	Exemptions	References[5]	Identification Number
Mercury and its compounds	Various	non-HID lamps	10 mg Hg per lamp		Louisiana Mercury Risk Reduction Act; IMERC State Mercury-Added Product Ban & Phase-out Guidance	160701-98
Polyvinyl Chloride (PVC)	Various & 9002-86-2	External case plastic parts of products[16]	Not intentionally added; 1000 ppm if incidentally present[6]	Sheathing of wires and cables, plastic parts <25 g, fabrics, protective product covers	HP Restriction; EPEAT and Korean ecolabel KOECO	041210-80
Red phosphorus	FR52 (ISO 1043-4) CAS#: 7723-14-0	Plastics (such as epoxy resins, polyamides, polypropylene) that contact a conductor, or are in close proximity to a conductor	Not present	Phos-bronze alloys (used in electrical contacts contain elemental phosphorus as part of the alloy makeup)	HP Restriction, Red Phosphorus Alert	140615-20

† Restrictions for these substances are also listed in HP Standards 011-01A and/or 011-01B.

‡ Restrictions for these substances are also listed in the HP Standard 011-02 GSE—Packaging Requirements.

∞ More restrictive limits apply when this substance is used in batteries. See HX-00011-12.

[16] Parts visible to the customer in normal product operation.

4.1 Responsible Minerals Sourcing

Conflict Minerals:

"Conflict Minerals" include tin, tantalum, tungsten, and gold and are collectively referred to as "3TG".

The following is required of suppliers with 3TG contained in the products they supply to HP:

- Suppliers must have a Conflict Minerals policy.
- When requested, suppliers must report information to HP for any 3TG in parts, materials, components, and products supplied to HP. To do so, suppliers must establish a program to survey their supply chains, conduct due diligence, and report information to HP using the current Responsible Minerals Initiative (RMI) Conflict Minerals Reporting Template (CMRT). Suppliers' programs must be consistent with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.
- To demonstrate suppliers' responsible sourcing, suppliers must ensure that any smelters processing 3TG for HP products are on the Responsible Minerals Initiative (RMI) conformant lists. These smelters have had their sourcing practices validated by 3rd-party audit through participation in the Responsible Minerals Assurance Process (RMAP)). HP encourages suppliers to use smelters that source minerals responsibly, including smelters with validated sourcing of minerals originating in conflict-affected and high-risk areas (CAHRAs), such as the DRC and adjoining countries.
- Suppliers must continuously work to ensure their 3TG supply chains utilize only RMI RMAP conformant smelters through direct engagement with:
    - Their suppliers to cascade responsible sourcing expectations up the supply chain, and
    - Smelters to encourage smelter participation in RMAP.
- If a smelter reported to HP is removed from the RMI conformant lists, suppliers must work with their suppliers and remove the smelter from HP's supply chain. If necessary, suppliers must switch to another smelter that is on the RMI conformant lists.
- As a result of HP's ongoing risk assessment, HP may request suppliers to remove a smelter from HP's supply chain regardless of the smelter's RMAP status. When requested, suppliers must provide an action plan to remove the smelter.

HP encourages its suppliers of products containing 3TG to participate in RMI.

Cobalt:

The following is required of suppliers with cobalt contained in the products they provide to HP:

- Suppliers must have a cobalt policy.
- When requested, suppliers must report information to HP for any cobalt in parts, materials, components, and products supplied to HP. To do so, suppliers must establish a program to survey their supply chains, conduct due diligence, and report information to HP using the current Responsible Minerals Initiative (RMI) Cobalt Reporting Template (CRT). Suppliers' programs must be consistent with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

- Suppliers must continuously work to encourage use of RMI RMAP conformant cobalt refiners in their supply chains through direct engagement with:
    - Their suppliers to cascade responsible sourcing expectations up the supply chain, and
    - Refiners to encourage refiner participation in RMAP.

HP encourages suppliers to use cobalt refiners that source minerals responsibly, including refiners with 3rd-party validated sourcing of minerals originating in conflict-affected and high-risk areas (CAHRAs), such as the DRC and adjoining countries.

HP encourages its suppliers of products containing cobalt to participate in RMI.

4.2 Lead in Polyvinyl Chloride (PVC) Coating for External Cables, Wires, and Cords.

The concentration of lead (Pb) in the PVC coating (outer jacket) of external PVC coated cables, wires, or cords must not exceed 0.03% (300 ppm) by weight in any homogeneous material. This requirement applies to the PVC coating (outer jacket) of external PVC coated cables, wires or cords, including connectors and plugs, in any of the following parts, components, and products:

- Computer mouse, roller ball, and joystick cords
- Computer peripheral wires and cables, AC adapter cords, interface cables, and PCMCIA card cords for portable computers or portable peripheral devices
- Computer peripheral wires and cables designed to plug into portable devices, computers, and the front of desktop computers (for example, USB cords)
- Computer speaker cords used with portable computers
- Computer power/patch/pin cords designed to plug into the front of desktop computers
- External CD/DVD and tape drives for portable computers
- Laptop and notebook computer cords
- USB, FireWire, telephone, modem, LAN, and other cables, wires, and cords designed for and used with portable products including, but not limited to:
    - Cell phones
    - GPS devices
    - Handheld PCs and Personal Digital Assistants (PDAs)
    - Portable digital imaging equipment (cameras and webcams)
    - Portable CD and DVD players
    - Portable scanners
    - Portable projectors
    - Portable printers
    - Portable audio and video players
    - Portable storage devices including hard disk drives, media drives, solid state storage devices, ZIP drives, and so forth; and related accessories
    - Portable computer input devices including handheld mice, touch pads, keypads, and graphic input tablets

4.3 RoHS Compliance

EU RoHS exemptions that are currently in force can be found in Annex III of RoHS Directive 2011/65/EU (and subsequent amendments) and are noted in the corresponding entries in Table 1. For information about future substance restrictions and exemption dates, see HX-00011-01A.

Any parts, components, and materials used in electrical and electronic products must comply with the European Union's RoHS Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, as amended from time to time, and similar regulations that apply in other countries, states, or regions including, but not limited to, China, India, Korea, Vietnam, Taiwan, Singapore, Turkey, Ukraine, EAEU, California, and New Jersey. This standard specifies HP requirements for the substances covered by the RoHS laws:

- Cadmium and its compounds
- Brominated flame retardants
  - Flame Retardant, polybrominated biphenyls (PBBs
  - Flame Retardant, polybrominated diphenyl ethers (PBDEs)
- Hexavalent chromium and its compounds
  - Metallic applications (such as corrosion preventative coatings and conversion coatings)
  - Nonmetallic applications (such as paints, pigments, leather, and plastics)
- Lead and its compounds
- Mercury and its compounds
- Butyl benzyl phthalate (BBP)Butyl benzyl phthalate (BBP)Butyl benzyl phthalate (BBP)Butyl benzyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Di-(2-ethylhexyl) phthalate (DEHP)
- Diisobutyl phthalate (DIBP)

Supplier verification requirements are in Section 5 of this standard.

5 Supplier Verification

See the *Supplier Verification* section of HP Standard 011-00.

Analytical Testing: Where the measurement of materials content is made to verify compliance or is specifically requested by HP, the supplier will use HP-approved test methodologies (see Test Methodologies, below) to perform the testing. Samples tested must be of a homogeneous material. (See Section 3 for a definition of *homogeneous material*.)

Test Methodologies: Recognized HP-approved sample preparations, test standards, and quality control must be used. The HP-approved test methods are listed in Table 2. The sample size and number of samples tested must adhere to the standard being applied. Test reports must be kept on file and made available to HP on request.

Parts Test Scheme: Suppliers must comply with the requirements in the *HP Active Verification Material Testing Specification.* (External version EX-EN876-00 is on the HP Supplier Portal; registration required).

Table 2: HP-Approved Test Methods and IEC Global Standard Testing Methodologies

Substance	Non-metal Materials	Metal Materials	Electronics (PWBs/ Components)
PBB/PBDE	GC/MS	Not applicable	GC/MS
Cr VI	Alkaline Digestion / Colorimetric Method	Boiling-water-extraction procedure (Note: EPA 3060A is not an acceptable test method)	Alkaline Digestion / Colorimetric Method
Hg	CV-AAS, AFS, ICP-OES, ICP-MS		
Pb/Cd	ICP-OES, ICP-MS, AAS (Note: Procedures vary for each material type, see IEC Standards)		
Phthalates	IEC 62321-8, GC-MS, Py-TD-GC-MS		
Azodyes	EN ISO 17234-1, EN ISO 17234-2, EN 14362-1, EN 14362-3		

IEC 62321 standards shall be used where applicable. Following IEC 62321-2, screening methods (such as those in IEC 62321-3-1 and IEC 62321-3-2) can be used prior to performing further quantitative chemical testing. .

Definitions and References for Table 2:

AAS	Atomic Absorption Spectroscopy
AFS	Atomic Fluorescence Spectrometry
CV-AAS	Cold Vapor Atomic Absorption Spectrometry
GC/MS	Gas Chromatography/Mass Spectrometry
ICP–OES	Inductively Coupled Plasma–Optical Emission Spectrometry
ICP–MS	Inductively Coupled Plasma–Mass Spectrometry
Py-TD-GC-MS	Gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption accessory

6 Substance Disclosure Requirements

HP will periodically request substance disclosure information for HP brand products and all parts, components, and materials incorporated into HP brand products to enable HP to make the necessary substance disclosures to comply with current regulations (including those set forth below). Suppliers are expected to understand what substances are contained in the products, parts, components, and materials that they sell to HP.

Material content information can be obtained from supply chain documentation such as materials specifications, part drawings, and product Bills of Materials (BOM). If material content is not provided in their

own documentation, suppliers are expected to identify their component suppliers and request product content information from those suppliers. This process is repeated up the supply chain until the raw materials are identified.

Performing a chemical analysis on products, parts, or components to obtain this information should not be necessary.

Suppliers must respond with the requested information by the stated due date.

6.1 REACH

REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) Legislation, EU Regulation 1907/2006, O.J.L 396/01, was adopted to improve the protection of human health and the environment from the risks that can be posed by chemicals. REACH obliges manufacturers and importers to share data for substances identified as Substances of Very High Concern (SVHCs).

Member States' Competent Authorities or the European Chemical Agency (ECHA), on a request by the Commission, may prepare Annex XV dossiers for the identification of SVHCs and propose them for addition to the Candidate List of substances of very high concern for Authorisation. The Candidate List is published twice per year and, in conformance with Article 33 of the regulation, HP is required to have product declarations completed and published on the same dates.

Product information for HP and HP-branded products (including aftermarket options, modules, components, and support parts) must contain the statement below.

> *HP is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at: http://www.hp.com/go/reach.*

The above statement must accompany the product in electronic media, software, or paper form.

6.2 International Electrotechnical Commission (IEC) 62474

HP gathers data on substances listed in the IEC 62474 database in order to answer customer inquiries concerning the material content of the products they purchase or to obtain Electronic Product Environmental Assessment Tool (EPEAT) eco label certifications.

Substances and their reporting thresholds can be found in the IEC 62474 database.

7 Additional Substance Requirements

This section defines substance information availability requirements, including for substances in products that are subject to current or enacted legal requirements regulating their import, export, offer, sale, distribution, or related needs. Any documents and information requested by HP to confirm details of those substances present in products must be obtained, supplied, and updated to HP in the form and within the time frames set by HP. The documents and information may consist of the following:

- Identity and quantity of substances
- Human health or environmental hazards or risks associated with the substances, including any physicochemical, toxicological, and ecotoxicological testing information and any other information required for HP to comply with data submission requirements for a substance or products that contain the substance

- Any precautions necessary for safe use
- Intended use and any risk management measures taken or recommended including, but not limited to, applications involving direct and indirect food contact
- Their intended use and any risk management measures taken or recommended
- Any other information required for HP to comply with classification, packaging, or labeling issues or requirements in respect of any substances present, either as intentionally added or known impurities/byproducts, often referred to as "Not Intentionally Added Substances" (NIAS)

Such documents and information must be kept on file for 10 years from the date the product is placed on the market by HP and provided to HP on request. HP may request this information in the form of a certification of analysis (CoA) and/or quantitative impurity profile.

Substances present in the products, parts, mixtures, preparations, or other materials supplied to HP must be registered or notified (including premanufacture notification) with confirmation to HP and must conform to any related chemical inventory or registration requirements where necessary to allow HP or its customers to import, place on the market, supply, or use the HP products in any jurisdiction, market, or region.

Jurisdictions that require or will require such registrations and notifications include, but are not limited to, Australia, Canada, the Canadian Province of Ontario, People's Republic of China, Japan, Malaysia, New Zealand, Philippines, South Korea, Switzerland, Taiwan, Turkey, United States, and Member States of the European Union and European Economic Area.

8 Other environmental requirements for All Products

The following are requirements for all HP brand and HP-owned brand products, including subassemblies, parts, components, materials, and batteries that are incorporated into HP brand and HP-owned brand products.

Note: "all parts, components, materials, and products" include EEE, batteries, and nonelectric and nonelectronic products (such as nonelectronic carrying cases and bags) as well as formulations and print media

Requirements specific to EEE are found in document HX-00011-11.

Requirements specific to batteries are found in document HX-00011-12.

Requirements specific to soft goods and other non-EEE are found in document HX-00011-13.

Requirements specific to chemicals and formulated products (such as toner and ink) are found in document HX-00011-14.

Requirements specific to print media (such as paper and banners) are found in document HX-00011-15.

For future restrictions and business-specified restrictions, see HX-00011-01A and HX-00011-01B, respectively.

8.1 Product Plastic Part Marking

Plastic parts weighing more than 25 g shall be physically identified with plastic material codes according to ISO 11469, *Plastics—Generic identification and marking of plastics products*, which includes ISO 1043, parts 1–4, *Plastics—Symbols and abbreviated terms*. Note: All plastics containing flame retardants that have been intentionally added or that exceed 1% by material weight shall include the flame retardant

code according to ISO 1043-4, *Plastics—Symbols and abbreviated terms—Part 4: Flame retardants*. For detailed requirements applicable to physical plastic part marking requirements, refer to the HP Standard 5951-1741-1, *Plastic Part Marking Algorithm Standard,* available here.

8.2 Product Brand Labeling

HP products must be identified by the use of an HP logo, HP jewel, or the term HP on the manufacturer's brand label, or other HP-owned brands (as instructed by the supplier's HP Business Relationship Manager).

8.3 Biocides – Use, Claims, and Labels

8.3.1 Use of Biocides Generally, and Claims About Biocides

In general, biocide uses in HP products (whether in supplies products or in hardware) should be limited to applications that conform to biocidal/pesticidal regulations applicable to "treated articles" (or the equivalent concept in national law). Biocides used in "treated articles" are typically incorporated in order to confer a preservative function with respect to the product that is treated. Although the biocides may have an antimicrobial impact, that impact is designed for internal effects (i.e., to protect the article being treated, such as to avoid discoloration of a keyboard polymer), rather than to provide a public health or confer an external impact (e.g., "to kill germs" on a keyboard or surface coating).

Use of biocides to confer an external biocidal effect, depending on factors such as intent and express or even implied claims, mean that an article that has been treated with a biocide will itself be subject to regulation as a biocidal product. Biocidal products are subject to comprehensive regulatory requirements in many jurisdictions, and can require extensive pre-market approval, labeling, packaging, and production obligations.

For this reason, any claim about the presence of or effect of a biocide in an HP product, or biocidal effect of an HP product itself, whether in marketing or advertising material, or on packaging or product information sheets, must be subject to prior review by HP Legal. The sole exception is a claim that is limited to the presence of a "preservative" to protect the product itself.

8.3.2 United States Biocidal requirements

For products treated with biocides for the U.S. market, the treated article must be treated with a pesticide that has been registered by the US EPA for uses that are consistent with its intended use in the HP product. Biocidal claims cannot be made, except as provided in Section 8.3.1.

8.3.3 EU Biocide Product Label

Any treated article (materials, parts, components, or products treated with or incorporating biocides) must meet the following requirements:

1. All active substances contained in the biocide(s) used to treat or incorporated into the article must be on the European Union approved list or under the review program or have applied for approval by 1-Sep-2016 per product type and used or be in Annex 1 of Regulation (EU) No 528/2012[17].
2. If the active substance is already included in the European Union approved list or in Annex I, the conditions and restrictions specified therein must be met.
3. If a biocidal claim is made (see Section 8.3.1), the treated article must be labeled.
4. If a biocide is used, the approval conditions may require labeling.

[17] REGULATION (EU) No 528/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 May 2012 concerning the making available on the market and use of biocidal products

5. Even if a label is not otherwise required under Requirements 3 or 4, a label with any relevant instruction of use, including any precautions to be taken, is required if this is necessary to protect humans, animals, and the environment.

Label requirements:

Location of label: On the treated article. If prohibitive because of size or function, then it can be on the packaging, instructions, or warranty card.

Design of label: The label shall be clearly visible, easily legible, and appropriately durable.

Language of the label: Label needs to be in the official language(s) of the EEA country in which it is sold. The official languages can be found at: http://ec.europa.eu/languages/policy/language-policy/official_languages_en.htm; the official language for Norway is Norwegian and for Iceland is Icelandic.

EU Biocidal Products Regulation (BPR) 528/2012

This product is a treated article and incorporates biocidal substances.

The (fill in) is the biocidal property attribute of the treated article.

Active biocidal substance(s): (List all)

(If present add:) Nano materials contained in the biocidal product: (list materials followed by the parenthetical (nano))

Instructions of use or precautions: (Fill in, if applicable)

Figure 1: Example Biocides Label

Approved active substances:
http://echa.europa.eu/web/guest/information-on-chemicals/biocidal-active-substances

Biocide Product types: http://echa.europa.eu/regulations/biocidal-products-regulation/product-types

Substances under review (per product type), under Article 89(1) of Regulation EU (No) 528/2012:
https://echa.europa.eu/regulations/biocidal-products-regulation/approved-suppliers

Nanomaterials definition: http://ec.europa.eu/environment/chemicals/nanotech/faq/definition_en.htm

8.3.4 China Biocide Label

Antimicrobial claims of HP's treated articles in China must comply with China's antimicrobial requirements and be certified by the certification entities accredited by Chinese government for conducting the antibacterial certification.

8.3.5 Other biocide use and labeling requirements

Any treated article must comply with worldwide biocidal requirements and have relevant certifications for jurisdictions in which it will be sold.

8.4 Information for Users on the Chemical Content of HP Products

Product information for HP and HP-owned brand products (including aftermarket options, modules, components, and support parts) must contain the statement below.

> *HP is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at: http://www.hp.com/go/reach.*

The above statement must accompany the product in electronic media, software, or paper form.

8.5 Recycled and certified requirements for wood in HP products

All HP brand paper, paper-based and fiber-based product packaging[18], and wood[19] used in HP products must be derived from certified and recycled sources by 2020. These materials must meet one of the following criteria:

- Chain-of-custody certified and carry the certification label.
- Chain-of-custody certified from the source at least through the converter. This material must be accompanied by the appropriate documentation, for example invoice or bill of lading, with certification information noted as applicable per a certification standard.
- Made of recycled content, which is to be verified by an independent third party in accordance with the applicable industry standards.

HP will maintain its preference for FSC-certified fiber. PEFC certification or relevant national certification schemes that comply with our sustainable paper and wood policy can be used in regions where they are recognized to not accept forest conversion, are endorsed by competent independent stakeholders, and ensure a reliable guarantee of responsible sources.

HP partners and suppliers shall maintain documentation and report annually the total annual tonnage of certified and recycled content per certification scheme. These requirements are to support worldwide timber regulations and HP's Zero Deforestation Goal.

8.6 Wood, paper, and other plant-based product sourcing requirements

Parts, components, materials, and products must not contain any wood material or other wild plant material that was illegally sourced from its country of origin. Examples of illegally sourced materials include, but are not limited to: wood or wild plant materials stolen from parks, reserves, or other protected areas; materials harvested without permission or contrary to applicable harvesting regulations; materials for which the applicable royalties, taxes, or fees were not paid; and materials exported in violation of log or other export bans.

To meet the due diligence requirements of wood and plant-derived product regulations, suppliers must: 1) Commit to using only legally-sourced wood and plant materials for products and materials supplied to HP; 2) Determine the country of origin, and genus and species of wood and plant-derived materials; and 3) Maintain and make available records that verify the legal origin of plant materials, as set forth in the Supplier Verification section of HP Standard 011-00.

[18] The requirement for all paper-based and fiber-based product packaging to be derived from certified and recycled sources applies to the box that comes with the product and all paper (including packaging and materials) inside the box.
[19] Wood was added to the commitment in 2019 due to wood now being used in some HP products

The worldwide requirements in this paragraph address the requirements of the following regulations: the U.S. Lacey Act Amendments of 2008 (codified at 16 U.S.C. §§ 3371–3378) effective May 22, 2008; the EU Timber regulation (Regulation (EU) No 995/2010) effective Oct 20, 2010; and the Australian Illegal Logging Prohibition Act (No. 166, 2012) effective Nov 29, 2012.

8.6.1 Lacey Act Wood and Paper Product Import Declaration

Wood materials, furniture, and other wood and paper-based products listed by Harmonized Tariff Schedule (HTS) chapters included in the APHIS Schedule of Enforcement must include an import declaration, PPQ FORM 505: Lacey Act Plant and Plant Product Declaration Form, when entering the United States. This requirement does not apply to packaging that is directly supporting or protecting a product, such as pallets or boxes carrying a product, or sundries that accompany the product (such as warranty cards, labels, and manuals).

8.6.2 Australian Illegal Logging Prohibition Act Wood and Paper Product Import Declaration

Timber products (including wood materials, furniture, packaging, and paper products) listed in "Schedule 1-Regulated timber products" of the Illegal Logging Prohibition Amendment Regulation 2013 (No. 1) must include a customs declaration when entering Australia. This requirement does not apply to packaging that is directly supporting or protecting a product, such as pallets or boxes carrying a product, or sundries that accompany the product (such as warranty cards, labels, and manuals). It also does not apply to a regulated timber product that is entirely made of recycled material, as well as to the part of a regulated timber product that is partially made from recycled material. See section "Wood, Paper and other Plant-based Products" of HP Standard 011-01 and HP Standard 011-02.

8.7 Leather, hides, and other animal-based product sourcing requirements

Parts, components, materials, and products that contain leather, skins or animal-based products shall be subject to the requirements to this section. For additional requirements for soft goods and other non-EEE (furniture, clothing, etc.) related to leather see HX-00011-13.

HP prohibits the use of leathers, hides, or skins from animals that have been inhumanely treated, whether these animals are wild or farmed.

HP prohibits:

- Any endangered or threatened species, as defined by the International Union for Conservation of Nature and Natural Resources (IUCN) in its red list.
- Exotic or protected animals. Examples include, but are not limited to, alligator, cheetah, crocodile, elephant, fish, leopard, lion, lizard, marine mammals, ostrich, shark, snake, tiger, rays, rhinoceros, etc.
- Skins derived from any species of domesticated or feral dog or cat.
- Furs or hair of any kind, including but not limited to mink, coyote, fox, horse, mountain lion, cougar, angora rabbit
- Animals raised or slaughtered in China, India, and Brazil's Amazon Legal (as defined by IBGE), including the Amazon Biome.

HP partners and suppliers must meet the Five Freedoms for Animal Welfare, as defined by the Farm Animal Welfare Council (FAWC), the internationally accepted standards for animal care. The Five Freedoms ensures the primary welfare of animals are met by providing:

- freedom from hunger, malnutrition, and thirst
- freedom from fear and distress

- freedom from physical and thermal discomfort
- freedom from pain, injury, and disease
- freedom to express normal patterns of behavior

All leather must be from Leather Working Group (LWG) certified sources and receive LWG's Gold Rating. The LWG is a multi-stakeholder group that promotes sustainable business practices within the leather industry. The LWG has developed stringent standards and audit protocols benchmarked against industry best practices, and checks compliance through independent monitoring.

HP partners and suppliers shall maintain credible chain of custody (traceability) from farm/ranch to final product to ensure the above requirements are met. Chain of custody documentation shall be provided to HP upon request that verifies that the materials meet the above requirements. In addition, HP requires suppliers of Brazilian leather to provide certificates of origin upon request to ensure that the leather does not originate from the Amazon Biome.

9 Substance Tables

* CAS = Chemical Abstract Service. Chemical classes do not have CAS numbers, but examples have been included when possible.

Table 3: Benzidine-based Substances

Name	CAS* Numbers
1,3-Naphthalenedi-sulfonic acid, 7-hydroxy-8-[2-[4'-[2-(4-hydroxyphenyl)diazenyl][1,1'- biphenyl]-4-yl]diazenyl]-	117-33-9
1,3,6-Naphthalenetri-sulfonic acid, 8-hydroxy-7-[2-[4'-[2-(2-hydroxy-1- naphthalenyl)diazenyl][1,1'-biphenyl]-4-yl]diazenyl]-, lithium salt (1:3)	65150-87-0
2,7-Naphthalenedi-sulfonic acid, 5-amino-3-[2-[4'-[2-(7-amino-1-hydroxy-3-sulfo-2- naphthalenyl)diazenyl][1,1'-biphenyl]-4-yl]diazenyl]-4-hydroxy-, sodium salt (1:2)	68214-82-4
2,7-Naphthalenedi-sulfonic acid, 4-amino-5-hydroxy-3-[2-[4'-[2-[2-hydroxy-4-[(2- methylphenyl)amino] phenyl]diazenyl][1,1'-biphenyl]-4-yl]diazenyl]-6-(2-phenyldiazenyl)-	72379-45-4
2,7-Naphthalenedi-sulfonic acid, 4-amino-5-hydroxy [[[(substituted phenylamino)] substituted phenylazo] diphenyl]azo-, phenylazo-, disodium salt.	Accession No. 21808 CAS No. CBI (NA)
4-(Substituted naphthalenyl)azo diphenylyl azo-substituted carbopolycycle azo benzene-sulfonic acid, sodium salt	Accession No. 24921 CAS No. CBI (NA)
4-(Substituted phenyl)azo biphenylyl azo-substituted carbopolycycloazo benzene-sulfonic acid, sodium salt	Accession No. 26256 CAS No. CBI (NA)
4-(Substituted phenyl)azo biphenylyl azo—substituted carbo-polycycle azo benzene-sulfonic acid, sodium salt	Accession No. 26267 CAS No. CBI (NA)
Phenylazoamino-hydroxynaphthalenylazobiphenylazo substituted benzene sodium sulfonate	Accession No. 26701 CAS No. CBI (NA)
[1,1'-Biphenyl]-4,4'-diamine	92-87-5
[1,1'-Biphenyl]-4,4'-diamine, dihydrochloride	531-85-1
1-Naphthalenesulfonic acid, 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis[4-amino-, disodium salt (C.I. Direct Red 28)	573-58-0
2,7-Naphthalenedisulfonic acid, 4-amino-3-[[4'-[(2,4-diaminophenyl) azo][1,1'-biphenyl]-4- yl]azo]-5-hydroxy-6-(phenylazo)-, disodium salt (C.I. Direct Black 38)	1937-37-7
1-Naphthalenesulfonic acid, 8,8'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis[7-hydroxy-,disodium salt (C.I. Direct Red 44)	2302-97-8
2,7-Naphthalenedisulfonic acid, 5-amino-3-[[4'-[(7-amino-1-hydroxy-3-sulfo-2- naphthalenyl)azo][1,1'-biphenyl]-4-yl]azo]-4-hydroxy-, trisodium salt (C.I. Direct Blue 2)	2429-73-4

Table 3: Benzidine-based Substances

Name	CAS* Numbers
Benzoic acid, 5-[[4'-[(1-amino-4-sulfo-2-naphthalenyl) azo][1,1'-biphenyl]-4-yl]azo]-2-hydroxy- ,disodium salt (C.I. Direct Orange 8)	2429-79-0
Benzoic acid, 5-[[4'-[[2,6-diamino-3-[[8-hydroxy-3,6-disulfo-7-[(4-sulfo-1-naphthalenyl)azo]-2- naphthalenyl]azo]-5-methylphenyl]azo][1,1'-biphenyl]-4-yl]azo]-2-hydroxy-, tetrasodium salt (C.I. Direct Brown 31)	2429-81-4
Benzoic acid, 5-[[4'-[(7-amino-1-hydroxy-3-sulfo-2-naphthalenyl) azo][1,1'-biphenyl]-4-yl]azo]-2- hydroxy-, disodium salt (C.I. Direct Brown 2)	2429-82-5
2,7-Naphthalenedisulfonic acid, 4-amino-3-[[4'-[(2,4-diamino-5-methylphenyl)azo][1,1'- biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)-, disodium salt (Direct Black 4)	2429-83-6
Benzoic acid, 5-[[4'-[(2-amino-8-hydroxy-6-sulfo-1-naphthalenyl)azo][1,1'-biphenyl]-4-yl]azo]-2- hydroxy-, disodium salt (C.I. Direct Red 1)	2429-84-7
Benzoic acid, 5-[[4'-[[2,6-diamino-3-methyl-5-[(4-sulfophenyl)azo]phenyl]azo][1,1'-biphenyl]-4- yl]azo]-2-hydroxy-, disodium salt (C.I. Direct Brown 1:2)	2586-58-5
2,7-Naphthalenedisulfonic acid, 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis[5-amino-4-hydroxy-, tetrasodium salt (C.I. Direct Blue 6]	2602-46-2
Benzoic acid, 5-[[4'-[[2,4-dihydroxy-3-[(4-sulfophenyl) azo]phenyl]azo][1,1'-biphenyl]-4-yl]azo]- 2-hydroxy-, disodium salt (C.I. Direct Brown 6)	2893-80-3
1,3-Naphthalenedisulfonic acid, 8-[[4'-[(4-ethoxyphenyl) azo][1,1'-biphenyl]-4-yl]azo]-7-hydroxy- ,disodium salt (C.I. Direct Red 37)	3530-19-6
1,3-Naphthalenedisulfonic acid, 7-hydroxy-8-[[4'-[[4-[[(4-methylphenyl) sulfonyl]oxy]phenyl]azo][1,1'-biphenyl]-4-yl]azo]-, disodium salt (C.I. Acid Red 85)	3567-65-5
2,7-Naphthalenedisulfonic acid, 4-amino-5-hydroxy-3-[[4'-[(4-hydroxyphenyl)azo][1,1'-biphenyl]- 4- yl]azo]-6-(phenylazo)-, disodium salt (C.I. Direct Green 1)	3626-28-6
Benzoic acid, 5-[[4'-[[2,4-diamino-5-[(4-sulfophenyl) azo]phenyl]azo][1,1'-biphenyl]-4-yl]azo]-2- hydroxy-, disodium salt (C.I. Direct Brown 1)	3811-71-0

Table 3: Benzidine-based Substances

Name	CAS* Numbers
2,7-Naphthalenedisulfonic acid, 4-amino-5-hydroxy-6-[[4'-[(4-hydroxyphenyl)azo][1,1'-biphenyl]- 4-yl] azo]-3-[(4-nitrophenyl)azo]-, disodium salt (C.I. Direct Green 6)	4335-09-5
2,7-Naphthalenedisulfonic acid, 4-amino-5-hydroxy-3-[[4'-[[4-hydroxy-2-[(2-methylphenyl)amino]phenyl]azo] [1,1'- biphenyl]-4-yl]azo]-6-[(4-sulfophenyl) azo]-, trisodium salt (C.I. Acid Black 94)	6358-80-1
Benzoic acid, 5-[[4'-[[4-[(4-amino-7-sulfo-1-naphthalenyl)azo]-6-sulfo-1-naphthalenyl]azo][1,1'- biphenyl]-4-yl] azo]-2-hydroxy-, trisodium salt (C.I. Direct Brown 27)	6360-29-8
Benzoic acid, 5-[[4'-[[2,6-diamino-3-methyl-5-[(4-sulfophenyl)azo]phenyl] azo][1,1'-biphenyl]-4- yl]azo]-2-hydroxy-3-methyl-, disodium salt (C.I. Direct Brown 154)	6360-54-9
Benzoic acid, 3,3'-[(3,7-disulfo-1,5-naphthalenediyl)bis [azo(6-hydroxy-3,1-phenylene)azo[6(or7)- sulfo-4,1-naphthalenediyl]azo[1,1'-biphenyl]-4,4'-diylazo]]bis[6-hydroxy-, hexasodium salt (C.I. Direct Brown 74)	8014-91-3
Cuprate(2-), [5-[[4'-[[2,6-dihydroxy-3-[(2-hydroxy-5-sulfophenyl)azo]phenyl] azo][1,1'-biphenyl]- 4-yl]azo]-2-hydroxybenzoato(4-)]-, disodium salt (C.I. Direct Brown 95)	16071-86-6

Table 4: Organostannic (organotin) compounds

Name	CAS* Numbers
Dibutyltin oxide (TBTO)	818-08-6
Dibutyltin diacetate	1067-33-0
Dibutyltin dilaurate	77-58-7
Dibutyltin maleate	78-04-6
Other dibutyltin compounds	–
Dioctyltin oxide	870-08-6
Dioctyltin dilaurate	3648-18-8
Other dioctyltin compounds	–
Bis(tri-n-butyltin) oxide	56-35-9
Triphenyltin N,N'-dimethyldithiocarbamate	1803-12-9
Triphenyltin fluoride	379-52-2
Triphenyltin acetate	900-95-8
Triphenyltin chloride	639-58-7
Triphenyltin hydroxide	76-87-9
Triphenyltin fatty acid ((9-11) salt)	18380-71-7, 18380-72-8, 47672-31-1; 94850-90-5
Triphenyltin chloroacetate	7094-94-2
Tributyltin methacrylate	2155-70-6
Bis(tributyltin) fumarate	6454-35-9
Tributyltin fluoride	1983-10-4
Bis(tributyltin) 2,3-dibromosuccinate	31732-71-5
Tributyltin acetate	56-36-0
Tributyltin laurate	3090-36-6
Bis(tributyltin) phthalate	4782-29-0
Copolymer of alkyl acrylate, methyl methacrylate and tributyltin methacrylate (alkyl; C=8)	67772-01-4
Tributyltin sulfamate	6517-25-5
Bis(tributyltin) maleate	14275-57-1
Tributyltin chloride	1461-22-9

Table 4: Organostannic (organotin) compounds

Name	CAS* Numbers
Mixture of tributyltin cyclopentanecarboxylate and its analogs (tributyltin naphthenate)	85409-17-2
Mixture of tributyltin 1,2,3,4,4a, 4b, 5,6,10,10a-decahydro-7-isopropyl-1, 4a-dimethyl-1-phenanthlenecarboxylate and its analogs (tributyltin rosin salt)	26239-64-5
Other tributyltins and triphenyltins	Chemical class; No CAS number assigned

Table 5: PBBs and PBDEs

Name	CAS* Numbers
Bromobiphenyl	2052-07-5, 2113-57-7, 92-66-0
Bromobiphenyl Ether	101-55-3
Decabromobiphenyl	13654-09-6
Decabromobiphenyl Ether	1163-19-5
Dibromobiphenyl	92-86-4
Dibromobiphenyl Ether	2050-47-7
Heptabromobiphenyl	35194-78-6
Heptabromobiphenyl Ether	68928-80-3
Hexabromobiphenyl	59080-40-9, 36355-01-8, 67774-32-7
Hexabromobiphenyl Ether	36483-60-0
Nonabromobiphenyl	27753-52-2
Nonabromobiphenyl Ether	63936-56-1
Octabromobiphenyl	61288-13-9
Octabromobiphenyl Ether	32536-52-0
Pentabromobiphenyl	56307-79-0
Pentabromobiphenyl Ether	32534-81-9
Polybrominated Biphenyl	59536-65-1
Polybromobiphenyl(s), Polybromodiphenyl(s)	Chemical class; no CAS number assigned
Polybrominated Biphenyl Ether(s), Polybrominated Biphenyl Oxide(s)	Chemical class; no CAS number assigned
Tetrabromobiphenyl	40088-45-7
Tetrabromobiphenyl Ether	40088-47-9
Tribromobiphenyl	51202-79-0
Tribromobiphenyl Ether	49690-94-0

Table 6: PFOS and PFOS salts

Name	CAS* Numbers
PFOS	1763-23-1
PFOS Ion	45298-90-6
PFOS Potassium Salt	2795-39-3
PFOS Lithium Salt	29457-72-5
PFOS Tetraethylammonium Salt	56773-42-3
PFOS Triphenylsulfonium Salt	144089-15-6
PFOS Sodium Salt	4021-47-0
PFOS Ammonium Salt	29081-56-9
PFOS Amide	754-91-6
Perfluorooctanesulfonyl fluoride	307-35-7
$C_8F_{17}SO_2X$ (X=OH, metal salt, halide, amide and other derivatives including polymers)	Various
Compounds that contain $C_8F_{17}SO_2$, $C_8F_{17}SO_3$ or $C_8F_{17}SO_2N$ moieties	Various

Table 7: PFOA, PFOA Salts, and PFOA-related compounds

Name[20]	CAS* Numbers
PFOA	335-67-1
PFOA Ammonium Salt	3825-26-1
PFOA Sodium Salt	335-95-5
PFOA Potassium Salt	2395-00-8
PFOA Silver Salt	335-93-3
PFOA Chromium Salt	68141-02-6
Perfluorooctanoyl fluoride	335-66-0
Methyl PFOA	376-27-2
Ethyl PFOA	3108-24-5
Ethanaminium Salt	98241-25-9
Fluorotelomer Alcohol	678-39-7
Fluorotelomer Phosphate Diester	678-41-1
Fluorotelomer Acrylate	27905-45-9
Perfluorinated Iodide	507-63-1

Table 8: Polycyclic Aromatic Hydrocarbons (PAHs)

Name	CAS* Numbers
Benz[a]anthracene (BaA)	56-55-3
Benzo[b]fluoranthene (BbFA)	205-99-2
Benzo[j]fluoranthene (BjFA)	205-82-3
Benzo[k]fluoranthene (BkFA)	207-08-9
Benzo[a]pyrene (BaP)	50-32-8
Benzo[e]pyrene (BeP)	192-97-2
Chrysene (CHR)	218-01-9
Dibenz[a,h]anthracene (DBAhA)	53-70-3

[20] This is a non-exhaustive list of substances belonging to the scope of the restriction

Table 9: Radioactive Substances (Radioactive Isotopes)

Name	CAS* Numbers
Uranium-238	7440-61-1
Radon	10043-92-2
Americium-241	14596-10-2
Thorium-232	7440-29-1
Cesium-137	10045-97-3
Strontium-90	10098-97-2

Table 10: REACH Annex XVII Phthalates

Name	CAS* Numbers
Di-(2-ethylhexyl) phthalate (DEHP)	117-81-7
Dibutyl phthalate (DBP)	84-74-2
Butyl benzyl phthalate (BBP)	85-68-7
Diisobutyl phthalate (DIBP)	84-69-5

Table 11: Other PCB Congeners and Mixtures

Name	CAS* Numbers
Polychlorinated biphenyl (PCB)	1336-36-3
2-Chlorobiphenyl	2051-60-7
3-Chlorobiphenyl	2051-61-8
4-Chlorobiphenyl	2051-62-9
2,2'-Dichlorobiphenyl	13029-08-8
2,3-Dichlorobiphenyl	16605-91-7
2,3'-Dichlorobiphenyl	25569-80-6
2,4-Dichlorobiphenyl	33284-50-3
2,4'-Dichlorobiphenyl	34883-43-7
2,5-Dichlorobiphenyl	34883-39-1
2,6-Dichlorobiphenyl	33146-45-1
3,3'-Dichlorobiphenyl	2050-67-1
3,4-Dichlorobiphenyl	2974-92-7
3,4'-Dichlorobiphenyl	2974-90-5
3,5-Dichlorobiphenyl	34883-41-5
4,4'-Dichlorobiphenyl	2050-68-2
2,2',3-Trichlorobiphenyl	38444-78-9
2,2',4-Trichlorobiphenyl	37680-66-3
2,2',5-Trichlorobiphenyl	37680-65-2
2,2',6-Trichlorobiphenyl	38444-73-4
2,3,3'-Trichlorobiphenyl	38444-84-7
2,3,4-Trichlorobiphenyl	55702-46-0
2,3,4'-Trichlorobiphenyl	38444-85-8
2,3,5-Trichlorobiphenyl	55720-44-0
2,3,6-Trichlorobiphenyl	55702-45-9
2,3',4-Trichlorobiphenyl	55712-37-3
2,3',5-Trichlorobiphenyl	38444-81-4
2,3',6-Trichlorobiphenyl	38444-76-7
2,4,4'-Trichlorobiphenyl	7012-37-5
2,4,5-Trichlorobiphenyl	15862-07-4

Table 11: Other PCB Congeners and Mixtures

Name	CAS* Numbers
2,4,6-Trichlorobiphenyl	35693-92-6
2,4',5-Trichlorobiphenyl	16606-02-3
2,4',6-Trichlorobiphenyl	38444-77-8
2,3',4'-Trichlorobiphenyl	38444-86-9
2,3',5'-Trichlorobiphenyl	37680-68-5
3,3',4-Trichlorobiphenyl	37680-69-6
3,3',5-Trichlorobiphenyl	38444-87-0
3,4,4'-Trichlorobiphenyl	38444-90-5
3,4,5-Trichlorobiphenyl	53555-66-1
3,4',5-Trichlorobiphenyl	38444-88-1

10 References

Each of the following standards forms a part of HP's GSE and is incorporated herein by reference:

HP Standard 011-00 General Specification for the Environment—Overview (HX-00011-00)

HP Standard 011-01 General Specification for the Environment—Substances and Materials Requirements, All Products (HX-00011-01)

HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)

HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)

HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)

HP Standard 011-06 GSE—Manufacturing Substances Requirements (HX-00011-06)

HP Standard 011-11 GSE—Product requirements for EEE (HX-00011-11)

HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)

HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)

HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)

HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)

HP Standard 014-02 Supplier Requirements for Safe and Legal Products

HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)

For more information about HP materials program, see our Materials & Chemical Management Policy, Materials Strategy, Green Chemistry Timeline, and the HP General Specification for the Environment page.

EX-EN876-00, *HP Active Verification Material Testing Specification* (External version EX-EN876-00, is on the HP Supplier Portal; registration required)

EU RoHS Directive 2011/65/EU

Commission Delegated Directive (EU) 2015/863

BIS RoHS Regulations Government Guidance Notes

EU RoHS Directive legislation (European Union website)

Connecticut Mercury Reduction and Education Act

Louisiana Mercury Risk Reduction Act

IMERC State Mercury-Added Product Ban & Phase-out Guidance

Leather Working Group (LWG)

EN 1811:2011 European Standard specifying a reference test method for release of nickel from products intended to come into direct and prolonged contact with skin which was approved by the European Committee for Standardisation

Testing and Validation of Polycyclic Aromatic Hydrocarbons (PAH) in the course of GS-Mark Certification, ZEK 01-08

IEC 62321 standards where applicable – Determination of Certain Substances in Electrotechnical Products, available through http://www.iec.ch

5951-1741-1, Plastic Part Marking Algorithm Standard

ISO 11469, which includes ISO 1043, part 1-4

GB 30981-2020 Limit of harmful substances of industrial protective coatings

GB 33372-2020 Limit of volatile organic compounds content in adhesives

GB 38508-2020 Limit of volatile organic compounds content in cleaning agents

GB 38507-2020 Limit of volatile organic compounds content in printing inks

A.1 Appendix A: HP-PK Supply Chain Substance information

The HP-PK materials management system groups substance requirements into three groups: Class 1, Class 2, and Class 3. This scheme is used to collect data for the materials restriction for HP-PK parts. Below, the HP requirements that correspond to the existing HP-PK substance groups are listed for information only. HP-PK suppliers shall follow all applicable requirements in the GSE documents even if those requirements are not listed in Appendix A.

Class I. RoHS Substances

Table 12. Class I substances

Substances and Materials	Substance Identifier	Scope[21]	Threshold Limit / Criteria[22]	Exemptions	References[23]	Identification Number
Flame Retardant, polybrominated biphenyls (PBBs)	See Table 5	All products	Not intentionally added; 1000 ppm if incidentally present[24]		EU RoHS Directive 2011/65/EU	980408-10
Flame Retardant, polybrominated diphenyl ethers (PBDEs)	See Table 5	All products	Not intentionally added and 1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	EU RoHS Directive 2011/65/EU	980408-50
Butyl benzyl phthalate (BBP)†	CAS#: 85-68-7	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	EU RoHS Directive 2011/65/EU	120621-20
Cadmium and its compounds	Various	All products	100 ppm	EU RoHS exemptions: 8(b)i, 13(b)ii, 13(b)iii. See HX-011-01A for exemption expirations.	EU RoHS Directive 2011/65/EU	980408-84

[21] "All products" includes "parts, components, materials, and products", this includes EEE, batteries, and nonelectric and nonelectronic products (such as nonelectronic carrying cases and bags) as well as formulations and print media
[22] The threshold limit is the number listed, reported as ppm by weight in homogenous material, unless otherwise specified.
[23] This column provides background on the source of the restriction. The reference list is not exhaustive, and more than the listed reference may apply. The cited reference is as amended.
[24] Incidentally present means occurring as unavoidable impurities or unintentional trace contaminants; such incidentally present material is not intentionally added.

Table 12. Class I substances						
Substances and Materials	Substance Identifier	Scope[21]	Threshold Limit / Criteria[22]	Exemptions	References[23]	Identification Number
Dibutyl phthalate (DBP)†	CAS#: 84-74-2	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	EU RoHS Directive 2011/65/EU	120621-13
Di-(2-ethylhexyl) phthalate (DEHP)†	CAS#: 117-81-7	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	EU RoHS Directive 2011/65/EU	120621-15
Diisobutyl phthalate (DIBP)†	CAS#: 84-69-5	All products	1000 ppm	Non-EEE has different criteria, see HX-00011-13, HX-00011-14, HX-00011-15	EU RoHS Directive 2011/65/EU	120621-66
Hexavalent chromium and its compounds	Various	Nonmetallic applications (such as paints, pigments, leather, and plastics)	1000 ppm		EU RoHS Directive 2011/65/EU	061020-79
Hexavalent chromium and its compounds	Various	Metallic applications (such as corrosion preventative coatings and conversion coatings)	Not a hexavalent chromium coating as determined by IEC 62321 series of test standards[25]		EU RoHS Directive 2011/65/EU	061020-24

[25] HP-approved test methods are discussed in Section 6 *Supplier Verification.*

Table 12. Class I substances						
Substances and Materials	Substance Identifier	Scope[21]	Threshold Limit / Criteria[22]	Exemptions	References[23]	Identification Number
Lead and its compounds	Various	All products	1000 ppm[26,∞,‡]	EU RoHS exemptions: 5b, 6(a)i, 6(b)i, 6(b)ii, 6(c), 7(a), 7(c)i, 7(c)ii, , 13(a), 13(b)i, 13(b)iii, 15(a). See HX-011-01A for exemption expirations.	EU RoHS Directive 2011/65/EU; California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	061020-12
Mercury and its compounds	Various	All products	1000 ppm[∞,‡]	EU RoHS exemptions: 4(f). See HX-011-01A for exemption expirations.	EU Regulation (EC) 1907/2006, Annex XVII (EU REACH), EU RoHS Directive 2011/65/EU	980408-14

‡ Restrictions for these substances are also listed in the HP Standard 011-02 GSE—Packaging Requirements.

∞ More restrictive limits apply when this substance is used in batteries. See HX-00011-12.

[26] Lead restrictions in PVC, paint, and non-EE are more restrictive.

Class II compounds: Substances are management by regulation or convention other than EU RoHS Directive

Table 13. Class II compounds

Substances and Materials	Substance Identifier	Scope[27]	Threshold Limit / Criteria[28]	Exemptions	References[29]	Identification Number
1,2,5,6,9,10-Hexabromocyclododecane (HBCDD or HBCD)†	CAS#: 25637-99-4, 3194-55-6, 134237-50-6 134237-51-7 134237-52-8	All products	Not intentionally added; 100 ppm if incidentally present[30]		Regulation (EU) 2019/1021 (POPs)	150601-11
Arsenic and its compounds	Various	All products	1000 ppm	Semiconductor chips (die only) and copper foil for printed circuit boards	HP Restriction	090807-98
Asbestos	CAS#: 1332-21-4 and others	All products	Not present		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	980408-11
Bisphenol A	CAS#: 80-05-7	external plastics	300 ppm[31]		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	160701-58

[27] "All products" includes "parts, components, materials, and products", this includes EEE, batteries, and nonelectric and nonelectronic products (such as nonelectronic carrying cases and bags) as well as formulations and print media
[28] The threshold limit is the number listed, reported as ppm by weight in homogenous material, unless otherwise specified.
[29] This column provides background on the source of the restriction. The reference list is not exhaustive and more than the listed reference may apply.
[30] Incidentally present means occurring as unavoidable impurities or unintentional trace contaminants; such incidentally present material is not intentionally added.
[31] Typical levels of residual BPA in plastics are < 100 ppm (see for example, http://www2.mst.dk/Udgiv/publications/2015/05/978-87-93352-24-7.pdf)

Table 13. Class II compounds						
Substances and Materials	Substance Identifier	Scope[27]	Threshold Limit / Criteria[28]	Exemptions	References[29]	Identification Number
Dibutyltin (DBT) compounds	See Table 4	All products	1000 ppm by weight of tin		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	110727-77
Diisononyl phthalate (DINP)	CAS# 28553-12-0, 68515-48-0, 71549-78-5	external plastics, including cords and cables	exposure of 146 µg/day		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	160701-81
Dimethylfumarate (DMF)	CAS#: 624-49-7	All products (leather and desiccant packs)	0.1 ppm		EU Decision 2009/251/EC	090807-44
Nickel	Various	External surface of any product with potential for direct and prolonged skin contact	0.5 µg/cm^2/week. Measurement to be performed using EN 1811:2011.		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-68
Ozone Depleting Substances (ODS)	Refer to Annexes A, B, C, E of Montreal Protocol	All products Manufacturing process	Not present Not used	Refrigeration units in manufacturing facilities or data center facilities	Montreal Protocol	980408-15

Table 13. Class II compounds						
Substances and Materials	Substance Identifier	Scope[27]	Threshold Limit / Criteria[28]	Exemptions	References[29]	Identification Number
Perfluorooctane sulfonates (PFOS) and PFOS salts	See Table 6	All products	Not intentionally added; 1000 ppm if incidentally present[32, 33]	Photoresists or antireflective coatings for photolithography processes Photographic coatings applied to films, papers, or printing plates	Regulation (EU) 2019/1021; Canada Regulation SOR/2008-177	070905-36
Perfluorooctanoic acid (PFOA) and esters	See Table 7	All products	1000 ppm	Spare parts for products made available before 1-Jun-14	Norway Product reg 922 of 2004, 550, 2013	130604-16
Perfluorooctanoic acid (PFOA) and esters	See Table 7	Coatings of any products	1 µg/m^2	Spare parts for products made available before 1-Jun-14	Norway Product reg 922 of 2004, 550, 2013	130604-48
Polychlorinated biphenyls (PCBs)	Various	All products	Not intentionally added; 0.1 ppm if incidentally present[32]		Regulation (EU) 2019/1021 (POPs)	980408-79
Polychlorinated naphthalenes	Various	All products	Not intentionally added		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	041210-90

[32] Incidentally present means occurring as unavoidable impurities or unintentional trace contaminants or impurities; such incidentally present material is not intentionally added.
[33] Calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS.

Table 13. Class II compounds						
Substances and Materials	Substance Identifier	Scope[27]	Threshold Limit / Criteria[28]	Exemptions	References[29]	Identification Number
Polycyclic Aromatic Hydrocarbons (PAHs)	see Table 8	Rubber or plastic material on the external or user accessed surfaces of a product[34]	1 ppm per PAH	Surfaces of internal parts that are not regularly user-accessed such as ceramics in electronic components, connectors, resistors, integrated circuit packaging, lubricants, internal cables, internal fans and printed circuit assemblies.[35]	EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	130604-79
Short chain chlorinated paraffins (SCCPs)	CAS#: 85535-84-8[36]	All products	Not intentionally added; 1000 ppm if incidentally present[32]		Stockholm Convention; Japan Chemical Substance Control Law	020221-58
Tributyltin compounds (TBT)	See Table 4	All products	Not intentionally added; 1000 ppm by weight of tin if incidentally present[32]		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-84
Tributyltin oxide (TBTO)	See Table 4	All products	Not intentionally added; 1000 ppm by weight of tin if incidentally present[32]		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-37
Tris(2-chloroethyl) phosphate (TCEP)	CAS#: 115-96-8	All products	1000 ppm		DC Law 21–08	170703-03

[34] External or regularly user accessed surfaces include but are not limited to black or grey rubber or plastic materials such as case parts, control panels, switches, cables, screens, paper trays, feeders, printer lids, printer cartridge body and carriage, and optical drives.
[35] Products out of scope are: Large scale stationary industrial tools and fixed installations as defined in EU RoHS Directive
[36] Any chlorinated alkane with a carbon length of 10 to 13 atoms and containing at least 48% by mass of chlorine, includes, but is not limited to the following CAS number: 85535-84-8. See HP Standard 011-01B for business-specified restriction for medium chain chlorinated paraffins (MCCPs).

Table 13. Class II compounds						
Substances and Materials	Substance Identifier	Scope[27]	Threshold Limit / Criteria[28]	Exemptions	References[29]	Identification Number
Polychlorinated terphenyls (PCTs)	Various	Preparations (excluding lubricating oils and adhesives)	50 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	980408-94
Triphenyltin compounds (TPT)	See Table 4	All products	Not intentionally added; 1000 ppm by weight of tin if incidentally present[32]		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-87
Arsenic and its compounds	Various	Computer display glass	10 ppm as trace contaminants or background levels, not intentionally added		HP Restriction	101118-42

Class III compounds: Substances which are voluntary phased-out due to the potentially negative effects to the environment or health. These voluntary requirements may be required as specified by the business.

Table 14. Class III compounds

Substances and Materials	Substance Identifier	Scope[37]	Threshold Limit / Criteria[38]	Exemptions	References[39]	Identification Number
TBBPA (Tetrabromobisphenol A)	Various, Additive and Reactive¥	Organic materials	900 ppm		Class III requirement	N/A
Brominated flame retardants (BFRs)	Various	Organic materials	Not intentionally added and 900 ppm Br		Class III requirement	N/A
Polyvinyl chloride (PVC)	Various	Organic materials	Not intentionally added and 900 ppm Cl		Class III requirement	N/A
Phthalates	Various	Organic materials	1000 ppm		Class III requirement	N/A
Antimony and compounds	Various	All parts and products	700 ppm	Ceramics, catalyst, optical glass, resistive layer of resistor chip, solder paste, thermal conduction	Class III requirement	N/A
Beryllium and its compounds	Various	All parts and products	1000	Used as an alloy for connectors and certain electronic components	Class III requirement	N/A
Cobalt dichloride	CAS # 7646-79-9	All parts and products	Not intentionally added and 900 PPM		Class III requirement	N/A

[37] "All products" includes "parts, components, materials, and products", this includes EEE, batteries, and nonelectric and nonelectronic products (such as nonelectronic carrying cases and bags) as well as formulations and print media
[38] The threshold limit is the number listed, reported as ppm by weight in homogenous material, unless otherwise specified.
[39] This column provides background on the source of the restriction. The reference list is not exhaustive, and more than the listed reference may apply. The cited reference is as amended.

Table 14. Class III compounds						
Substances and Materials	Substance Identifier	Scope[37]	Threshold Limit / Criteria[38]	Exemptions	References[39]	Identification Number
Chlorinated flame retardants	Various	Organic materials	Not intentionally added and 900 ppm Cl		Class III requirement	N/A

11 Revision History

Prior revision history

Revision, Date, Change Number	Brief Description of change
S, 23-Jun-14	• Organized the requirements into tables and added the references • Pulled out future and business-specified requirements into two separate Standards, 011-1A and 011-1B, respectively • Updated paragraph about replacing substances • Added BNST • Changed hexavalent chromium threshold criteria to "Not a hexavalent chromium coating as determined by IEC 62321 series of test standards" from "not present" • Removed display screens for projection as an exemption for PVC • Added red phosphorus • Updated Conflict Minerals • Updated the RoHS Compliance section • Added restrictions for lead, mercury, hexavalent chromium, PBBs, and PBDEs in non-lead acid batteries, including packs and coin cell • Updated the Additional Substances Requirements section
S1, 18-Jul-14	• Removed Denmark references for DEHP, BBP, and DBP • Corrected the CAS# for DBB • Added Table 3 for DMF in Table 1
S2, 23-Feb-15	• Added GSE Standard 011-06 GSE – Manufacturing Process Substances Requirements • Added Polychlorinated biphenyls (PCBs) to Table 1 for listing in 011-01 document • Added Polychlorinated biphenyls (PCBs) to Table 2 for "All products" and remove PCBs from Table 3 • Added Antimony trioxide to Table 1 for listing in 011-01A document • Added "Chlorine compounds in the form of polyvinyl chloride…" (080715-88) and "Bromine compounds" (090807-37) to Table 1 for listing in 011-01A and removal from 011-01B document • Added "MCCP" (Identification number: 130604-94) to Table 1 for listing in 011-01A and removal from 011-01B document • Added "GSE Standard 011-06 Manufacturing Process Substances Requirements, Table 1" to footnote 8 • Added Benzidine-based substances to Table 1 and Table 2 • Added Table 14 – Benzidine-based substances

Revision, Date, Change Number	Brief Description of change
T, 1-Jun-15	• Updated Section 3 to include “This includes non-EE and batteries.” • Added to Table 1 in exemptions RoHS exemption 39a and 39b to “Cadmium and its compounds” (ID #: 980408-84) • Added to Table 1 in exemptions RoHS exemption 13b to “Lead and its compounds” (ID #: 061020-12) • Removed from Table 1 RoHS exemption 4d from exemption list “Mercury and its compounds” (ID #: 980408-14) • Removed from Table 1 (ID #: 061020-81), RoHS exemption 4d has expired on 13-Apr-2015 • Removed from Table 1 (ID #: 130604-16) “See HX-011-01A for exemption expiration” and added “(expires 1-Jan-2016)” • Added HBCDD (ID #: 120621-60) to Table 1 from GSE 011-01A document due to effective date 1-Aug-2015 and included exemption – “Recycled material in all products: 1000 ppm” • Added DIBP to Table 2 from GSE 011-01A document with effective date 1-Jul-15 • Added PAH to Table 1 from GSE 011-01A document with effective date 1-Aug-15 • Change two-digit years to four-digit years (e.g., 1-Jul-16 changed to 1-Jul-2016) • Removed Table 1 and added to HP Standard 011-0 document • Removed “All products manufactured before 14-Mar-15” from BNST exemptions • Update to Azo colorants (remove “and aromatic amines”; add “and Azodyes”); added clarification under substance identifier and threshold limit/criteria. • Updated Red Phosphorus scope and added exemptions • Updated Short chain chlorinated paraffins (SCCPs) to HP Restrictions • Added "2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)" to existing GSE restriction of a similar name "Phenol,2 (2H benzotriazole-2-yl) 4,6 bis(1,1-dimethylethyl), CAS#: 3846-71-7" and added additional reference “EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)” • Added to PVC in Substance Identifier “& 9002-86-2” and References “EPEAT and Korean eco-label KOECO” • Added in Table 3 “including coin cell” under mercury and its compounds for batteries with inclusion of reference for Taiwan Battery Regulation (ID Number: 080715-63)

Revision, Date, Change Number	Brief Description of change
	• Added in Table 3 Mercury and its compounds (new ID #: 150601-06) at 5ppm with Canada Products Containing Mercury Regulations & EU Battery Directive 2013/56/EU as references • Removed in Table 3 "coin cell batteries" under mercury and compounds for batteries (ID Number: 140615-61) • Added in Table 3 "Taiwan Battery Regulation" reference (ID # 080715-36) • Added to Table 4 with Azodyes approved test methods • Added "Malaysia" to Section 8 for the list of countries • Rename Table 6 to Aromatic Amines • Added Table 14 Polycyclic Aromatic Hydrocarbons (PAHs) • Removed Benzo[ghi]perylene (CAS#: 191 24 2) from PAH Table 14 • Removed exemption – "Mist suppressants for nondecorative hard chromium (VI) plating (in closed loop systems)" and added "Canada Regulation SOR/2008-178" under references in Table 1 for PFOS (ID #: 070905-36) and in Table 2 for PFOS (ID #: 070905-82 and 070905-13)
01-Aug-2015	• Cloned the standards for HPI
U, 21-Jul-2016	• Added paper sourcing requirements • added restrictions for BPA, DINP, CFR in case plastics • add Hg restrictions related to Canada and US states • remove PFOA exemption for adhesive foil or tape • removed polychlorinated naphthalene limiter • updated conflict minerals dates • remove FGHG Canada Eco-Logo requirement • editorial changes
V, 3-Jul-2017	• modified scope to reflect new GSE structure • removed requirements that were not applicable to all products • added substance disclosure requirements • added Section 8 "Other Environmental Requirements…" • added DC FR law requirements; moved Phenylmercury requirement from HX-00011-01A; added diglyme requirement • Removed spare parts exemption from 160701-87 (Canada Hg requirements) • Clarified scope of 160701-98 (US State Hg requirement) • Modified Conflict Mineral requirement dates

Revision, Date, Change Number	Brief Description of change

W, 26-Jul-2018	• Added Appendix for HPPK supply chain reference only
	• Expanded alternatives assessments section
	• Clarified references are normative
	• Updated Conflict Minerals section
	• Adjusted materials requirements:
	  ○ transferred requirements from HX-00011-01A that come into force during document's revision lifecycle
	  ○ Removed BNST requirement, added DMAC requirement
	  ○ Adjusted PCB, SCCP, and Nickel requirement
	• Editorial changes

X	• Per standard versioning best practices, there is no version X

Y, 13-Sep-2019	• Updated EU POPs Directive reference
	• Adjusted materials requirements:
	  ○ Added REACH phthalate requirement
	  ○ Added non-EEE exemption for PBDEs and phthalates
	  ○ transferred requirements from HX-00011-01A that come into force during document's revision lifecycle
	  ○ added PFOA related compounds to PFOA table
	• Added MDA and MOCA requirements
	• Updated EU POPs reference
	• removed date references from cited standards
	• clarified screening testing is allowed
	• Editorial Changes

Z	• Per standard versioning best practices, there is no version Z

Revision, Date, Change Number	Brief Description of change
AA, 29-Jul-2020	• Added Phthalates test method to Approved Test Methods and IEC Global Standard Testing Methodologies • Added TSCA PBT substance requirements to the Pan-HP mandatory restrictions for all products • Added Leather, hides, and other animal-based product sourcing requirements section • Added Table for polychlorinated biphenyl CAS numbers • Updated References and Identification Numbers for PFOA and its salts; PFOA-related compounds in Pan HP Mandatory Restrictions for All Products table • Updated RoHS Exemptions and assumptions • Added Responsible Mineral Sourcing section • Added biocides general requirements • Added US and China Biocide requirements

HP Standard 011-02 General Specification for the Environment—Packaging Requirements

Document Identifier	HX-00011-02
Revision and Date	AA, 29-Jul-2020
Last Revalidation Date	29-Jul-2020
Abstract	This standard defines HP's global environmental requirements for all packaging used for selling or shipping HP brand and HP-owned brand products.
Applicability	All HP design centers, HP manufacturing facilities, and HP's suppliers, including third-party packaging service providers, of HP brand and HP-owned brand products must comply with HP's General Specification for the Environment (GSE). Non-HP brand products must comply with applicable legal requirements.
Status	Approved

Table of Contents

List of Tables

1 Purpose

HP's General Specification for the Environment (GSE) is a series of standards that includes this standard (HP Standard 011-02) and the standards that are listed in the References section of this standard. The referenced standards shall be considered normative references and are required for application of this standard. This standard defines HP's global environmental requirements for all packaging used for selling or shipping HP brand and HP-owned brand products.

2 Scope

The requirements specified in this standard apply globally to all packaging used for selling or shipping HP brand and HP-owned brand products. All further references to "HP brand products" in this standard include HP-owned brand products. Packaging for non-HP brand products and all parts, components, and materials incorporated into non-HP brand products or which are included in any HP-delivered solution, must meet or exceed the applicable legal requirements in each country in which these third-party products will be sold, leased, or marketed.

This standard, HP Standard 011-02 General Specification for the Environment (GSE)—Packaging Requirements, is a component of HP's General Specification for the Environment (GSE). The GSE consists of the following standards:

- HP Standard 011-00 GSE—Overview (HX-00011-00)

Requirements that apply to all products:

- HP Standard 011-01 GSE—Substances and Materials, All Products (HX-00011-01)
- HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)*
- HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)*
- HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)
- HP Standard 011-06 GSE—Manufacturing Process Substances Requirements (HX-00011-06)

Requirements that apply to specific types of products:

- HP Standard 011-11 GSE—Product requirements, EEE (HX-00011-11)
- HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)
- HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)
- HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)

- HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)
- HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)*

*The restrictions in HP Standard 011-01A apply globally on the future effective date provided, unless an HP business requires an earlier effective date. The restrictions in HP Standard 011-01B are applicable only when and as specified by an HP business. HP Standard 025-01 is applicable to parts and components in scope of the standard.

3 General Packaging Requirements

The restrictions specified in this section apply to all packaging used for selling or shipping HP brand and HP-owned brand products.

3.1 Restricted Substances and Materials

Materials and substances otherwise restricted by the GSE (including in HP Standards 011-01, 011-01A, and 011-01B) must not be used in HP packaging.

3.1.1 Ozone Depleting Substances in Packaging Materials

Chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) listed in the GSE (including in HP Standards 011-01, 011-01A, and 011-01B) must not be used in or for the manufacturing of plastic foam packaging materials (for example, as a foam blowing agent).

Methyl bromide sterilization must not be used on wood packaging.

3.1.2 Heavy Metals in Packaging Materials

Packaging materials and inks used to print on packaging shall not contain intentionally added lead, mercury, cadmium, or hexavalent chromium. The sum concentration of incidentally present[1] lead, mercury, cadmium, and hexavalent chromium shall not be greater than 0.01% (100 ppm) by weight.

3.1.3 Polyvinyl Chloride (PVC)

PVC must not be used in packaging. This restriction does not apply to protective tape covers with a surface area equal to or less than 15 square centimeters (2.35 square inches) and or weighing less than 1 g (0.035 oz.).

3.1.4 Elemental Chlorine

Elemental chlorine shall not be used as a bleaching agent to bleach virgin or recovered content fiber used in paper-based and fiber-based packaging, including in-box documentation.

3.1.5 Phthalates

The phthalates DEHP, BBP, DBP, and DIBP shall not be used in packaging individually or in any combination in concentrations greater than 0.1% (1000 ppm) by weight in any homogeneous material.

See HP Standard 011-01B for a list of phthalates and additional phthalate restrictions.

3.1.6 Cobalt Dichloride

Cobalt dichloride, typically used in silica gel desiccants and humidity indicators, shall not be used in HP packaging solutions.

[1] Incidentally present means occurring as unavoidable impurities or unintentional trace contaminants; such incidentally present material is not intentionally added.

3.1.7 Expanded Polystyrene

Expanded polystyrene loose fill packing is not allowed to be used in HP packaging.

3.1.8 Polybrominated Diphenyl Ethers (PBDEs)

In addition to the requirements for all products related to PBDEs in HX-00011-01, PBDEs shall not be intentionally added in HP packaging materials. If incidentally present[1], PBDEs shall not be present above 500 ppm.

3.1.9 Oxo-biodegradable Plastics

Oxo-biodegradable plastics[2] shall not be allowed for use in HP product packaging.

3.2 Recyclable Materials

All materials used in the packaging systems must be recyclable[3], except where approved by HP.

- Choose materials in which recycling systems are readily available.
    - Suppliers should aim to reduce plastic packaging components whenever possible. HP's preference is for fiber-based alternatives due to their higher amounts of recycled content and higher recycling rates worldwide.
- Packaging components weighing greater than 25 g shall be separable from other packaging components made of dissimilar materials without the use of tools once the product is removed. An example of a method that is not acceptable includes using permanent glue or adhesives to attach foam cushions to corrugated fiberboard.
- Plastics shall be separable from each other based on their marked resin identification code. Exceptions include:
    - Plastic bags (or wrap) affixed with paper labels that meet either of the following criteria:
        - Combined weight of single bag (or wrap) and label is < 25 g
        - Surface area of label is < 50 cm^2
    - Pallets or pallet assemblies
    - Tape, glue, or staples used to construct or close a container
- Use of multi-layered plastic packaging[4] is not allowed in HP product packaging unless the packaging is integral to the functionality of the product and there exists no readily-available alternatives. If this is the case, technical design documents must be on hand to justify necessity and lack of viable alternatives.

3.3 Recycled Content in Plastic-based Packaging

Where plastic packaging is needed and where HP has expressed approval of plastic use, suppliers should aim to utilize high amounts of recycled content.

- Specifically, where Expanded Polyethylene (EPE) foam is used, supplies should utilize **greater than 90% recycled content** whenever possible.

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[2] Oxo-biodegradable plastics are defined as polymers such as PE (polyethylene), PP (polypropylene), and PS (polystyrene) containing extra ingredients (metal salts) and tested according to ASTM D6954 or BS8472 or AFNOR Accord T51-808 to degrade and biodegrade in the open environment from oxidation.

[3] As defined by the Federal Trade Commission (FTC)

[4] Multi-layered plastic packaging is defined as any material used for packaging and having at least one layer of plastic as the main ingredient in combination with one or more layers of materials such as paper, paper board, other plastic polymers, metalized layers, or aluminum foil, either in the form of a laminate or co-extruded structure.

Rigid Plastic Packaging Containers (RPPCs) must have at least 25% postconsumer recycled content. If a container meets one of the following requirements, it is also compliant:

- Refillable or reusable at least 5 times for same or similar purpose
- Source reduced 10 percent (package to product weight ratio) versus similar and/or older packaging
- The RPPC must be recycled at a 45 percent recycling rate (demonstrated by industry to enforcement agency)

A RPPC is defined as a container that is entirely made of plastic, has a relatively inflexible shape or form, is capable of at least one closure (including closure during the manufacturing process), and has a minimum capacity or volume of eight ounces up to a maximum of five gallons. Containers are exempted if they include any type of electronic parts or are manufactured for use in the shipment of hazardous materials and are prohibited from being manufactured with used material by federal packaging material specifications and testing standards.

3.4 Recycled and Certified Requirements for Fiber-based, Wood-based, and Paper-based Packaging

All HP brand paper, fiber-based or paper-based product packaging[5], and wood[6] used in HP products must be derived from certified and recycled sources by 2020.

HP requires that suppliers ensure that the recycled content of all fiber-, wood-, and paper-based packaging stock supplied to HP for a single packaging component or part has an minimum average of 35% recycled content over the life of an HP product. For example, if a corrugated cardboard box is supplied for a certain notebook, the average recycled content of all corrugated cardboard boxes supplied to HP for that product shall be a minimum of 35%.

The following shall be excluded from the calculation of total recycled fiber-based packaging:

- Labels with surface area less than 50 cm^2
- Tape, glue, or staples used to construct or close a wood-based fiber container
- Pallets or pallet assemblies

When specifying recycled content in fiber-, wood-, and paper-based packaging, HP prefers the uses of post-consumer recycled content. It is understood that recycled content may vary from batch to batch for fiber-, wood-, and paper-based packaging. Recycled content is to be certified or verified by an independent 3rd party in accordance with the applicable industry standards.

Table 1. Recycled Content Requirements

Category	Total Recovered Fiber Content; Pre-Consumer + Post-Consumer (% by weight)	Virgin Fiber Content
Paperboard	80%	Must come from certified sources
Corrugated Fiberboard	35%	
Solid Fiberboard	40%	

[5] The requirement for all fiber-based and paper-based product packaging to be derived from certified and recycled sources applies to the box that comes with the product and all paper (including packaging and materials) inside the box.
[6] Wood was added to the commitment in 2019 due to wood now being used in some HP products

Table 1. Recycled Content Requirements		
Category	Total Recovered Fiber Content; Pre-Consumer + Post-Consumer (% by weight)	Virgin Fiber Content
Spiral Wound Tubes	90%	

The remaining virgin fiber content must come from certified sources as outlined above. These materials must meet one of the following criteria::

1) Chain-of-custory certified and carry the certification label.

2) Chain-of-custody certified from the source at least through the converter. This material must be accompanied by the appropriate documentation, for example, invoice or bill of lading, with certification information noted as applicable per a certification standard.

HP will maintain its preference for FSC-certified fiber. PEFC certification or relevant national certification schemes that comply with our Sustainable paper and wood policy can be used in regions where they are recognized to not accept forest conversion, are endorsed by competent independent stakeholders, and ensure a reliable guarantee of responsible sources.

HP partners and suppliers shall maintain documentation and report annually the total annual tonnage of certified and recycled content per certification scheme. These requirements are to support worldwide timber regulations and HP's Zero Deforestation Goal.

3.5 Wood, Paper, and Other Plant-based Packaging Sourcing Requirements

Packaging must not contain any wood, paper, or plant-based material that was illegally sourced from its country of origin. Examples of illegally sourced materials include, but are not limited to, wood or wild plant materials stolen from parks, reserves, or other protected areas; materials harvested without permission or contrary to applicable harvesting regulations; materials for which the applicable royalties, taxes, or fees were not paid; and materials exported in violation of log or other export bans. To meet the due diligence requirements of wood and plant-derived product regulations, suppliers must: 1) Commit to using only legally-sourced wood and plant materials for products and materials supplied to HP; 2) Determine the country of origin and genus and species of wood and plant-derived materials; and 3) Maintain and make available records that verify the legal origin of plant materials, as set forth in the Supplier Verification section of HP Standard 011-00. The worldwide requirements in this paragraph address the requirements of the following regulations: U.S. Lacey Act Amendments of 2008 (codified at 16 U.S.C. §§ 3371-3378) effective 22-May-2008; the EU Timber regulation (Regulation (EU) No 995/2010) effective 20-Oct-10; and the Australian Illegal Logging Prohibition Act (No. 166, 2012) effective 29-Nov-12.

3.5.1 Australian Illegal Logging Prohibition Act Import Declaration

Timber products (including packaging) listed in “Schedule 1- Regulated timber products” of the Illegal Logging Prohibition Amendment Regulation 2013 (No. 1) must include a customs declaration when entering Australia. This requirement does not apply to packaging that is directly supporting or protecting a product, such as pallets or boxes carrying a product or to sundries that accompany the product (such as warranty cards, labels, and manuals). It also does not apply to a regulated timber product that is entirely made of recycled material, as well as to the part of a regulated timber product that is partially made from recycled material.

3.6 Secondary Packaging Restrictions

When possible, products should be shipped in their primary sales packaging[7] to avoid excessive packaging material use. There are some exceptions:

- If the original primary packaging would not survive the prescribed distribution channel then secondary packaging, or overpacking, is allowed in the form of boxes or cartons used to protect products in their primary package during transportation and distribution. If used, **the volume of the secondary packaging must be less than or no more than two times the volume of the primary package of the item or items.**
- An exemption may also be granted to allow secondary packaging when the primary package graphics may pose a risk of theft. The exemption must be SKU specific and must be documented and approved by the approving packaging authority. Copies of this documentation must be held by the approver and the requester, as set forth in the Supplier Verification section of HP Standard 011-00. The secondary packaging size restriction identified above continues to apply.
- Items suitable for shipment in an envelope or padded envelope and which do not require a box for protection against shipping damage should not be packed in a box and must use an envelope.

3.7 Country-Specific Packaging Restrictions

3.7.1 India

Under the Plastic Waste Management Rules, 2016, **plastic sheets or similar material (for example, shrink wrap, polybags, etc.) used as part of the primary sales packaging[7] in India shall not be less than 50 microns in thickness.** Exemptions include where the plastic sheet is essential to the functionality of the product or the increased thickness of the plastic sheet impairs the functionality of the product.

3.7.2 Korea Recyclability Certification for Packaging Material

South Korea requires certification for recyclability of all types of plastic packaging including film and sheet type (e.g. plastic bags), foam type (e.g. expanded polystyrene foam), and other synthetic resin packaging material (e.g. containers and trays).

All HP products that use plastic packaging are in scope of this requirement.

The certification shall be completed before first sale of product that uses each type of plastic packaging listed in Table 2. Certification requires submission of either evaluation report issued by accredited test labs in Korea or manufacturer's self-evaluation result with supporting documents including MSDS or material test report.

HP businesses and suppliers who plan to use a new type of plastic packaging must check if the packaging is covered by existing certification, and complete certification if it is confirmed as not covered by existing certifications.

Table 2. Korea Packaging Recyclability Evaluation Criteria

Type of Material	Example	Easy to Recycle	Difficult to Recycle (If meets any of the following)
Foam Type	EPS, EPE, EPP, etc.	White color and single material Note: Black color for EPE and EPP is accepted if recycled content is used.	• Other than white color • Multiple materials that are not manually separable

[7] Primary sales packaging is defined as packaging that is included in a sales unit to the final user or consumer at the point of purchase.

Table 2. Korea Packaging Recyclability Evaluation Criteria			
Type of Material	Example	Easy to Recycle	Difficult to Recycle (If meets any of the following)
Film/Sheet Type	LDPE/HDPE bag, film, bubble wrap, etc	Any material not evaluated as Difficult to Recycle	• Packaging material with label made of non-plastic that is not easily separable manually (example: PE bag with paper label) • PVC material
Container, Tray and Other Type	Tray, blister, clamshell, etc.	Any material not evaluated as Difficult to Recycle	• Packaging material with label made of different material that is not manually separable • PVC material

Plastic packaging material that is certified as "Difficult to Recycle" shall have a marking indicating such. See Section 4.2.2 of HP Standard 011-02 for more details on this marking requirement.

3.7.3 China Volatile Organic Compound (VOC) Limits

China has requirements to limit the Volatile Organic Compounds (VOCs) and restrict hazardous substances for materials in scope (e.g. coatings, adhesives, etc.) that are manufactured in or imported into China, or applied to packaging in China. Printing ink, coatings, adhesives, and cleaning agents applied to packaging in China must meet the requirments in the following standards:

- GB 30981-2020 Limit of harmful substances of industrial protective coatings - Implementation date December 2020
- GB 33372-2020 Limit of volatile organic compounds content in adhesives - Implementation date December 2020
- GB 38508-2020 Limit of volatile organic compounds content in cleaning agents – Implementation date December 2020
- GB 38507-2020 Limit of volatile organic compounds content in printing inks – Implementation date April 2021

For more details regarding the requirements, see HP Standard 011-06 Manufacturing Process Substance Requirements.

4 Packaging Labeling Requirements

The labeling requirements specified in this section apply to all packaging used for selling or shipping HP brand and HP-owned brand products. Additional product labeling requirements that may affect packaging can be found in the HP Standard 011-11 and HP Standard 011-12.

4.1 General Material Coding

Where the materials listed in Table 3 are used in packaging, the applicable coding is required to be embossed or marked on all packaging components. An example is shown in Figure 1 with the material identification codes and abbreviated terms in Table 3. The following requirements must be met:

- The Code must be printed, molded or embossed on the packaging and must be durable, clear, and legible, including when the packaging is opened. The abbreviations must appear in capital letters.
- The symbol, not including the lettering, must be between 1.27 cm (0.5 in) and 2.54 cm (1.0 in) in height. Smaller symbols are permitted when the part size does not allow the above minimum sizes requirements to be met.

- The Code must be placed in an inconspicuous location on the packaging component, such as the bottom or the back.
- The term “recyclable” or other environmental claims must not be placed in proximity to the Code.

This coding requirement does not apply to:

- Plastic packaging weighing less than 25 g or with surface area less than 50 cm^2
- Plastic protective and stretch wrapping
- Packaging pieces such that the shape or surface makes marking problematic
- Tape
- Labels
- Small plastic bags and bubble bags 128 mm (5 in) by 178 mm (7 in) or smaller, not printed with other information
- Paper-based and fiber-based packaging components, such as corner boards, corrugated inserts, slipsheets, and so forth that are not marked in any way with other information

For composite packaging (defined as packaging made of different materials which cannot be separated manually and none of which exceeds a share of 95 percent by weight), the material codes are listed in Table 3 and the abbreviation is “C/” plus the abbreviation for the predominant material. For example, the material code “90” and abbreviation “C/PET” is the appropriate marking for a composite that is predominantly Polyethylene Terephthalate (PET) with a layer of aluminum.

Note that the material abbreviation "Other" (material code "7") should only be used when the material in question is made from a polymer chemistry not described by codes 1-6. However, material code “7” should not be used for a single plastic sheet containing two or more layers of different plastic polymers.

For a single plastic sheet containing at least two layers of different plastic polymers, the appropriate material code is that of the predominate plastic polymer, as listed in Table 3. Likewise, the applicable material abbreviation is that of the predominate plastic polymer (as listed in Table 3) followed by "+" to indicate additional plastic types. For example, the material code "4" and the abbreviation "LDPE+" would be used for a plastic sheet made of predominately Low Density Polyethylene (LDPE) with small amounts of other plastic polymers, such as nylon or PET.

Figure 1. Packaging Material Code

Table 3. Packaging Material Identifications Codes and Abbreviations		
Material	Abbreviation	Number
Plastics		
Polyethylene Terephthalate	PET	1

Table 3. Packaging Material Identifications Codes and Abbreviations		
Material	**Abbreviation**	**Number**
High Density Polyethylene	HDPE	2
Low Density Polyethylene	LDPE	4
Polypropylene	PP	5
Polystyrene	PS	6
Other resins	OTHER	7
Paper		
Corrugated fiberboard	PAP	20
Noncorrugated fiberboard	PAP	21
Paper	PAP	22
Metals		
Steel	FE	40
Aluminum	ALU	41
Wood		
Wood	FOR	50
Cork	FOR	51
Fabrics		
Cotton	TEX	60
Jute	TEX	61
Glass		
Glass clear	GL	70
Glass green	GL	71
Glass brown	GL	72
Composite Packaging		
Paper and cardboard/miscellaneous metals	C/XXX*	80
Paper and cardboard/plastic		81
Paper and cardboard/aluminum		82
Paper and cardboard/tinplate		83
Paper/cardboard/plastic/aluminum		84
Paper and cardboard/plastic/aluminum/tinplate		85
Plastic/aluminum		90

Table 3. Packaging Material Identifications Codes and Abbreviations		
Material	Abbreviation	Number
Plastic/tinplate		91
Plastic/miscellaneous metals		92
Glass/plastic		95
Glass/aluminum		96
Glass/tinplate		97
Glass/miscellaneous metals		98
*For composites, the material abbreviation is “C/” plus the abbreviation for the predominant material; for example, “C/PET” is the appropriate marking for a composite that is predominantly Polyethylene Terephthalate (PET) with a layer of aluminum. *For a single plastic sheet containing at least two layers of different plastic polymers, the appropriate material abbreviation is that of the predominate material followed by "+"; for example, "LDPE+" is the appropriate marking for a plastic sheet that is predominately Low Density Polyethylene (LDPE) with small amounts of other plastic polymers.		

4.2 Country-Specific Labeling

The following countries have specific labeling requirements that must be met, in addition to the requirements identified in other sections of this document. Suppliers are required to comply with all applicable labeling laws whether or not they are expressly included in this standard.

4.2.1 Japan

Material identification marks are mandatory on paper and plastic containers and packaging, in addition to steel and aluminum containers and PET bottles. Marks are mandatory on packaging of products for household use. Packaging of products that can go to both household consumers and business custonmers is also in scope of the marking requirement.

The guidelines for the Japanese material labeling requirements indicate the following major points:

- The vertical size of the marks shall be 6 mm (0.24 in) or more for printing and 8 mm (0.31 in) or more for embossing.
- The following are out of scope of this marking requirement:
  - Packaging made of corrugated cardboard
  - Bands / tapes made of any material
  - Packaging which do not become unnecessary when removed from the contents or which are a part of the merchandise (e.g. CD sleeve).
- There are exemptions for packaging that has no existing printing, is too small (less than 50 cm^2), or when, due to shape, affixing the label is not possible. However, if any of these packaging components are part of a packaging system (such as an outer film with no labeling, bottle, and small cap) the exemptions do not apply. Either each component must be labeled or:
  - For packaging that is either too small or of an odd shape, the identification mark shall be placed on another packaging component in addition to its own mark.
  - Product with multiple packaging which consists of separable components, such as packaging for a PC (the corrugated cardboard box, outer film, plastic bag, and buffer), or which consists of outer packaging and inner packaging contained therein, marks for respective components may be collectively placed on one of them if they are to be discarded at almost the same time. In this case, the names of components (see the PC example) shall be indicated near their respective marks.

Paper Containers/Packaging
Except
- Corrugated cardboard
- Paper drink packs with no aluminum coating

Plastic Containers/Packaging
Except PET Bottles for
- Beverages
- Soy sauce

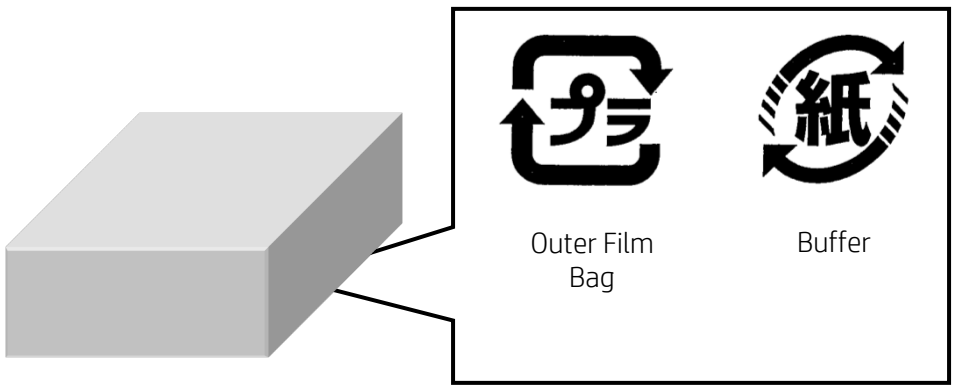
PET Bottle

Steel Can

Aluminum Can

Example: A set of PC packaging

Example of Indication



Target of Indication	Exemption of Indication
Outer Film (Plastic) Bag (Plastic) Buffer (Molded Pulp)	Box (Corrugated Cardboard) CD Sleeve (Not discarded to keep CD-ROM) Plastic Band (Not a “packaging or container” defined by the law)

Although not mandatory at this time, indication of material under the mandatory marking is preferable by using signs prescribed by).

4.2.2 Korea

South Korea requires material identification marks for all types of **plastic packaging** including film and sheet type (for example, plastic bags), buffer type (for example, expanded polyethylene foam), and all other synthetic resin packaging material (for example, containers and trays). The Korean logo may be displayed along with the General Material Coding described in Section 4.1. All HP products are in scope of this requirement.

NOTE: The regulation strictly applies ONLY to the packaging material in scope, and the logo must NOT be applied on materials not in scope of the regulation. For example, paper carton boxes are not in scope of the regulation, therefore printing the logo on carton boxes is not allowed.

The following packaging materials are exempt from this Separate Discharge Marking requirement:

- Packaging materials whose surface is less than 50 cm^2 (7.75 in^2).
- Plastic sheet and film with a surface area less than 100 cm^2 (15.5 in^2). Plastic bags are included in the scope of plastic sheet and film. Example for bags: A 6 cm wide x 10 cm tall bag that uses 120 cm^2 plastic film, exceeding the 100 cm^2 limit, must be marked unless otherwise exempt.
- Packaging components with a volume less than 30 milliliters (1.01 fl oz.) or a capacity less than 30 grams (1.06 oz.) measured by weighing the amount of water that the container can hold.
- Packaging material on which it is technically difficult to print, engrave, or label due to elements or structural properties.
- Plastic film or sheet packaging materials with a thickness less than 20 microns (µm).
- Plastic bags, plastic sheet, and plastic film packaging materials that do not have any printing, engraving, embossing, or labeling.
- Packaging which is not discharged by end user, but collected and discharged by manufacturer (for example, packaging of service parts which is collected by customer service engineer).

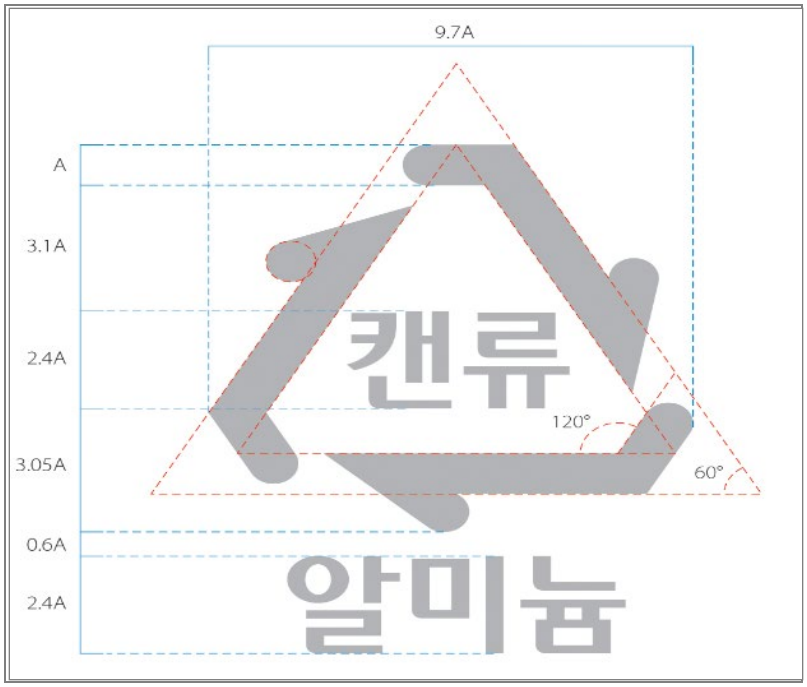
The design consists of the triangular recycling symbol, text inside the symbol, and text below the symbol. Text inside the symbol is the material type name and it must be written in Korean. The text below the symbol is the material composition name and it should be written in English. For more details on the text, refer to the Table 4.

Table 4. Korean Discharge Mark Design Reference

Text inside the symbol (Material type name)	Translation	Color of the symbol (optional)	Text below the symbol (Material composition name)
페트	PET	Yellow	(None)
플라스틱	Other plastics than film and sheet type plastics and PET	Blue	HDPE, LDPE, PP, PS, PVC, OTHER
비닐류	Film and sheet type plastic	Purple	

"OTHER" as material composition name is used for plastics other than HDPE, LDPE, PP, PS, PVC, or plastics that consist of more than two plastic compositions, or plastics with other material (for example, metal) coated or attached.

Design details



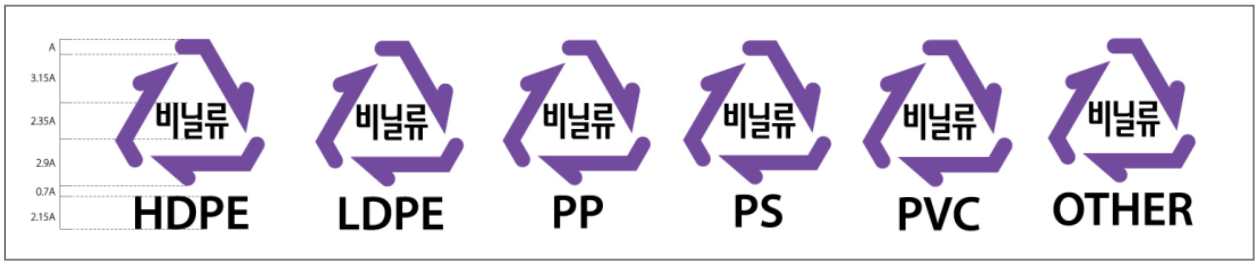
- The triangular recycling symbol (excluding the "material name" text below it) must be larger than 8 mm in width and length.
- The Material type name inside the symbol must be written in Korean. The Material composition name below the symbol should be written in English.
- The extension of each side of the symbol is a regular triangle, whose inside angle is 60° and outside angle at the bended part of the arrow's end is 120°.
- Given that the width of the symbol line is "A", the height of the inside text is: 2.4A if the length of the inside text is 2 in Korean character (PET, can, paper, glass), 2.35A if the length of the inside text is three (film and sheet type plastic, paper pack), and 2.2A if the length of the inside text is four (plastic). And the space between the symbol and material composition text is 0.6A.
- The color of the symbol must be distinct from other colors used on the packaging, to make the symbol clearly visible (this is not applicable to engraved or embossed labels). The mark can be printed in a single color. If the mark is printed in multiple colors, it is recommended to use the designated color for the symbol according to the material type name (see the note that follows), which is listed in Table 4. Examples of the marks using the designated color are illustrated below.
- The label is to be located on the front or side flank or around the barcode of the component, unless it is impossible, in which case the mark could be located on the bottom or lid of the package.

NOTE: The color for material type is defined in another Ministry directive providing guideline on design of separate discharge container for recyclable material. The intention of the recommendation on the color use is to match the colors of the container and the symbol.

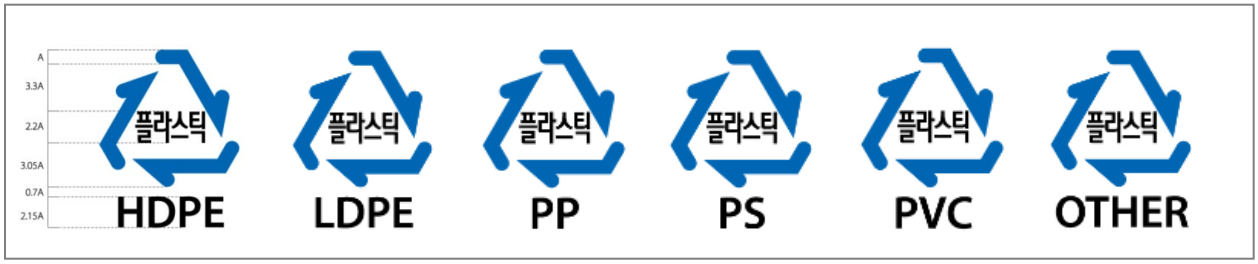
Korea Separate Discharge Mark examples with design guideline

The mark can be printed in a single color. If the mark is printed in multiple colors, it is recommended to use the designated color for the symbol according to the material type name.

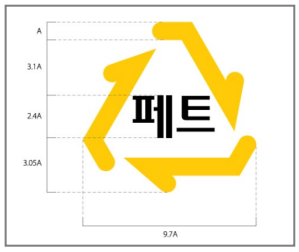
Film and sheet type plastic



Plastic

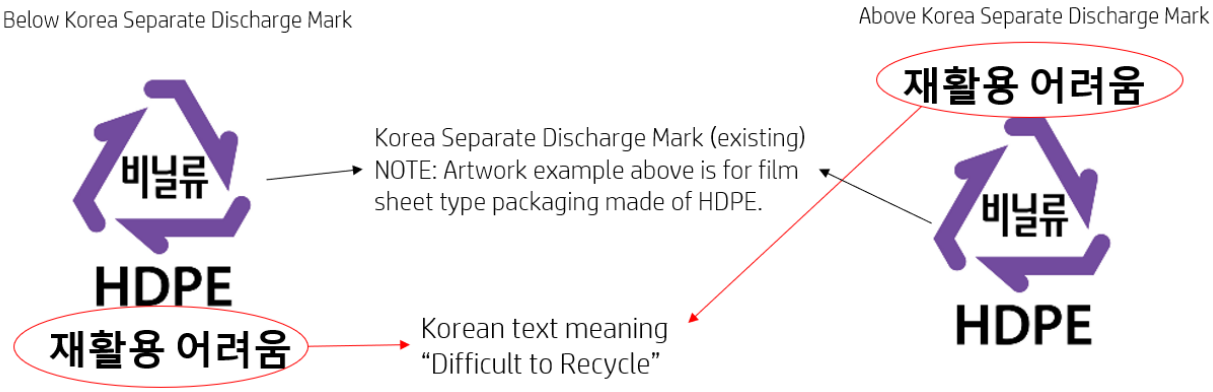


PET



Any plastic packaging certified as “Difficult to Recycle” by the Korean government must have an additional marking for this certification result. See section 3.7.2 of HP Standard 011-02 for more details on the Korea Recyclability Certification for Packaging Material.

Below is an example of a marking for film/sheet type packaging made of HDPE that may have a paper label and would therefore be certified as “Difficult to Recycle”. The additional marking for this certification result is a Korean text meaning “difficult-to recycle”, which must be placed right above or below Korea Separate Discharge Mark. Font size must be same as plastic material name (e.g. HDPE).



4.2.3 Taiwan

Taiwan requires the use of a four-arrow symbol on all containers (either on the container itself, the inner or outer wrapping, or on the packaging label) that are subject to recycling under the Taiwan Waste Act. The in-scope containers include those used for cleaning agents, coloring agents, pigments, dyes, ink, lubricating oils, lubrication agents, paper tissues, wet wipes, desiccants, etc. Containers are defined as "packaging that is made from [specified] materials, is used to hold, and is not in the form of bag, film, cloth, and foil." Containers refers to packaging made mainly with the purpose of being filled, and that are mainly filled with articles that are not packed in bags, plastic wrap, cloth, foil, etc. Containers do not include those with a volume of over 17 liters (4.5 gallons). **This does not apply to packaging such as corrugated or fiber board containers, or cushioning materials.**

The four-arrow symbol must be marked on all subject containers and packaging sold on the Taiwan market, **for both household and business use** (such as restaurants or business stores). The manufacturer must label the packaging correctly and pay the corresponding fees.

The packaging materials that require this symbol are:

- Aluminum
- Steel (refers to steel sheet)
- Glass
- Paper that is waxed, laminated/coated with plastic, or laminated with aluminum (does not include corrugated or fiber board containers)
- Aluminum Foil Pack (such as Tetra Pak®, paper/aluminum foil/plastic composite)
- Plastics: PET, EPS (for disposable dishware), PS, PVC, PE, PP, or other plastics
- Plant fiber (applies to disposable dishware, does not include corrugated or fiber board containers)

4.2.4 France

France has a requirement for a logo called the "Triman" with the purpose of implementing a common set of signage to aid in the sorting of materials and contribute to an increase in the rate of collection of waste and recycling. Implementation must be done by any company responsible for placing a recyclable product on the market which is subject to a system of extended producer responsibility (EPR). Only **paper-based and fiber-based packaging for products intended for household use** need the signage (for example, cardboard boxes).

The signage should consist of the following pictogram:

The intent is to help consumers sort their packaging correctly, so the preference is to apply the logo to each piece of paper-based and fiber-based packaging. However, if there is a reason it cannot be applied to each piece of packaging (due to space constraints, etc.), then it can be applied (in order of preference) to primary packaging, in-box materials, or added to a website.

The logo must be:

- Visible, readable, understandable, and indelible. It is not hidden, veiled, nor separated by any other instruction or picture.
- At least as large as the dimension of other markings. In the absence of such markings, the pictograph should measure at least 1 cm x 1 cm. In the event of technical constraints, in particular packaging of small size, the pictograph should be no smaller than 0.6 cm x 0.6 cm.
- In the same visual field or, if not possible, is as accessible as the information related to the end-of-life management
- It cannot be affected by other contradictory messages, indications, or signage that might conflict with the Triman pictograph or undermine the consumer's understanding of the Triman message at the time an item is discarded.
- Consist of contrasting colors

This logo also needs to be placed near the Green Dot logo as described in Section 4.2.5.

4.2.5 Europe Green Dot

The Green Dot logo should be applied to packaging for which a fee has been paid to a qualified national packaging recovery organization that has been set up in accordance with the principles defined in European Packaging and Packaging Waste Directive 94/62 and the respective national law. Apply the Green Dot logo to **all primary sales packaging[8] intended for household use in EMEA**. Do not apply the logo to packaging intended for business use, unless the packaging is the same as the packaging intended for households. Marking of secondary and tertiary packaging is optional.

The countries where it is mandatory to apply the Green Dot logo are Cyprus, France, Portugal, and Spain.

The logo must be:

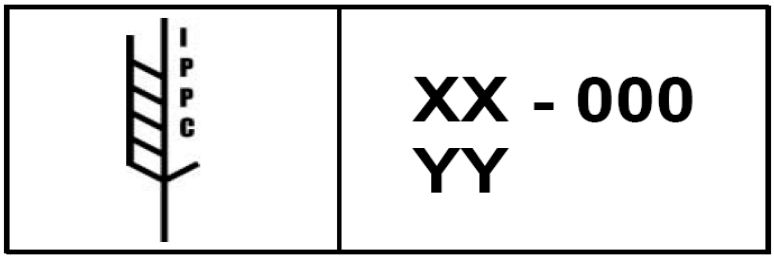
- Visibly part of the sales packaging
- Marked on the front, back, or sides
- Should be in proportion to the pack
- Should remain visible on the packaging throughout its life, even after being opened
- Must stand vertical to the text on the packaging

4.3 Packaging and Pallets Made of Wood

4.3.1 Pallet Treating and Marking

Except when designated by HP for domestic use solely within the country of origin, or where the shipping entity has specifically determined that the country of destination will accept untreated pallets, all packaging and pallets made of wood must be treated and marked in accordance with the provisions of the International Standard for Phytosanitary Measures (ISPM) #15: *Guidelines for Regulating Wood Packaging Material in International Trade*.

[8] Primary sales packaging is defined as packaging that is included in a sales unit to the final user or consumer at the point of purchase.



The mark must include the following:

- IPPC symbol
- ISO two-letter country code followed by a unique number assigned by the National Plant Protection Organization (NPPO) to the producer of the wood packaging material, who is responsible for ensuring appropriate wood is used and properly marked
- The IPPC abbreviation for Heat Treatment (HT)
  Note: Methyl bromide (MB) fumigation is not allowed as stated in Section 3.1.1.

4.3.2 Brazil Pallet Declaration

Brazil requires a declaration for wooden packaging exported, imported, transshipped, and in transit cargos (passage) through Brazil. The declaration requires the following information:

1) Is there wooden package? YES or NO

2) What kind of wooden package?

a. Wooden Package Material: Treated and Certificated (treated material and/or fumigated with certification);

b. Wooden Package Material: Processed (processed material);

c. Wooden Package Material: Not treated and Not Certificated (not treated material and/or fumigated with certification).

5 References

Each of the following standards forms a part of HP's GSE and is incorporated herein by reference:

HP Standard 011-00 General Specification for the Environment—Overview (HX-00011-00)

HP Standard 011-01 General Specification for the Environment—Substances and Materials Requirements, All Products (HX-00011-01)

HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)

HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)

HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)

HP Standard 011-06 GSE—Manufacturing Substances Requirements (HX-00011-06)

HP Standard 011-11 GSE—Product requirements for EEE (HX-00011-11)

HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)

HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)

HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)

HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)

HP Standard 014-02 Supplier Requirements for Safe and Legal Products

HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)

HP's Sustainable Paper and Wood Policy

2008 United States Lacey Act amendments (codified at 16 U.S.C. §§ 3371-3378)

EU Timber Regulation (EU) No 995/2010

Australian Government's Illegal Logging Prohibition Act 2012

JIS 6899-1 (ISO 1043-1), Plastics - Symbols and Abbreviated Terms - Part1: Basic Polymers And Their Special Characteristics

ASTM D7611 – Standard Practice for Coding Plastic Manufactured Articles for Resin Identification[9]

European Directive 94/62/EC on Packaging and Packaging Waste of 20 December 1994

German Packaging Ordinance - The Ordinance on the Avoidance and Recovery of Packaging Wastes

Containers and Packaging Recycling Law (Japan Ministry of Trade, Economy and Industry)

Korean Presidential Enforcement Decree of Dec. 18, 2002, the *Guideline of the Separate Discharge Mark System* of December 2002 (Ministry of Environment Notification No. 2002-195), and its amendment of December 17, 2003 (Ministry of Environment Notification No. 2003-213) and of Jan. 26, 2004 (Ministry of Environment Notification No. 2004-9) and of Sept 27 2010 and of August 29, 2019 (Ministry of Environment Public Notice No.2019-645, 646)

[9] The ASTM D7611 Standard was revised to change the symbol to a solid triangle, however the applicable laws have not been updated to reflect this change

Korean Electric Appliances Safety Control Act

International Standard for Phytosanitary Measures (ISPM) #15*: Guidelines for Regulating Wood Packaging Material in International Trade*

Taiwan Waste Act

France Triman Requirements

Green Dot Logo

India Plastic Waste Management Rules, 2016:

China Volatile Organic Compound (VOC) and Hazardous Substances limits:

- GB 30981-2020 Limit of harmful substances of industrial protective coatings
- GB 33372-2020 Limit of volatile organic compounds content in adhesives
- GB 38508-2020 Limit of volatile organic compounds content in cleaning agents
- GB 38507-2020 Limit of volatile organic compounds content in printing inks

6 Revision History

Prior revision history

Revision, Date, Change Number	Brief Description of change
P, 01-Aug-2012 DCN 03139	Added 3.5 Elemental Chlorine language Revised 3.6 Recyclable Materials language Added 3.7, 3.7.1 and 3.7.2 Recycled content requirements Revised 4.1.1 Country-Specific Labeling - Japan
Q	No Revision Q was issued, to align all documents to the same revision letter.
R, 3-Jun-2013	Added 3.6 Phthalates requirements Revised 4.1.1 Country-Specific Labeling - Japan Revised 4.1.3 Country-Specific Labeling – Taiwan Revised 4.4 Wood, Paper, and Other Plant-based Packaging Restrictions
S, 23-Jun-14	Revised 3.8 HP's Approach to Recycled and Certified Fiber Content in Packaging Revised 4.1 General Material Coding
T, 01-Jun-15	Revised 4.2.2 Korean Logo Added 4.2.4 France Triman Logo Added 4.4.5 Europe Green Dot Added Appendix A Use of Green Dot symbol in Europe
U, 21-Jul-16	Revised 3.1.2 Heavy Metals in Packaging Added 3.1.6 Expanded Polystyrene Added 3.3 Recycled Content in Plastic-based Packaging Revised 3.4 Recycled and Certified Fiber Content in Paper-based Packaging Revised 4.2.3 Taiwan Revised 4.2.5 Europe Green Dot Added 4.3.2 Brazil Pallet Declaration Removed Appendix A Use of Green Dot Symbol in Europe

V, 3-Jul-2017	Added 3.1.6 Cobalt Dichloride Revised 3.2 Recyclable Materials Revised 3.4 Recycled and Certified Fiber Content in Paper-based Packaging Revised 3.5 Wood, Paper, and other Plant-based Packaging Requirements Added 3.5.1 Australian Illegal Logging Prohibition Act Import Declaration Added 3.7 Country-Specific Packaging Requirements Added 3.7.1 India Revised 4.1 General Material Coding
W, 26-Jul-2018	Added oxo-biodegradable plastics restriction Clarified in-box documentation is part of packaging Editorial changes
X	Per standard versioning best practices, there is no version X
Y, 13-Sep-2019	Clarified Heavy Metals in Packaging Materials requirement to include incidentally present substances Modified phthalates requirement to align with REACH Annex XVII Added PBDE requirement Clarified Zero Deforestation requirements Added definition of “incidentally present” Editorial changes
Z	Per standard versioning best practices, there is no version Z
AA, 29-Jul-2020	Bold line on 35% min recycled content for fiber-based packaging. Restructured Recycled and Certified Fiber based Packaging section Added aspirational language of paper over plastic Added aspirational language for recycled content in EPE Added sentence to Japan recycling logo Added Japan Recycling Logo Clarified language on secondary packaging restrictions Added China VOC requirement Updated Korea packaging requirements with latest amendment

HP Standard 011-06 General Specification for the Environment—Manufacturing Process Substances Requirements

Document Identifier	HX-00011-06
Revision and Date	F, 29-Jul-2020
Last Revalidation Date	29-Jul-2020
Abstract	This Standard defines HP's global environmental requirements for restricting certain substances in the manufacturing of HP brand and HP-owned brand products.
Applicability	All HP design centers, HP manufacturing facilities, and HP's suppliers of HP brand and HP-owned brand products must comply with HP's General Specification for the Environment (GSE). Non-HP brand products must comply with applicable legal requirements.
Status	Approved

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Tables

1 Purpose

This Standard defines HP's global environmental requirements for restricting certain substances used in the manufacturing processes to produce HP brand and HP-owned brand products, including parts, components, and materials that are incorporated into HP brand and HP-owned brand products.

2 Scope

The requirements specified in this standard apply to all manufacturing processes used to produce HP brand and HP-owned brand products and the manufacturing processes for all parts, components, and materials incorporated into HP brand and HP-owned brand products. These requirements are in addition to those set forth in HP Standards 011-01 and 011-01A. All further references to "HP brand products" in this Standard include HP-owned brand products. Manufacturing processes for non-HP brand products and all parts, components, and materials incorporated into non-HP brand products or which are included in any HP delivered solution, must meet or exceed the applicable legal requirements in each country in which these third-party products are manufactured.

This standard, HP Standard 011-06 General Specification for the Environment—Manufacturing Process Substances Requirements, is a component of HP's General Specification for the Environment (GSE). The GSE consists of the following standards:

- HP Standard 011-00 GSE—Overview (HX-00011-00)

Requirements that apply to all products:

- HP Standard 011-01 GSE—Substances and Materials, All Products (HX-00011-01)
- HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)*
- HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)*
- HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)
- HP Standard 011-06 GSE—Manufacturing Process Substances Requirements (HX-00011-06)

Requirements that apply to specific types of products:

- HP Standard 011-11 GSE—Product requirements, EEE (HX-00011-11)
- HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)
- HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)
- HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)
- HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)
- HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)*

*The restrictions in HP Standard 011-01A apply globally on the future effective date provided, unless an HP business requires an earlier effective date. The restrictions in HP Standard 011-01B are applicable only when and as specified by an HP business. HP Standard 025-01 is applicable to parts and components in scope of the standard.

3 Manufacturing Process Substances Requirements

As outlined in the HP Supplier Code of Conduct, suppliers shall identify, evaluate, and control occupational health and safety hazards through a prioritized process of hazard elimination, engineering controls, and/or administrative controls. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.

In addition to the code of conduct requirements, the use of certain substances in the manufacturing of HP brand products is restricted due to international agreements, regulatory restrictions, voluntary initiatives, and concerns over human health or environmental risks. These restrictions are supplementary to any applicable national, state, or local environmental or workplace safety restrictions. Worker exposure to the listed and other hazardous substances must not exceed occupational exposure limits and chemical formulations must comply with all applicable legal restrictions, including any subsequent restrictions that establish stricter limits.

When replacing substances, alternatives must have a lower potential impact to human health and the environment and meet HP Business performance and cost criteria. The BizNGO materials selection principles constitute an overarching chemical management approach that should be used to establish the governing principles and constraints when performing a chemical alternatives assessment. . There are many tools available to perform an alternatives assessment. The Organisation for Economic Cooperation and Development (OECD) has a "toolbox" that is designed to help organizations choose an appropriate method of alternatives assessment. Non-chemical alternatives should be considered first, such as mechanical polishing instead of using a solvent. The following sources will help to identify potential alternatives:

- Toxic Use Reduction Institute (TURI), CleanerSolutions database, Chemical Data Commons, chemsec Marketplace, EPA's Safer Chemicals Ingredients List, SUBSPORT, Green Chemistry and Commerce Council, and Interstate Chemicals Clearinghouse.
- Literature search of the chemical of concern and any possible alternatives by using Scifinder, Google scholar, patents, academic research, government reports, technical reports, marketing literature, and industry magazines.
- Ask chemical companies / formulators about available alternatives. Chemical companies that focus on finding alternatives to hazardous chemicals may be helpful.

The HP PCA Spot Cleaner Standard lists acceptable alternatives for removing contaminants and/or other residues from small areas of Printed Circuit Assemblies (PCAs) and lists some additional spot cleaner restrictions due to reliability reasons.

HP will periodically request substance disclosure information for manufacturing process substances used to produce HP products and parts, components, and materials incorporated into HP products. Suppliers are expected to understand what substances are used to produce the products, parts, components, and materials that they sell to HP. Suppliers must respond with the requested information by the stated due date.

Table 1: Pan-HP Mandatory Restrictions for All Manufacturing Process Substances					
Substances[1]	Substance Identifier	Threshold Limit / Criteria[2]	Exemptions	References[3]	Identification Number
Methanol	CAS#: 67-56-1	Not used as a cleaner, degreaser, or mold release agent above 10% by volume For other applications, exposure must be limited to <25 mg/m^3 8-hour time weighted average (TWA)		HP Restriction; PCA Spot Cleaner Standard GBZ 2.1 2007	150309-01
Benzene	CAS#: 71-43-2	Do not use		HP Restriction; PCA Spot Cleaner Standard	150309-02
Toluene	CAS#: 108-88-3	Not used as a cleaner, degreaser, or mold release agent For other applications, exposure must be limited to <20ppm 8-hour TWA	Solvent in paints and inks	HP Restriction; PCA Spot Cleaner Standard ACGIH	150309-03

[1] Substance identifiers listed may not represent a complete list of substances where the restricted chemical may be found. For example, n-hexane may be found in many different petroleum distillation products (such as light naphtha). HP manufacturing entities and suppliers are expected to communicate with their chemical suppliers to ensure that the listed substances are not present in chemical formulations above the established limits.

[2] Threshold Limit/Criteria values are in some cases substantially higher than limits on restricted substances in finished products set forth in other sections of the GSE. This is because substances in finished products are usually found in smaller concentrations than in the chemical formulations used to produce them.

[3] This column provides background on the source of the restriction. The reference list is not exhaustive, and more than the listed reference may apply. The cited reference is as amended.

Table 1: Pan-HP Mandatory Restrictions for All Manufacturing Process Substances					
Substances[1]	Substance Identifier	Threshold Limit / Criteria[2]	Exemptions	References[3]	Identification Number
N-hexane	CAS#: 110-54-3	Do not use If incidentally present[4] exposure must be limited to <20 ppm 8-hour TWA		HP Restriction; PCA Spot Cleaner Standard; EU Directive 2006/15/EC; Bulgaria D.V.8/2004, as amended 2012	150309-04
Hexane, branched and linear	CAS#: 92112-69-1	Do not use If incidentally present exposure must be limited to <20 ppm 8-hour TWA		HP Restriction EU Directive 2006/15/EC; Bulgaria D.V.8/2004, as amended 2012	150309-05
Cyclohexane	CAS#: 110-82-7	Do not use If incidentally present[4] exposure must be limited to <100 ppm 8-hour TWA		HP Restriction ACGIH	160701-01
1,1-Dichloroethylene	CAS#: 75-35-4	Do not use	Polymer formation where the residual amount of monomer is below 100 ppm	HP Restriction	150309-10
Pentachloroethane	CAS#: 76-01-7	Do not use		HP Restriction	150309-11

[4] Incidentally present means occurring as unavoidable impurities or unintentional trace contaminants; such incidentally present material is not intentionally added.

Table 1: Pan-HP Mandatory Restrictions for All Manufacturing Process Substances					
Substances[1]	Substance Identifier	Threshold Limit / Criteria[2]	Exemptions	References[3]	Identification Number
Methylene chloride	CAS#: 75-09-2	Do not use		HP Restriction	150309-12
Tetrachloromethane (Carbon Tetrachloride)	CAS#: 56-23-5	Do not use		HP Restriction	150309-13
1,1,1,2-Tetrachloroethane	CAS#: 630-20-6	Do not use		HP Restriction	150309-14
1,1,2,2-Tetrachloroethane	CAS#: 79-34-5	Do not use		HP Restriction	150309-15
Tetrachloroethylene[5]	CAS#: 127-18-4	Do not use		HP Restriction	150309-16
Trichloromethane (Chloroform)	CAS#: 67-66-3	Do not use		HP Restriction	150309-17
1,1,2-Trichloroethane	CAS#: 79-00-5	Do not use		HP Restriction	150309-18
Trichloroethylene[5]	CAS#: 79-01-6	Do not use		HP Restriction	150309-19
1,1,1-Trichloroethane (TCA)	CAS#: 71-55-6	Do not use		HP Restriction	150309-20

[5] Tetrachloroethylene and trichloroethylene are also restricted for use in cleaning agents and adhesives under the Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973

Table 1: Pan-HP Mandatory Restrictions for All Manufacturing Process Substances					
Substances[1]	Substance Identifier	Threshold Limit / Criteria[2]	Exemptions	References[3]	Identification Number
Bis (chloromethyl) ether	CAS#: 542-88-1	Do not use		HP Restriction	150309-21
Pentachlorophenol	CAS#: 87-86-5	Do not use		HP Restriction	150309-22
Polychlorinated Phenols and their salts	Chemical class; no CAS# assigned	Do not use		HP Restriction	150309-23
Vinyl Chloride (monomer)	CAS#: 75-01-4	Do not use	Polymer formation where the residual amount of monomer is below 10 ppm	HP Restriction	150309-24
1-Bromopropane (n-propylbromide)	CAS#: 106-94-5	Do not use		HP Restriction	160701-55
Alkylphenols & Alkylphenol Ethoxylates	Various	Do not use		HP Restriction; EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	160701-22
Ozone Depleting Substances (ODS)	Refer to Annexes A, B, C, E of Montreal Protocol	Do not use	Refrigeration units used in manufacturing facilities or in data center facilities	Montreal Protocol	980408-15

Table 1: Pan-HP Mandatory Restrictions for All Manufacturing Process Substances					
Substances[1]	Substance Identifier	Threshold Limit / Criteria[2]	Exemptions	References[3]	Identification Number
Fluorinated greenhouse gases, hydrofluorocarbons, and perfluorocarbons[6]	See Table 12 of HX-00011-13	Do not use		EC 842/2006	090807-36
2-Methoxyethanol (ethylene glycol monomethyl ether)	CAS#: 109-86-4	Do not use		HP Restriction	170703-84
2-Methoxyethyl acetate (ethylene glycol monomethyl ether acetate)	CAS#: 110-49-6	Do not use		HP Restriction	170703-08
2-Ethoxyethyl acetate (ethylene glycol monoethyl ether acetate)	CAS#: 111-15-9	Do not use		HP Restriction	170703-79
Diethylene glycol dimethyl ether (diglyme)	CAS#: 111-96-6	Do not use		HP Restriction	170703-33
2-Ethoxyethanol (ethylene glycol monoethyl ether)	CAS#: 110-80-5	Do not use		HP Restriction	170703-22

[6] See HP Standard 011-13 for details of the scope of restriction

4 China Volatile Organic Compound (VOC) Limits

China has requirements to limit the Volatile Organic Compounds (VOCs) and restrict hazardous substances for materials in scope (e.g. coatings) that are manufactured in or imported into China, or applied to parts, products, or packaging in China. Printing ink, coatings, adhesives, and cleaning agents applied to HP's products, parts, or packaging in China must meet the requirements in the following standards:

- GB 30981-2020 Limit of harmful substances of industrial protective coatings - Implementation date December 2020
- GB 33372-2020 Limit of volatile organic compounds content in adhesives - Implementation date December 2020
- GB 38508-2020 Limit of volatile organic compounds content in cleaning agents – Implementation date December 2020
- GB 38507-2020 Limit of volatile organic compounds content in printing inks – Implementation date April 2021

These requirements are in addition to those set forth in Table 1. Listed in the standards are many product categories or application fields that are not applicable to HP's products or packaging, so those are not included in this document.

The standards listed above also include testing and labeling requirements for the materials (e.g. coatings) in scope. Please refer to the standards for more details.

4.1 Coating requirements

The Chinese standard GB 30981-2020 specifies the product classifications, permissible limits of VOCs and hazardous substances, test methods, inspection rules, and labeling requirements for industrial protective coatings. This standard applies to a variety of industrial protective coatings used for protecting the surface of metal, plastics, etc. that are manufactured in or imported into China, or applied to parts, products, or packaging in China.

Volatile organic compound content is defined as the mass of the volatile organic compounds present in a coating, as determined under specified conditions. The limits of VOC content in various industrial protective coatings other than special functional coatings are to comply with the requirements of Table 2 through Table 5. The limits of the content of harmful substances other than VOCs in various industrial protective coatings shall comply with the requirements of Table 6.

Exemptions include:

- Certain special functional coatings are exempted including insulating coatings, anti-fingerprint coatings for touch screens and optical plastic sheets, polytetrafluoroethylene coatings which are sintered at a high temperature above 150 ° C (chemical resistant, wear resistant, lubricated, non-stick, and other functions), fluorosilicone coating for elastomers, electroplating silver effect paints (radiation curing type), marking paints, protective coating for electronic components (which are used to prevent acid mist, dust and moisture or for other special functions), etc.
- Products with an operating voltage of more than 1500V for DC or 1000V for AC
- Equipment involving the production, transmission, and distribution of electric energy

Table 2. VOC Content in Water-based Coatings			
Product Category		Main Product Types	Limit (g/L)
Coatings for electrical and electronic products		Primer	≤420
		Paint	≤420
		Varnish	≤420
Package Coating	Non-stick coating	Primer	≤480
		Floating coat	≤350
		Finishing coat	≤300
	Other	Roll coating (sheet)	≤480
		Spray coating	≤400

Table 3. VOC Content in Solvent-based Coatings			
Product Category		Main Product Types	Limit (g/L)
Coatings for electrical and electronic products		Primer	≤600
		Paint	≤700
		Varnish	≤650
Package Coating	Non-stick coating	--	≤420
	Other	Roll coating (coiled material)	≤780
		Roll coating (sheet)	≤680
		Spray coating	≤750

Table 4. VOC Content in Solvent-free Coatings		
Item		Limit (g/L)
VOC content		≤100

Table 5. VOC Content in Radiation Curable Coatings		
Product Category	Application Method	Limit (g/L)
Water-based coatings	Spray coating	≤400
	Other	≤150
Non-water-based coatings	Spray coating	≤550
	Other	≤200

Table 6. Requirements for Content of Other Hazardous Substances in Coatings	
Items	Limits
Benzene content a (for solvent-based coatings and non-water-based radiation-curing coatings only) /%	≤0.3%
Total content of toluene and xylene (including ethylbenzene)a (for solvent-based coatings and non-water-based radiation-curing coatings only) /%	≤35%
Total halogenated hydrocarbons content a (for solvent-based coatings and non-water-based radiation-curing coatings only) /% (limited to dichloromethane, chloroform, carbon tetrachloride, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2-dichloropropane, 1,2,3-trichloropropane, trichloroethylene, tetrachloroethylene)	≤1%
Total polycyclic aromatic hydrocarbons total (limited to solvent-based coatings and non-water-based radiation-curing coatings) / (mg/kg) (limited to naphthalene, anthracene)	≤500 mg/kg
Methanol content a(for inorganic coatings only) /%	≤1%
Total content of glycol ether and ether ester a(for water-based coatings, solvent-based coatings, and radiation curable coatings only)/% (limited to ethylene glycol methyl ether, ethylene glycol methyl ether acetate, ethylene glycol ether, ethylene glycol ethyl ether acetate, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol dimethyl ether, triethylene glycol dimethyl ether)	≤1%

Table 6. Requirements for Content of Other Hazardous Substances in Coatings	
Items	Limits
Heavy metal content (for paints, coating powder, alkyd varnish only)/ (mg/kg):	
Lead (Pb)	≤1000 mg/kg
Cadmium (Cd)	≤100 mg/kg
Hexavalent chromium (Cr6+)	≤1000 mg/kg
Mercury (Hg)	≤1000 mg/kg

4.2 Adhesive requirements

The Chinese standard GB 33372-2020 specifies the application fields, permissible limits of VOCs, test methods, inspection rules, and labeling requirements for adhesives that are manufactured in or imported into China, or applied to parts, products, or packaging in China.

Exemptions include:

- the adhesives used as intermediates or not entering the circulation field to be used as raw materials for production;
- the adhesives for testing or evaluation in any research and development, quality
- assurance or analysis laboratory;
- urea formaldehyde, phenol formaldehyde and melamine formaldehyde adhesives;
- special functional surface treating agents for material bonding.

The content of single volatile organic compound in adhesive such as benzene series (benzene, methylbenzene and xylene), halogenated hydrocarbon (dichloromethane, 1,2-dichloroethane, 1,1,1-trichloroethane and 1,1,2-trichloroethane), toluene diisocyanate and free formaldehyde, shall meet the requirements of GB 30982 or GB 19340.

Volatile organic compounds are defined as the mass of volatile organic compounds contained in adhesive per unit volume or mass measured under specified conditions. The limits of VOC content in adhesives are to comply with the requirements of Table 7, Table 8, and Table 9. For this standard the term “Assembly industry” means assembling any parts or products together, including electrical and electronic products.

Table 7. VOC Content in Solvent-based adhesives					
Application Field	Limit (g/L) ≤				
	Chloroprene rubber	Styrene-butadiene-styrene segmented copolymer rubber	Polyurethanes	Acrylics	Others
Assembly Industry	600	550	250	510	250

Table 7. VOC Content in Solvent-based adhesives					
Application Field	Limit (g/L) ≤				
Packaging	600	500	400	510	500
Soft goods (e.g. luggage)	600	500	400	--	400
Others	600	500	250	510	250

Table 8. VOC Content in Water-based Adhesives							
Application Field	Limit (g/L) ≤						
	Polyvinyl acetates	Polyvinyl alcohols	Rubber	Polyurethanes	Vinyl acetate-ethylene copolymer emulsions	Acrylics	Others
Assembly Industry	100	--	100	50	50	50	50
Packaging	50	--	50	50	50	50	50
Soft goods (e.g. luggage)	50	--	150	50	50	100	50
Others	50	50	50	50	50	50	50

Table 9. VOC Content in Bulk Adhesives									
Application Field	Limit (g/kg) ≤								
	Silicones	MS[7]	Polyurethanes	Polysulfides	Acrylics	Epoxy resins	α-cyano-acrylic acids	Thermo-plastics[8]	Others
Assembly Industry	100	100	50	50	200	100	20	50	50
Packaging	100	50	50	--	--	--	--	50	50
Fiber processing and paper conversion	--	50	50	--	--	--	--	50	50

[7] MS refers to the adhesive with silane modified polymer as the main material.
[8] Thermoplastics refer to thermoplastic polyolefin or thermoplastic rubber.

Table 9. VOC Content in Bulk Adhesives									
Application Field	Limit (g/kg) ≤								
	Silicones	MS[7]	Polyurethanes	Polysulfides	Acrylics	Epoxy resins	α-cyano-acrylic acids	Thermo-plastics[8]	Others
Soft goods (e.g. luggage)	--	50	50	--	--	--	20	50	50
Others	100	50	50	50	200	50	20	50	50

4.3 Cleaning agents

The Chinese standard GB 38508-2020 specifies the permissible limits of VOCs and hazardous substances, test methods, inspection rules, and labeling requirements for cleaning agents. This standard is applicable to cleaning agents that are manufactured in or imported into China or used in industrial production and service activities in China.

Exemptions include:

- cleaning agents used in semiconductor (including integrated circuits) manufacturing

Volatile organic compounds are defined as organic compounds that will undergo atmospheric photochemical reaction at standard atmospheric pressure of 101.3 kPa and initial boiling point less than or equal to 250°C, or those determined according to relevant regulations. VOC content and specific volatile organic compounds content in cleaning agents shall meet the requirements in Table 10. Water-based cleaning agent meeting the requirements of Table 10 and semi-water-based cleaning agent meeting the requirements of Table 11 may be classified as low-VOC-content cleaning agents.

Table 10. Requirements for limits of VOC content and specific volatile organic compounds content in cleaning agents			
Item	Limits		
	Water-based cleaning agent	Semi-water-based cleaning agent	Organic solvent cleaning agent
VOC content/(g/L) ≤	50	300	900
Sum of dichloromethane, trichloromethane, trichloroethylene and tetrachloroethylene/% ≤	0.5	2	20
Formaldehyde /(g/kg) ≤	0.5	0.5	--
Sum of benzene, toluene, ethylbenzene and xylene/% ≤	0.5	1	2

Table 11. Requirements for limits of low-VOC content in semi-water-based cleaning agent	
Item	Limits
VOC content/(g/L) ≤	100
Sum of dichloromethane, trichloromethane, trichloroethylene and tetrachloroethylene/% ≤	0.5
Formaldehyde /(g/kg)	0.5
Sum of benzene, toluene, ethylbenzene and xylene/% ≤	0.5

4.4 Printing Ink

The Chinese standard GB 38507-2020 specifies the permissible limits of VOCs and hazardous substances, test methods, inspection rules, and labeling requirements for printing ink. The standard includes requirements for a variety of inks for products, parts, and packaging. These requirements apply to screen printing on parts and products, to printing on packaging, and to printing on documentation.

The requirements are also listed in HX-00011-14 for HP's chemicals and formulated products.

Exemptions include:

- additives and diluents used to adjust the printing performance of ink, nor to cleaning agents for printing ink or other products used for printing.

Volatile organic compounds are defined as organic compounds of which the initial boiling point is lower than or equal to 250℃ under the standard pressure of 101.3kPa. The limits of volatile organic compounds in printing ink shall meet the requirements of Table 12.

Table 12: Limits of volatile organic compounds in printing ink			
Ink Type			VOC Limit (%)
Solvent-based ink	Gravure ink		≤75
	Flexographic ink		≤75
	Ink-jet ink		≤95
	Screen ink		≤75

Table 12: Limits of volatile organic compounds in printing ink			
Ink Type			VOC Limit (%)
Water-based ink	Gravure ink	Absorbent printed material	≤15
		Non-absorbent printed material	≤30
	Flexographic ink	Absorbent printed material	≤5
		Non-absorbent printed material	≤25
	Ink-jet ink		≤30
	Screen ink		≤30
Offset ink	Sheet-fed offset ink		≤3
	Cold-set web-fed ink		≤3
	Heat-set web-fed ink		≤10
Energy curing ink	Offset ink		≤2
	Flexographic ink		≤5
	Screen ink		≤5
	Ink-jet ink		≤10
	Gravure ink		≤10
Intaglio ink			≤20

The solvents listed in Table 13 shall not be intentionally added to ink products in the production process.

Table 13: List of prohibited solvents in printing ink	
Name	CAS #
Halohydrocarbons	Various
Ethyl benzene	100-41-4
Propylene oxide	75-56-9
Styrene	100-42-5
Benzene	71-43-2
Isopropyl nitrite	541-42-4
Butyl nitrite	544-16-1
2-Ethoxyethanol	110-80-5

Table 13: List of prohibited solvents in printing ink	
Name	CAS #
Ethyl glycol acetate	111-15-9
2-Methoxyethanol	109-86-4
2-Methoxyethyl acetate	110-49-6
2-Nitropropane	79-46-9
N-Methyl-2-pyrrolidone	872-50-4
Triethylene Glycol Dimethyl Ether	112-49-2
1,2-Dimethoxyethane	110-71-4
Ethylene Glycol Diethyl	629-14-1
Toluene	108-88-3
Xylene	1330-20-7

5 References

CAS# = Chemical Abstract Service Number

Each of the following standards forms a part of HP's GSE and is incorporated herein by reference:

HP Standard 011-00 General Specification for the Environment—Overview (HX-00011-00)

HP Standard 011-01 General Specification for the Environment—Substances and Materials Requirements, All Products (HX-00011-01)

HP Standard 011-01A GSE—Substances and Materials, Future Requirements (HX-00011-01A)

HP Standard 011-01B GSE—Substances and Materials, Business-Specified Requirements (HX-00011-01B)

HP Standard 011-02 GSE—Packaging Requirements (HX-00011-02)

HP Standard 011-06 GSE—Manufacturing Substances Requirements (HX-00011-06)

HP Standard 011-11 GSE—Product requirements for EEE (HX-00011-11)

HP Standard 011-12 GSE—Requirements for Batteries and Battery Containing Products (HX-00011-12)

HP Standard 011-13 GSE—Requirements for Soft Goods and Other Non-EEE (furniture, wooden products, clothing, etc.) (HX-00011-13)

HP Standard 011-14 GSE—Requirements for Chemicals and Formulated Products (HX-00011-14)

HP Standard 011-15 GSE—Requirements for Print Media (HX-00011-15)

HP Standard 014-02 Supplier Requirements for Safe and Legal Products

HP Standard 025-01 Supplemental Environmental Specification—Commodity and Component (HX-00025-01)

HP Supplier Code of Conduct

National Institute for Occupational Safety and Health (NIOSH)

American Conference of Governmental Industrial Hygienists (ACGIH)

Interstate Chemicals Clearinghouse (IC2) Alternatives Assessment Guide

BizNGO Alternatives Assessment Working Group

EPA DfE Screen for Solvents in Cleaning Products

HP PCA Spot Cleaner Standard

GB 30981-2020 Limit of harmful substances of industrial protective coatings

GB 33372-2020 Limit of volatile organic compounds content in adhesives

GB 38508-2020 Limit of volatile organic compounds content in cleaning agents

GB 38507-2020 Limit of volatile organic compounds content in printing inks

6 Revision History

Prior revision history

Revision, Date, Change Number	Brief Description of change
A, 27-Feb-2015	Initial creation of the document
B, 21-Jul-2016	Added 1-Bromopropane (n-propylbromide), Cyclohexane, and Alkylphenols & Alkylphenol Ethoxylates restrictions to Table 1 Removed “Substance Group” and “Examples of Use” from Table 1 to align with GSE 011-01
C, 3-Jul-2017	Changed criteria from “not used” to “do not used” to clarify criteria Added select ethylene glycol ether substances
D, 26-Jul-2018	Editorial changes Added mold release agent to disallowed uses for some substances Expanded alternatives assessments section Clarified references are normative
E, 13-Sep-2019	Editorial changes Clarified definition of incidentally present
F, 29-Jul-2020	Added China VOC requirements