



HP Standard 011 General Specification for the Environment

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

1. GSE Overview – Revision U, 21-Jul-2016
2. Substances and Materials Requirements – Revision U, 21-Jul-2016
3. *Substances and Materials Future Requirements - Revision U, 21-Jul-2016
4. *Substances and Materials Business-Specified Requirements -Revision U, 21-Jul-2016
5. Packaging Requirements– Revision U, 21-Jul-2016
6. *Product Requirements - Revision U, 21-Jul-2016
7. *Substance Disclosure Requirements - Revision D, 21-Jul-2016
8. Manufacturing Process Substances Requirements – Revision B, 21-Jul-2016

** 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	U, 21-Jul-2016
Last Re-validation Date	21-Jul-2016
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 subsidiary 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. Non-HP brand products must comply with applicable legal requirements.
Status	Approved

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1 Introduction

HP's General Specification for the Environment (GSE) is a series of Standards that is comprised of this Standard (HP Standard 011-00) and the subsidiary standards (HP Standards 011-01 through 011-06 and HP Standard 014-02) that are listed in the References section of this Standard. The subsidiary standards are incorporated by reference in this Standard. Accordingly, any reference to the GSE or HP Standards 011 or 011-00 means and includes the specifications and requirements of this Standard and those set out in the subsidiary 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 HP brand and HP owned



brand products. All further references to “HP brand products” in the GSE include HP owned brand products. Non-HP brand products and all parts, components, materials, and packaging 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.

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 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 for 10 years from the end of production and upon request by HP:

- Provide any documentation or test data that demonstrates specific actions taken by the supplier to verify compliance. This includes requirements in the Supplier Verification and Additional Substance Requirements sections of HP Standard HP-011-01 General Specification for the Environment – Substances and Materials Requirements (HP-00011-01). 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.
- 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, 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 Substances and Materials Requirements

Table 1 is a complete list of all substances and materials requirements in all four of the following Standards:

- HP Standard 011-01 General Specification for the Environment - Substances and Materials Requirements ([HP-00011-01](#))
- HP Standard 011-01A General Specification for the Environment - Substances and Materials Future Requirements ([HP-00011-01A](#))
- HP Standard 011-01B General Specification for the Environment - Substances and Materials Business-Specified Requirements ([HP-00011-01B](#))
- HP Standard 011-06 GSE – Manufacturing Process Substances Requirements ([HP-00011-06](#))



Table 1. Complete List of Substances and Materials for HP-00011-01, HP-00011-01A, HP-00011-01B, and HP-00011-06		
Substances and Materials	Standard	Table or section
Antimony	HP-011-01B	Table 2
Antimony trioxide	HP-011-01A	Table 1
	HP-011-01B	Table 2
Arsenic	HP-011-01	Table 1
Asbestos	HP-011-01	Table 1
Azo colorants and aromatic amines	HP-011-01	Table 2
Batteries – Mercury	HP-011-01	Table 3
Batteries – Cadmium	HP-011-01	Table 3
Batteries – Lead	HP-011-01	Table 3
Batteries – Non-rechargeable Alkaline and Carbon-Zinc Batteries	HP-011-01	Table 3
Batteries - Classification for Transportation	HP-011-01	Table 3
Benzene	HP-011-06	Table 1
Benzenamine, N-phenyl-, Reaction Products with Styrene and 2,4,4-Trimethylpentene (BNST)	HP-011-01	Table 1
	HP-011-01	Table 2
Benzidine-based Dyes	HP-011-01	Table 1
Beryllium	HP-011-01	Table 1
	HP-011-01B	Table 2
Bis(chloromethyl) ether	HP-011-06	Table 1
Bisphenol A	HP-011-01	Table 1
	HP-011-01	Table 2
Brominated Flame Retardants (BFRs) and Chlorinated Flame Retardants (CFRs)	HP-011-01	Table 1



Brominated Flame Retardants (tetrabromodiphenyl ether and pentabromodiphenyl ether)	HP-011-01	Table 2
Brominated Flame Retardants (PBBs, PBDEs)	HP-011-01	Table 1
1,2,5,6,9,10-Hexabromocyclododecane (HBCDD or HBCD)	HP-011-01	Table 1
	HP-011-01A	Table 1
Brominated Flame Retardants (all BFRs in external case plastic parts) and Chlorinated Flame Retardants (CFRs)	HP-011-01	Table 1
Cadmium and its compounds	HP-011-01	Table 1
	HP-011-01A	Table 1
Chlorine in bleached paper	HP-011-01B	Table 1
Chlorinated Hydrocarbons	HP-011-01	Table 1
Chlorinated Hydrocarbons (trichloroethylene and tetrachloroethylene)	HP-011-01	Table 2
Chlorinated Paraffins (SCCPs, MCCPs)	HP-011-01	Table 1
	HP-011-01A	Table 1
Conflict Minerals	HP-011-01	Table 1
Dibutyltin (DBT)	HP-011-01	Table 1
	HP-011-01	Table 2
1,1-Dichloroethylene	HP-011-06	Table 1
Dimethyl fumarate (DMF)	HP-011-01	Table 1
	HP-011-01	Table 2
Dioctyltin (DOT)	HP-011-01	Table 2
Di- μ -oxo-di-n-butylstanniohydroxyborane (DBB) [also known as dibutyltin hydrogen borate]	HP-011-01	Table 2
Fluorinated Greenhouse Gases	HP-011-01	Table 2
	HP-011-06	Table 1



Formaldehyde	HP-011-01	Table 2
Formaldehyde – emissions	HP-011-01	Table 2
Gold (Conflict Minerals)	HP-011-01	Table 1
Halogenated Diphenyl Methanes	HP-011-01	Table 1
	HP-011-01	Table 2
Halogenated Flame Retardants (BFRs and CFRs), Polyvinyl Chloride (PVC), and Antimony Trioxide	HP-011-01B	Table 2
Chlorine compounds in the form of polyvinyl chloride (PVC) , PVC congeners, PVC block polymers, PVC copolymers or polymer alloys containing PVC	HP-011-01A	Table 1
	HP-011-01B	Table 2
Chlorine in printed circuit boards	HP-011-01B	Table 2
Total bromine and chlorine in printed circuit boards	HP-011-01B	Table 2
Hexane, branched and linear	HP-011-06	Table 1
Hexavalent Chromium and its compounds in metallic applications	HP-011-01	Table 1
Hexavalent Chromium and its compounds in non-metallic applications	HP-011-01	Table 2
Hexavalent Chromium and its compounds in leather applications	HP-011-01	Table 2
Lead and its compounds	HP-011-01	Table 1
	HP-011-01A	Table 1
Lead in accessory bags, carrying cases, sleeves, and backpacks	HP-011-01	Table 2
Lead in graphic inks	HP-011-01	Table 2
Lead in glass	HP-011-01B	Table 2
Lead in paint	HP-011-01	Table 2
Lead in Polyvinyl Chloride (PVC) coating of external cables, wires and cords	HP-011-01	Table 1
Methylene chloride	HP-011-01	Table 8



Mercury and its compounds	HP-011-01	Table 1
	HP-011-01A	Table 1
Mercury in display (panel + glass)	HP-011-01B	Table 2
Methanol	HP-011-06	Table 1
N-hexane	HP-011-06	Table 1
Natural latex rubber	HP-011-01B	Table 2
Nickel on external surfaces	HP-011-01	Table 1
Nonylphenol, branched and linear, ethoxylated	HP-011-01A	Table 1
Organostannic (organotin) Compounds (DBT, DOT, TBT, TBTO, TPT)	HP-011-01	Table 1
	HP-011-01	Table 2
Ozone Depleting Substances (ODS)	HP-011-01	Table 1
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Pentachloroethane	HP-011-06	Table 1
Pentachlorophenol	HP-011-06	Table 1
Perfluorooctane Sulfonates (PFOS)	HP-011-01	Table 1
	HP-011-01	Table 2
Perfluorooctanoic Acid (PFOA)	HP-011-01	Table 1
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	HP-011-01A	Table 1
Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethyl ethyl)	HP-011-01	Table 1
Phenylmercury compounds	HP-011-01A	Table 1
Phthalates	HP-011-01	Table 1
	HP-011-01	Table 2



	HP-011-01A	Table 1
	HP-011-01B	Table 1
	HP-011-01B	Table 2
Polychlorinated Biphenyls (PCBs)	HP-011-01	Table 1
Polychlorinated Phenols and their salts	HP-011-06	Table 1
Polychlorinated Terphenyls (PCTs)	HP-011-01	Table 2
Polychlorinated Naphthalenes	HP-011-01	Table 1
Polycyclic Aromatic Hydrocarbons (PAH)	HP-011-01	Table 1
	HP-011-01B	Table 2
Polyvinyl Chloride (PVC)	HP-011-01	Table 1
	HP-011-01B	Table 2
Radioactive Substances	HP-011-01	Table1
Red Phosphorus	HP-011-01	Table1
RoHS Compliance	HP-011-01	Section 4.3
Tantalum (Conflict Minerals)	HP-011-01	Table 1
Tetrabromobisphenol A, Additive (TBBPA)	HP-011-01A	Table 1
	HP-011-01B	Table 2
Tetrachloromethane (Carbon Tetrachloride)	HP-011-06	Table 1
1,1,1,2-Tetrachloroethane	HP-011-06	Table 1
1,1,2,2-Tetrachloroethane	HP-011-06	Table 1
Tetrachloroethylene	HP-011-06	Table 1
Trichloromethane (Chloroform)	HP-011-06	Table 1
1,1,2-Trichloroethane	HP-011-06	Table 1
Trichloroethylene	HP-011-06	Table 1
1,1,1-Trichloroethane (TCA)	HP-011-06	Table 1



Tin (Conflict Minerals)	HP-011-01	Table 1
Tributyltin (TBT), Triphenyltin (TPT), Tributyltin Oxide (TBTO)	HP-011-01	Table1
Toluene	HP-011-06	Table 1
2,4,6-Tri-tert-butylphenol	HP-011-01	Table 2
Tungsten (Conflict Minerals)	HP-011-01	Table 1
Vinyl Chloride (monomer)	HP-011-06	Table 1
Wood, Paper and Other Plant-based Products	HP-011-01	Table 2

5 General

The most current revisions of the following standards must be used.

5.1 Environmental Requirements for Substances and Materials

The restrictions specified in HP Standard 011-01 General Specification for the Environment - Substances and Materials Requirements apply globally to all HP and HP owned brand products and all parts, components, and materials incorporated into HP brand and HP owned brand products. The restrictions 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. The restrictions in Standard 011-01B are applicable only when and as specified by an HP business.

5.2 Environmental Requirements for Packaging

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

5.3 Environmental Requirements for Products

The requirements specified in HP Standard 011-04 General Specification for the Environment – Product Requirements (HP-00011-04) apply globally to all HP brand and HP owned brand products, and include product labeling, user documentation, declarations, registration, and product performance requirements.

5.4 Environmental Requirements for Substance Disclosure

The requirements specified in HP Standard 011-05 General Specification for the Environment – Substance Disclosure Requirements (HP-00011-05) apply globally for disclosing certain substances and materials in HP brand and HP owned brand products only when and as specified by HP or an HP business.

5.5 Environmental Requirements for Manufacturing Process Substances

The requirements specified in HP Standard 011-06 General Specification for the Environment – Manufacturing Process Substances Requirements (HP-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.

5.6 Environmental Management System for Products

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

6 References

Each of the following standards forms a part of [HP's GSE](#), and is incorporated herein by reference:

HP Standard 011-01 General Specification for the Environment - Substances and Materials Requirements

HP Standard 011-01A General Specification for the Environment - Substances and Materials Future Requirements

HP Standard 011-01B General Specification for the Environment - Substances and Materials Business-Specified Requirements

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

HP Standard 011-04 General Specification for the Environment – Product Requirements

HP Standard 011-05 General Specification for the Environment - Substance Disclosure Requirements

HP Standard 011-06 GSE – Manufacturing Process Substances Requirements

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

7 Revision History

Revision, Date, Change Number	Brief Description of change
P, 01-Aug-2012 DCN 03139	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> No Revision Q was issued, to align all standards to the same revision letter.
R, 04-June-2013	<ul style="list-style-type: none"> Corrected section reference, Supplier Verification Section 5 of the GSE Substances and Materials Standard (HP Standard 011-1)
S, 23-Jun-2014	<ul style="list-style-type: none"> Added "Overview" to the title Added references to the three new GSE standards: Future, Business-Specified and Disclosure



T, 1-Jun-2015	<ul style="list-style-type: none">• 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 1,2,5,6,9,10-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 1• Updated Table 1 for removal of “Bromine in printed circuit boards”
01-Aug-2015	<ul style="list-style-type: none">• Cloned the standards for HPI
U, 15-Jul-2016	<ul style="list-style-type: none">• Editorial changes, updated Table 1



HP Standard HP-011-01 General Specification for the Environment – Substances and Materials Requirements

Document Identifier	HX-00011-01
Revision and Date	U, 21-Jul-2016
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Abstract	This Standard defines HP's global environmental requirements for restricting certain substances and materials in 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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1 Purpose

This Standard defines HP's global environmental requirements for restricting certain substances and materials in 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 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. 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 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, is a component of HP's General Specification for the Environment (GSE), along with the following GSE standards:

- HP Standard 011-00 GSE - Overview (HP-00011-00)
- HP Standard 011-01A GSE - Substances and Materials Future Requirements (HP-00011-01A)*
- HP Standard 011-01B GSE - Substances and Materials Business-Specified Requirements (HP-00011-01B)*
- HP Standard 011-02 GSE - Packaging Requirements (HP-00011-02)
- HP Standard 011-04 GSE - Product Requirements (HP-00011-04)
- HP Standard 011-05 GSE – Substance Disclosure Requirements (HP-00011-05)
- HP Standard 011-06 GSE – Manufacturing Process Substances Requirements (HP-00011-06)

*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.



3 Substances and Materials Requirements

The restrictions and prohibitions specified in this Standard apply to substances at the homogeneous material¹ 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 Guidance for Phthalate Replacements (EL-MF908-01) and HP Procurement Guidance for Flame Retardants (EL-MF908-02) (both available at the [HP Supplier Portal](#), registration required). There are several alternative assessment processes being used in the industry, such as the [Interstate Chemicals Clearinghouse \(IC2\) Alternatives Assessment Guide](#) and the [BizNGO Alternatives Assessment Working Group](#).

HP's materials strategy, product proactive materials restriction, and substitution timeline is available [here](#).

Table 1, Table 2, and Table 3 list the restricted substances covered by this Standard (HP-00011-01).

- Table 1 lists restrictions applicable to all HP brand products, including parts, components, and materials incorporated into HP brand products. These restrictions are also applicable to non-EE and batteries.
- Table 2 lists restrictions specific to non-electric and non-electronic products, including preparations² and manufacturing processes.
- Table 3 lists restrictions specific to batteries.

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](#))

² Preparations are a mixture or solution composed of two or more substances.



4 Pan-HP Mandatory Restrictions for All Products

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 batteries and non-electric and non-electronic products (such as non-electronic carrying cases and bags).

For restrictions specific to non-electric and non-electronic products, see Section 5.

For restrictions specific to batteries, see Section 6.

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

Table 1: Pan-HP Mandatory Restrictions for All Products³

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	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
Arsenic and its compounds	Various	Computer display glass	10 ppm as trace contaminants or background levels, not intentionally added		HP Restriction	101118-42
Asbestos	CAS#: 1332-21-4 and others	All products	Not present		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	980408-11

³ For restrictions specific to non-EE products, see Section 5. For restrictions specific to batteries, see Section 6. For future and business-specified material restrictions, see HP-00011-1A and HP-00011-1B.

⁴ "All products" includes "parts, components, materials, and products"; "EE" – includes all Electric and Electronic products (or Equipment, as defined by EU RoHS (Directive 2011/65/EU)); "Non-EE" includes products outside the scope of EU RoHS. Note: all parts, components, materials and products include batteries and non-electric and non-electronic products.

⁵ The threshold limit is the number listed, reported as ppm by weight in homogenous material, unless otherwise specified.

⁶ This column provides background on the source of the restriction. The reference list is not exhaustive and more than the listed reference may apply.

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Benzenamine, N-phenyl-, Reaction Products with Styrene and 2,4,4-Trimethylpentene (BNST)	CAS#: 68921-45-9	All products ⁷	Not used, not intentionally added	Rubber products (but not rubber tires).	Canadian Environmental Protection Act, 1999: Prohibition of Certain Toxic Substances Regulations, 2012	140615-46
Benzidine-Based Dyes	See Table 13	All products	Not present		U.S. TSCA 40 CFR 721.1660	150309-30
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
Bisphenol A	80-05-7	External plastics	300 ppm ⁸		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	160701-58

⁷ See BNST restriction in Table 2 of this Standard.

⁸ 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 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Cadmium and its compounds ^{†, ‡}	Various	All products	100 ppm	EU RoHS exemptions: 13b, 39a, 39b. See HP-00011-01A for exemption expirations.	EU RoHS Directive 2011/65/EU	980408-84
Chlorinated hydrocarbons ⁹	See Table 8	All products	1000 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	020221-79
Conflict minerals, gold (Au)	Various	All products	Disclosure requirement, see Section 4.1		Conflict Minerals section to the Dodd-Frank Wall Street Reform and Consumer Protection Act	110727-71
Conflict minerals, tantalum (Ta)	Various	All products	Disclosure requirement, see Section 4.1		Conflict Minerals section to the Dodd-Frank Wall Street Reform and Consumer Protection Act	110727-92
Conflict minerals, tin (Sn)	Various	All products	Disclosure requirement, see Section 4.1		Conflict Minerals section to the Dodd-Frank Wall Street Reform and Consumer Protection Act	110727-87

⁹ See Ozone Depleting Substances (ODS), and chlorinated hydrocarbons (tetrachloroethylene and trichloroethylene) in Table 2, of this Standard and in HP Standard 011-06 Manufacturing Process Substances Requirements, Table 1 for more restrictive requirements.

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Conflict minerals, tungsten (W)	Various	All products	Disclosure requirement, see Section 4.1		Conflict Minerals section to the Dodd-Frank Wall Street Reform and Consumer Protection Act	110727-37
Dibutyltin (DBT) compounds	See Table 5	All products ¹⁰	1000 ppm by weight of tin		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	110727-77
Dimethylfumarate (DMF)	CAS#: 624-49-7	All products (such as leather and desiccant packs)	0.1 ppm		EU Decision 2009/251/EC	090807-44
Diisononyl phthalate [†]	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

¹⁰ See DBT restriction in Table 2 of this Standard.

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Flame retardant, chlorinated flame retardants (CFR) and brominated flame retardants (BFR) [†]		DecaBDE replacements in external housing parts of computers and televisions	Not used Incidentally present must not exceed 1000 ppm combined	Any formulation changes made before 1-Jun-2011	Maine (38 MRS S1609)	110727-18
Flame retardant, polybrominated biphenyls (PBBs) [†]	See Table 7	All products	Not intentionally added and 1000 ppm		EU RoHS Directive 2011/65/EU	980408-10
Flame retardant, polybrominated diphenyl ethers (PBDEs) [†]	See Table 7	All products	Not intentionally added and 1000 ppm		EU RoHS Directive 2011/65/EU	980408-50
Flame retardants, brominated [†]	Various	External case plastic parts ¹¹	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	1000 ppm	Printed circuit board base materials or printed circuit assemblies	HP Restriction, ECMA 370 (The Eco Declaration, TED)	160701-45

¹¹ Parts visible to the customer in normal product operation.

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	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 and 50 ppm	Recycled material in all products: 1000 ppm	Stockholm Convention, HP Restriction	120621-60
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 ¹²		EU RoHS Directive 2011/65/EU	061020-24
Lead and its compounds ^{†, ‡}	Various	All products	1000 ppm ^{13, ∞, ‡}	EU RoHS exemptions: 5b, 6a, 6b, 6c, 7a, 7ci, 7cii, 7 civ, 13a, 13b, 15. See HP-00011-01A for exemption expirations.	EU RoHS Directive 2011/65/EU; California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	061020-12

¹² HP-approved test methods are discussed in Section 7 *Supplier Verification*.

¹³ Lead restrictions in PVC, paint, and non-EE are more restrictive.

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope⁴	Threshold Limit / Criteria⁵	Exemptions	References⁶	Identification Number
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
Lead carbonates, lead sulfates	Various	Paint	90 ppm		HR 4040 Consumer Product Safety Act	980408-27
Mercury and its compounds ^{†,‡}	Various	All products	1000 ppm ^{∞,‡}	EU RoHS exemptions: 4f. See HP-00011-01A for exemption expirations.	EU Regulation (EC) 1907/2006, Annex XVII (EU REACH); EU RoHS Directive 2011/65/EU	980408-14

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope⁴	Threshold Limit / Criteria⁵	Exemptions	References⁶	Identification Number
Mercury and its compounds	various	Measuring devices, switches, non-HID Lamps	10 mg Hg per device, switch, or lamp		Louisiana Mercury Risk Reduction Act; IMERC State Mercury-Added Product Ban & Phase-out Guidance	160701-98
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 lamp	Length ≤ 1.5 m: 10 mg Hg per lamp Length > 1.5 m: 13 mg Hg per lamp	Spare parts	Canada Products Containing Mercury Regulations	160701-87
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	Spare parts	Canada Products Containing Mercury Regulations	160701-08


Table 1: Pan-HP Mandatory Restrictions for All Products³

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	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	Spare parts	Canada Products Containing Mercury Regulations	160701-15
Monomethyl-dibromodiphenyl-methane ¹⁴ (DBBT)	CAS#: 99688-47-8	All products	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH); 67/548/EEC Dangerous Substances Directive	020221-74

¹⁴ Halogenated diphenyl methane.


Table 1: Pan-HP Mandatory Restrictions for All Products³

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Monomethyl-dichlorodiphenyl-methane ¹⁴ (Ugilec 121, Ugilec 21)	CAS#: 81161-70-8	All products	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH); 67/548/EEC Dangerous Substances Directive	020221-88
Monomethyl-tetrachloro-diphenyl-methane ¹⁴ (Ugilec 141)	CAS#: 76253-60-6	All products	Not used		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 Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Nickel	Various	External surface of any product part designed to be frequently handled or touched while carrying the product (or intended to be in 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)	041210-58
Ozone Depleting Substances (ODS) ‡	Refer to Annexes A, B, C, E of Montreal Protocol	All products Manufacturing process	Not present Not used	Refrigeration units used in manufacturing facilities or in data center facilities	Montreal Protocol	980408-15
Perfluorooctane sulfonates (PFOS) and PFOS salts	See Table 10	All products ¹⁵	Not used 1000 ppm if incidentally present ^{16, 17}	<ul style="list-style-type: none"> Photoresists or antireflective coatings for photolithography processes Photographic coatings applied to films, papers, or printing plates 	EU Regulation 850/2004 (as amended by 757/2010) Canada Regulation SOR/2008-178	070905-36

¹⁵ See PFOS restrictions in Table 2 of this Standard.

¹⁶ Incidentally present means occurring as trace contaminants or impurities and not intentionally added.

¹⁷ Calculated with reference to the mass of structurally or micro-structurally distinct parts that contain PFOS.


Table 1: Pan-HP Mandatory Restrictions for All Products³

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Perfluorooctanoic acid (PFOA) and esters [†]	See Table 11	All products	1000 ppm	Spare parts for products made available before 1-Jun-2014	Norway Product reg 922 of 2004, 550, 2013	130604-16
Perfluorooctanoic acid (PFOA) and esters [†]	See Table 11	Coatings of any products	1 µg/m ²	Spare parts for products made available before 1-Jun-2014	Norway Product reg 922 of 2004, 550, 2013	130604-48
Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl), 2-benzotriazol-2-yl-4,6-di-tert-butylphenol, (UV-320)	CAS#: 3846-71-7	All products	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973; EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	090807-38
Polychlorinated biphenyls (PCBs)	Various	All products	Not used Less than 50 ppm if incidentally present ¹⁶		EU Regulation 850/2004 (POPs)	150216-03

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Polychlorinated naphthalenes	Various	All products	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	041210-90
Polycyclic Aromatic Hydrocarbons (PAH)	See Table 14	Rubber or plastic material on the external or regularly user accessed surfaces of a product ¹⁸	1ppm 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. ¹⁹	EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	130604-79
Polyvinyl Chloride (PVC) ^{†,‡}	Various & 9002-86-2	External case plastic parts of products ²⁰	Not used	Sheathing of wires and cables, plastic parts <25 g, fabrics, and protective product covers	HP restriction; EPEAT and Korean eco-label KOECO	041210-80

¹⁸ 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.

¹⁹ Products out of scope are:

- Large scale stationary industrial tools and fixed installations as defined in EU RoHS Directive

²⁰ Parts visible to the customer in normal product operation.

**Table 1: Pan-HP Mandatory Restrictions for All Products³**

Substances and Materials	Substance Identifier	Scope ⁴	Threshold Limit / Criteria ⁵	Exemptions	References ⁶	Identification Number
Radioactive substances	See Table 12	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
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, <u>Red Phosphorus Alert</u>	140615-20
Short chain chlorinated paraffins (SCCPs) [†]	CAS#: 85535-84-8 ²¹	All products	1000 ppm		HP Restriction	020221-48
Tributyltin compounds (TBT)	See Table 5	All products	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-74

²¹ 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 Products³**

Substances and Materials	Substance Identifier	Scope⁴	Threshold Limit / Criteria⁵	Exemptions	References⁶	Identification Number
Tributyltin oxide (TBTO)	See Table 5	All products	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-36
Triphenyltin compounds (TPT)	See Table 5	All products	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-86

† 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 Table 3 in this Standard.



The following subsections (4.1 - 4.3) are further information about the corresponding restriction in Table 1.

4.1 Conflict Minerals

Suppliers must have a Conflict Minerals Policy.

Supplier must survey its supply chain and report information to HP about Supplier and Supplier's supply chain using this [template](#). That information must be provided to HP annually for any tantalum, tin, tungsten, or gold necessary to (or used in the production of and contained in) parts, materials, components and products.

Any smelters in Supplier's supply chain that process tantalum for use in materials, parts, components or products supplied to HP must be included on the [Conflict Free Smelter Program List](#). HP expects Supplier to immediately begin transitioning all of its tantalum, tin, tungsten, or gold supply chains to Conflict-Free Smelters or encouraging their known smelters to participate in the Conflict Free Smelter Program through direct engagement.

HP will require Supplier to demonstrate that any smelters in the Supplier's supply chain that process tin, tantalum, tungsten, or gold for use in materials, parts, components or products supplied to HP must be included on the [Conflict Free Smelter Program List](#) by the end of 2017. Progress towards this requirement will be measured by HP and be based on the percent of Conflict Free Smelter Program smelters included in Supplier's biannual template report.

If a smelter used within Supplier's supply chain is removed from the Conflict Free Smelter Program, Supplier has 6 (six) months to switch to another smelter that is on the [Conflict Free Smelter Program List](#).

By 31-Dec-2016, any smelters in Supplier's supply chain that process tungsten for use in materials, parts, components or products supplied to HP must be included on the [Conflict Free Smelter Program List](#).

By 31-Dec-2017, any smelters in Supplier's supply chain that process tin or gold for use in materials, parts, components, or products supplied to HP must be included on the [Conflict Free Smelter Program List](#).

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 web cams)
 - 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. For information about future substance restrictions and exemption dates, see HP-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, Turkey, Ukraine, 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)
 - Non-metallic applications
- Lead and its compounds
- Mercury and its compounds

Supplier verification requirements are in Section 7 of this Standard.



5 Pan-HP Mandatory Restrictions for Non-Electric and Non-Electronic Products

In addition to the requirements of Section 4, the following restrictions are applicable to **non-electric and non-electronic products (non-EE)** that are in scope for each restriction, except for the listed exemptions and apply globally across HP.

For restrictions specific to batteries, see Section 6.

Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
2,4,6-tri-tert-butylphenol	CAS#: 732-26-3	Lubricating oils	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	101118-14
Azo colorants and Azodyes	Specific azodyes which may release aromatic amines found in Table 6	Textiles or leather articles where the substance may come in prolonged direct contact with exposed skin (such as carrying cases, watches, and protective covers)	30 ppm by test methods listed in Table 4		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	041210-46

²² "All products" includes "parts, components, materials, and products"; "EE" – includes all Electric and Electronic products (or Equipment, as defined by EU RoHS (Directive 2011/65/EU)); "Non-EE" includes products outside the scope of EU RoHS.

²³ The restriction limit is the number listed, reported as ppm by weight in homogenous material, unless otherwise specified.

²⁴ This column provides background on the source of the restriction. The reference list is not exhaustive and more than the listed reference may apply.



Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Benzenamine, N-phenyl-, Reaction Products with Styrene and 2,4,4-Trimethylpentene (BNST)	CAS#: 68921-45-9	Lubricants ²⁵	Not used, not intentionally added		Canadian Environmental Protection Act, 1999: Prohibition of Certain Toxic Substances Regulations, 2012	140615-46
Bisphenol A	CAS#: 80-05-7	Thermal paper	Not used		Connecticut Public Act No. 11-222	110727-78
Dibutyltin (DBT) compounds	See Table 5	Mixtures ²⁶	1000 ppm by weight of tin		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	110727-55
Diisobutyl phthalate (DIBP)	CAS#: 84-69-5	All products	1000 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	120621-45
Dimethylfumarate (DMF)	CAS#: 624-49-7	All products (such as leather and desiccant packs)	0.1 ppm		EU Decision 2009/251/EC	090807-44
Di- μ -oxo-di-n-butylstannohydroxyborane (DBB)	CAS#: 75113-37-0	Preparations	1000 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	090807-41
Diocetyl tin (DOT) compounds	See Table 5	Textile articles intended for skin contact and wall coverings	1000 ppm by weight of tin		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	110727-17

²⁵ See BNST restriction in Table 1 of this Standard.

²⁶ See DBT restrictions in Table 1 of this Standard.



Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Fluorinated greenhouse gases	See Table 9	One-component foams, non-refillable containers	Not used		EC 842/2006,	090807-91
Fluorinated greenhouse gases, hydrofluorocarbons	See Table 9	Novelty aerosols	Not used		EC 842/2006	090807-17
Fluorinated greenhouse gases, hydrofluorocarbons and perfluorocarbons	See Table 9	Unconfined direct-evaporation systems containing refrigerants	Not used		EC 842/2006	090807-36
Formaldehyde	CAS#: 50-00-0	Textile materials intended for skin contact	75 ppm		Lithuania Hygiene norm HN 96:2000, et al.	041210-48
Formaldehyde emissions	CAS#: 50-00-0	Wooden materials made of plywood, pressed wood, and fiber board	See Section 5.1	Pallets and wood packaging	Sections 93120-93120.12, title 17, California Code of Regulations	080715-69
Hexavalent chromium and its compounds ^{†,‡}	Various	Non-metallic applications (such as paints, pigments, and plastics)	1000 ppm		EU RoHS Directive 2011/65/EU	061020-79



Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Hexavalent chromium and its compounds ^{†,‡}	Various	Leather articles, or parts of articles, coming in contact with skin	3 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	130604-45
Lead and its compounds ^{†,‡}	Various	Accessory bags, carrying cases, sleeves, backpacks	200 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	110727-62
Lead and its compounds ^{†,‡}	Various	Graphic inks	600 ppm nonvolatile content		Uruguay Decree 69-011 and Argentina 453/2010	110727-85
Monomethyldibromodiphenylmethane ²⁷ (DBBT)	CAS#: 99688-47-8	Preparations	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH);	020221-33
Monomethyldichlorodiphenylmethane ²⁷ (Ugilec 121, Ugilec 21)	CAS#: 81161-70-8	Preparations	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH);	020221-18
Monomethyltetra-chlorodiphenylmethane ²⁷ (Ugilec 141)	CAS#: 76253-60-6	Preparations	Not used		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH);	020221-55

²⁷ Halogenated diphenyl methane.



Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Pentabromodiphenyl ether [†]	CAS#: 32534-81-9	Adhesives	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	101118-95
Perfluorooctane sulfonates (PFOS) and PFOS salts	See Table 10	Preparations ²⁸	Not used 10 ppm if incidentally present ²⁹	<ul style="list-style-type: none"> Photoresists or antireflective coatings for photolithography processes Photographic coatings applied to films, papers, or printing plates 	EU Regulation 850/2004 (as amended by 757/2010) Canada Regulation SOR/2008-178	070905-82
Perfluorooctane sulfonates (PFOS) and PFOS salts	See Table 10	Textiles ²⁸	Not used 1 µg/m ² if incidentally present ²⁹	<ul style="list-style-type: none"> Photoresists or antireflective coatings for photolithography processes Photographic coatings applied to films, papers, or printing plates 	EU Regulation 850/2004 (as amended by 757/2010) Canada Regulation SOR/2008-178	070905-13
Perfluorooctanic acid (PFOA) and esters	See Table 11	Preparations	10 ppm	Spare parts for products made available before 1-Jun-2014	Norway Product reg 922 of 2004, 550, 2013	130604-77
Perfluorooctanic acid (PFOA) and esters	See Table 11	Coatings of any textiles	< 1 µg/m ²	Spare parts for products made available before 1-Jun-2014	Norway Product reg 922 of 2004, 550, 2013	130604-49

²⁸ See PFOS restriction in Table 1 of this Standard.

²⁹ Incidentally present means occurring as trace contaminants or impurities and not intentionally added.



Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Bis (2-ethylhexyl) phthalate (DEHP) ^{†,‡}	CAS#: 117-81-7	Non-EE (such as textiles, accessory bags, carrying cases, sleeves and backpacks)	1000 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	110727-51
Butyl benzyl phthalate (BBP) ^{†,‡}	CAS#: 85-68-7	Non-EE (such as textiles, accessory bags, carrying cases, sleeves and backpacks)	1000 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	110727-46
Dibutyl phthalate (DBP) ^{†,‡}	CAS#: 84-74-2	Non-EE (such as textiles, accessory bags, carrying cases, sleeves and backpacks)	1000 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	110727-73
Diisodecyl phthalate (DIDP) [†]	CAS#: 26761-40-0, 68515-49-1	Non-EE (such as textiles, accessory bags, carrying cases, sleeves and backpacks)	1000 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	110727-54



Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Di-n-hexyl phthalate (DnHP) [†]	CAS#: 84-75-3	Non-EE (such as textiles, accessory bags, carrying cases, sleeves and backpacks)	1000 ppm		California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)	110727-58
Polychlorinated terphenyls (PCTs)	Various	Lubricating oils and adhesives	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	980408-54
Polychlorinated terphenyls (PCTs)	Various	Preparations (excluding lubricating oils and adhesives)	50 ppm		EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	980408-94
Tetrabromodiphenyl ether [†]	CAS#: 40088-47-9	Adhesives	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	101118-69
Tetrachloroethylene ³⁰	CAS#: 127-18-4	Cleaning agents and adhesives	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	020221-53

³⁰ Chlorinated hydrocarbon, ozone depleting substance (ODS).


Table 2: Pan-HP Mandatory Restrictions for Non-EE Products

Substances and Materials	Substance Identifier	Scope ²²	Threshold Limit / Criteria ²³	Exemptions	References ²⁴	Identification Number
Trichlorethylene ³⁰	CAS#: 79-01-6	Cleaning agents and adhesives	Not used		Japan Chemical Substance Control Law (CSCL, "Kashinho"), Law No. 117 of 1973	020221-64
Wood, paper, and other plant-based products	N/A		See Section 5.2		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	090807-43

† 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](#).



The following subsections (5.1 - 5.2) are further information about the corresponding restriction in Table 2.

5.1 Formaldehyde in wooden materials

Formaldehyde must not exceed the emissions requirements as defined in sections 93120-93120.12, title 17, California Code of Regulations ([Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products](#)) This requirement applies to wooden materials (excluding pallets and wood packaging) made of plywood, pressed wood, and fiber board.

5.2 Wood, paper, and other plant based products

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. Suppliers must have a due diligence process to verify compliance of products with the material restrictions that wood and plant products are legally sourced, including obtaining the country of origin and genus and species of plant or wood material and maintaining records that verify the legal origin of plant materials used to produce products and packaging.

All HP brand paper and paper-based product packaging³¹ must be derived from certified and recycled sources by 2020. Virgin fiber in paper must either carry chain-of-custody certification or be fully certified with documented chain of custody through the converter. The latter must be accompanied by the appropriate documentation, for example invoice, or bill of lading, at distribution center(s) with certification information noted as required per certification scheme standards. HP will maintain its preference for FSC-certified fiber. PEFC certification or relevant national certification schemes that comply with our paper policy can be used in regions where they are recognized, are endorsed by competent independent stakeholders, and ensure a reliable guarantee of responsible sources. Recycled content is to be certified or verified by an independent 3rd party in accordance with the applicable industry standards

See the “Wood, Paper, and other Plant-based Packaging Restrictions” in [HP Standard 011-02 GSE - Packaging Requirements](#) and the “Lacey Act and Australian Illegal Logging Prohibition Act” sections concerning import declaration requirements in [HP Standard 011-04 GSE - Product Requirements](#).

³¹ The requirement for all paper-based product packaging to be derived from certified and recycled sources applies to “primary packaging,” defined as the box that comes with the product and all paper (including packaging and materials) inside the box.



6 Pan-HP Mandatory Restrictions for Batteries

The following restrictions apply across HP and are applicable to the batteries that are in scope for each restriction, notwithstanding the listed exemptions. For restrictions that are applicable to all parts, components, materials, and products see Section 4. For restrictions specific to non-electronic and non-electrical products, see Section 5.

For additional battery requirements, including labeling, refer to the [HP Standard 011-04 GSE - Product Requirements](#).

Table 3: Pan-HP Mandatory Restrictions for Batteries

Substances and Materials	Substance Identifier	Scope ³²	Threshold Limit / Criteria ³³	Exemptions	References ³⁴	Identification Number
Cadmium and its compounds ^{†, ‡}	Various	Batteries	20 ppm by weight of battery		EU Directive 2006/66/EC, Taiwan Battery Regulation	080715-36
Cadmium and its compounds ^{†, ‡}	Various	Non- lead acid batteries, including packs and coin cell	1000 ppm		India e-waste rules 2016	140615-68
Lead and its compounds ^{†, ‡}	Various	Batteries, nonrechargeable and built-in (such as soldered or glued)	1000 ppm by weight of battery		Brazil 401/08 battery regulation	080715-92
Lead and its compounds ^{†, ‡}	Various	Batteries, alkaline zinc manganese dioxide	40 ppm by weight of battery		China Standard GB24427-2009	110727-25
Lead and its compounds ^{†, ‡}	Various	Non- lead acid batteries, including packs and coin cell	1000 ppm		India e-waste rules 2016	140615-74

³² "All products" includes "parts, components, materials, and products"; EEE – includes all Electric and Electronic Equipment as defined by EU RoHS (Directive 2011/65/EU); Non-EE includes products outside the scope of EU RoHS.

³³ The restriction limit is the number listed, reported as ppm by weight in homogenous material, unless otherwise specified.

³⁴ This column provides background on the source of the restriction. The reference list is not exhaustive and more than the listed reference may apply.

**Table 3: Pan-HP Mandatory Restrictions for Batteries**

Substances and Materials	Substance Identifier	Scope ³²	Threshold Limit / Criteria ³³	Exemptions	References ³⁴	Identification Number
Mercury and its compounds ^{†,‡}	Various	Batteries, including coin cell	1 ppm by weight of battery, not intentionally added		Thailand Hazardous Substance Act, Taiwan Battery Regulation, and others	080715-63
Mercury and its compounds ^{†,‡}	Various	Batteries, including coin cell	5 ppm		Canada Products Containing Mercury Regulations & , EU Battery Directive, 2013/56/EU	150601-06
Mercury and its compounds ^{†,‡}	Various	Non-lead acid batteries, including packs	1000 ppm		India e-waste rules 2016	140615-61
Hexavalent Chromium and its compounds ^{†,‡}	Various	Non-lead acid batteries, including packs and coin cell	1000 ppm		India e-waste rules 2016	140615-95
Nonrechargeable batteries	N/A	Batteries nonrechargeable alkaline and carbon-zinc	Hermetically sealed, see Section 6.1		Argentina Battery Bill, S-14/06, Ley 26.184	080715-81
Polybrominated Biphenyls (PBB)	See Table 7	Non-lead acid batteries, including packs and coin cell	1000 ppm		India e-waste rules 2016	140615-87

**Table 3: Pan-HP Mandatory Restrictions for Batteries**

Substances and Materials	Substance Identifier	Scope³²	Threshold Limit / Criteria³³	Exemptions	References³⁴	Identification Number
Polybrominated Diphenyl Ethers (PBDE)	See Table 7	Non-lead acid batteries, including packs and coin cell	1000 ppm		India e-waste rules 2016	140615-81
N/A	N/A	Battery Transportation Classification for All Batteries	See Section 6.2		See Section 6.2	080715-70
N/A	N/A	Rechargeable sealed lead-acid batteries	See Section 6.3		See Section 6.3	080715-60
N/A	N/A	Lithium batteries	See Section 6.4		See Section 6.4	080715-54

† 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.



The following subsections (6.1-6.4) are further information about the corresponding restriction in Table 3.

6.1 Nonrechargeable Alkaline and Carbon-Zinc Batteries

Nonrechargeable alkaline and carbon-zinc batteries must be hermetically sealed.

6.2 Batteries Not Classified as Dangerous Goods for Transportation

All batteries must meet all applicable design, manufacture, marking, testing, and other battery-specific requirements necessary to avoid classification as a dangerous good for purposes of transport for all modes of transportation, as defined in the following documents when shipped installed in, or with equipment:

- United States, "Hazardous Materials Regulations," Title 49, Code of Federal Regulations, US Department of Transportation (DOT)
- International Civil Aviation Organization (ICAO), "Technical Instructions for the Safe Transport of Dangerous Goods by Air"
- International Air Transport Association (IATA), "Dangerous Goods Regulations"
- International Carriage of Dangerous Goods by Road (ADR)
- International Maritime Dangerous Goods Code (IMDG)

Documentation that demonstrates compliance to these regulations, such as a Material Safety Data Sheet (MSDS) or Product Data Sheet (PDS), must be supplied to HP upon request.

6.3 Lead-Acid Batteries

Rechargeable sealed lead-acid batteries must comply with dangerous goods transport criteria for non-spillable batteries as specified in ICAO/IATA Packaging Instruction 872 and Special Provision A67, including testing at 13°C (55°F) to ensure no free liquid flows from the case when it is cracked or ruptured and the requirement that the batteries contain no free or unabsorbed liquid.

6.4 Lithium Batteries

Each lithium battery must be of a type that has been demonstrated to meet the lithium metal or lithium ion battery testing requirements in the most recent version of the United Nations Manual of Tests and Criteria, Part III, Subsection 38.3 (including any revisions, amendments, addenda, or other changes to those testing requirements that are effective as of the date on which the lithium battery is supplied to HP). Batteries and battery packs are subject to these tests without regard to whether the cells of which they are composed have been tested.



7 Supplier Verification

See the *Supplier Verification* section of the *Overview Standard* (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 4. 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 4: HP-Approved Test Methods and IEC Global Standard Testing Methodologies

Substance	Polymer 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 Standard)		
Azodyes	EN ISO 17234-1:2010, EN ISO 17234-2:2011, EN 14362-1:2012, EN 14362-3:2012		

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

Definitions and References for Table 4:

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



8 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 eco-toxicological 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 end of production 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 pre-manufacture 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.



9 Substance Tables

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

Table 5: 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	-
Diocetyl tin oxide	870-08-6
Diocetyl tin 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

**Table 5: Organostannic (organotin) compounds**

Name	CAS* Numbers
Bis(tributyltin) maleate	14275-57-1
Tributyltin chloride	1461-22-9
Mixture of tributyltin cyclopentanecarboxylate and its analogs (tributyltin naphthenate)	5409-17-2
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 6: Aromatic Amines**

Name	CAS* Numbers
biphenyl-4-amine	92-67-1
benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-aminoazotoluene	97-56-3
5-nitro-o-toluidine	99-55-8
4-chloroaniline	106-47-8
4-methoxy-m-phenylenediamine	615-05-4
4,4'-methylenedianiline	101-77-9
3,3'-dichlorobenzidine	91-94-1
3,3'-dimethoxybenzidine	119-90-4
3,3'-dimethylbenzidine	119-93-7
4,4'-methylenedi-o-toluidine	838-88-0
6-methoxy-m-toluidine	120-71-8
4,4'-methylene-bis(2-chloroaniline)	101-14-4
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
4-methyl-m-phenylenediamine	95-80-7
2,4,5-trimethylaniline	137-17-7
o-anisidine	90-04-0
4-amino azobenzene	60-09-3

**Table 7: PBBs and PBDEs**

Name	CAS* Numbers
Bromobiphenyl	2052-07-5, 2113-57-7, 92-66-0
Bromobiphenyl Ether	101-55-3
Decabromobiphenyl	13654-09-06
Decabromobiphenyl Ether	1163-19-5
Dibromobiphenyl	92-86-4
Dibromobiphenyl Ether	2050-47-7
Heptabromobiphenyl	6355-01-8
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 8: Chlorinated Hydrocarbons**

Name	CAS* Number
1,1 Dichloroethylene	75-35-4
Pentachloroethane	76-01-7
Methylene chloride	75-09-2
Tetrachloromethane (Carbon Tetrachloride)	56-23-5
1,1,1,2 Tetrachloroethane	630-20-6
1,1,2,2 Tetrachloroethane	79-34-5
Tetrachloroethylene	127-18-4
Trichloromethane (Chloroform)	67-66-3
1,1,2 Trichloroethane	79-00-5
Trichloroethylene	79-01-6
1,1,1-Trichloroethane (TCA)	71-55-6
Bis (chloromethyl) ether	542-88-1
Pentachlorophenol	87-86-5
Polychlorinated Phenols and their salts	Chemical class; no CAS number assigned
Vinyl Chloride (monomer)	75-01-4



Table 9: Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF₆)

Name	CAS* Numbers
Trifluoromethane – (HFC-23)	75-46-7
Difluoromethane – (HFC-32)	75-10-5
Methyl fluoride – (HFC-41)	593-53-3
2H,3H-Decafluoropentane – (HFC-43-10mee)	138495-42-8
Pentafluoroethane – (HFC-125)	354-33-6
1,1,2,2-Tetrafluoroethane – (HFC-134)	359-35-3
1,1,1,2-Tetrafluoroethane – (HFC-134a)	811-97-2
1,1-Difluoroethane – (HFC-152a)	75-37-6
1,1,2-Trifluoroethane – (HFC-143)	430-66-0
1,1,1-Trifluoroethane – (HFC-143a)	420-46-2
2H-Heptafluoropropane – (HFC-227ea)	431-89-0
1,1,1,2,2,3-hexafluoropropane – (HFC-236cb)	677-56-5
1,1,1,2,3,3-Hexafluoropropane – (HFC-236ea)	431-63-0
1,1,1,3,3,3-Hexafluoropropane – (HFC-236fa)	690-39-1
1,1,2,2,3-Pentafluoropropane – (HFC-245ca)	679-86-7
1,1,1,3,3-Pentafluoropropane – (HFC-245fa)	460-73-1
1,1,1,3,3-Pentafluorobutane – (HFC-365mfc)	406-58-6
Carbon tetrafluoride (Perfluoromethane)	75-73-0
Perfluoroethane (Hexafluoroethane)	76-16-4
Perfluoropropane (Octafluoropropane)	76-19-7
Perfluorobutane (Decafluorobutane)	355-25-9
Perfluoropentane (Dodecafluoropentane)	678-26-2
Perfluorohexane (Tetradecafluorohexane)	355-42-0
Perfluorocyclobutane	115-25-3
Sulphur hexafluoride (SF ₆)	2551-62-4

**Table 10: 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 ₈ F ₁₇ SO ₂ X (X=OH, metal salt, halide, amide and other derivatives including polymers)	Various
Compounds that contain C ₈ F ₁₇ SO ₂ , C ₈ F ₁₇ SO ₃ or C ₈ F ₁₇ SO ₂ N moieties	Various

Table 11: PFOA, PFOA Salts and PFOA Esters

Name	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
Perfluorooctanoyl fluoride	335-66-0
Methyl PFOA	376-27-2
Ethyl PFOA	3108-24-5

**Table 12: Radioactive Substances (Radioactive Isotopes)**

Name	CAS* Numbers
Uranium-238	7440-61-6
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 13: 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 diphenyl azo-substituted carbopolycycle azo benzene-sulfonic acid, sodium salt	Accession No. 24921 CAS No. CBI (NA)
4-(Substituted phenyl)azo biphenyl azo-substituted carbopolycycloazo benzene-sulfonic acid, sodium salt	Accession No. 26256 CAS No. CBI (NA)
4-(Substituted phenyl)azo biphenyl azo—substituted carbopolycycle 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 13: 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 13: 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 14: 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]fluorathene (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



10 References

CAS# = Chemical Abstract Service Number

HP Standard 011-00 General Specification for the Environment – Overview

HP Standard 011-01A General Specification for the Environment - Substances and Materials Future Requirements

HP Standard 011-01B General Specification for the Environment - Substances and Materials Business-Specified Requirements

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

HP Standard 011-04 General Specification for the Environment – Product Requirement

HP Standard 011-05 General Specification for the Environment – Substance Disclosure Requirements

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

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

HP's materials strategy, product proactive materials restriction and substitution timeline is available [here](#)

EL-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](#)

[BIS RoHS Regulations Government Guidance Notes](#)

[Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products](#)

[Connecticut Mercury Reduction and Education Act](#)

[Louisiana Mercury Risk Reduction Act](#)

[IMERC State Mercury-Added Product Ban & Phase-out Guidance](#)

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

United States, "Hazardous Materials Regulations," Title 49, Code of Federal Regulations, US Department of Transportation (DOT)

International Civil Aviation Organization (ICAO), "Technical Instructions for the Safe Transport of Dangerous Goods by Air"

International Air Transport Association (IATA), "Dangerous Goods Regulations"

European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)

International Maritime Dangerous Goods Code (IMDG)



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

[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](#)

11 Revision History

Revision, Date, Change Number	Brief Description of change
S, 23-Jun-14	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Removed Denmark references for DEHP, BBP, and DBP • Corrected the CAS# for DBB • Added Table 3 for DMF in Table 1



Revision, Date, Change Number	Brief Description of change
S2, 23-Feb-15	<ul style="list-style-type: none"> • 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
T, 1-Jun-15	<ul style="list-style-type: none"> • 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 HP-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



Revision, Date, Change Number	Brief Description of change
	<ul style="list-style-type: none"> • Added "2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)" to existing GSE restriction of a similar name "Phenol,2 (2H benzotriazol 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) • 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	<ul style="list-style-type: none"> • Cloned the standards for HPI
U, 21-Jul-2016	<ul style="list-style-type: none"> • 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



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

Document Identifier	HX-00011-02
Revision and Date	U, 21-Jul-2016
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

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1 Purpose

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 – Packaging Requirements, is a component of HP’s General Specification for the Environment (GSE), along with the following GSE standards:

- HP Standard 011-00 GSE – Overview (HP-00011-00)
- HP Standard 011-01 GSE – Substances and Materials Requirements (HP-00011-01)
- HP Standard 011-01A GSE – Substances and Materials Future Requirements (HP-00011-01A)
- HP Standard 011-1B GSE – Substances and Materials Business-Specified Requirements (HP-00011-01B)
- HP Standard 011-04 GSE – Product Requirements (HP-00011-04)
- HP Standard 011-05 GSE – Substance Disclosure Requirements (HP-00011-05)
- HP Standard 011-06 GSE – Manufacturing Process Substances Requirements (HP-00011-06)

The Supplier Verification requirements in HP Standard 011-01 apply.

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 must not contain lead, mercury, cadmium, or hexavalent chromium where the sum concentration of incidental lead, mercury, cadmium, and hexavalent chromium is 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 packaging.

3.1.5 Phthalates

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

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

3.1.6 Expanded Polystyrene

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

3.2 Recyclable Materials

- All materials used in the packaging systems must be recyclable¹, except where approved by HP.
- Choose materials in which recycling systems are readily available.
- Permanent glue or adhesives must not be used to attach dissimilar materials such as foam cushions to corrugated fiberboard.
- Plastic sheets or similar material (for example, shrink wrap) used as part of the primary sales packaging² shall not be less than 50 microns in thickness, except where the thickness of plastic sheets is important to the functionality of the product.

3.3 Recycled Content in Plastic-based Packaging

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 Fiber Content in Paper-based Packaging

HP has taken a proactive approach to increasing the recycled content and certified fiber content in paper-based packaging. HP prefers suppliers that demonstrate environmental values and a commitment to sourcing from responsibly managed forests as outlined in [HP's Environmentally Preferable Paper Policy](#).

¹ As defined by the Federal Trade Commission (FTC)

² 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.



All paper-based product packaging³ must be derived from certified and recycled sources by 2020. Virgin fiber in paper-based product packaging must either carry chain-of-custody certification or be fully certified with documented chain of custody through the converter. The latter must be accompanied by the appropriate documentation, for example invoice, or bill of lading, at distribution center(s) with certification information noted as required per certification scheme standards. HP will maintain its preference for FSC-certified fiber. PEFC certification or relevant national certification schemes that comply with our paper policy can be used in regions where they are recognized, are endorsed by competent independent stakeholders, and ensure a reliable guarantee of responsible sources.

Recycled content (pre-consumer and post-consumer) in paper-based packaging shall meet or exceed the minimum percentages listed in Table 1. When specifying recycled content in paper-based packaging, HP prefers the uses of post-consumer recycled content. Recycled content is to be certified or verified by an independent 3rd party in accordance with the applicable industry standards. The remaining virgin fiber content must come from CoC certified sources as outlined above.

Table 1. Recycled Content Requirements

Category	Total Recovered Fiber Content; Pre-Consumer + Post Consumer (% by weight)	Virgin Fiber Content
Paperboard	80%	Must come from CoC certified sources
Corrugated Paperboard	25%	
Solid Fiberboard	40%	
Spiral Wound Tubes	90%	

HP partners and suppliers shall maintain documentation and report annually the total annual tonnage of certified and recycled content per certification scheme. General document maintenance requirements are set forth in the Supplier Verification section of the HP Standard 011-00.

3.5 Wood, Paper, and other Plant-based Packaging Restrictions

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. Suppliers must have a due diligence process to verify that all wood, paper and plant-based products are legally sourced, including obtaining the country of origin and genus and species of the plant or wood material and maintaining records that verify the legal sourcing of the wood, paper or plant-based materials used to produce packaging, as set forth in the Supplier Verification section of HP Standard 011-00.

This requirement applies to all wood, paper and plant-based materials and products (including wood from planted forests) but does not apply to common food crops. See the Lacey Act and Australian Illegal Logging Prohibition Act import declaration sections in HP Standard 011-04.

³ The requirement for all paper-based product packaging to be derived from certified and recycled sources applies to “primary packaging,” defined as the box that comes with the product and all paper (including packaging and materials) inside the box.



3.6 Secondary Packaging Restrictions

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. The volume of the secondary packaging must be no more than two times the volume of the primary package of the item or items.

If a primary package or envelope is to be shipped as a single item on an order, it cannot be overpacked or placed in a secondary package.

Items suitable for shipment in an envelope or padded envelope, and which do not require a box for protection against shipping damage may not be packed in a box and must use an envelope.

An exemption may 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.

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 011-04.

4.1 General Material Coding

Where the materials listed in Table 2 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 2. 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 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 cm²
- 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 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 2 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.



Figure 1. Packaging Material Code

**Table 2. Packaging Material Identifications Codes and Abbreviations**

Material	Abbreviation	Number
Plastics		
Polyethylene Terephthalate	PET	1
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
Non-corrugated 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



Material	Abbreviation	Number
Paper and cardboard/plastic/aluminum/tinplate		85
Plastic/aluminum		90
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.		

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 only on packaging of products for **household use**. **Packaging going to business customers (containers and wrapping of merchandise consumed for the purpose of business activities) is exempt from 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 cm²), 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:



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

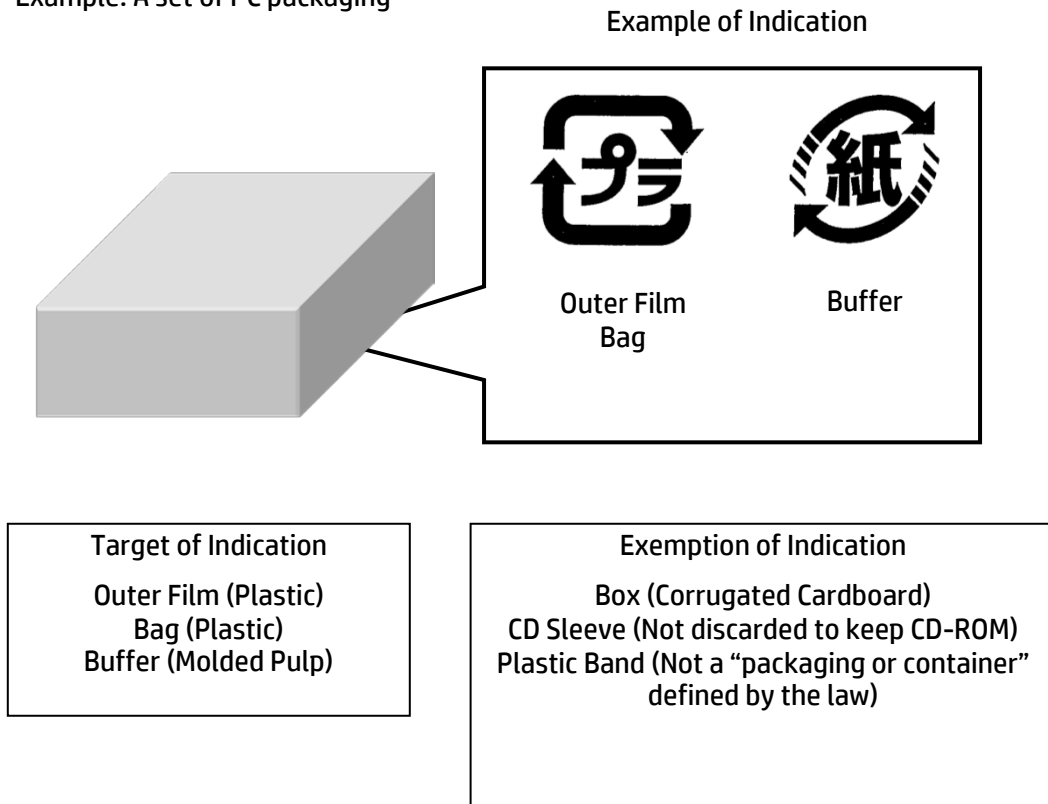


Aluminum Can



- 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.

Example: A set of PC packaging



Although not mandatory at this time, indication of material under the mandatory marking is preferable by using signs prescribed by JIS 6899-1 2000 (ISO 1043-1 1997).

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 cm² (7.75 in²).
- Plastic sheet and film with a surface area less than 100 cm² (15.5 in²). 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 cm² plastic film, exceeding the 100 cm² 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.

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 3.

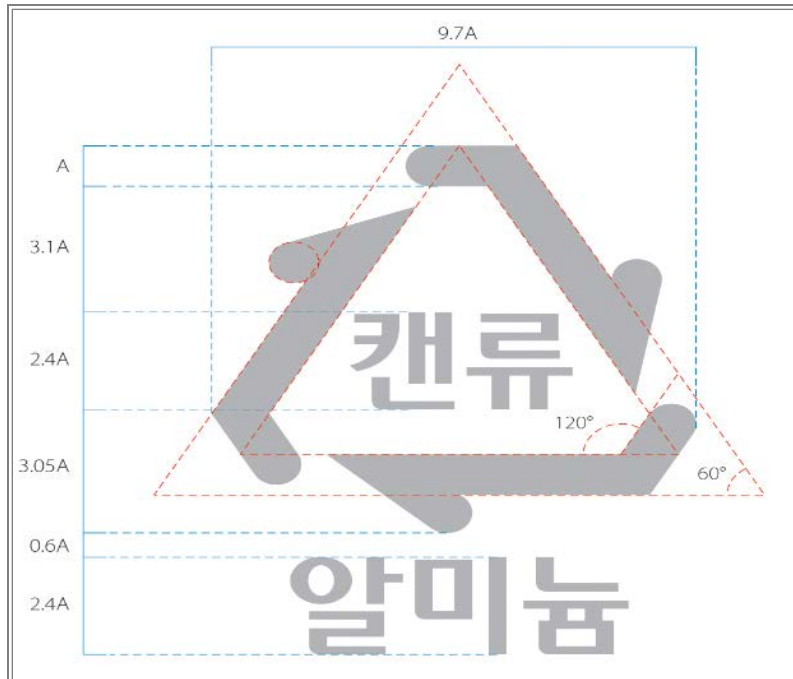
Table 3. Korean Discharge Mark Design Reference

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.

“Paper Pack” refers to paper-based packaging materials whose surface is coated with aluminum or synthetic resin, for example, container for milk, foil laminated, and so forth.

Design details



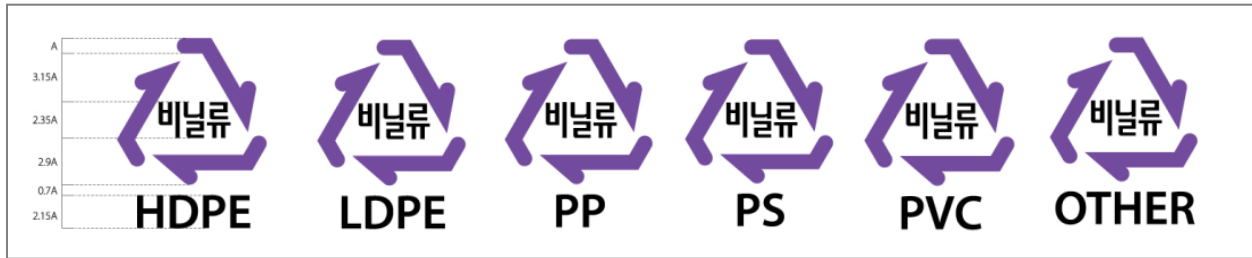
- The triangular recycling symbol (excluding the “material name” text below it) must be larger than 8 mm in width and length.
- The Material type name inside the symbol must be written in Korean. The Material composition name below the symbol should be written in English.
- The extension of each side 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 (however, 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 3. Examples of the marks using the designated color are illustrated in the next section.
- 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.

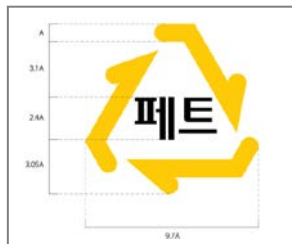
Film and sheet type plastic



Plastic



PET



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 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 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 packaging⁴ 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:

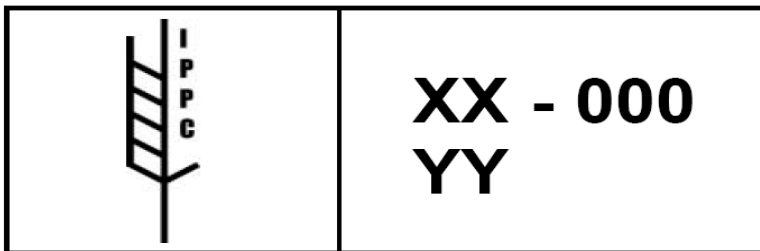
- Visibly part of the sales packaging
- Marked on the front, back, or sides
- Should be in proportion to the pack
- Should remain visible on the packaging throughout its life, even after being opened
- Must stand vertical to the text on the packaging



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*.



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 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.



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

HP Standard 011-00 General Specification for the Environment - Overview

HP Standard 011-01 General Specification for the Environment - Substances and Materials Requirements

HP Standard 011-01A General Specification for the Environment - Substances and Materials Future Requirements

HP Standard 011-01B General Specification for the Environment - Substances and Materials Business Specified Requirements

HP Standard 011-04 General Specification for the Environment - Product Requirements

HP Standard 011-05 General Specification for the Environment - Substance Disclosure Requirements

HP Standard 011-06 GSE – Manufacturing Process Substances Requirements

[HP's Environmentally Preferable Paper 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 Identification⁵](#)

[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

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](#)

⁵ 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



6 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



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

Document Identifier	HX-00011-06
Revision and Date	B, 21-Jul-2016
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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Table of Contents

- 1 Purpose
- 2 Scope
- 3 Manufacturing Process Substances Requirements
- 4 References
- 5 Revision History

Tables

Table 1: Pan-HP Mandatory Restrictions for All Manufacturing Process Substances

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. All parts, components, materials and products include batteries and non-electric and non-electronic products. 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), along with the following GSE documents:

- HP Standard 011-00 GSE – Overview
- HP Standard 011-01 GSE – Substances and Materials Requirements
- HP Standard 011-01A GSE – Substances and Materials Future Requirements
- HP Standard 011-1B GSE – Substances and Materials Business-Specified Requirements
- HP Standard 011-02 GSE - Packaging Requirements
- HP Standard 011-04 GSE – Product Requirements
- HP Standard 011-05 GSE – Substance Disclosure Requirements

The requirements in this standard are in addition to any product requirements set forth in the GSE sections listed above.

3 Manufacturing Process Substances Requirements

As outlined in the [HP Electronic Industry 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. An assessment of alternatives may include reference to occupational exposure limit guidelines from sources such as the [National Institute for Occupational Safety and Health \(NIOSH\)](#) or the [American Conference of Governmental Industrial Hygienists \(ACGIH\)](#). There are also several alternative assessment processes being used in the industry, such as the [Interstate Chemicals Clearinghouse \(IC2\) Alternatives Assessment Guide](#) and the [BizNGO Alternatives Assessment Working Group](#). The [EPA DfE Screen for Solvents in Cleaning Products](#) can also be used as a guide when analyzing alternatives.

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.

**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 cleaning agent or degreaser 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	Not used		HP Restriction; PCA Spot Cleaner Standard	150309-02
Toluene	CAS#: 108-88-3	Not used as a cleaning agent or degreaser 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
N-hexane	CAS#: 110-54-3	Not used		HP Restriction; PCA Spot Cleaner Standard;	150309-04

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.



Substances ¹	Substance Identifier	Threshold Limit / Criteria ²	Exemptions	References ³	Identification Number
		If incidentally present ⁴ exposure must be limited to <20 ppm 8-hour TWA		EU Directive 2006/15/EC; Bulgaria D.V.8/2004, as amended 2012	
Hexane, branched and linear	CAS#: 92112-69-1	Not used If incidentally present ⁵ 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	Not used If incidentally present ⁵ exposure must be limited to <100 ppm 8-hour TWA		HP Restriction ACGIH	
1,1-Dichloroethylene	CAS#: 75-35-4	Not used	Polymer formation where the residual amount of monomer is below 100 ppm	HP Restriction	150309-10
Pentachloroethane	CAS#: 76-01-7	Not used		HP Restriction	150309-11
Methylene chloride	CAS#: 75-09-2	Not used		HP Restriction	150309-12
Tetrachloromethane (Carbon Tetrachloride)	CAS#: 56-23-5	Not used		HP Restriction	150309-13

⁴ Incidentally present means occurring as trace contaminants or impurities and not intentionally added



Substances ¹	Substance Identifier	Threshold Limit / Criteria ²	Exemptions	References ³	Identification Number
1,1,1,2-Tetrachloroethane	CAS#: 630-20-6	Not used		HP Restriction	150309-14
1,1,2,2-Tetrachloroethane	CAS#: 79-34-5	Not used		HP Restriction	150309-15
Tetrachloroethylene ⁵	CAS#: 127-18-4	Not used		HP Restriction	150309-16
Trichloromethane (Chloroform)	CAS#: 67-66-3	Not used		HP Restriction	150309-17
1,1,2-Trichloroethane	CAS#: 79-00-5	Not used		HP Restriction	150309-18
Trichloroethylene ⁷	CAS#: 79-01-6	Not used		HP Restriction	150309-19
1,1,1-Trichloroethane (TCA)	CAS#: 71-55-6	Not used		HP Restriction	150309-20
Bis (chloromethyl) ether	CAS#: 542-88-1	Not used		HP Restriction	150309-21
Pentachlorophenol	CAS#: 87-86-5	Not used		HP Restriction	150309-22

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, see GSE 011-01



Substances ¹	Substance Identifier	Threshold Limit / Criteria ²	Exemptions	References ³	Identification Number
Polychlorinated Phenols and their salts	Chemical class; no CAS number assigned	Not used		HP Restriction	150309-23
Vinyl Chloride (monomer)	CAS#: 75-01-4	Not used	Polymer formation where the residual amount of monomer is below 10 ppm	HP Restriction	150309-24
1-Bromopropane (n-propylbromide)	CAS#: 106-94-5	Not used		HP Restriction	
Alkylphenols & Alkylphenol Ethoxylates	Various	Not used		HP Restriction; EU Regulation (EC) 1907/2006, Annex XVII (EU REACH)	
Ozone Depleting Substances (ODS)	Refer to Annexes A, B, C, E of Montreal Protocol	Not used	Refrigeration units used in manufacturing facilities or in data center facilities	Montreal Protocol	980408-15
Fluorinated greenhouse gases, hydrofluorocarbons and perfluorocarbons ⁶	See Table 10 of HP-011-01	Not used		EC 842/2006	090807-36

⁶ See HP Standard 011-01 for details of the scope of restriction



4 References

CAS# = Chemical Abstract Service Number

HP Standard 011-00 General Specification for the Environment - Overview

HP Standard 011-01 General Specification for the Environment - Substances and Materials Requirements

HP Standard 011-01A General Specification for the Environment - Substances and Materials Future Requirements

HP Standard 011-01B General Specification for the Environment - Substances and Materials Business Specified Requirements

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

HP Standard 011-04 General Specification for the Environment - Product Requirements

HP Standard 011-05 GSE – Substance Disclosure Requirements

[HP Electronic Industry 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](#)

5 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